Essays on firm performance and investment efficiency

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Abstract

The thesis comprises three independent essays on various aspects of corporate finance. The first essay focus on the impact of regional foreign investment on Chinese domestic mergers and acquisitions (M&As). The second essay examines the relationship between corporate social responsibility (CSR) and export performance in the United States. The third essay explores the influence of corporate reputational risk on firms' investment inefficiency in the United States. The introduction provides a brief overview of the background, and the conclusion summarizes the main findings across the three chapters.

The first empirical study (Chapter 2) investigates the impact of regional foreign investment on domestic mergers and acquisitions in China during the period between 2011 and 2019. First, the empirical results indicate that the regional foreign investment exerts no significant effect on firms' short-term stock performance surrounding M&A announcements. Second, this study aims to explore the moderating role of regional corporate income tax and state-owned enterprises (SOEs) in the relationship between regional foreign investment and firms' short-term stock performance after mergers and acquisitions. The findings indicate that regional corporate income tax plays a partially negative moderating role in the relationship between regional foreign investment and short-term M&A stock performance. However, there is no evidence that state-owned enterprises status of acquiring firms exerts any significant moderating influence in this relationship. Furthermore, the analysis provides limited support for the view that the foreign investment in China's western region may have a positive impact on firms' short-term M&A stock performance. Finally, the study reveals that regional foreign investment fails to have a statistically significant impact on the number of M&A transactions.

The second empirical study (Chapter 3) examines the effect of corporate social responsibility on firm export sales, utilizing a panel of U.S. firms over the period from 1995 to 2013. First, the results demonstrate that corporate social responsibility has a positive and significant impact on export sales. Second, the study also aims to explore the moderating role of

financial constraints and firm location in the effects of corporate social responsibility on firm export sales. The study indicates that neither financial constraints nor firm location have a significant moderating effect on the relationship between CSR and export sales. Moreover, the findings reveal that state-level GDP per capita has a positive and statistically significant moderating effect on the relationship between CSR and export sales to some extent. Finally, the results also reveal that CSR strength is positively associated with corporate export sales to a certain extent, while CSR concern exerts a detrimental effect. Furthermore, CSR related to employee, diversity and product aspects significantly enhance a company's export sales to some degree.

The final empirical study (Chapter 4) assesses the impact of a firm's reputational risk on corporate investment inefficiency. This chapter analyzes a dataset consisting of 3602 firm-year observations from 588 distinct U.S. firms spanning from 2007 to 2020. The results reveal that reputational risk significantly and positively affects corporate investment inefficiency. Then, the findings indicate that while reputational risk increases overinvestment, it does not have a considerable effect on underinvestment. Moreover, reputational risk positively impacts investment inefficiency across firms of varying levels of reputational risk and sizes. Notably, firms with low reputational risk and larger firms experience greater adverse effects. In addition, reputational risk does not significantly affect either overinvestment or underinvestment in both large and small firms. Furthermore, this chapter also demonstrates that social and governance-related reputational risk positively affect corporate investment inefficiency, whereas environmental reputational risk does not exert a significant influence. Additionally, the analysis further reveals that financial constraints do not have a significant moderating effect on the relationship between reputational risk and corporate investment inefficiency.

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Author’s Declaration

“I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.”

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1 Introduction

This thesis is structured into three analytical chapters focused on distinct aspects of corporate finance. The first empirical study examines the effect of regional foreign investment on mergers and acquisitions, focusing on Chinese listed firms. The second empirical study contributes to the literature on corporate social responsibility by analyzing its influence on firm export sales. The third empirical study explores the relationship between corporate reputational risk and firm investment inefficiency. The last two chapters select data and context from the United States.

In recent years, M&As have garnered significant attention as pivotal subject in the emerging markets of Brazil, Russia, India, and China (Du and Boateng, 2015). Additionally, M&As are recognized as an effective mechanism for increasing corporate governance (Alba et al., 2009). However, given the distinct regional characteristics of the Chinese market, M&A strategies from developed nations may not be directly transferable to China (Ahlstrom et al., 2003). Moreover, Ahlstrom et al. (2014) highlight the considerable gap in academic research concerning M&A processes in China. Furthermore, Zhu and Zhu (2016) assert that a profound comprehension of Chinese mergers and acquisitions could provide substantial benefits to both Chinese and global enterprises as an increasing number of Chinese companies engage in M&As to enhance their competitiveness both domestically and internationally.

In addition, since initiating economic reforms and opening up to international markets, foreign investment has played a pivotal role in driving China's economic growth, including advancements in science and technology and adjustments in industrial structures (Yufei and Li, 2013). Following the Southern Tour speech in 1992, there has been a marked increase in foreign direct investment in China over the past two decades. By 2003, after joining the World Trade Organization, China had overtaken the United States as the world's largest recipient of foreign direct investment (Chen et al., 2017). Yufei and Li (2013) analyze the current landscape of foreign investment in China, advocating for a more strategic utilization of foreign capital to enhance international collaboration in innovation strategies. Yao and

Wei (2007) assert that foreign direct investment has facilitated the adoption of general-purpose technology, introducing innovative technologies and expertise.

Furthermore, Sun et al. (2002) contend that foreign direct investment is distributed unevenly across China's provinces, while Li and Park (2006) observe that this disparity offers a significant opportunity for investigating the heterogeneity of Chinese provinces. Démurger et al. (2002) assert that foreign direct investment is the principal driver of growth within provincial preferential policies, creating competitive environments that can enhance productivity among domestic enterprises. Sylvie (2000) underscores that FDI acts as a robust mechanism for technology transfer, particularly benefiting the coastal provinces of China that receive significant amounts of FDI. Moreover, Zhu and Zhu (2016) recommend that the inclusion of regional variables offers a promising avenue for future research on Chinese mergers and acquisitions. The study aims to examine whether regional foreign investment can provide advantages that increase firms' mergers and acquisitions performance.

Moreover, the second chapter initially examines the impact of regional foreign investment on firms' M&A short-term stock performance. In addition, this chapter also evaluates the moderating effects of corporate income tax and state ownership on the relationship between regional foreign investment and firms' short-term stock performance after mergers and acquisitions. Furthermore, as noted above, given the substantial economic disparities between eastern and western China, together with the introduction of "The development of the western region in China" strategy in 2001, this chapter takes regional heterogeneity into account and examines whether foreign investment in western provinces of China affects firms' M&A short-term stock performance. The classification of China's western provinces follows the criteria established by the National Bureau of Statistics of China.

Additionally, the findings indicate that regional foreign investment does not have a significant influence on corporate short-term stock performance after mergers and acquisitions. In addition, the result also reveals that corporate income tax has a negative moderating effect on the relationship between regional foreign investment and corporate short-term stock performance after mergers and acquisitions to some extent. However, there

is no evidence that state-owned enterprises status of acquiring firms exerts any significant moderating influence in this relationship. Finally, additional analysis can only partially suggest a positive effect of foreign investment in the western region on firms' M&A short-term stock performance. Furthermore, referring to Hu et al. (2020), the analysis indicates that regional foreign investment fails to have a statistically significant impact on the number of M&A transactions.

Chapter 3 focuses on discussing the role of corporate social responsibility in export sales. Currently, entry into the international market is a crucial strategy for enterprises' development (Rivas, 2012a, 2012b). Moreover, internationalization significantly contributes to the provision of development opportunities, the acquisition of new knowledge, the access to foreign market resources, and the enhancement of long-term profitability for companies (Chen et al., 2016). Additionally, exporting functions as a strategic activity at the levels of companies, industries and countries (Salomon and Shaver, 2005; Kaimakoudi et al., 2014), as it can enhance organizational capabilities and improve company performance (Filatotchev et al., 2009). A substantial body of research has investigated the determinants of firm export performance (Zou and Stan, 1998; Baldauf et al., 2000; Sousa et al., 2008; Brouthers et al., 2009; Beleska-Spasova, 2014; Chen et al., 2016). However, despite extensive research over the past decades, conclusions regarding the determinants of export performance remain fragmented and controversial (Cavusgil and Zou, 1994; Zou and Stan, 1998).

In recent decades, corporate social responsibility has emerged as a central theme within the business community (Kim et al., 2014; Adhikari, 2016; Cheung et al., 2020; Bu et al., 2021). Furthermore, interest in CSR continues to grow among both practitioners and academics in the finance sector (Albuquerque et al., 2019; Kim et al., 2019). This trend is evidenced by the increasing number of companies issuing corporate social responsibility announcements and these firms have invested substantial time and resources in explaining their CSR strategy in recent years (Arouri et al., 2019; Gloßner, 2019; Kim et al., 2019). Nguyen et al. (2020) report that according to a 2005 article in "*The Economist*", 81% of investors and 85% of managers regard CSR as a "core" consideration. Additionally, Byun and Oh (2018) also note that PricewaterhouseCoopers (PwC) reported in 2010 that over 80% of businesses publicly

disclose their CSR activities online. Furthermore, they conclude that CSR is positively correlated with shareholder value and operating performance, including return on assets, profit margin, employee productivity and sales growth. This study aims to examine whether corporate social responsibility significantly influences the export sales of U.S. firms.

The third chapter first evaluates the influence of corporate social responsibility on export sales. Subsequently, Zou and Stan (1998) contend that the influence of the socio-cultural and political environments across different regions has been largely overlooked in studies of export performance. Furthermore, various scholars agree that macro-level factors at the country and regional levels are often neglected in this field of research (Katsikeas et al., 2000; Beleska-Spasova, 2014; Chen et al., 2016). Moreover, Li and Wang (2022) assert that both CSR and company location are increasingly significant, noting that the macroeconomic shocks from CSR activities exhibit substantial regional variations in their impact on firms. Cheung et al. (2020) further observe that the differential impact of CSR across various countries and regions remains uncertain.

Consequently, this analysis also investigates the moderating effects of financial constraints, firm location, and external macroeconomic variables on the relationship between CSR and export sales. Moreover, the results demonstrate that CSR has a positive and significant influence on a firm's export sales. Furthermore, the findings indicate that financial constraints and firm location do not have a significant moderating effect on the relationship between CSR and export sales. Subsequently, it is found that state GDP per capita exerts a positive and significant moderating effect on the relationship between CSR and export sales to some extent. Finally, referring to Kim et al. (2014), the findings also reveal that CSR strength is positively related to corporate export sales to some extent, while CSR concern adversely affects corporate export sales. Furthermore, CSR scores related to employee, diversity and product aspects significantly promote the company's export sales to a certain degree.

The fourth chapter investigates the relationship between corporate reputational risk and firm investment inefficiency. Reputation is acknowledged as an intangible asset and ranks among

the most valuable assets for a company, particularly within the financial companies (Roberts and Dowling, 2002; Gaultier-Gaillard and Louisot, 2006; Nobanee et al., 2023). Nobanee et al. (2021) emphasize that reputation constitutes the most crucial asset for a company. In recent years, managers, supervisory agencies, and scholars have increasingly concentrated on corporate reputational risk (Csiszar and Heidrich, 2006; Nujen et al., 2021; Zhu et al., 2022). Moreover, reputational risk is a significant element of business risk (Hasan et al., 2022). Deloitte (2014) suggest that reputational risk is the foremost strategic risk. Heidinger and Gatzert (2018) maintain that managing reputational risk presents considerable challenges, given its recognition as the risk of risks. Additionally, Scandizzo (2011) argues that effective management of reputational risks necessitates that companies enhance their decision-making processes, establish clearer reporting relationships, and more explicitly define roles and responsibilities.

Both scholars and practitioners have consistently emphasized the importance of effective fund allocation strategies (Rajkovic, 2020). Efficient capital allocation is a key function of financial reporting, and sound investment decisions contribute significantly to achieving this objective (Chen et al., 2011; Zhang et al., 2016). In an ideal market, firms should select projects exhibiting positive net present value and allocate resources to the most profitable projects until all projects have equal marginal outputs and achieve an optimal level of investment to maximize shareholder value (Modigliani and Miller, 1958). However, in actual financial markets characterized by frictions, enterprises often deviate from the optimal investment level due to challenges such as information asymmetry and agency conflicts, leading to inefficient investment practices (Jensen and Meckling, 1976; Myers and Majluf, 1984; Jensen, 1986). It is crucial for corporate management to concentrate on optimizing investment decisions to secure optimal outcomes (Cao et al., 2020). Consequently, it is important to gain a deeper understanding of the factors influencing corporate investment efficiency (O'Toole et al., 2016).

The Chapter 4 investigates how the reputational risk affects investment inefficiency, overinvestment and underinvestment. Moreover, firms' classifications are made based on varying levels of reputational risk and firm size. In addition, this chapter also categorizes

reputational risk into environmental, social and governance dimensions as outlined in the RepRisk Methodology Overview (2021), to explore which types of reputational risk most significantly affect corporate investment inefficiency. Finally, this chapter examines whether financial constraints have a significant moderating effect on investment inefficiency.

Furthermore, the results of this chapter indicate that a firm's reputational risk exerts a positive and significant influence on corporate investment inefficiency. Additionally, the findings also reveal that reputational risk increases corporate overinvestment, but it does not significantly affect corporate underinvestment. Subsequently, the analysis demonstrates that social and governance reputational risk is positively related to corporate investment inefficiency, whereas environmental reputational risk does not exert a significant influence on corporate investment inefficiency.

Additionally, reputational risk has a stronger positive effect on investment inefficiency in large firms compared to small firms. However, reputational risk does not have a significant impact on the overinvestment or underinvestment of both large and small firms. Moreover, the findings indicate that reputational risk exerts a greater positive impact on corporate investment inefficiency of low reputational risk firms compared to high reputational risk firms. Furthermore, the analysis reveals that financial constraints do not have a significant moderating effect on the relationship between reputational risk and corporate investment inefficiency.

2 Regional foreign investments and M&A performance: Evidence from China

2.1 Abstract

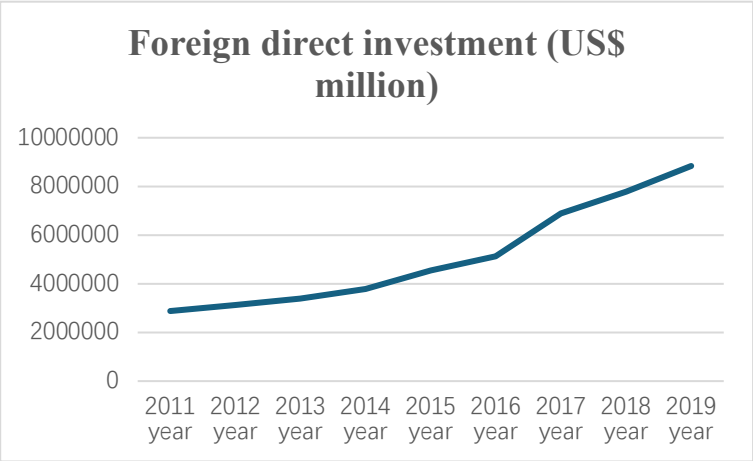
Drawing on a comprehensive dataset of Chinese listed firms covering the period from 2011 to 2019, this chapter conducts an in-depth examination to explore the influence of regional foreign investment on domestic mergers and acquisitions (M&As) in China. The empirical results indicate that the regional foreign investment exerts no significant effect on firms' short-term stock performance surrounding M&A announcements. Moreover, the findings also indicate that regional corporate income tax plays a partially negative moderating role in the relationship between regional foreign investment and short-term M&A stock performance. However, there is no evidence that state-owned enterprises (SOEs) status of acquiring firms exerts any significant moderating influence in this relationship. Furthermore, additional analyses provide limited support for the view that the foreign investment in China's western region may have a positive impact on firms' short-term M&A stock performance. Finally, the analysis reveals that regional foreign investment fails to have a statistically significant impact on the number of M&A transactions. Moreover, this chapter further employs an instrumental variable approach to address potential endogeneity issues, finding that the outcomes broadly conform to the primary findings. Additionally, robustness tests involving modification to the measurement of key variable also largely confirm the main conclusions of the study.

Keywords: China, M&As, Regional foreign investment, Corporate income tax, CARs

2.2 Introduction

Since initiating economic reforms and opening up to international markets, foreign direct investment (FDI) has been crucial in driving China's economic growth, including advancements in science and technology and adjustments in industrial structures (Yufei and Li, 2013). Yao and Wei (2007) also assert that the foreign direct investment has accelerated the adoption of general-purpose technology, introducing new technologies and expertise. Additionally, Démurger et al. (2002) maintain that foreign direct investment serves as the primary driver of growth within provincial preferential policies, fostering competitive environments that can enhance productivity among domestic enterprises. Sylvie (2000) highlights that FDI acts as an effective mechanism for technology transfer, offering advantages to coastal provinces of China that attract substantial amounts of foreign direct investments.

In addition, following the Southern Tour speech in 1992, there has been a substantial surge in foreign direct investment in China over the past two decades. By 2003, after joining the World Trade Organization, China had surpassed the United States as the world's largest recipient of FDI (Chen et al., 2017). Moreover, the Third Plenary Session of the 18th Central Committee of the Communist Party of China in November 2013 emphasized the decisive role of the market in allocating resources, thereby facilitating the effective movement of capital, including international capital. Then, the attached chart illustrates the total amount of foreign direct investment in China over the past several years, indicating that China's foreign direct investments have been on a consistent upward trend in recent years.



Moreover, despite the extensive literature on foreign investment in China, there is still limited understanding of how it affects the performance of domestic mergers and acquisitions of Chinese enterprises. In recent years, M&As have received considerable attention as a key topic in the emerging markets of Brazil, Russia, India, and China (BRIC) (Du and Boateng, 2015). Additionally, M&As serve as a robust mechanism for enhancing corporate governance (Alba et al., 2009). ZAKI and MALAININE (2024) argue that mergers and acquisitions constitute a critical strategy for firms to achieve external growth, enabling them to enter new markets and gain access to technological and human capital resources.

However, considering the unique economic features of the Chinese market, M&A strategies from developed countries might not be directly applicable to China (Ahlstrom et al., 2003). Moreover, historical research has often concentrated on federal regimes when investigating regional variations (Kandilov et al., 2017). Furthermore, Jiang and Kim (2020) also contend that methodologies and outcomes observed in the United States may not be simply applied to the Chinese context.

Thus, the examination of the impact of regional foreign investment on the performance of domestic mergers and acquisitions of China's companies is motivated for the following several reasons. First, understanding the determinants of M&A performance is critical for firms' survival and growth. Bi and Wang (2018) contend that decisions regarding M&As are crucial to corporate strategy. Moreover, a substantial body of literature has examined the factors influencing M&A performance (Xie et al., 2017).

However, despite a considerable body of research conducted over recent decades, the findings on M&A performance determinants remain fragmented and contested (Gomes et al., 2013). Moreover, Cartwright and Schoenberg (2006) and Wang and Wu (2024) also note that existing studies on the determinants of M&A performance are incomplete and are still not well comprehended. Consequently, ZAKI and MALAININE (2024) argue that such controversy and uncertainty underscore the importance of further research into the factors affecting M&A performance.

In addition, Xie et al. (2017) note that firms' investment decisions are influenced by both internal and external investors. Yufei and Li (2013) describe the current state of foreign investment in China, emphasizing the need for China to leverage foreign investment more effectively and to encourage international investors to participate in China's development strategies. However, Ferraz and Hamaguchi (2002) argue that because foreign investors come from diverse cultural and economic backgrounds, integrating foreign investment into the local economic environment requires time and remains an ongoing process. Hence, the effects of foreign direct investment on local firms and economic activities require more in-depth exploration.

Although many studies have separately examined foreign direct investment and firms' M&A performance, research on the relationship between foreign direct investment and M&A performance remains highly limited. This gap is surprising, as such research could substantially deepen our understanding of how foreign direct investment influences corporate M&A activities. Therefore, exploring the relationship between these factors is both crucial and valuable. Can foreign direct investment drive improvements in firms' M&A performance?

Second, Reddy (2015) and Xie et al. (2017) emphasize that the determinants of M&A performance are multidimensional. King et al. (2004) likewise recommend that future studies should devote greater attention to the influence of non-financial factors on M&A activities. Furthermore, both the Economic Prosperity Theory and the Disturbance Theory suggest that the macroeconomic environment exerts a significant influence on corporate M&A activities (Kumar et al., 2023). Consistent with these perspectives, numerous empirical studies further point out the critical role of macroeconomic factors in affecting corporate M&A activity (Thanos et al., 2020; Kapil and Dhingra, 2021). However, Kumar et al. (2023) maintain that current research and theoretical models are inadequate for fully explaining this relationship and highlight the need for further exploration.

Moreover, despite significant development in China over the past four decades, the economic

disparity between the eastern and western regions continues to be a significant challenge. In contrast to the eastern region of China, which benefits from extensive coastlines, over 50% of the western region comprises mountains and plateaus. These geographical challenges hinder economic growth, infrastructure development, and industrialization in China's western regions (Jia et al., 2020).

Additionally, significant variations exist among the provinces, including disparities in local fiscal revenues, unique regulatory frameworks, and even linguistic differences (Chan et al., 2010). Furthermore, Sun et al. (2002) contend that the allocation of foreign direct investment across China's provinces is uneven, while Li and Park (2006) note that this imbalance presents a valuable opportunity for research into the heterogeneity in Chinese provinces.

Moreover, Zhu and Zhu (2016) recommend that incorporating regional variables could present a valuable future research direction for Chinese mergers and acquisitions. Therefore, it is crucial to analyze foreign investment in China with an emphasis on these regional factors. Hu et al. (2020) also state that future research should place greater emphasis on examining provincial-level FDI and regional disparities in China. Therefore, this forms the second motivation of this chapter, which is to examine the impact of China's regional macroeconomic factors on corporate M&A activities and take regional heterogeneity into consideration.

Third, Kumar et al. (2023) argue that an increasing number of emerging economies are now engaging in M&A activities. Christofi et al. (2017) further emphasize that future research on M&A performance should place greater focus on contexts outside the United States. Moreover, following the financial crisis, Chinese firms have participated in an increasing number of M&A activities. By the end of 2019, the value of Chinese M&A transactions accounted for nearly 12% of total global M&A activities (Chen et al., 2020).

In addition, Khachoo and Sharma (2016) note that while foreign direct investment has increasingly flowed into developing countries, further research is needed to understand its practices and benefits in these contexts. Furthermore, as the world's largest emerging

economy and developing country, China shares certain corporate governance characteristics and board structures with other emerging markets (Boateng et al., 2017).

However, despite the increasing frequency of mergers and acquisitions within China in recent years, the understanding of these activities remains limited compared to the extensive history of M&As in developed countries over the past century (Zhu and Zhu, 2016). Lebedev et al. (2015) also argue that the existing literature on Chinese M&As remains constrained. Additionally, Ahlstrom et al. (2014) highlight the significant gap in academic research on Chinese M&A processes. Furthermore, China's M&As, both domestic and international, exert a profound impact on both the Chinese economy and the global market.

Moreover, Zhu and Zhu (2016) also assert that a profound comprehension of Chinese mergers and acquisitions could provide substantial benefits to both Chinese and global enterprises as an increasing number of Chinese companies engage in M&As to enhance their competitiveness both domestically and internationally. Consequently, this forms the third motivation of this chapter, which is to examine the relationship between regional foreign investment and corporate M&A performance in the context of China.

Finally, Megginson and Netter (2001) argue that state ownership plays an important role in firms' production and operational activities, and its influence is even more pronounced in emerging markets. Morck et al. (2005) also state that in many emerging markets, a prevalent issue is the concentration of ownership due to the presence of a single major shareholder, often in the form of state-owned enterprises (SOEs). This ownership concentration can significantly influence corporate decision-making and performance.

Moreover, many studies have documented that state-owned enterprises enjoy greater privileges and access to resources compared with privately owned firms (Zhou et al., 2015; Ma et al., 2016; Chen et al., 2020). Zhou et al. (2015) note that relatively few studies have explored the role of state ownership in Chinese firms' M&A activities. In addition, Chen et al. (2020) suggest that further research is needed to examine the impact of ownership type, particularly state ownership, on M&A performance in China.

Thus, it acts as the final motivation to assess the impact of state-owned enterprises on China's M&As. In addition, China plays an important role in both foreign direct investment and M&A activities, making it particularly interesting to explore the potential relationships between these factors. Therefore, the research question is how are Chinese regional foreign investment and mergers and acquisitions associated?

Then, the main contributions are as follows. First, with the expansion of the Chinese economy, the topics of mergers and acquisitions and foreign investment have attracted considerable interests and present extensive opportunities for research. Despite the observed increase in Chinese M&As and the steady rise in foreign investment, literature exploring their relationship is scarce. This research is pioneering in analyzing the relationship between regional foreign investment and domestic M&A activities in China. Considering that China is one of the world's largest recipients of foreign investment and that Chinese companies are increasingly involved in mergers and acquisitions, this question is interesting and deserves further study. Therefore, this chapter aims to bridge this knowledge gap, broaden the scope of M&A research in China, and provide fresh insights into the influence of foreign investment on China's social and economic development.

Second, this chapter also focuses on the influence of macroeconomic factors on Chinese firms' M&A activities. Choi and Jeon (2011) demonstrate that M&A activities in the United States are significantly affected by macroeconomic conditions. In addition, Boateng et al. (2015) and Ahmad et al. (2018) maintain that macroeconomic factors play a crucial role in affecting the distribution of foreign direct investment across both developed and developing countries.

Furthermore, this chapter will also concentrate on regional heterogeneity. Given China is a vast area, treating its regions as homogeneous would lead to inaccurate conclusions. The eastern and western regions of China exhibit significant differences in numerous aspects, which contribute to serious regional economic imbalances. Yuan (2009) argues that these regional disparities are evident in the industrial structures, GDP per capita, income levels of

urban versus rural residents, and foreign direct investment of China. Additionally, this trend gradually weakens from the east to the west. Therefore, by considering both the influence of macroeconomic factors and regional heterogeneity, this chapter contributes to a more comprehensive and multidimensional understanding of Chinese firms' M&A activities.

Finally, Grigorieva and Petrunina (2015) argue that emerging markets have significantly influenced mergers and acquisitions activities over the past few decades. However, they also note that poor institutional frameworks within these markets can impede M&A performance. Furthermore, Chalencon and Mayrhofer (2018) also report that there are a substantial volume of mergers and acquisitions in emerging economies. Then, Tsui et al. (2004) maintain that an in-depth comprehension of China's foreign direct investment is crucial for understanding the economic and commercial patterns of emerging economies.

In addition, Morck et al. (2005) also demonstrate that state ownership plays an important role in influencing firms' M&A performance in many emerging markets. Consequently, given that China is the largest emerging country, its insights and practices can provide valuable guidance for governments in other emerging and developing countries. These nations' government can learn from China's approach to utilizing foreign direct investment and introducing suitable policies that influence the M&A decisions of domestic firms, ultimately increasing M&A effectiveness and boosting both local and national economic development.

Moreover, this chapter examines the research question by utilizing data on Chinese domestic mergers and acquisitions from the China Stock Market & Accounting Research (CSMAR) database during the period from 2011 to 2019. Additionally, macroeconomic data is sourced from the National Bureau of Statistics (NBS) of China. Then, the analysis employs fixed effect regression model to investigate the impact of regional foreign investment on firms' M&A short-term stock performance. In addition, this chapter also evaluates the moderating effects of corporate income tax and state ownership on the relationship between regional foreign investment and firms' short-term stock performance after mergers and acquisitions.

Furthermore, as noted above, given the substantial economic disparities between eastern and western China, together with the introduction of "The development of the western region in China" strategy in 2001, this chapter takes regional heterogeneity into account and examines whether foreign investment in western provinces of China affects firms' M&A short-term stock performance. The classification of China's western provinces follows the criteria established by the National Bureau of Statistics of China. The detailed empirical results are presented in the additional analysis section.

Moreover, the findings indicate that regional foreign investment does not have a significant influence on corporate short-term stock performance after mergers and acquisitions. In addition, the result also reveals that corporate income tax has a negative moderating effect on the relationship between regional foreign investment and corporate short-term stock performance after mergers and acquisitions to some extent. However, there is no evidence that state-owned enterprises status of acquiring firms exerts any significant moderating influence in this relationship.

Next, this chapter employs the instrumental variable approach to solve potential endogeneity issues and the results largely support the main findings. Then, for robustness check, this chapter applies a different measurement of corporate short-term stock performance after mergers and acquisitions as proposed by Bi and Wang (2018). The results broadly confirm the primary findings, which are detailed in the robustness check section.

Finally, additional analysis can only partially suggest a positive effect of foreign investment in the western region on firms' M&A short-term stock performance. Furthermore, referring to Hu et al. (2020), the analysis indicates that regional foreign investment fails to have a statistically significant impact on the number of M&A transactions.

The rest of the chapter proceeds as follows. Section 2.3 provides a review of the literature. Section 2.4 introduces the data and research methodology. Section 2.5 presents the empirical results, robustness checks and additional analysis. Section 2.6 shows the conclusion.

2.3 Literature Review and Hypothesis Development

2.3.1 Previous research of M&A

ZAKI and MALAININE (2024) point out that mergers and acquisitions represent a critical strategic avenue for firms seeking external expansion and economic growth. However, the high failure rate associated with frequent M&A transactions underscores the complexity and multidimensional nature of such activities, highlighting the need for further research on the factors influencing M&A outcomes.

Dhingra and Kapil (2022) note that the history of mergers and acquisitions can be traced back to as early as 1880. Since then, global economies have experienced seven major waves of merger and acquisition activities, the latest of which commenced following the financial crisis of 2008 to 2010. Consequently, examining the determinants influencing mergers and acquisitions has consistently remained a prominent research topic in academia.

Nowadays, an increasing number of studies are adopting the resource-based view (RBV) as a theoretical framework in research on firms' merger and acquisition activities (Suh et al., 2013; ZAKI and MALAININE, 2024). The concept of the resource-based view can be traced back to the works of Adam Smith and Karl Marx, while Edith Penrose introduces the modern formulation of the resource-based view (Branco and Rodrigues, 2006).

Barney (1991) argues that a firm's competitive advantage in the marketplace derives from a set of unique resources, including both tangible and intangible resources. Moreover, the author also states that these distinctive competitive advantages can be categorized into four types. First, the resources must be valuable. Second, they must be rare. Third, they should be difficult to imitate. Fourth, they should be challenging to substitute.

Then, numerous studies suggest that a firm's innovation capability is both unique and valuable, exerting a positive influence on merger and acquisition performance. The absorptive capacity theory proposed by Cohen and Levinthal (1989) suggests that internal R&D enhances a firm's ability to recognize, absorb, and apply external knowledge. Accordingly, a sufficiently strong innovation capability can also enable firms to more

effectively identify and evaluate high-quality acquisition targets (Vyas et al., 2012).

Additionally, Sorescu et al. (2007) also emphasize that innovation serves as a critical driver of a firm's merger and acquisition activity. The growth potential hypothesis posits that when firms exhibit high levels of R&D investment, the public is likely to perceive their acquisition targets as highly promising. As a result, such mergers and acquisitions are often viewed positively by the public (Dutta and Kumar, 2009).

Dutta and Kumar (2009) investigate the impact of a firm's R&D intensity on merger and acquisition performance. Using a sample of 925 firm-year observations from publicly listed Canadian companies between 1993 and 2002, their study demonstrates a significant positive relationship between R&D intensity and cumulative abnormal returns around the M&A announcement date. Furthermore, the results also suggest that R&D intensive firms possess greater growth potential compared to non-R&D intensive firms.

Furthermore, Suh et al. (2013) examine the impact of firm innovation capability on the performance of cross-border mergers and acquisitions. Their study is based on a sample of 220 cross-border M&A transactions involving firms from 12 European countries. The findings indicate that innovation capability has a positive and significant effect on cross-border M&A performance.

Then, several studies have also explored whether innovation increases the likelihood of a firm engaging in mergers and acquisitions. Pradhan and Abraham (2005) utilize M&A data during the period between 2000 and 2003 obtained from the Centre for Monitoring Indian Economy and conclude that Indian manufacturing firms engaged in outbound mergers and acquisitions exhibit stronger R&D intensity compared to those that do not pursue overseas acquisitions.

Moreover, this feature is also evident in India's pharmaceutical sector. Vyas et al. (2012) employ a logit regression model and analyze 1120 observations by Indian pharmaceutical firms. Then, they also collect data from the Center for Monitoring Indian Economy between

2001 and 2010. Their findings indicate a positive relationship between R&D intensity and M&A activity among Indian pharmaceutical companies.

Sahu and Agarwal (2017) also investigate the key determinants influencing the merger and acquisition activities of Indian pharmaceutical firms. Their study is based on a sample of 600 firm-year observations spanning the period from 1991 to 2014. The results reveal a positive association between R&D activity and M&A participation. Additionally, they also suggest that factors such as export intensity and firm size also play significant roles in shaping Indian pharmaceutical firms' decisions to engage in mergers and acquisitions.

In addition, information asymmetry is another important factor influencing corporate mergers and acquisitions (Cumming et al., 2023). Cai et al. (2016) point out that the uncertainty in the merger and acquisition process may have a detrimental effect on M&A performance. You (2022) also maintains that effectively managing asymmetric information and accurately identifying high-quality acquisition targets during the merger process are fundamental to achieving successful M&A outcomes.

Basu and Chevrier (2011) examine the role of information asymmetry in mergers and acquisitions by using the geographical distance between the acquiring and target firms as a proxy for information asymmetry. Their study analyzes 134 M&A transactions in Canada between 1991 and 2003. The findings reveal a negative relationship between the distance separating acquirers and target firms and the acquirers' post-merger performance.

Cai and Sevilir (2012) investigate the impact of board connection on merger and acquisition transactions. Using a sample of 1664 M&A deals in the United States spanning the period from 1996 to 2008, they find that acquirers exhibit better M&A performance when either (1) the acquiring and target firms share a common board member, or (2) a director from the acquiring firm and a director from the target firm both serve on the board of a third company.

Moreover, Cai et al. (2016) assess whether the presence of a shared auditor between acquiring and target firms enhances the quality of M&A transactions. Employing a sample

of 1971 M&A deals from 1988 to 2010, they suggest that acquisitions involving a shared auditor exhibit superior market performance compared to those without a shared auditor. This is attributed to the role of shared auditors in improving the quality of information exchange between the two parties.

Furthermore, Dhaliwal et al. (2016) also support this perspective by investigating the role of shared auditors in M&A transactions. Utilizing a dataset of approximately 3300 mergers and acquisitions conducted between 2002 and 2010, their results demonstrate that the presence of a shared auditor is associated with higher market returns for the acquiring firm during the announcement period, suggesting that shared auditors facilitate more effective information flow and reduce information asymmetry in M&A deals.

Moeller et al. (2007) analyze approximately 1500 M&A transactions to examine the impact of information asymmetry on acquirer M&A performance. Their findings reveal that information asymmetry is negatively associated with acquirers' abnormal returns during the announcement period only in equity transactions. In contrast, information asymmetry does not have a significant effect on the acquirers' announcement-period abnormal returns in cash deals.

In addition, many scholars argue that corporate social responsibility (CSR) is also a critical factor in determining whether a firm can achieve a successful M&A transaction (Xie et al., 2017; Cumming, et al., 2023; ZAKI and MALAININE, 2024). Deng et al. (2013) and Wang and Wu (2024) also suggest that the influence of CSR on mergers and acquisitions aligns with stakeholder theory. CSR practices help meet the interests of various stakeholders, reduce transaction-related costs, and mitigate information asymmetry.

Then, several studies have reported evidence supporting the conclusion that CSR has a positive impact on firms' merger and acquisition performance. Deng et al. (2013) investigate the relationship between corporate social responsibility and mergers and acquisitions using a sample of approximately 1500 U.S. M&A deals from 1992 to 2007. Their findings indicate that CSR has a positive and significant effect on acquirers' stock returns during the

announcement period, as well as on firm value and long-term post-merger performance.

Qiao et al. (2018) examine the impact of corporate social responsibility on the long-term performance of mergers and acquisitions by collecting nearly 1100 M&A transactions involving Chinese listed companies during the period from 2012 to 2014. Their analysis demonstrates that CSR has a positive effect on the long-term performance of M&A deals, but this effect is observed only among firms located in China's eastern region.

In addition, Arouri et al. (2019) assess the relationship between acquirers' corporate social responsibility and M&A uncertainty. Their sample consists of approximately 700 M&A transactions conducted between 2004 and 2016. The results show that CSR is negatively associated with the arbitrage spread following the initial deal announcement, suggesting that higher CSR scores of acquiring firms help reduce uncertainty in merger and acquisition transactions.

Krishnamurti et al. (2019) utilize data from 776 merger and acquisition transactions in Australia between 2000 and 2016 to investigate how corporate social responsibility affects M&A performance. They indicate that acquirers' CSR scores are positively correlated to abnormal returns around the announcement period. Moreover, they also provide evidence that firms with higher CSR levels are more likely to acquire target companies that also exhibit strong CSR performance.

Wang and Wu (2024) explore the impact of corporate social responsibility disclosure on merger and acquisition performance and utilize a sample of approximately 2500 M&A transactions in China between 2008 and 2018. They suggest that firms disclosing CSR reports achieve higher long-term M&A performance compared to those that do not disclose CSR reports.

2.3.2 Foreign direct investment and performance

According to the resource-based view, foreign direct investment can provide firms with unique advantages and valuable resources. Extensive literature argues that foreign direct

investment inflows facilitate the introduction of innovative technologies or enable technology transfer through technology spillovers to domestic firms within host countries (Blomström and Kokko, 1998; Aitken and Harrison, 1999; Javorcik, 2004; Sinani and Meyer, 2004; Bwalya, 2006; Silva et al., 2024).

Javorcik (2004) utilizes over 11000 observations from 1996 to 2000 in Lithuania to examine the strategies countries employ to attract foreign direct investment. The study identifies positive FDI spillovers through backward linkages in Lithuania, characterized by: (1) Direct knowledge transfer; (2) Encouraging domestic suppliers to upgrade management and technology; (3) Indirect knowledge transfer; (4) Domestic suppliers benefit from scale economies; (5) Competition effect.

Furthermore, some scholars have focused on and investigated the impact of foreign direct investment on firm innovation. Bertschek (1995) explores the impact of inward foreign investment on product and process innovation using a sample of over 1200 manufacturing firms in West Germany from 1984 to 1988. Applying a random effects probit model, the study finds that inward foreign direct investment has a positive effect on both product and process innovation.

Blind and Jungmittag (2004) conduct a survey-based study in 1999 to examine the impact of foreign investment on product and process innovation within Germany's service sector. Selecting a sample of over 2000 firms, they confirm that foreign direct investment positively influences both product and process innovation. In addition, their findings also indicate that imports have a similarly positive effect on both types of innovation.

Cheung and Ping (2004) use provincial-level data from China spanning the period from1995 to 2000 to explore the impact of foreign direct investment on innovation. Their findings reveal that foreign direct investment has a positive effect on the number of domestic patent applications in China, suggesting that foreign direct investment contributes to enhancing the country's innovation output.

Lin and Lin (2010) follow and extend the research framework of Bertschek (1995) by collecting data from over 3000 firms in Taiwan between 1998 and 2000 to assess the impact of inward foreign direct investment on firm innovation activities. Their results indicate that inward FDI has a positive effect on innovation among Taiwanese firms. Moreover, they also find that outward FDI and imports similarly contribute positively to innovation in Taiwan's corporate sector.

Erdal and Göçer (2015) investigate the impact of foreign direct investment on innovation and R&D activities at the national level. Utilizing panel causality and cointegration methods, they analyze data from 10 developing Asian countries over the period from 1996 to 2013. Their findings demonstrate that foreign direct investment plays a positive and significant role in enhancing innovation and R&D activities at the national level.

Ghazal and Zulkhibri (2015) also focus on developing countries and explore the factors that influence innovation output at the national level. Applying the negative binomial method and collecting data from 18 developing countries spanning the period from 1996 to 2010, they conclude that both industrial design and foreign direct investment exert a positive impact on national innovation output. Additionally, their study also demonstrates that the effect of R&D on innovation output depends on the country's level of economic development.

Khachoo and Sharma (2016) assess the impact of foreign direct investment on innovation performance among Indian manufacturing firms by categorizing FDI based on industry type. Their sample comprises approximately 500 manufacturing companies observed between 2000 and 2013. The findings suggest that the horizontal FDI and backward FDI positively influence a firm's innovation performance.

In addition, Li et al. (2020) investigate the effects of both inward and outward foreign direct investment on regional innovation performance in the context of China. Employing the Generalized Method of Moments (GMM) estimation method and a dataset covering 30 provincial-level regions from 2003 to 2017, their study reveals that both inward and outward FDI are positively associated with regional innovation performance. Additionally, inward

FDI demonstrates a stronger effect in terms of new product sales.

Nyeadi and Adjasi (2020) draw on data from the World Bank to evaluate the impact of foreign direct investment on the innovation performance of domestic firms in Nigeria and South Africa. The results indicate a positive relationship between FDI and innovation performance among Nigerian firms. However, for domestic firms in South Africa, there is no evidence that FDI has a significant effect on innovation performance.

Furthermore, some scholars contend that foreign investment can benefit firms by reducing information asymmetry and enhancing the quality of information (Andriosopoulos and Yang, 2015). The active monitoring hypothesis explains this mechanism, emphasizing that foreign investors actively monitor corporate shareholders to protect their own interests and reduce information asymmetry (An, 2015).

Jiang and Kim (2004) examine the relationship between foreign ownership and information asymmetry, using a sample of approximately 16000 firm-year observations from Japanese companies between 1976 and 1994. Their empirical results reveal a negative relationship between the proportion of foreign ownership in Japanese firms and the level of information asymmetry.

Moreover, An (2015) investigates, in the context of Korea, whether foreign ownership can enhance the quality of corporate financial reporting. Using data covering nearly 3000 firm-year observations from 2000 to 2005, and applying the Cash Flow Model, the Dechow and Dichev Model, and the Jones Model, the study concludes that foreign ownership improves the financial reporting quality of Korean firms.

Kim et al. (2019) analyze about 110000 firm-year observations from 40 countries between 2001 and 2011 to examine whether foreign institutional ownership influences firms' choice of auditors. Their results show that firms with higher levels of foreign institutional ownership are more likely to engage Big Four auditors in order to reduce information asymmetry.

Furthermore, Tsang et al. (2019) utilize nearly 20000 observations from 32 countries between 2003 and 2011 to evaluate whether foreign institutional investors influence firms' voluntary disclosure practices. Their findings confirm that the presence of foreign institutional investors has a positive effect on enhancing the level of voluntary disclosure by firms.

Then, Vo and Chu (2019) assess the impact of foreign ownership on earnings quality in the context of Vietnam, employing a sample of 245 listed companies from 2007 to 2015. Their results demonstrate that foreign ownership is negatively associated with earnings management but positively associated with earnings persistence. Furthermore, the study provides evidence that a higher proportion of foreign ownership contributes positively to improving the quality of earnings information.

Lee and Oh (2024) investigate how foreign ownership influences earnings management and accounting transparency among listed companies in Korea. Using a sample of approximately 20000 firm-level observations from 1999 to 2019, they maintain that foreign ownership is positively associated with both earnings management and accounting transparency. Additionally, they observe that the positive effect is significantly stronger for non-chaebol firms than for their chaebol counterparts.

In addition, Li et al. (2021) argue that most foreign investors originate from developed countries and regions, which makes them more attentive to the CSR practices of the firms they invest in. Moreover, foreign investors may face the "liability of foreignness" (ry De Nyeadi et al., 2021), as investing in foreign markets entails certain risks. Typically, foreign investors may lack sufficient information about the target company, leading them to place greater emphasis on the firm's CSR score.

Furthermore, ry De Nyeadi et al. (2021) and Pham et al. (2024) explain that the influence of foreign investment on CSR aligns with both the superior knowledge transfer theory and stakeholder theory. The superior knowledge transfer theory posits that when foreign investors invest in a target company, they can contribute their own knowledge and

managerial expertise, train high-quality personnel, and integrate resources, which are consistent with CSR principles. Meanwhile, stakeholder theory emphasizes that firms must consider the interests of all stakeholders during their operations. Accordingly, foreign investors may require CSR reporting and related disclosures to meet the expectations of various stakeholders.

Several studies have highlighted the positive role of foreign investment in enhancing corporate social responsibility. Oh et al. (2011) examine the impact of ownership structure on CSR. They select 118 large firms from Korea's "*2006 Top 200 Best Corporate Citizens*" list as their sample. Their findings reveal a positive relationship between the proportion of foreign ownership and CSR ratings. Furthermore, they also demonstrate that executive ownership is negatively associated with CSR performance.

Additionally, Nyuur et al. (2016), in the context of Ghana, employ a survey-based approach to evaluate whether foreign direct investment can promote corporate engagement in CSR activities. Based on an analysis of 227 completed questionnaires, they conclude that foreign direct investment exerts a positive effect on encouraging local firms to actively participate in CSR initiatives.

ry De Nyeadi et al. (2021) apply a sample of 56 listed companies in South Africa from 2011 to 2013 to investigate the relationship between foreign direct investment and the CSR performance of domestic firms. Their findings indicate that foreign direct investment is positively related to CSR scores. Specifically, foreign direct investment plays a positive role in enhancing scores for social and environmental responsibility but has little impact on governance responsibility scores.

Setiawan et al. (2021) investigate whether the presence of foreign boards influences the CSR performance of firms in Indonesia. Employing a sample of nearly 500 firm-year observations from Indonesian manufacturing companies between 2017 and 2019, they contend that foreign boards exert a positive impact on local firms' CSR performance. In addition, their results also demonstrate that foreign ownership is positively correlated with local firm's CSR

performance.

Moreover, several studies have conducted in-depth investigations into this issue in the context of Vietnam. Nguyen et al. (2019) examine the impact of foreign direct investment on sustainable development in the context of Vietnam. Their sample covers more than 400 observations from 62 provinces between 2010 and 2016. The results reveal that the capital of FDI firms and the workforce employed in the FDI sector are positively associated with provincial-level sustainable development in Vietnam. However, the scale of fixed assets and the level of long-term capital investment in FDI projects are negatively associated with provincial sustainable development.

Lin and Nguyen (2022) explore the relationship between ownership structure and CSR performance, utilizing a sample of 65 Vietnamese firms in 2019. They conclude that managerial ownership and foreign ownership have positive effects on CSR performance, whereas ownership concentration and state ownership have no significant impact on CSR outcomes.

Pham et al. (2024) investigate the impact of foreign ownership on CSR performance in Vietnam, using a dataset of nearly 1500 firm-year observations from 309 non-financial Vietnamese firms between 2015 and 2019. Their findings indicate that foreign ownership has a positive effect on CSR performance, but this effect is evident only in non-environmentally sensitive firms. In contrast, in environmentally sensitive firms, the impact of foreign ownership on CSR performance is not significant.

Additionally, several studies have also assessed this issue in the context of China. Wu and Liu (2010) employ provincial panel data from China spanning the period from 2003 to 2007 to evaluate the impact of foreign investment on firms' pollutant management. Their findings suggest that foreign investment has a positive effect on reducing and managing pollutant emissions in Chinese firms. Moreover, this effect is more pronounced in western China compared to the eastern and central regions.

McGuinness et al. (2017) investigate the relationship between foreign ownership and corporate social responsibility ratings, utilizing a sample of approximately 2500 Chinese listed companies from 2009 to 2013. They conclude that in state-owned enterprises, the proportion of foreign ownership is positively associated with CSR ratings.

Guo and Zheng (2021) also analyze the relationship between foreign ownership and corporate social responsibility in Chinese firms. Applying a sample of about 5500 firm-year observations from Chinese listed companies between 2009 and 2018, they observe that foreign ownership is positively associated with CSR ratings. Moreover, they report that legal institutional distance and economic institutional distance both serve as positive moderating factors in the relationship between foreign ownership and CSR.

Li et al. (2021) adopt nearly 4000 firm-year observations from China between 2009 and 2017 to investigate the relationship between foreign institutional ownership and CSR performance. Their findings reveal a positive association between the proportion of foreign institutional ownership and firms' CSR performance. Moreover, they also argue that this positive relationship is stronger when foreign institutional investors are among a firm's top ten shareholders.

Therefore, the above literature provides comprehensive evidence that foreign direct investment constitutes a unique advantage for firms. First, according to the resource-based view and the superior knowledge transfer theory, foreign direct investment can bring innovative technologies and facilitate technology transfer to host firms. As highlighted in the literature discussed in the previous section, such technology transfer driven by foreign direct investment can enhance firm innovation, which in turn may exert a positive impact on merger and acquisition performance.

Second, as previously discussed, information asymmetry can adversely affect the acquirer's M&A performance. Foreign investors, due to their limited familiarity with local conditions, often require firms to provide high-quality information and reports, thereby effectively reducing information asymmetry while also exercising a monitoring role. Moreover,

accepting foreign investment aligns with signaling theory, as it conveys a positive signal to the market and investors, strengthening their confidence and expectations. Collectively, these factors can effectively help firms enhance their M&A performance.

Third, according to the stakeholder theory discussed earlier, corporate social responsibility plays an important role in enhancing firms' M&A performance. The influence of foreign investment on CSR is consistent with stakeholder theory (Pham et al., 2024). Consequently, foreign investors may require CSR reports and related disclosures to meet the expectations of various stakeholder groups. Furthermore, this influence is also in line with the superior knowledge transfer theory, which posits that when foreign investors invest in a target firm, they can contribute their knowledge and managerial expertise, develop high-quality human capital, and engage in practices consistent with CSR principles. Therefore, it is anticipated that foreign direct investment will have a positive impact on firms' M&A stock performance. More formally, the hypotheses are formulated as follows:

Hypothesis 1: Regional foreign direct investment will be positively associated with firms' M&A short-term stock performance in China

2.3.3 Moderating effect of corporate income tax

Hines (1993) states that local tax rates have a significant impact on capital flows and even the broader economic environment. Similarly, Silva et al. (2024) note that tax policy plays an important role in attracting foreign investment. Abdioğlu et al. (2016) elaborate on the underlying mechanism, arguing that an increase in tax rates reduces firms' earnings, which may in turn influence foreign investors' decision-making and ultimately discourage foreign investment.

Moreover, Hines (1993) analyzes U.S. state-level data on corporate income tax rates and foreign direct investment for 1987 to examine whether state tax rates significantly affect the ability to attract FDI. The author argues that higher corporate income tax rates have a pronounced adverse impact on attracting foreign direct investment.

Wijeweera et al. (2007) explore the impact of U.S. corporate income tax rates on the country's capacity to absorb foreign direct investment. Their sample covers FDI inflows from nine countries to the United States during the period from 1982 to 2000. The results demonstrate a negative relationship between U.S. corporate income tax rates and inbound FDI.

Klemm and Van Parys (2012) use data from 47 developing countries between 1985 and 2004 to investigate the role of tax incentives in attracting foreign direct investment. Their findings reveal a negative relationship between corporate income tax rates and FDI inflows. In addition, they also maintain that tax exemption policies have a positive effect on developing countries' ability to attract FDI.

Abdioğlu et al. (2016) also assess the relationship between corporate income tax rates and foreign direct investment. Analyzing data from around 20 OECD countries between 2003 and 2013 and applying both fixed effect model and GMM method, they conclude that higher corporate income tax rates are associated with lower levels of FDI.

Furthermore, Davies et al. (2016) distinguish between EU and non-EU countries to evaluate the relationship between corporate income tax rates and the level of foreign direct investment. Adopting data from 2002 to 2013 and applying a nested logit model, they reach two main conclusions. First, in non-EU countries, corporate income tax rates are negatively associated with FDI. However, within EU countries, corporate income tax rates have a positive effect on FDI, as foreign investors place greater emphasis on other local advantages.

Paun (2019) focuses on Eastern European countries, utilizing data from 11 nations between 2005 and 2015 to assess the impact of taxation on GDP and FDI inflows. The author finds that corporate income tax plays a negative role in both GDP and FDI inflows. In addition, the study also argues that capital taxation is detrimental to GDP growth.

Saikia (2024) also concentrates on the OECD context, analyzing the impact of tax costs on foreign direct investment inflows spanning the period from 2003 to 2013. Employing a

gravity framework approach, the study concludes that tax costs have a negative effect on foreign direct investment inflows.

Additionally, Jacob (2022) emphasizes that tax costs represent a major expense for firms, which may significantly influence their actual decision-making. Fedderke and Romm (2006) also note that beyond non-policy factors, policy-related factors such as corporate tax rates exert a substantial impact on firms' M&A performance. Moreover, Xie et al. (2017) point out that the tax system and tax environment are critical determinants of M&A performance.

Furthermore, several studies have specifically examined how taxation influences firms' merger and acquisition decisions. Arulampalam et al. (2010) investigate whether host-country tax rates affect the occurrence of cross-border M&As. Using a mixed logit model and data on approximately 2800 acquiring firms across nearly 80 countries between 2006 and 2008, they indicate that host-country tax rates are negatively associated with the likelihood of cross-border mergers and acquisitions.

Sreesing (2018) analyzes the relationship between corporate tax rates and the risk level of M&A decisions in the context of G7 countries. Utilizing the Merton framework and a dataset of roughly 20000 public M&A transactions from 1990 to 2012, the study demonstrates that corporate tax rates have a positive effect on the risk level of M&A decisions. In other words, higher tax rates increase the asset risk faced by acquiring firms, thereby undermining M&A performance.

Blouin et al. (2021) assess whether reductions in corporate income tax influence firms' M&A activities. Their sample consists of around 5000 U.S. public acquirers spanning the period from 1997 to 2013. The results reveal that lowering corporate income tax not only has a positive effect on the volume of M&A transactions among U.S. listed firms but also improves the quality of those deals. In addition, this effect is particularly pronounced for financially constrained firms.

Bradley et al. (2023) also examine the effect of corporate income tax on firms' M&A

activities. They compile data on cross-border mergers and acquisitions from 1995 to 2019, covering about 120 acquiring countries, around 120 target countries, and 84 industries. Their findings indicate a negative relationship between corporate income tax and cross-border M&A activity. Moreover, they emphasize that this negative relationship holds consistently across all broad industry categories.

Furthermore, beyond evaluating the relationship between corporate income tax and M&A activity, some scholars have also studied the effects of other forms of taxation on mergers and acquisitions. Feld et al. (2016) employ a Poisson pseudo-maximum-likelihood model and use data from 30 countries between 2002 and 2013 to analyze the relationship between corporate capital gains tax and M&A activity. They conclude that capital gains taxation is negatively associated with both the number of M&A transactions and the overall transaction value.

Todtenhaupt et al. (2020) also investigate the impact of capital gains taxation on M&A activity. Their sample includes nearly 30000 M&A transactions from 2002 to 2013, and the study applies conditional logit and mixed logit regressions as well as a Poisson pseudo-maximum-likelihood model. The findings show a negative relationship between capital gains tax rates and the number of M&A transactions.

However, Ciobanu and Dobre (2015) take a different perspective. They collect data from about 50 countries worldwide to examine whether tax indicators affect the number of mergers and acquisitions. Their findings show that both the statutory corporate income tax rate and the effective tax rate have a positive and significant effect on the volume of M&A activity.

Therefore, based on the above literature, corporate income tax constitutes one of the most significant costs for firms. It not only hampers the attraction of foreign direct investment but also substantially reduces firms' asset returns, undermines investor confidence, and weakens M&A performance. Accordingly, it can be expected that corporate income tax exerts a negative moderating effect on the relationship between foreign direct investment and firms'

M&A stock performance. More formally, I propose the following hypothesis:

Hypothesis 2: Corporate income tax has a negative moderating impact on the relationship between regional foreign direct investment and firms' M&A short-term stock performance in China

2.3.4 Moderating effect of state ownership

Changqi and Ningling (2010) point out that many listed companies in China emerged from the restructuring of state-owned enterprises (SOEs). Thus, SOEs must be regarded as an important factor in studies of Chinese listed firms. According to Fortune Magazine's 2015 list of the World's 500 largest companies, SOEs accounted for roughly 94% of Chinese firms on the list (Li et al., 2025). Furthermore, consistent with the discussion in the previous section, Lu and Ma (2008) also note that many foreign investors face the "liability of foreignness." Consequently, researchers have increasingly examined whether foreign investors, after entering local markets, tend to prefer cooperating with SOEs.

SOEs offer several advantages in attracting foreign direct investment. First, SOEs can help foreign investors gain a deeper understanding of national regulations and mitigate certain market and political risks. Second, they can assist in reducing administrative procedures, such as obtaining business licenses, securing factory space, and recruiting workers. Third, SOEs can facilitate the development of local linkages by providing the networks and resources that foreign investors need, while also enhancing their local reputation. Fourth, SOEs can enable investors to benefit from preferential policies, such as tax and interest rate incentives, and improve access to financial resources and credit guarantees (Ramachandran et al., 2011; Ma, 2012; Ma, 2020; Chen and Xu, 2023; Huang et al., 2024). Collectively, these advantages of SOEs can significantly reduce operating costs for foreign investors and enhance their returns in local markets.

In addition, several studies have examined how SOEs contribute to attracting foreign direct investment. Ma (2020) investigates the relationship between local state-owned economic sectors and the level of inward foreign direct investment. The study uses a sample of nearly

140 counties from 17 cities in China's Yangtze River Delta region during the period from 1991 to 1992. The findings indicate that the scale of the local state-owned economy probably has a significant impact on attracting FDI inflows to the region.

Chen and Xu (2023) analyze whether foreign investors partnering with state-owned enterprises are more likely to receive compensation in litigation cases. Their sample consists of lawsuits involving multinational corporations in China from 2002 to 2017. The results demonstrate that foreign investors collaborating with SOEs are more likely to obtain compensation, whereas the political connections of foreign firms' board members have little impact on case outcomes.

Huang et al. (2024) collect nearly 60000 observations from about 60 countries between 1990 and 2018 to assess whether foreign investors prefer SOEs or private firms. Their findings indicate that when host countries face high expropriation risk and operate under a state-dominated banking system, local SOEs become the more favorable choice for foreign investors. Furthermore, the results also reveal that partnering with local SOEs improves the performance of foreign firms, particularly for those that are financially constrained.

Li et al. (2025) analyze data from approximately 10000 foreign-invested enterprises spanning the period from 1998 to 2007 and conclude that foreign firms are more inclined to adopt joint ventures with local state-owned enterprises. In addition, compared with wholly foreign-owned enterprises, joint ventures exhibit higher total factor productivity and greater returns on capital.

Moreover, Zhu and Zhu (2016) maintain that future research in Chinese mergers and acquisitions should explore the relationship between state-owned enterprises and mergers and acquisitions performance. Xie et al. (2017) also highlight that SOEs are an important factor to be considered in future global M&A research. Furthermore, Ma et al. (2016) and Chen et al. (2020) emphasize that SOEs possess superior political and business networks as well as privileged access to financing channels during the M&A process. In addition, SOEs benefit from various preferential policy supports. As a result, many scholars have begun to

focus on the role of SOEs in mergers and acquisitions.

Changqi and Ningling (2010) explore the factors influencing Chinese cross-border mergers and acquisitions by examining 32 deals from 2000 to 2006. Their findings highlight the significant role of state ownership in the performance of these cross-border mergers and acquisitions. In addition, their research also indicates that the performance prior to the acquisition also affects the outcomes of Chinese cross-border mergers and acquisitions.

Chi et al. (2011) analyze whether state ownership and government connections affect firms' M&A performance. Selecting a sample of nearly 1200 M&A transactions conducted by Chinese listed companies between 1998 and 2003, they conclude that both the level of state ownership and government connections are significantly positively associated with acquirers' M&A performance.

Du and Boateng (2015) evaluate the impact of state ownership on cross-border mergers and acquisitions. Their sample comprises nearly 470 cross-border M&A transactions undertaken by Chinese listed companies from 1998 to 2011. The results indicate that state ownership has a positive effect on acquirers' M&A performance. In addition, their findings reveal that institutional factors, such as formal institutional distance and reforms to the foreign currency approval system, also play an important role in acquirers' M&A performance.

Furthermore, Zhou et al. (2015) examine nearly 830 mergers and acquisitions between 1994 and 2008 to explore differences between China's state-owned and privately-owned enterprises' post-merger performance. The findings indicate that, compared to privately-owned enterprises, state-owned enterprises exhibit superior long-term stock performance. Particularly during hot political periods, state-owned enterprises demonstrate greater performance both in the short and long term.

Du et al. (2016) examine the impact of state ownership on the performance of cross-border mergers and acquisitions. Utilizing data from the Chinese Stock Market Research database, their study estimates approximately 220 cross-border M&As conducted between 1998 and

2008 within China. Then, the results indicate that both state ownership and the interaction between R&D and state-owned enterprises, significantly enhance post-acquisition performance. Additionally, they also report that the interaction between the tangible resources of M&As and state-owned enterprises is negatively related to post-acquisition performance.

Moreover, Ma et al. (2016) also investigate the relationship between state ownership and the performance of corporate mergers and acquisitions. Exploring domestic mergers and acquisitions of Chinese listed firms spanning from 1998 to 2009, they conclude that state-owned enterprises exhibit a greater improvement in long-term post-M&A performance compared to non-state-owned enterprises.

Chen et al. (2020) assess the impact of different ownership types on firms' M&A performance. Utilizing a sample of 450 M&A transactions conducted by Chinese listed companies between 2009 and 2016, they indicate that equity-financed M&As by state-owned enterprises outperform those carried out by privately owned firms.

In summary, the above literature provides strong evidence of the advantages that SOEs demonstrate in attracting foreign investment and engaging in mergers and acquisitions, which is consistent with the resource-based view. Thus, based on the preceding discussion, it is anticipated that SOEs serve as a positive moderator in the relationship between foreign direct investment and firms' M&A stock performance. More formally, I propose the following hypothesis:

Hypothesis 3: SOE acquirers have a positive moderating impact on the relationship between regional foreign direct investment and firms' M&A short-term stock performance in China

2.4 Data and Model

2.4.1 Source of data and sample selection

The sample is constructed by integrating data from multiple sources spanning from 2011 to 2019. The choice of 2011 as the starting point for the research sample is based on several

considerations. First, following the global financial crisis of 2008 to 2010, Chinese firms gradually resumed normal production and business activities. Second, 2011 marked the beginning of China's 12th Five-Year Plan, during which the government emphasized transforming the mode of economic development, stimulating domestic demand, and introducing a series of policies aimed at encouraging foreign investment and promoting industrial upgrading. These policy shifts had a significant impact on patterns of FDI inflows as well as on corporate M&A activities. Finally, as summarized by Dhingra and Kapil (2022), there have been seven major waves of mergers and acquisitions in history, with the seventh occurring around 2010.

In addition, data on Chinese domestic M&A deals by province are sourced from the Chinese Stock Market Research (CSMAR) database. Then, provincial macroeconomic data is obtained from the National Bureau of Statistics of China. Furthermore, the annual financial fundamentals of firms are also derived from the CSMAR database. These databases are combined to form the initial sample for the analysis.

Moreover, the companies analyzed in this chapter are exclusively from the Shanghai Stock Exchange and the Shenzhen Stock Exchange. Firms located in Hong Kong, Macau, and Taiwan are not included in the scope of this study. In addition, the criteria used to select the final data set are derived from the methodologies outlined in Golubov et al. (2015), Boateng et al. (2017) and Bi and Wang (2018). (1) Transaction type would include mergers, tender offers, and acquisitions of assets; (2) Acquirers would be domestic Chinese listed companies in Shanghai and Shenzhen Stock Exchange; (3) Financial sectors are excluded due to different financial reporting methods; (4) The transaction should be successful and complete; (5) They are non-ST stocks; (6) Listed firms which have or ever had qualified foreign investment institution (QFII) shareholders before. (7) Only the first attempt is considered when a firm conducts multiple acquisition attempts within a year.

Additionally, the initial dataset comprises 2971 domestic mergers and acquisitions transactions in China from 2011 to 2019. Then, this dataset is merged with the control variable file. After removing duplicate and missing values and applying the established

criteria, the final sample consists of 881 firm-year observations, representing 569 unique firms engaged in mergers and acquisitions during the period. Furthermore, according to these criteria, the distribution of these mergers and acquisitions between 2011.01.01-2019.12.31 is presented as follows:

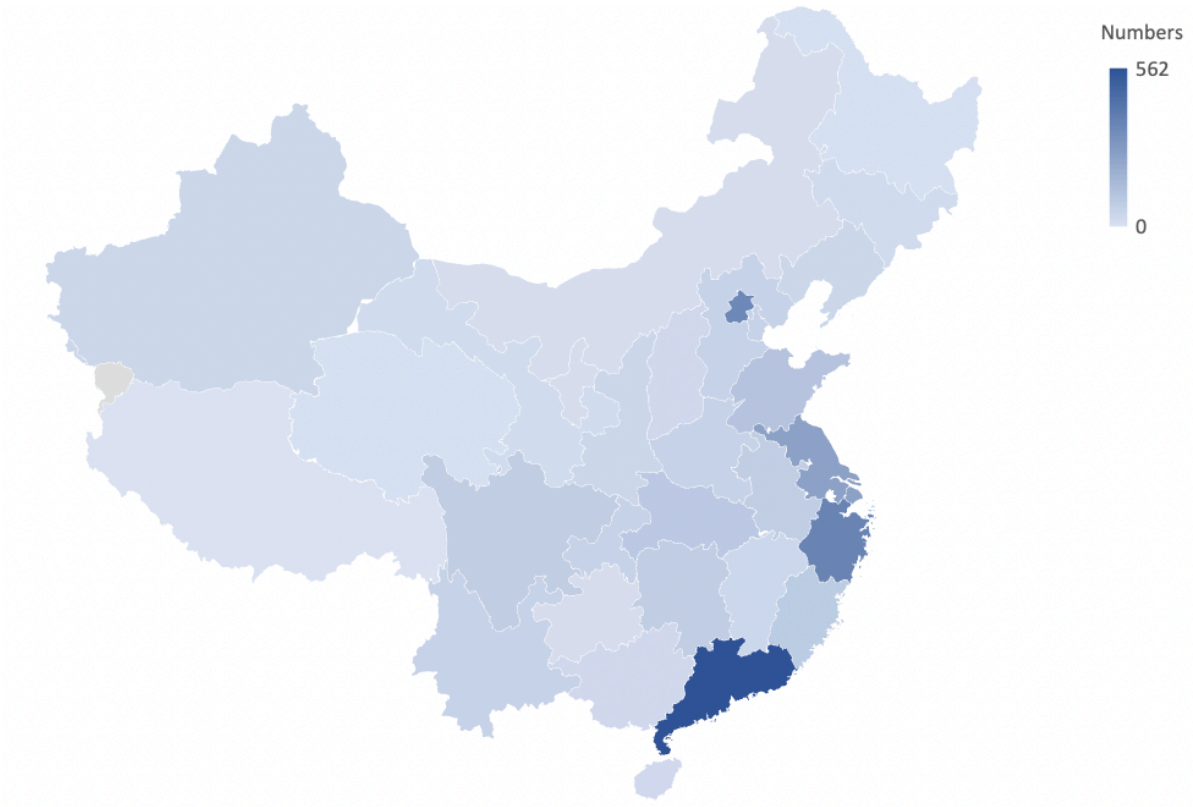


Fig. 1. The distribution of Chinese domestic M&As from 2011-2019

Fig. 1 illustrates the distribution of domestic mergers and acquisitions in China from 2011 to 2019, revealing a gradually weakening trend from the eastern to the western regions. Coastal provinces have conducted a substantial number of M&As in recent years, with over 250 recorded in Beijing, Jiangsu, Shanghai, and Zhejiang, and more than 550 in Guangdong. In contrast, the western provinces of Xinjiang, Tibet, Inner Mongolia, and Qinghai, despite their extensive geographical coverage, have recorded fewer M&As, 40, 0, 12, and 7 respectively.

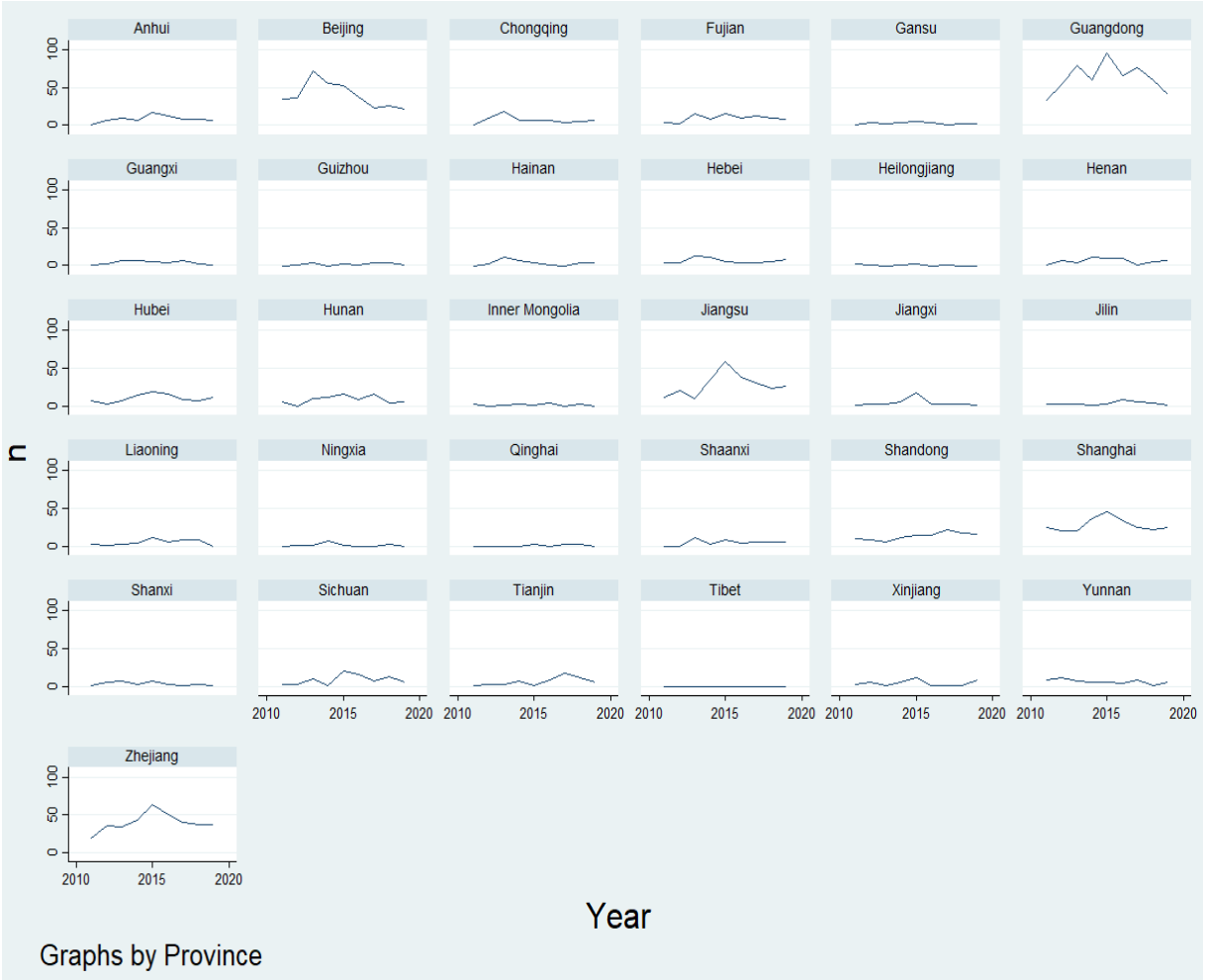


Fig. 2. The distribution of the number of M&As in each province each year from 2011-2019

Fig. 2 displays the annual distribution of mergers and acquisitions across Chinese provinces from 2011 to 2019, highlighting a higher number of M&As in coastal provinces such as Guangdong, Jiangsu, Zhejiang, and Shanghai, compared to other regions, particularly the western provinces where M&A activity is nearly zero each year. Therefore, Fig. 2 also demonstrates that the distribution of domestic M&A events in China is uneven, exhibiting a decreasing trend from the eastern to the western regions.

2.4.2 Cumulative abnormal return (CAR) measure

CAR is an important index for assessing the capital market response to the announcement of M&As (Bi and Wang, 2018). Huang et al. (2019) and Yang et al. (2019) also contend that CAR effectively captures market reactions to the stock of the acquiring company. This chapter aims to examine whether regional foreign investment can affect companies' short-term stock performance after M&As. In line with Yang et al. (2019), CAR_{ijt} includes CAR (-1,1) and CAR (-2,2), representing cumulative abnormal returns during the event window (-1,1) and (-2,2), respectively. To calculate the dependent variable CAR, the initial announcement day of the company's merger and acquisition is selected as the event day. Moreover, drawing on Ma et al. (2016), Bi and Wang (2018), Schweizer et al. (2019), and Yang et al. (2019), the estimation period is identified as [-240, -40]. The calculation of CARs is based on the approach developed by Brown and Warner (1985).

For the stock of any firm, its market model is:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

Here, R_{it} is the actual rate of return of stock *i* on day *t*, expressed by the rise and fall of individual stocks on the Shanghai and Shenzhen stock exchanges. R_{mt} is index return in the stock market, expressed by Shanghai and Shenzhen Composite Index in Shanghai and Shenzhen stock exchanges. α_i and β_i are the intercept and slope of the equation. ε_{it} is the residual.

Subsequently, perform an Ordinary Least Squares (OLS) estimation on the sample data to calculate the estimated values of α_i and β_i. Then, the estimated interval of α_i and β_i spans from 240 days to 40 days prior to the company's initial announcement.

The next step is to estimate the stock return:

$$\mathrm{E}(R_{it)} = \widehat{\alpha_\iota} + \widehat{\beta_\iota} R_{mt} \ (2)$$

and the stock abnormal return AR_{it} is the difference between the actual return R_{it} and the expected return $\mathrm{E}(R_{it)}$.

$$AR_{it} = R_{it} - \mathrm{E}(R_{it)} \quad (3)$$

Finally, CAR is the accumulation of abnormal returns.

$$CAR_i = \sum_{t=+d}^{t=-d} AR_{it} \quad (4)$$

2.4.3 Specifications for the effect of regional foreign investment on firms' stock performance

To investigate the relationship between regional foreign direct investment and companies' short-term stock performance after M&As in China, this chapter employs the following econometric model:

$$CAR_{ijt} = \beta_0 + \beta_1 Log(FI_{jt-1}) + \beta_2 Log(Tax_{jt-1}) + \beta_3 X_{it-1} + \mu_i + \omega_t + \theta_j + \delta_q + \varepsilon_{ijt} \quad (5)$$

Here, CAR_{ijt} is the cumulative abnormal return from acquirer firm *i* in *j* province in year *t*. $Log(FI_{jt-1})$ is the logarithm of total investments by foreign-invested enterprises in province *j* at year end prior to acquisition announcements. $Log(Tax_{jt-1})$ is the logarithm of the corporate income tax in province *j* at year end prior to acquisition announcements. X_{it-1} contains other control variables of firm *i* at year end prior to acquisition announcements. μ_i is the firm fixed effect. ω_t is the year fixed effect. θ_j is the province fixed effect. δ_q is the industry fixed effect and ε_{ijt} is the error term.

Moreover, for other firm-level control variables, this chapter mainly draws on the frameworks established by Golubov et al. (2012), Golubov et al. (2015), Bi and Wang (2018), Schweizer et al. (2019) and Yang et al. (2019). These selected variables are designed to

reflect characteristics of the acquirer, the deal, and the management team. SOE, Cash Dummy, Stock Dummy, Cash flow, PE, MTBV, Tobin Q, Leverage, Shareholder concentration, Board size and Board independence are incorporated into the model. In addition, Table 2-1 presents the firm-level control variables and the research findings of previous papers.

Table 2-1 Variables or conditions for the acquirer's choice

Determinants	Description	Effects	Related References	Theoretical deduction	Expected effects
SOE	If the acquirer firm is state-owned enterprise, the value is 1, 0 otherwise	Positive	Firth et al. (2012); Calomiris et al. (2010); Zhou et al. (2015)	Enterprises controlled by the state can benefit from more policies and funds from the central government, Thus, the impact is positive	Positive
		Not significant	Black et al. (2015); Huang et al. (2019)		
Cash payment	If the payment method is all cash, the value is 1, 0 otherwise	Positive	Schweizer et al. (2019)	Mergers and acquisitions by companies in cash will lead to a shortage of cash flow, potentially leading to a negative impact	Negative
		Negative	Bi and Wang (2018)		
		Not significant	Levi et al. (2014); Zhou et al. (2015); Black et al. (2015); Cao et al. (2019)		
Stock payment	If the payment method is all stock, the value is 1, 0 otherwise	Negative	Levi et al. (2014); Ishii and Xuan (2014); Zhou et al. (2015); Cao et al. (2019)	Mergers and acquisitions with stock may lead to taking on the debt risk of the acquired company, potentially resulting in adverse effects	Negative
		Not significant	Schweizer et al. (2019); Black et al. (2015)		
Cash flow	Ratio of corporate free cash flow to total asset of acquirer firm	Not significant	Ishii and Xuan (2014); Golubov et al. (2015)	Acquirers with more free cash flow may use cash to conduct M&As. This can lead to a shortage of cash flow and have a negative impact	Negative
PE	Price to earning ratio of acquirer firm	Negative	Sudarsanam and Mahate (2003)	A high price to earnings ratio to a certain extent reflects investors' recognition of the company's growth potential, which typically results in strong stock performance	Positive
MTBV	Market to book value of acquirer firm	Positive	Zhou et al. (2015)	Stocks with a high market to book value ratio have higher risks and are not conducive to stock performance after mergers and acquisitions	Negative
		Not significant	Huang et al. (2019); Black et al. (2015)		
Tobin Q	Tobin Q (Market value A/total assets) of acquirer firm	Positive	Boateng et al. (2017)	When Tobin's Q is greater than 1, the value of the firm is overvalued in the financial	Negative
		Negative	Golubov et al. (2015); Bi and Wang (2018); Cao et		

			al. (2019)	market	
		Not significant	Levi et al. (2014)		
		Positive	Ishii and Xuan (2014); Golubov, et al. (2015); Boateng et al. (2017)	The acquirer's high leverage ratio leads to a greater default risk, which can negatively affect the post-merger stock performance	Negative
Leverage	Ratio of total debt to total asset of acquirer firm	Negative	Bi and Wang (2018); Black et al. (2015)		
		Not significant	Golubov et al. (2012); Levi et al. (2014); Zhou et al. (2015); Cao et al. (2019); Huang et al. (2019)		
Shareholder concentration	Percentage of shares held by the top ten shareholders of acquirer firm	Positive	Bi and Wang (2018); Boateng et al. (2017)	High ownership concentration such as state-owned enterprises may enjoy favorable policies, but it may also lead to corruption in management	Depends on which effect is stronger
Board size	Total number of board members of acquirer firm	Negative	Huang et al. (2019)	Corporate governance in China is still in its infancy and may not have a significant impact on post-merger stock performance	Not significant
		Not significant	Levi et al. (2014); Cao et al. (2019)		
Board independence	(Total number of independent directors/Total number of board members) of acquirer firm	Positive	Boateng et al. (2017)	Corporate governance in China is still in its infancy, and the number, rights and mechanisms of independent directors are not perfect, likely resulting in minimal effect	Not significant
		Not significant	Levi et al. (2014); Bi and Wang (2018); Cao et al. (2019); Huang et al. (2019)		

2.4.4 Summary Statistics

Tables 2-2 and 2-3 present the definitions and summary statistics for the main variables used in the model. Moreover, Table 2-3 includes mean values, standard deviations, tenths, nineties, as well as maximum and minimum values. The mean value and standard deviation of the logarithm of regional foreign investment are 12.442 and 1.196, respectively. This indicates that there are notable differences and imbalances in the capacity of different regions in China to attract foreign direct investment.

Additionally, the mean values and standard deviations of CAR for various time frames are as follows: for CAR (-1,1), the mean value is 0.032 and the standard deviation is 0.081. Moreover, for CAR (-2,2), the mean value is 0.039 and the standard deviation is 0.108. Then, these findings correspond with those reported in prior research by Bi and Wang (2018), in

which the mean value and standard deviation of CAR (-1,1) are 0.017 and 0.075, respectively, while the mean value and standard deviation of CAR (-2,2) are 0.018 and 0.096, respectively.

Table 2-2 Variable definition

Variable	Definitions
CAR (-1,1)	Cumulative abnormal returns during the event window (−1,1)
CAR (-2,2)	Cumulative abnormal returns during the event window (−2,2)
Log (FI)	Logarithm of total investment of foreign invested firms in China's provinces (Billion dollars) at year end prior to acquisition announcements
Log (Tax)	Logarithm of corporate income tax in China's provinces at year end prior to acquisition announcements
SOE	If the acquirer firm is state-owned enterprise, the value is 1, 0 otherwise
Cash payment	If the payment method is all cash, the value is 1, 0 otherwise
Stock payment	If the payment method is all stock, the value is 1, 0 otherwise
Cash flow	Ratio of corporate free cash flow to total asset of acquirer firm at year end prior to acquisition announcements
PE	Price to earning ratio of acquirer firm at year end prior to acquisition announcements
MTBV	Market to book value of acquirer firm at year end prior to acquisition announcements
Tobin Q	Tobin Q (Market value A/total assets) of acquirer firm at year end prior to acquisition announcements
Leverage	Ratio of total debt to total asset of acquirer firm at year end prior to acquisition announcements
Shareholder concentration	Percentage of shares held by the top ten shareholders of acquirer firm at year end prior to acquisition announcements
Board size	Total number of board members of acquirer firm at year end prior to acquisition announcements

Board independence	(Total number of independent directors/Total number of board members) of acquirer firm at year end prior to acquisition announcements

Table 2-3 Summary statistics

Variable	Obs	Mean	P10	P90	Std. dev.	Min	Max
CAR (-1,1)	881	0.032	-0.044	0.166	0.081	-0.305	0.312
CAR (-2,2)	881	0.039	-0.056	0.210	0.108	-0.489	0.438
Log (FI)	881	12.442	10.743	13.688	1.196	8.039	14.470
Log (Tax)	881	2.739	2.190	3.174	0.380	1.232	3.273
SOE	881	0.266	0.000	1.000	0.442	0.000	1.000
Cash payment	881	0.833	0.000	1.000	0.373	0.000	1.000
Stock payment	881	0.077	0.000	0.000	0.267	0.000	1.000
Cash flow	881	0.008	-0.135	0.115	0.116	-0.749	0.454
PE	881	74.946	14.586	121.960	225.072	3.190	5161.332
MTBV	881	3.867	1.399	6.769	3.443	0.532	41.818
Tobin Q	881	2.115	1.105	3.556	1.340	0.787	22.353
Leverage	881	0.400	0.147	0.647	0.187	0.008	0.973
Shareholder concentration	881	60.317	39.870	77.750	14.429	20.240	92.740
Board size	881	8.435	7.000	10.000	1.632	4.000	18.000
Board independence	881	0.377	0.333	0.429	0.055	0.300	0.667

2.5 Empirical Analysis

2.5.1 Role of regional foreign investment in M&A short-term stock performance

Table 2-4 illustrates the impact of regional foreign investment on M&A short-term stock performance. In columns (1) through (4) of Table 2-4, the dependent variable is CAR (-1, 1), while in columns (5) through (8), the dependent variable is CAR (-2, 2). Moreover, in columns (1) and (5), only the year fixed effect is controlled. In columns (2) and (6), both year and province fixed effects are controlled. In columns (3) and (7), both year and industry fixed effects are controlled. Finally, in columns (4) and (8), both year and firm fixed effects are controlled. Standard errors are corrected for clustering at the firm level.

In addition, in all columns, the coefficients of Log (FI) are not significant, indicating that regional foreign investment does not have a significant impact on firms' M&A short-term stock performance. Therefore, the findings reject Hypothesis 1. Three main reasons may explain this result. First, in Chinese listed companies, foreign investment typically enters through institutional investors. Andriosopoulos and Yang (2015) note that large institutional investors tend to exert stronger monitoring over firms.

However, the proportion of institutional investors in Chinese listed companies is very low. Jiang and Kim (2020) report that institutional investors hold only a minor share in Chinese companies, with their average equity ownership reaching just 6% between 2013 and 2018. Consequently, the share of Qualified Foreign Institutional Investors (QFIIs) is even smaller, making it difficult for them to provide effective monitoring, thereby limiting their impact on firm performance. Additionally, Tam et al. (2010) also argue that QFII does not have a long-term impact on the Chinese market.

Second, Ferraz and Hamaguchi (2002) argue that M&A failure is a common phenomenon, and Sun et al. (2012) state that the M&A success rate among Chinese firms is below 50%. Therefore, a relatively small sample size may increase standard errors and result in statistically insignificant coefficients. Third, Haddad and Harrison (1993) propose that the lack of significant impact from foreign investment may be attributed to the short duration of the analysis period.

Furthermore, Table 2-4 also reveals that the insignificant coefficients of Log (FI) are negative. Andriosopoulos and Yang (2015) provide a possible explanation, suggesting that institutional investors such as QFIIs may handle M&As cautiously because these transactions consume corporate resources and modify governance structures. As a result, they find a negative relationship between institutional ownership and the scale of M&As.

In addition, Ferraz and Hamaguchi (2002) and Cartwright and Schoenberg (2006) offer two further explanations. First, they argue that agency problems are a key factor behind negative M&A performance, as managers often pursue firm size maximization rather than profit maximization. Second, according to the hubris hypothesis (Roll, 1986), managers may overestimate the value of acquisition targets due to overconfidence, leading to the payment of excessive premiums. Because QFIIs typically hold only small ownership stakes and therefore lack the ability to effectively monitor corporate managers, these factors may explain why the coefficients of Log (FI) are negative.

Table 2-4 The impact of regional foreign investment on M&A short-term stock performance
This table presents the results of the impact of regional foreign investment on M&A short-term stock performance. The dependent variables in columns (1) through (4) are 3-day cumulative abnormal return (CAR (-1,1)) of firm *i* in year *t*. The dependent variables in columns (5) through (8) are 5-day cumulative abnormal return (CAR (-2,2)) of firm *i* in year *t*. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, * at the 10% level.

	CAR (-1,1)				CAR (-2,2)			
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log (FI)	-0.007	-0.017	-0.007	-0.028	-0.012	-0.020	-0.009	-0.045
	(0.006)	(0.014)	(0.007)	(0.022)	(0.008)	(0.019)	(0.009)	(0.030)
Log (Tax)	0.023	0.062	0.024	0.128	0.040	0.068	0.034	0.116
	(0.019)	(0.078)	(0.021)	(0.155)	(0.026)	(0.095)	(0.027)	(0.190)
SOE	0.004	0.005	0.002	0.030	0.007	0.007	0.004	0.043
	(0.006)	(0.006)	(0.007)	(0.027)	(0.008)	(0.008)	(0.009)	(0.040)
Cash payment	-0.096***	-0.096***	-0.092***	-0.067***	-0.133***	-0.132***	-0.129***	-0.097***
	(0.011)	(0.011)	(0.011)	(0.016)	(0.014)	(0.015)	(0.015)	(0.019)
Stock payment	-0.033*	-0.032*	-0.032*	0.012	-0.038*	-0.036	-0.039*	0.008
	(0.017)	(0.017)	(0.017)	(0.027)	(0.022)	(0.023)	(0.023)	(0.035)
Cash flow	-0.023	-0.031	-0.015	-0.052*	-0.033	-0.042	-0.028	-0.087**
	(0.022)	(0.022)	(0.024)	(0.029)	(0.031)	(0.030)	(0.033)	(0.037)

PE	0.000	0.000	0.000	0.000	0.000**	0.000***	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTBV	0.002**	0.002**	0.003***	0.002	0.003**	0.003**	0.004***	0.002
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.004)
Tobin Q	-0.006*	-0.006**	-0.006**	-0.014	-0.008*	-0.009**	-0.009**	-0.013
	(0.003)	(0.003)	(0.003)	(0.010)	(0.004)	(0.004)	(0.004)	(0.015)
Leverage	-0.041***	-0.038**	-0.048**	-0.033	-0.050**	-0.044**	-0.063**	-0.042
	(0.015)	(0.015)	(0.019)	(0.045)	(0.020)	(0.020)	(0.027)	(0.058)
Shareholder concentration	-0.000*	-0.000*	-0.000**	-0.000	-0.000*	-0.000*	-0.001**	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
Board size	-0.002	-0.002	-0.003	-0.006	-0.004	-0.003	-0.005*	-0.012
	(0.002)	(0.002)	(0.002)	(0.007)	(0.002)	(0.003)	(0.003)	(0.009)
Board independence	0.057	0.060	0.054	-0.083	0.013	0.027	0.003	-0.172
	(0.054)	(0.055)	(0.057)	(0.161)	(0.074)	(0.074)	(0.078)	(0.207)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	No	No	Yes	No	No
Industry FE	No	No	Yes	No	No	No	Yes	No
Firm FE	No	No	No	Yes	No	No	No	Yes
Observations	880	880	871	517	880	880	871	517
R-squared	0.255	0.283	0.301	0.574	0.267	0.300	0.312	0.605

2.5.2 Role of regional corporate income tax in the effect of regional foreign investment on firms' M&A short-term stock performance

To examine the moderating effect of regional corporate income tax on the relationship between regional foreign investment and firms' M&A short-term stock performance, an interaction term, Log (FI)*Log (Tax), is then constructed and incorporated into the regression model. The specified model is defined as follows:

$$CAR_{ijt} = \beta_0 + \beta_1 Log(FI_{jt-1}) + \beta_2 Log(Tax_{jt-1}) + \beta_3 X_{it-1} + \beta_4 Log(FI_{jt-1}) * Log(Tax_{jt-1}) + \mu_i + \omega_t + \theta_j + \delta_q + \varepsilon_{ijt} \quad (6)$$

Here, CAR_{ijt} is the cumulative abnormal return from acquirer firm *i* in *j* province in year *t*. $Log(FI_{jt-1})$ is the logarithm of total investments by foreign-invested enterprises in province *j* at year end prior to acquisition announcements. $Log(Tax_{jt-1})$ is the logarithm of the corporate income tax in province *j* at year end prior to acquisition announcements. $Log(FI_{jt-1}) * Log(Tax_{jt-1})$ is an interaction term. X_{it-1} contains other control variables

of firm i at year end prior to acquisition announcements. μ_i is the firm fixed effect. ω_t is the year fixed effect. θ_j is the province fixed effect. δ_q is the industry fixed effect and ε_{ijt} is the error term.

Table 2-5 presents the empirical findings concerning the moderating effect of regional corporate income tax on the relationship between regional foreign investment and firms' M&A short-term stock performance. In column (5) of Table 2-5, the results demonstrate that the coefficient of Log (FI)*Log (Tax) is negative and statistically significant at the 10% significance level when only year fixed effect is controlled. This indicates that corporate income tax has a negative moderating effect on the relationship between regional foreign investment and CAR (-2, 2). For economic implications, the effects are obtained by multiplying the standard deviation of regional corporate income tax by the interaction term coefficient. Accordingly, a one-standard-deviation increase in regional corporate income tax reduces the impact of regional foreign investment on CAR (-2, 2) by 0.380% (-0.010 * 0.380 = -0.0038).

However, under other circumstances, the findings reveal that the coefficients of Log (FI)*Log (Tax) are not significant. A possible explanation is that FDI decisions are not solely driven by tax considerations but rather depend more heavily on a combination of factors such as economic fundamentals, institutional quality, infrastructure, and government efficiency. Wang and Wang (2015) contend that attracting foreign capital through tax policy should not be the top priority of the Chinese government, and the Chinese government should pay more attention to improve the efficiency of the financial market.

Additionally, Long et al. (2015) also argue that China can no longer attract foreign investment through preferential tax policies. They assert that a robust institutional environment is crucial for foreign investors. This insight can partly explain why the regional corporate income tax does not have the moderating effect on the relationship between regional foreign investment and firms' M&A short-term stock performance in other situations. In summary, this finding provides partial support for Hypothesis 2.

Table 2-5 The moderating effect of regional corporate income tax on the relationship between regional foreign investment and M&A short-term stock performance

This table presents baseline results on the moderating effect of regional corporate income tax on the relationship between regional foreign investment and M&A short-term stock performance. The dependent variables in columns (1) through (4) are 3-day cumulative abnormal return (CAR (-1,1)) of firm *i* in year *t*. The dependent variables in columns (5) through (8) are 5-day cumulative abnormal return (CAR (-2,2)) of firm *i* in year *t*. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, * at the 10% level.

	CAR (-1,1)				CAR (-2,2)			
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log (FI)	0.008	0.007	0.005	-0.102*	0.013	-0.005	0.013	-0.101
	(0.012)	(0.032)	(0.013)	(0.055)	(0.015)	(0.039)	(0.017)	(0.072)
Log (Tax)	0.093*	0.165	0.074	-0.164	0.154**	0.130	0.131*	-0.105
	(0.052)	(0.139)	(0.056)	(0.218)	(0.067)	(0.159)	(0.071)	(0.260)
Log (FI)* Log (Tax)	-0.006	-0.008	-0.004	0.022	-0.010*	-0.005	-0.008	0.017
	(0.004)	(0.009)	(0.004)	(0.015)	(0.005)	(0.011)	(0.005)	(0.018)
SOE	0.004	0.004	0.002	0.030	0.006	0.007	0.003	0.043
	(0.006)	(0.006)	(0.007)	(0.024)	(0.008)	(0.008)	(0.009)	(0.039)
Cash payment	-0.096***	-0.096***	-0.092***	-0.067***	-0.133***	-0.132***	-0.129***	-0.097***
	(0.011)	(0.011)	(0.011)	(0.016)	(0.014)	(0.015)	(0.015)	(0.020)
Stock payment	-0.033**	-0.032*	-0.032*	0.009	-0.038*	-0.036	-0.039*	0.005
	(0.017)	(0.017)	(0.017)	(0.027)	(0.022)	(0.022)	(0.023)	(0.035)
Cash flow	-0.021	-0.031	-0.014	-0.051*	-0.031	-0.042	-0.026	-0.086**
	(0.023)	(0.022)	(0.024)	(0.029)	(0.031)	(0.030)	(0.033)	(0.038)
PE	0.000*	0.000	0.000	0.000	0.000***	0.000***	0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTBV	0.002**	0.002**	0.003***	0.002	0.003**	0.003**	0.004***	0.002
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.004)
Tobin Q	-0.006*	-0.006**	-0.006**	-0.015	-0.008**	-0.009**	-0.009**	-0.014
	(0.003)	(0.003)	(0.003)	(0.010)	(0.004)	(0.004)	(0.004)	(0.015)
Leverage	-0.040***	-0.037**	-0.046**	-0.037	-0.047**	-0.043**	-0.060**	-0.045
	(0.015)	(0.015)	(0.019)	(0.047)	(0.020)	(0.020)	(0.027)	(0.059)
Shareholder concentration	-0.000*	-0.000*	-0.000**	-0.000	-0.000*	-0.000*	-0.001**	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
Board size	-0.002	-0.002	-0.003	-0.006	-0.004	-0.003	-0.005*	-0.013
	(0.002)	(0.002)	(0.002)	(0.007)	(0.003)	(0.003)	(0.003)	(0.008)
Board independence	0.059	0.061	0.057	-0.097	0.016	0.027	0.007	-0.183
	(0.054)	(0.055)	(0.057)	(0.162)	(0.074)	(0.074)	(0.078)	(0.210)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	No	No	Yes	No	No
Industry FE	No	No	Yes	No	No	No	Yes	No
Firm FE	No	No	No	Yes	No	No	No	Yes
Observations	880	880	871	517	880	880	871	517

R-squared	0.256	0.284	0.301	0.576	0.269	0.300	0.313	0.605

2.5.3 Role of SOE in the effect of regional foreign investment on firms' M&A short-term stock performance

To examine the moderating effect of SOE on the relationship between regional foreign investment and firms' M&A short-term stock performance, an interaction term, Log (FI)*SOE, is then constructed and incorporated into the regression model. The specified model is defined as follows:

$$CAR_{ijt} = \beta_0 + \beta_1 Log(FI_{jt-1}) + \beta_2 SOE_{it-1} + \beta_3 X_{ijt-1} + \beta_4 Log(FI_{jt-1}) * SOE_{it-1} + \mu_i + \omega_t + \theta_j + \delta_q + \varepsilon_{ijt} \quad (7)$$

Here, CAR_{ijt} is the cumulative abnormal return from acquirer firm *i* in *j* province in year *t*. $Log(FI_{jt-1})$ is the logarithm of total investments by foreign-invested enterprises in province *j* at year end prior to acquisition announcements. SOE_{it-1} is a dummy variable. If the firm is a state-owned enterprise, the value is 1, and 0 otherwise. $Log(FI_{jt-1}) * SOE_{it-1}$ is an interaction term. X_{ijt-1} contains other control variables of firm *i* and province *j* at year end prior to acquisition announcements. μ_i is the firm fixed effect. ω_t is the year fixed effect. θ_j is the province fixed effect. δ_q is the industry fixed effect and ε_{ijt} is the error term.

Table 2-6 presents the empirical results concerning the moderating effect of SOE on the relationship between regional foreign investment and firms' M&A short-term stock performance. The findings indicate that, across all situations, the coefficients of Log (FI)*SOE are not significant. This suggests that SOEs do not have a significant moderating effect on the relationship between regional foreign investment and firms' short-term M&A stock performance, which reject Hypothesis 3.

Several reasons may explain this result. First, as discussed in earlier sections, SOEs inherently enjoy advantages in financing, policy support, and market access (Ramachandran et al., 2011; Ma, 2012; Ma, 2020; Chen and Xu, 2023; Huang et al., 2024). Consequently,

compared with private firms, SOEs are less dependent on external conditions such as the capital, technology, and competitive pressures associated with FDI. In other words, regardless of the level of regional foreign investment, the market response to M&As carried out by SOEs may not exhibit substantial fluctuations.

Second, SOEs may place greater emphasis on policy objectives rather than on maximizing market value. Ma et al. (2016) point out that Chinese SOEs often bear social welfare responsibilities and undertake various political and social tasks, which may prevent them from prioritizing profit maximization. As a result, investors may take a more cautious view of SOEs' M&A motives, leading to lower sensitivity of CARs to differences in FDI levels. These factors may partly explain why the coefficients of Log (FI)*SOE are not significant.

Table 2-6 The moderating effect of SOE on the relationship between regional foreign investment and M&A short-term stock performance

This table presents baseline results on the moderating effect of SOE on the relationship between regional foreign investment and M&A short-term stock performance. The dependent variables in columns (1) through (4) are 3-day cumulative abnormal return (CAR (-1,1)) of firm *i* in year *t*. The dependent variables in columns (5) through (8) are 5-day cumulative abnormal return (CAR (-2,2)) of firm *i* in year *t*. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, * at the 10% level.

	CAR (-1,1)				CAR (-2,2)			
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log (FI)	-0.007	-0.016	-0.006	-0.025	-0.012	-0.021	-0.009	-0.042
	(0.006)	(0.014)	(0.007)	(0.022)	(0.009)	(0.019)	(0.009)	(0.030)
Log (Tax)	0.023	0.064	0.025	0.131	0.040	0.067	0.033	0.120
	(0.019)	(0.078)	(0.021)	(0.155)	(0.026)	(0.095)	(0.027)	(0.191)
SOE	0.041	0.057	0.043	0.140	-0.021	-0.024	-0.013	0.184
	(0.060)	(0.065)	(0.064)	(0.183)	(0.081)	(0.085)	(0.084)	(0.258)
Log (FI)* SOE	-0.003	-0.004	-0.003	-0.009	0.002	0.002	0.001	-0.011
	(0.005)	(0.005)	(0.005)	(0.014)	(0.006)	(0.007)	(0.007)	(0.020)
Cash payment	-0.096***	-0.095***	-0.092***	-0.067***	-0.134***	-0.132***	-0.130***	-0.097***
	(0.011)	(0.011)	(0.011)	(0.016)	(0.015)	(0.015)	(0.015)	(0.019)
Stock payment	-0.032*	-0.032*	-0.032*	0.012	-0.038*	-0.036	-0.039*	0.008
	(0.017)	(0.017)	(0.017)	(0.027)	(0.022)	(0.023)	(0.023)	(0.035)
Cash flow	-0.023	-0.031	-0.016	-0.055*	-0.033	-0.042	-0.028	-0.090**
	(0.022)	(0.022)	(0.024)	(0.030)	(0.031)	(0.030)	(0.033)	(0.039)
PE	0.000	0.000	0.000	0.000	0.000**	0.000***	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTBV	0.002**	0.002**	0.003***	0.002	0.003**	0.003**	0.004***	0.002

	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.004)
Tobin Q	-0.006*	-0.006**	-0.006**	-0.014	-0.008*	-0.009**	-0.009**	-0.013
	(0.003)	(0.003)	(0.003)	(0.010)	(0.004)	(0.004)	(0.004)	(0.015)
Leverage	-0.042***	-0.039***	-0.049***	-0.033	-0.050**	-0.043**	-0.062**	-0.043
	(0.015)	(0.015)	(0.019)	(0.046)	(0.020)	(0.020)	(0.027)	(0.059)
Shareholder concentration	-0.000*	-0.000*	-0.000**	-0.000	-0.000*	-0.000*	-0.001**	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
Board size	-0.002	-0.002	-0.003	-0.006	-0.004	-0.003	-0.005*	-0.013
	(0.002)	(0.002)	(0.002)	(0.007)	(0.002)	(0.003)	(0.003)	(0.009)
Board independence	0.056	0.059	0.054	-0.083	0.014	0.028	0.003	-0.172
	(0.054)	(0.055)	(0.057)	(0.162)	(0.074)	(0.074)	(0.078)	(0.207)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	No	No	Yes	No	No
Industry FE	No	No	Yes	No	No	No	Yes	No
Firm FE	No	No	No	Yes	No	No	No	Yes
Observations	880	880	871	517	880	880	871	517
R-squared	0.255	0.284	0.301	0.574	0.267	0.300	0.312	0.605

2.5.4 Tackling endogeneity concerns

To address potential endogeneity issues within the model, this chapter formally addresses the endogeneity problem by considering the instrumental variable (IV) approach. In several studies, regional averages are often employed as instrumental variables to address endogeneity concerns. Lundstedt and Edgell (2020) contend that regional averages align more closely with the requirements for valid instruments while mitigating the problems that arise with other instruments.

The National Bureau of Statistics of China divides the country into three major regions: the eastern, middle, and western regions. This chapter calculates the regional average of foreign investment based on these three divisions. This measure is chosen because it is relevant to a province foreign investment while remaining exogenous to firms' M&A short-term stock performance. Thus, this chapter utilize the logarithm of average regional foreign investment to serve as the instrumental variable.

The findings are presented as follows. Table 2-7 and Table 2-8 display the 2SLS regression results examining the effect of regional foreign investment on firms' M&A short-term stock

performance. For the first stage, in columns (1), (3), (5) and (7), the coefficients of Log (Average regional FI) are all significant at a 1% significance level, which means that the logarithm of average regional foreign investment is highly correlated with the regional foreign investment used as an independent variable in this chapter. Moreover, the F values in the first stage are 22.050, 1305.160, 19.430 and 271.370, respectively, as shown in columns (1), (3), (5) and (7), which are all above 12. This result proves that the logarithm of average regional foreign investment serves as a valid instrumental variable and can be used to conduct endogeneity testing.

In addition, the results also demonstrate that in both Table 2-7 and Table 2-8, all coefficients of Log (FI) are not significant, indicating that regional foreign investment does not have a significant impact on firms' short-term M&A stock performance. This is consistent with the main regression results presented in the previous section. Overall, the endogeneity test results largely support the primary findings.

Table 2-7 Endogeneity: Instrument variable

This table presents 2SLS regression results to address endogeneity concerns on the effect of regional foreign investment on M&A short-term stock performance. The dependent variable is 3-day cumulative abnormal return CAR (-1,1) of firm *i* in year *t*. The logarithm of average regional foreign investment is employed as the instrumental variable. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	CAR (-1,1)							
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	First stage	Second stage	First stage	Second stage	First stage	Second stage	First stage	Second stage
Log (FI)		-0.044		-0.005		-0.047		-0.011
		(0.032)		(0.017)		(0.035)		(0.034)
Log (Tax)		0.130		0.011		0.140		0.139
		(0.094)		(0.081)		(0.100)		(0.171)
SOE		0.006		0.005		0.004		0.039
		(0.007)		(0.007)		(0.007)		(0.024)
Cash payment		-0.098***		-0.098***		-0.097***		-0.066***
		(0.011)		(0.011)		(0.012)		(0.016)
Stock payment		-0.034*		-0.030*		-0.037**		0.021
		(0.018)		(0.017)		(0.019)		(0.026)
Cash flow		-0.030		-0.035		-0.025		-0.041
		(0.025)		(0.023)		(0.026)		(0.029)
PE		0.000**		0.000**		0.000**		0.000
		(0.000)		(0.000)		(0.000)		(0.000)

MTBV		0.003**		0.002**		0.003***		0.002
		(0.001)		(0.001)		(0.001)		(0.003)
Tobin Q		-0.007**		-0.007**		-0.008**		-0.015
		(0.003)		(0.003)		(0.003)		(0.010)
Leverage		-0.036**		-0.037**		-0.045**		-0.042
		(0.016)		(0.015)		(0.019)		(0.048)
Shareholder concentration		-0.000*		-0.000		-0.000*		-0.000
		(0.000)		(0.000)		(0.000)		(0.001)
Board size		-0.003		-0.002		-0.004		-0.007
		(0.002)		(0.002)		(0.002)		(0.007)
Board independence		0.040		0.059		0.046		-0.080
		(0.056)		(0.056)		(0.059)		(0.167)
Log (Average regional FI)	0.152***		3.181***		0.146***		2.882***	
	(0.032)		(0.088)		(0.033)		(0.175)	
F-value	22.050		1305.160		19.430		271.370	
Year FE		Yes		Yes		Yes		Yes
Province FE		No		Yes		No		No
Industry FE		No		No		Yes		No
Firm FE		No		No		No		Yes
Observations		843		843		833		487
R-squared		0.142		0.175		0.130		0.154

Table 2-8 Endogeneity: Instrument variable

This table presents 2SLS regression results to address endogeneity concerns on the effect of regional foreign investment on M&A short-term stock performance. The dependent variable is 5-day cumulative abnormal return CAR (-2,2) of firm *i* in year *t*. The logarithm of average regional foreign investment is employed as the instrumental variable. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	CAR (-2,2)							
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	First stage	Second stage	First stage	Second stage	First stage	Second stage	First stage	Second stage
Log (FI)		-0.063		-0.004		-0.065		-0.038
		(0.045)		(0.024)		(0.049)		(0.046)
Log (Tax)		0.189		0.009		0.193		0.154
		(0.131)		(0.102)		(0.141)		(0.209)
SOE		0.009		0.008		0.006		0.057
		(0.009)		(0.008)		(0.009)		(0.042)
Cash payment		-0.134***		-0.133***		-0.133***		-0.097***
		(0.015)		(0.015)		(0.016)		(0.019)
Stock payment		-0.041*		-0.033		-0.047*		0.014
		(0.024)		(0.023)		(0.026)		(0.035)
Cash flow		-0.042		-0.046		-0.041		-0.081**

		(0.034)	(0.031)	(0.036)	(0.038)
PE		0.000**	0.000**	0.000**	-0.000
		(0.000)	(0.000)	(0.000)	(0.000)
MTBV		0.004**	0.003**	0.005***	0.002
		(0.002)	(0.001)	(0.002)	(0.004)
Tobin Q		-0.010**	-0.009**	-0.011**	-0.014
		(0.005)	(0.004)	(0.005)	(0.014)
Leverage		-0.045**	-0.045**	-0.063**	-0.062
		(0.021)	(0.020)	(0.028)	(0.063)
Shareholder concentration		-0.000*	-0.000*	-0.001**	-0.001
		(0.000)	(0.000)	(0.000)	(0.001)
Board size		-0.006**	-0.004	-0.006**	-0.012
		(0.003)	(0.003)	(0.003)	(0.009)
Board independence		-0.005	0.035	-0.007	-0.147
		(0.075)	(0.076)	(0.079)	(0.214)
Log (Average regional FI)	0.152***		3.181***	0.146***	2.882***
	(0.032)		(0.088)	(0.033)	(0.175)
F-value	22.050		1305.160	19.430	271.370
Year FE		Yes	Yes	Yes	Yes
Province FE		No	Yes	No	No
Industry FE		No	No	Yes	No
Firm FE		No	No	No	Yes
Observations		843	843	833	487
R-squared		0.150	0.184	0.141	0.177

2.5.5 Robustness checks

In this section, modification has been made to the measurement of the dependent variable. Furthermore, Bi and Wang (2018) employ different event windows for their tests, such as the 3-day CAR (-1, 1), 5-day CAR (-2, 2), and 11-day CAR (-5, 5). Following their approach, this chapter replaces the dependent variable CARs with the 11-day CAR (-5, 5). The model is specified as follows:

$$CAR(-5,5)_{ijt} = \beta_0 + \beta_1 Log(FI_{jt-1}) + \beta_2 X_{ijt-1} + \mu_i + \omega_t + \theta_j + \delta_q + \varepsilon_{ijt} \quad (8)$$

Here, $CAR(-5,5)_{ijt}$ is the 11-day cumulative abnormal return from acquirer firm i in j province in year t. $Log(FI_{jt-1})$ is the logarithm of total investments by foreign-invested enterprises in province j at year end prior to acquisition announcements. X_{ijt-1} contains

other control variables of firm *i* and province *j* at year end prior to acquisition announcements. μ_i is the firm fixed effect. ω_t is the year fixed effect. θ_j is the province fixed effect. δ_q is the industry fixed effect and ε_{ijt} is the error term.

The results presented in Table 2-9 demonstrate that the coefficients of Log (FI) in columns (1) through (4) are all insignificant. These findings are consistent with the main results, indicating that regional foreign investment does not have a significant impact on CARs across different event windows. Possible explanations for this outcome have already been discussed in earlier sections.

Table 2-9 Robustness: The impact of regional foreign investment on M&A short-term stock performance

This table presents robustness test results on the impact of regional foreign investment on M&A short-term stock performance in China. The dependent variable is CAR (-5,5) of firm *i* in year *t*. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	CAR (-5,5)			
Independent variable	(1)	(2)	(3)	(4)
Log (FI)	-0.011	-0.018	-0.009	-0.040
	(0.012)	(0.027)	(0.013)	(0.037)
Log (Tax)	0.039	0.075	0.036	-0.036
	(0.037)	(0.117)	(0.040)	(0.235)
SOE	-0.002	0.001	-0.009	0.160***
	(0.011)	(0.012)	(0.013)	(0.060)
Cash payment	-0.162***	-0.161***	-0.152***	-0.124***
	(0.023)	(0.024)	(0.024)	(0.030)
Stock payment	-0.014	-0.008	-0.007	0.013
	(0.036)	(0.036)	(0.039)	(0.055)
Cash flow	-0.013	-0.018	-0.023	-0.081
	(0.042)	(0.043)	(0.044)	(0.059)
PE	0.000	0.000**	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
MTBV	0.005**	0.005*	0.007**	0.004
	(0.003)	(0.003)	(0.003)	(0.007)
Tobin Q	-0.013	-0.012	-0.014*	-0.020
	(0.008)	(0.008)	(0.008)	(0.019)
Leverage	-0.053*	-0.044	-0.054	0.003
	(0.029)	(0.029)	(0.037)	(0.081)
Shareholder concentration	-0.001**	-0.001*	-0.001**	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)

Board size	-0.003	-0.003	-0.004	-0.008
	(0.004)	(0.004)	(0.004)	(0.010)
Board independence	0.092	0.116	0.074	0.119
	(0.119)	(0.120)	(0.121)	(0.240)
Year FE	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	No
Industry FE	No	No	Yes	No
Firm FE	No	No	No	Yes
Observations	880	880	871	517
R-squared	0.233	0.257	0.288	0.566

2.5.6 Additional analysis

2.5.6.1 Role of western region in the effect of regional foreign investment on firms' M&A short-term stock performance

Xie et al. (2017) emphasize the significant impact of geographical factors on firms' M&A performance. Beck et al. (2001), from the perspective of the endowment view, argue that geographical endowments play a crucial role in shaping a region's economic activities and patterns of economic development. Additionally, since the implementation of economic system reforms in 1978, the eastern region of China has experienced faster growth than the western region, due to favorable natural conditions, leading to significant regional imbalances (Jia et al., 2020). Lai (2002) also agrees with this perspective. Thus, to reduce the disparity between coastal and inland provinces, the Chinese government follows the step-wise development strategy and introduces the "The development of the western region in China" strategy.

Furthermore, the "The development of the western region in China" strategy has fostered economic growth in China's western regions. Since implementing this strategy, both the economic growth rate and growth rate of per capita GDP in the western region have experienced significant increases. Moreover, the western regions have attracted more foreign investment, with a significant reduction in the share of the primary industry and a corresponding sharp rise in the tertiary sector (Lu and Deng, 2011). Then, Yao and Wei (2007) also suggest that China's government should encourage more foreign direct investment in western provinces because it significantly boosts their economic growth.

Therefore, this chapter takes regional heterogeneity into account and aims to examine the impact of foreign investment absorbed by provinces in the western region on firms' M&A performance as the distribution of foreign investment in China is notably uneven, as noted by Sun et al. (2002). To investigate this issue, a dummy variable, West, is introduced to distinguish between western and non-western regions firms. If the company is registered in Chinese western provinces, the value is 1, and 0 otherwise. The classification of western provinces follows the criteria set by the National Bureau of Statistics of China. Moreover, an interaction term, Log (FI)*West, is then constructed and incorporated into the regression model. The specified model is defined as follows:

$$CAR_{ijt} = \beta_0 + \beta_1 Log(FI_{jt-1}) + \beta_2 West_{it} + \beta_3 X_{ijt-1} + \beta_4 Log(FI_{jt-1}) * West_{it} + \mu_i + \omega_t + \theta_j + \delta_q + \varepsilon_{ijt} \quad (9)$$

Here, CAR_{ijt} is the cumulative abnormal return from acquirer firm *i* in *j* province in year *t*. $Log(FI_{jt-1})$ is the logarithm of total investments by foreign-invested enterprises in province *j* at year end prior to acquisition announcements. $West_{it}$ is a dummy variable. If the company is registered in Chinese western provinces, the value is 1, and 0 otherwise. $Log(FI_{jt-1}) * West_{it}$ is an interaction term. X_{ijt-1} contains other control variables of firm *i* and province *j* at year end prior to acquisition announcements. μ_i is the firm fixed effect. ω_t is the year fixed effect. θ_j is the province fixed effect. δ_q is the industry fixed effect and ε_{ijt} is the error term.

Table 2-10 presents the results concerning the moderating effect of firms in west regions on the relationship between regional foreign investment and M&A short-term stock performance in China. It suggests that the coefficient of the interaction term Log (FI)*West is positive and statistically significant at the 5% significance level in column (5), when only year fixed effect is controlled. This indicates that foreign investment absorbed by firms in the western region has a positive effect on firms' CAR (-2, 2). The possible explanation has already been discussed in the literature review section.

For economic implications, the effects are obtained by multiplying the standard deviation of regional foreign investment by the interaction term coefficient. Accordingly, a one-standard-deviation increase in regional foreign investment raises the 5-day CAR of firms located in the western region by 2.631%. (0.022 * 1.196 = 0.026312).

However, in other situations, the coefficients of the interaction term Log (FI)*West are not significant, revealing that foreign investment in the western region does not have a statistically significant impact on firms' CARs. The reason may be that, as illustrated in the previous section, both the volume of foreign investment received and the number of M&A transactions undertaken in the western region are very limited. Consequently, foreign investment in the western region is unlikely to exert a significant impact on the M&A performance of local firms. Therefore, these results can only partially suggest a positive effect of foreign investment in the western region on firms' M&A short-term stock performance.

Table 2-10 The moderating effect of western regions on the relationship between regional foreign investment and M&A short-term stock performance

This table presents baseline results on the moderating effect of western regions on the relationship between regional foreign investment and M&A short-term stock performance. The dependent variables in columns (1) through (4) are 3-day cumulative abnormal return (CAR (-1,1)) of firm *i* in year *t*. The dependent variables in columns (5) through (8) are 5-day cumulative abnormal return (CAR (-2,2)) of firm *i* in year *t*. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, * at the 10% level.

	CAR (-1,1)				CAR (-2,2)			
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log (FI)	-0.008	-0.016	-0.007	-0.025	-0.014	-0.018	-0.010	-0.043
	(0.007)	(0.014)	(0.007)	(0.022)	(0.009)	(0.019)	(0.009)	(0.030)
Log (Tax)	0.026	0.054	0.026	0.102	0.046*	0.053	0.038	0.102
	(0.020)	(0.077)	(0.021)	(0.146)	(0.026)	(0.092)	(0.028)	(0.179)
West	-0.122		-0.076		-0.222*		-0.163	
	(0.092)		(0.099)		(0.117)		(0.124)	
Log (FI)*West	0.012	-0.013	0.008	-0.048	0.022**	-0.025	0.016	-0.026
	(0.009)	(0.018)	(0.009)	(0.046)	(0.011)	(0.022)	(0.012)	(0.058)
SOE	0.004	0.005	0.002	0.031	0.006	0.007	0.003	0.044
	(0.006)	(0.006)	(0.007)	(0.028)	(0.008)	(0.008)	(0.009)	(0.041)
Cash payment	-0.095***	-0.096***	-0.092***	-0.068***	-0.132***	-0.132***	-0.128***	-0.098***
	(0.011)	(0.011)	(0.011)	(0.016)	(0.014)	(0.015)	(0.015)	(0.020)
Stock payment	-0.033*	-0.032*	-0.032*	0.009	-0.038*	-0.036	-0.038*	0.006

	(0.017)	(0.017)	(0.017)	(0.026)	(0.022)	(0.023)	(0.023)	(0.035)
Cash flow	-0.022	-0.031	-0.015	-0.057*	-0.031	-0.043	-0.027	-0.089**
	(0.023)	(0.022)	(0.024)	(0.030)	(0.031)	(0.030)	(0.033)	(0.038)
PE	0.000*	0.000	0.000	0.000	0.000***	0.000**	0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTBV	0.002**	0.002**	0.003***	0.002	0.003**	0.003**	0.004***	0.002
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.004)
Tobin Q	-0.006*	-0.006**	-0.007**	-0.014	-0.009**	-0.008*	-0.009**	-0.013
	(0.003)	(0.003)	(0.003)	(0.010)	(0.004)	(0.004)	(0.004)	(0.015)
Leverage	-0.041***	-0.038**	-0.048**	-0.028	-0.050**	-0.043**	-0.063**	-0.040
	(0.015)	(0.015)	(0.019)	(0.046)	(0.020)	(0.020)	(0.026)	(0.059)
Shareholder concentration	-0.000*	-0.000*	-0.000**	-0.000	-0.000**	-0.000*	-0.001**	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
Board size	-0.002	-0.002	-0.003	-0.006	-0.004	-0.004	-0.005*	-0.013
	(0.002)	(0.002)	(0.002)	(0.007)	(0.003)	(0.003)	(0.003)	(0.008)
Board independence	0.059	0.060	0.057	-0.085	0.017	0.025	0.008	-0.173
	(0.054)	(0.055)	(0.057)	(0.161)	(0.074)	(0.074)	(0.078)	(0.207)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	No	No	Yes	No	No
Industry FE	No	No	Yes	No	No	No	Yes	No
Firm FE	No	No	No	Yes	No	No	No	Yes
Observations	880	880	871	517	880	880	871	517
R-squared	0.257	0.284	0.302	0.575	0.271	0.300	0.314	0.605

2.5.6.2 Role of regional foreign investment in the number of M&As

Xie et al. (2017) also emphasize the impact of the macroeconomic environment on corporate M&A activities and suggest that future research should explore more deeply how external conditions influence M&A activities. Several scholars support this view and have begun examining the effects of macroeconomic factors on corporate M&A activities (Uddin and Boateng, 2011; Ibrahim and Raji, 2018).

Therefore, to gain a more comprehensive understanding of how the macroeconomic environment influences domestic M&A activities in China, this chapter adopts the framework developed by Hu et al. (2020) to examine the impact of regional foreign investment on the number of M&A transactions. All data for the dependent, independent, and control variables are obtained from the Chinese Stock Market Research database and the National Bureau of Statistics of China. The specified model is defined as follows:

$$Y_{it} = \beta_0 + \beta_1 Log(FI_{it}) + \beta_2 X_{it} + \mu_i + \omega_t + \varepsilon_{it} \quad (10)$$

Here, Y_{it} is logarithm of the number of domestic M&As from province *i* in year *t*. Log (FI_{it}) is the logarithm of total investments by foreign-invested enterprises from province *i* in year *t*. X_{it} contains control variables from province *i* in year *t*. μ_i is the province fixed effect. ω_t is the year fixed effect and ε_{it} is the error term.

Moreover, this chapter adapts and modifies the control variables from Hu et al. (2020), incorporating several key economic indicators. These include the logarithm of the regional corporate income tax form province *i* in year *t*, the logarithm of Gross Domestic Product (GDP) from province *i* in year *t* and the logarithm of total population from province *i* in year *t*. Moreover, the ratios of both regional fiscal revenue and expenditure to GDP from province *i* in year *t*. Next, the logarithm of the value-added of the financial industry from province *i* in year *t*. Then, the logarithm of industrial added value from province *i* in year *t*. In addition, this chapter also introduces two additional control variables: the logarithm of the length of transportation routes, including both road and railway, and the logarithm of the number of domestic patent applications granted.

The logarithm of the length of transportation routes serves as an indicator of infrastructural development, as highlighted by Cheng and Kwan (2000) and Sun et al. (2002). In addition, Vasconcellos and Kish (1996) maintain that technology plays a significant role in facilitating mergers and acquisitions. Moreover, Phillips and Zhdanov (2013) reveal that large enterprises often pursue M&A activities as a strategy to integrate innovations from smaller firms, which in turn focus on enhancing their innovativeness to attract acquisition offers from larger entities. This trend demonstrates the critical influence of the innovation environment on M&A activity. Consequently, this chapter employs the logarithm of the number of domestic patent applications granted as a proxy variable to measure the regional innovation capacity and its impact on M&A transactions.

The results presented in Table 2-11 demonstrate that the coefficients of Log (FI) are not

statistically significant across all columns, which means that the regional foreign investment has no meaning impact on the number of M&As. The possible explanations have already been discussed in the tests presented in the previous section. Overall, regional foreign investment appears to exert no significant influence on domestic M&A activities in China.

Table 2-11 The impact of regional foreign investment on the number of M&As

This table presents the results of the impact of regional foreign investment on the number of M&As. The dependent variable is the logarithm of the number of domestic M&As from province *i* in year *t*. Standard errors corrected for clustering at the province level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, * at the 10% level.

	Log (M&A numbers)	
Independent variable	(1)	(2)
Log (FI)	0.024	-0.051
	(0.159)	(0.161)
Log (Tax)	1.179*	0.928***
	(0.604)	(0.305)
Log (GDP)	-0.123	-8.777***
	(1.561)	(2.689)
Log (Population)	-0.721	8.714***
	(0.776)	(3.088)
Fiscal revenue/GDP	-9.204***	-5.945
	(2.685)	(3.895)
Fiscal expenditure /GDP	0.498	-2.261
	(0.611)	(1.856)
Log (Financial industry value-added)	2.021***	3.045***
	(0.708)	(0.815)
Log (Industry value-added)	-0.604	4.299***
	(0.533)	(1.400)
Log (Length)	-0.084	-0.232
	(0.209)	(0.943)
Log (Patents)	0.110	-0.574
	(0.393)	(0.351)
Year FE	Yes	Yes
Province FE	No	Yes
Observations	279	279
R-squared	0.735	0.826

2.6 Conclusion

By examining the merger and acquisition transactions of Chinese listed companies over the period from 2011 to 2019, this chapter explores whether regional foreign investment affects firms' M&A short-term stock performance around M&A events. The empirical results reveal that regional foreign investment does not exert a statistically significant influence on the M&A short-term stock performance of acquiring firms. Furthermore, this chapter also demonstrates that regional corporate income tax exhibits a partially negative moderating effect on the relationship between regional foreign investment and firms' M&A short-term stock performance. In addition, the analysis indicates that state-owned enterprise status does not significantly moderate the relationship between regional foreign investment and firms' short-term M&A stock performance.

Moreover, additional analyses further reveal that the evidence only partially supports the view that foreign investment in China's western region may generate a positive effect on firms' M&A short-term stock performance. Lastly, the result also confirms that regional foreign investment exerts no significant influence on the overall number of M&A transactions.

Collectively, this chapter enhances the understanding of regional foreign investment in merger and acquisition transactions in China. It offers valuable insights for the Chinese government on optimizing the use of foreign investment to improve the possibility and quality of mergers and acquisitions among enterprises and to develop more targeted policy interventions. In addition, this can also encourage Chinese listed companies to pay more attention to the allocation of foreign investment and mergers and acquisitions to increase their benefits and strengthen their competitiveness in a challenging market environment.

Despite the contribution of this analysis to understanding M&As in China, this chapter acknowledges certain limitations. Specifically, this chapter only focuses on Chinese listed companies as acquirers but does not consider unlisted companies. In addition, this chapter does not analyze the conditions of the acquired companies. Finally, China's M&A activities are still in an initial stage, and the number of M&A activities does not reach the levels

observed in developed countries. Therefore, it is suggested that future research address these limitations.

2.7 Reference

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3 Corporate Social Responsibility and Export Sales: Evidence from the United States

3.1 Abstract

Using a panel of U.S. firms over the period from 1995 to 2013, this chapter examines the impact of corporate social responsibility on a firm's export sales. The results demonstrate that corporate social responsibility has a positive and significant impact on export sales. Further analysis indicates that neither financial constraints nor firm location have a significant moderating effect on the relationship between CSR and export sales. Moreover, the findings reveal that state-level GDP per capita has a positive and statistically significant moderating effect on the relationship between CSR and export sales to some extent. In addition, this chapter employs the instrumental variable approach to solve the potential endogeneity problems and the findings are consistent with the main results. Then, after several robustness checks, which include modifications in the measurement of key variables and adjustments to the time frame of the sample period, the results also largely support the main findings. Finally, the results also reveal that CSR strength is positively related to corporate export sales to some extent, and CSR concern has the detrimental effect. Furthermore, CSR in employee, diversity and product aspects significantly promote a company's export sales to a certain degree.

Keywords: Corporate social responsibility, Export sale, State GDP per capita, Financial constraints

3.2 Introduction

Nowadays, entry into the international market is an important way for enterprises' development (Rivas, 2012a, 2012b). Internationalization significantly influences the provision of development opportunities, the acquisition of new knowledge, the access to foreign market resources, and the enhancement of long-term profitability for companies (Chen et al., 2016). Moreover, it also plays a pivotal role in a firm's growth strategy (Hsu et al., 2013) as it can realize the economies of scale and scope (Caves and Caves, 1996; Hitt et al., 1997), accumulate experiences from foreign customers and competitors (Love and Ganotakis, 2013; Ren et al., 2015), and enhance the innovation ability (Kafouros et al., 2008).

Furthermore, internationalization may facilitate corporate mitigation of harsh domestic institutional environment (Luo and Tung, 2007; Witt and Lewin, 2007). Gaur and Kumar (2010) also argue that internationalization provides substantial benefits by allowing firms to overcome the constraints of small domestic markets and to enhance their legitimacy, which they may previously have lacked. Thus, the importance of a firm's engagement in foreign markets cannot be overstated, because of the trend toward globalization of trade and sales activities (Sousa et al., 2008). Then, Zhao and Zou (2002) also maintain that exporting is a common choice for companies to enter foreign markets and realize internationalization.

In addition, exporting serves as a strategic activity at the levels of companies, industries and countries (Salomon and Shaver, 2005; Kaimakoudi et al., 2014), as it can strengthen organizational abilities and improve company performance (Filatotchev et al., 2009). Moreover, in the context of trade globalization, an increasing number of enterprises are expanding their focus beyond domestic markets to explore international markets. Domestic firms also face challenges due to competition in foreign markets. Thus, export is a basic factor for the survival and development of enterprises and becomes more important in companies' activities (Sousa, 2004; Navarro et al., 2010; Chen et al., 2016). Papadopoulos and Martín (2010) also assert that entry into international markets not only increases new opportunities but also protects existing businesses from international competitors.

Therefore, a growing number of scholars and managers have focused on the research of firm

export performance over recent decades (Sousa, 2004; Sousa et al., 2008; Krammer et al., 2018; Mahmoud et al., 2020; Brache et al., 2022), as export performance is a key indicator of an enterprise utilization of resources in the foreign market (Beleska-Spasova, 2014). However, although numerous papers have explored the determinants of firm export performance (Zou and Stan, 1998; Baldauf et al., 2000; Sousa et al., 2008; Brouthers et al., 2009; Beleska-Spasova, 2014; Chen et al., 2016), research examining the impact of corporate social responsibility on firm export sales remains absent.

Then, over the past few decades, corporate social responsibility (CSR) has become mainstream in the business world (Kim et al., 2014; Adhikari, 2016; Cheung et al., 2020; Bu et al., 2021). The most widely recognized definition of CSR in scholarly literature is proposed by McWilliams and Siegel (2001), characterize CSR as *"actions that appear to further some social good, beyond the interests of the firm and that which is required by law"*.

In addition, there is growing interest in CSR among practitioners and scholars within the finance sector (Albuquerque et al., 2019; Kim et al., 2019). This is reflected in the increasing number of companies issuing corporate social responsibility announcements and these firms have invested considerable time and resources in explaining their CSR strategy in recent years (Arouri et al., 2019; Gloßner, 2019; Kim et al., 2019). Kim et al. (2019) identify several benefits for companies to engage more actively in CSR activities, noting that such efforts can reduce firm risk related to product security and improve a firm's reputation, which in turn contributes positively to firm valuation.

Additionally, they also argue that numerous business schools have included CSR into their curriculum to meet the increasing corporate demand for sustainable development. Furthermore, Albuquerque et al. (2019) also contend that the mechanisms through which corporate social responsibility influences firm value remain unclear. Thus, there is a growing focus on CSR-related research.

Moreover, Nguyen et al. (2020) maintain that 81% of investors and 85% of managers cite CSR as a "core" consideration according to a report in "*The Economist*" in 2005. Byun and

Oh (2018) also report that PricewaterhouseCoopers (PwC) noted in 2010 that more than 80% of businesses publicly disclose their CSR activities online. In addition, Dutordoir et al. (2018) and Bu et al. (2021) note that Fortune Global 500 firms invested nearly 20 billion dollars annually in CSR activities during the period from 2011 to 2013. Then, Boubakri et al. (2016) and El Ghoul et al. (2016) also argue that Klynveld Peat Marwick Goerdeler (KPMG) found over 90% of the world's largest 250 companies included CSR activities in their annual reports or issued a separate CSR report in 2015 and 2013, respectively.

Additionally, El Ghoul et al. (2016) highlight the importance of enhancing corporate social responsibility. From the perspectives of employees, customers, and investors, Nielsen's 2014 global survey revealed that 67% of respondents expressed a preference to work for socially responsible companies, and 55% indicated a willingness to pay a premium for products from such companies. Moreover, Guenster et al. (2011) argue that a growing number of large institutional investors are investing in socially responsible companies. Adhikari (2016) maintain that corporations such as Microsoft and Google pursue corporate social responsibility through employee donations and philanthropic efforts. In addition, Roy et al. (2022) document that at the start of 2021, global investments in Environmental, Social, and Governance (ESG) funds reached nearly $350 billion.

Moreover, the focus on the effect of CSR on the U.S. firm's export sales is motivated by the following reasons. First, understanding of the determinants affecting export sales plays an important role in the survival and development of a company. Numerous studies have concentrated on identifying the key factors influencing export performance (Sousa et al., 2008). However, despite extensive research over the past decades, findings on the determinants of export performance remain fragmented and controversial (Cavusgil and Zou, 1994; Zou and Stan, 1998). Cavusgil and Zou (1994) argue that these differences are due to conceptual and methodological issues within export studies. Zou and Stan (1998) agree with the viewpoint and further contend that research on the determinants of export performance suffers from an insufficient integration of fragmented knowledge. Furthermore, Chen et al. (2016) observe that the subject has not been extensively investigated. They note that many researchers overlook the complex, interactive, and nested relationships within the field.

Although research methodologies have been updated, biases in estimation continue to persist. Thus, Leonidou et al. (2007) and Sousa et al. (2010) maintain that research managers and policymakers need a more comprehensive understanding of exports.

Furthermore, Trotta et al. (2011) maintain that corporate social responsibility can enhance a company's reputation and create economic value. These advantages of CSR are crucial to a firm's export sales as these are consistent with the resource-based theory. In addition, Xu et al. (2018) maintain that CSR serves as an important mechanism for building partnerships with relevant stakeholders and gaining a competitive advantage in foreign markets, which is align with the stakeholder theory. Additionally, Goergen et al. (2019) also suggest that multinational corporations (MNCs) are more likely to be affected by negative publicity in foreign markets due to their extensive foreign responsibilities, and engagement in CSR activities may mitigate these adverse effects. Nguyen and Le (2019) also argue that environmental factors play an increasingly important role in the process of firm internationalization.

Although numerous studies have explored export performance and corporate social responsibility independently, there has been limited investigation into the relationship between CSR and export sales. This finding is surprising because export sales could significantly enhance the understanding of the impacts of CSR activities on exporting companies. Thus, it is both essential and valuable to explore the relationship between these elements. Whether enhancements in a company's CSR abilities could drive export sales growth?

Second, the United States ranks as the most economically developed country and one of the largest exporters in the world. Vithessonthi and Racela (2016) assert that the United States has consistently improved its level of internationalization, and the ratio of export sales to total sales rose from 18.4% in 1990 to 34.8% in 2013. In addition, American companies are also increasingly engaged in corporate social responsibility activities. Galema et al. (2008) argue that more than 50% of Fortune 1000 companies publish CSR reports in the U.S. and about 10% of U.S. investments are subject to CSR compliance standards.

Moreover, U.S. companies invested nearly $30 billion in sustainable development initiatives and contributed $15 billion to philanthropic activities in 2012, as noted by Di Giuli and Kostovetsky (2014). Furthermore, *The 2020 U.S. SIF Foundation's Biennial "Trends Report"* indicated that sustainable investment assets in the U.S grew by 42% between 2018 and 2020, according to Li and Wang (2022). Additionally, *The 2022 U.S. SIF Foundation's Biennial "Trends Report"* reveals that total US-domiciled assets under management of sustainable investing strategies reached 8.4 trillion dollars, which occupies 13% of the total US assets under professional management. Therefore, this constitutes a second motivation for studying the topic within the U.S. context, where American companies, as leaders in both fields, provide a more representative sample for research.

Third, Zou and Stan (1998) argue that the influence of socio-cultural and political environment of different regions, as moderating factors, has been largely neglected in studies of export sales. Furthermore, several scholars agree that macro factors at the country and regional levels are frequently overlooked in this field of research (Katsikeas et al., 2000; Beleska-Spasova, 2014; Chen et al., 2016).

Moreover, Freeman et al. (2012) maintain that geographic location may serve as an important moderating factor between export drivers and export outcomes. However, past export research has often overlooked the market environment and contextual background of a firm's location. Cheung et al. (2020) also note that the differential impact of corporate social responsibility in various countries and regions remains uncertain. Additionally, Gillan et al. (2021) demonstrate that the attributes of CSR are influenced by the country- and state-level characteristics of the company's location.

Cai et al. (2016) also contend that differences in the ratings of corporate social performance are mainly due to the cultural systems and developmental stages of each country. Liang and Renneboog (2017) argue that the legal origin of a country or region plays a crucial role in determining a company's CSR rating. Thus, this also emphasizes the importance of considering the location of firms. In addition, Gillan et al. (2021) maintain that it is essential

to consider variations in domestic market characteristics, such as macroeconomic factors. Therefore, this serves as the third motivation for investigating the moderating effects of firm location and external macroeconomic factors on the relationship between CSR and export sales. Thus, the research question is how are CSR and export sales associated?

The main contributions of this chapter are as follows. First, this research represents the first exploration of the effect of corporate social responsibility on corporate export sales in the United States. As previously discussed, although there were numerous prior studies on exporting, the results concerning the determinants of export sales are fragmented and controversial (Cavusgil and Zou, 1994; Zou and Stan, 1998). Moreover, Xu et al. (2018) argue that there is a significant gap in the literature regarding the impact of CSR on export sales. Thus, considering that the United States is the most economically developed country and one of the largest exporters in the world, and an increasing number of U.S. firms have engaged in CSR activities in recent years, this topic is interesting and requires additional exploration. In addition, this chapter can address the existing gap, broaden the direction of academic research in the field of exporting, and provide a new perspective on the role of corporate social responsibility in the socio-economic activities of U.S. corporations.

Second, the United States is the fourth largest country in the world and comprises 50 states and federal territories (Washington, DC). This chapter considers regional heterogeneity, which is conducive to understanding the diverse conditions across various parts of the United States as there are significant differences in these regions (Li and Wang, 2022). Therefore, analyzing the U.S. states separately offers a fresh insight into the role of corporate social responsibility in American corporate exports. Moreover, this chapter also considers other moderating variables, such as financial constraints and external macroeconomic factors, in examining the relationship between CSR and export sales. This provides a more comprehensive and integrated perspective on how CSR influences the export sales of U.S. firms.

Third, in recent years, an increasing number of firms have engaged in the CSR activities as discussed above. However, the development of CSR in many emerging countries is still in

its infancy. Gao (2011) agrees with this viewpoint and notes that Chinese CSR reports follow national rather than international standards. Miras-Rodríguez et al. (2018) emphasize that research on emerging countries should assess the applicability of CSR disclosure methods and highlight the importance of establishing legal mechanisms to ensure CSR transparency. Moreover, Khan et al. (2021) also mention the necessity of CSR legislation in Pakistan and maintain that western regulatory mechanisms are not suitable for implementation in Pakistan. In the context of economic globalization, the United States, recognized as a leader among developed countries, possesses research and expertise that can significantly benefit other regions, particularly emerging markets. Their experiences can enhance understanding of the role of CSR in corporate exports, thereby facilitating local and national economic development.

This chapter examines the research question using a dataset between 1995 and 2013. The CSR data is sourced from the MSCI ESG KLD database. Information on exporting is derived from Historical Segments on the Compustat database. The analysis employs fixed effect regression model to investigate the impact of CSR on export sales. Then, this chapter also investigates the moderating effects of financial constraints, firm location, and external macroeconomic variables on the relationship between CSR and export sales.

Moreover, the results demonstrate that CSR has a positive and significant influence on a firm's export sales. Furthermore, the analysis indicates that financial constraints and firm location do not have a significant moderating effect on the relationship between CSR and export sales. Subsequently, it is found that state GDP per capita exerts a positive and significant moderating effect on the relationship between CSR and export sales to some extent.

Next, this chapter employs the instrumental variable (average industry CSR value) approach to solve potential endogeneity issues and the results largely support the main findings. Then, for robustness checks, this research modifies the time frame of the sample following the guidance of Gloßner (2019) and Amin et al. (2020) and adopt a proxy variable, export intensity, which is calculated as the ratio of export sales to total sales (Baldauf et al., 2000;

Hsu et al., 2013), Furthermore, this chapter employs two different measurements of CSR as proposed by Deng et al. (2013), Lins et al. (2017) and Dutordoir et al. (2018). The results broadly confirm the primary findings, which are detailed in the robustness check section.

Finally, referring to Kim et al. (2014), the findings also reveal that CSR strength is positively related to corporate export sales to some extent, while CSR concern adversely affects corporate export sales. Furthermore, CSR scores related to employee, diversity and product aspects significantly promote the company's export sales to a certain degree.

The rest of the chapter proceeds as follows. Section 3.3 provides a review of the literature. Section 3.4 introduces the data and research methodology. Section 3.5 presents the empirical results, robustness checks and additional analysis. Section 3.6 is the conclusion.

3.3 Literature Review

3.3.1 The determinants of export sales

Nowadays, an increasing number of studies are adopting the resource-based view (RBV) as a theoretical framework in research on firms' export activities (Sousa et al., 2008; Singh, 2009; Gao et al., 2010; Freeman et al., 2012; Freeman and Styles, 2014). The concept of the resource-based view can be traced back to the works of Adam Smith and Karl Marx, while Edith Penrose introduces the modern formulation of the resource-based view (Branco and Rodrigues, 2006).

Barney (1991) argues that a firm's competitive advantage in the marketplace derives from a set of unique resources, including both tangible and intangible resources. Moreover, the author also states that these distinctive competitive advantages can be categorized into four types. First, the resources must be valuable. Second, they must be rare. Third, they should be difficult to imitate. Fourth, they should be challenging to substitute.

Research on firm export performance can be traced back to the 1960s. Tookey (1964) provides the initial analysis of the determinants underlying a company's export success. This analysis employs questionnaires and interviews to collect information from trade

organizations and individuals experienced in export practices, and further conduct a survey for 54 companies in hosiery and knitwear sector. Furthermore, the study argues that variables such as the type and quality of product, firm size, export policy, home marketing channels and export marketing techniques are critical determinants of a manufacturing firm's success in exporting.

Zou and Stan (1998) review the literature from 1987 to 1997 concerning determinants of export performance, categorizing these determinants into internal and external factors. Internal factors are based on the resource-based view, including export marketing strategy, management characteristics, management attitudes and perceptions, firm characteristics and competencies, while external factors are grounded in the industrial organization perspective, containing industry characteristics, foreign market characteristics and domestic market characteristics.

Sousa et al. (2008) also conduct a systematic review of literature on export performance spanning from 1998 to 2005 to understand the determinants of a firm's export performance. Their analysis reveals that the proportion of non-U.S. studies has risen to 77%, and they also categorize the determinants affecting the export performance of enterprises into internal and external factors. Internal factors include export marketing strategy, and firm and management characteristics, while external factors contain characteristics of both foreign and domestic markets.

Chen et al. (2016) review the literature from 2006 to 2014 about the determinants influencing export performance, providing a detailed description and differentiation between internal and external factors. Internal factors include export marketing strategies (such as product adaptation and product innovation), firm characteristics and capabilities (such as innovation capability, R&D investment, and market orientation), and managerial characteristics (such as managers' international experience and managerial orientation). External factors encompass industry characteristics (including industry technological intensity and degree of market competition) and country-specific characteristics (such as market demand and economic growth rates).

Then, an increasing number of articles have emerged that examine the internal determinants of firms' export performance. From the perspective of marketing strategy, Morgan et al. (2012) execute a study on 1000 U.K. exporting manufacturers and introduce the theory of export marketing strategy implementation effectiveness to examine the antecedents of export marketing capability and their performance of manufacturing firms engaged in international markets. They maintain that export marketing strategy is conducive to expanding export markets and improving corporate financial performance. Additionally, marketing ability exerts a significant influence on achieving successful marketing strategy implementation.

Furthermore, Katsikea et al. (2019) also conduct a survey of 168 exporting firms in Greece and employ structural equation modeling to analyze the effect of export strategies on export performance. Then, their research indicates that the distribution of export market information significantly contributes to the development of export strategies. Apart from that, they also argue that export strategies have a positive and substantial impact on the increase of export performance.

Several studies have highlighted the significance of product characteristics in influencing export performance. When discussing the barriers to firm exports, Leonidou (2004) points out that meeting product quality standards in target markets is a major challenge, as consumers in many of these markets have much higher quality expectations than those in the domestic market.

Funke and Ruhwedel (2001) carry out a survey across 10 East Asian countries to examine whether the type of goods exported affects export performance. Their research concludes that highly differentiated export commodities are conducive to improving the export performance of enterprises. Thus, they argue that the new trade theory provides substantial theoretical and practical benefits.

Brouthers and Xu (2002) collect data from 88 Chinese exporting firms through a questionnaire survey to examine the factors influencing performance satisfaction among

Chinese exporters. They findings suggest that compared to a price leadership product strategy, a branding-oriented product strategy is more effective in enhancing export performance satisfaction.

Moreover, Katsikeas et al. (2006) examine 736 U.S., Japanese, and German multinational corporations operating in the United Kingdom and utilize field interviews to investigate the international marketing strategies of subsidiaries for specific products or product lines. They provide evidence that strategy standardization exerts a significant influence on export performance when the corporate environmental context is consistent with its international marketing strategy.

In addition, from the perspective of firm characteristics and capabilities, a company's R&D and innovation capabilities are critical to its export sales. Salomon and Shaver (2005) utilize data from approximately 14000 firm-year observations drawn from the Spanish Public Business Foundation between 1990 and 1997 to examine the determinants of export sales. The results demonstrate a strong interaction between export and domestic sales. In addition, the study also finds a positive correlation between R&D investment and export sales.

Singh (2009) focuses on Indian manufacturing firms and collects approximately 40000 firm-year observations from 1990 to 2005 to investigate the factors influencing the export performance of Indian enterprises. The author suggests that firms' R&D expenditures have a positive and significant effect on export sales.

Golovko and Valentini (2011) also utilize Spanish manufacturing data from 1990 to 1999, provided by the Spanish Public Business Foundation, to examine the relationship between innovation and export performance in small and medium-sized enterprises (SMEs). The sample consists of 8802 firm-year observations. Their findings indicate a significant interaction between innovation and export. Then, they argue that firms enhance their export performance by producing higher-quality products through innovation.

Oura et al. (2016) conduct a structured questionnaire survey in 2013, using data from 112

Brazilian small and medium-sized enterprises to examine the relationship between international experience, innovation capability, and export performance. Their results show that both international experience and innovation positively contribute to the export performance of Brazilian SMEs, with international experience having a more significant impact.

Moreover, several other studies have mentioned the influence of market orientation and firm size on export performance. Prasad et al. (2001) execute a questionnaire among 381 manufacturing firms in the United States to explore the effect of Internet technology on the relationship between market orientation, marketing competencies, and export performance. Additionally, their findings demonstrate that market orientation affects export performance through marketing capability, and that Internet technology exerts a moderating effect on the relationship between marketing capability and market orientation.

Bertrand (2011) employs data sourced from the Echanges Internationaux Intra Groupe (EIIG) and Enqueˆte Annuelle d'Entreprise (EAE) databases to investigate the effect of offshore outsourcing on corporate export performance. The analysis, covering approximately 2000 manufacturing multinational corporations in France, reveals that both firm size and export experience positively moderate the relationship between offshoring and firm export performance.

Furthermore, some studies have also examined the impact of external factors on export performance. Styles and Ambler (1994) carry out a survey involving managers from 67 exporting firms that won the 1992 Queen's Award for Export Achievement and examine the export practices of successful UK organizations. Moreover, they identify that infrastructure, tariffs, cultural environment are pivotal in affecting the export performance of these UK enterprises.

LiPuma et al. (2013) provide evidence that government influence, the court system, and tax regulations exert a positive effect on export performance based on a questionnaire of approximately 7500 companies across 56 countries. However, the findings also demonstrate

that access to financial markets and general regulations negatively influence the export decisions of firms.

3.3.2 Corporate social responsibility and performance

Branco and Rodrigues (2006) argue that firms engage in corporate social responsibility activities because CSR can provide unique and hard-to-replicate competitive advantages, aligning with the principles of the resource-based view. Moreover, they propose that CSR generates both internal and external benefits for firms. Internally, CSR investments can help develop new resources and technologies as well as cultivate talented employees. Externally, actively attending CSR activities can enhance a firm's reputation.

Several studies have pointed out that firms are increasingly integrating sustainability concepts into the product development process in order to meet consumer demand for products with CSR-related attributes. Giallonardo and Mulino (2012) develop a vertical product differentiation model to examine consumer demand for corporate social responsibility products offered by cooperative firms. Their results indicate that these firms face "bottom-up pressure" from consumers—that is, strong consumer demand for CSR-oriented products drives cooperative firms to produce goods with more pronounced CSR attributes.

Kara et al. (2014) conduct a questionnaire survey and collect responses from 330 middle- and senior-level managers in manufacturing firms across Asia, Australia, Europe, and North America to study the development of sustainable products. Their findings reveal that although manufacturing firms of different sizes and regions employ varying decision-making tools, environmental responsibility plays a significant role in guiding these decisions.

Boehe and Barin Cruz (2010) also carry out a questionnaire survey involving 252 medium- and large-sized Brazilian exporting firms to examine the impact of CSR-based product differentiation on export performance. Their findings indicate that both CSR-based product differentiation and quality differentiation positively influence export performance. However, the effect of CSR-based product differentiation is more pronounced.

Ullah et al. (2021) collect data from 433 U.S. manufacturing firms spanning the period from 2002 to 2017 to investigate the relationship between corporate social responsibility strategy, sustainable product attributes, and export performance. Their findings suggest a positive correlation between the social attributes of sustainable products and export performance. Additionally, they argue that firms need to adopt more proactive adjustment strategies toward environmentally sustainable product attributes.

In addition, several studies have also noted that CSR can promote firms' R&D and innovation activities. McWilliams and Siegel (2000) use data from 524 firms covering the period from 1991 to 1994 to examine the relationship between CSR and corporate R&D capability. Their results show a positive correlation between corporate social responsibility and firms' R&D investment.

Surroca et al. (2010) take advantage of data from nearly 600 industrial firms across 28 countries and regions to investigate the role of intangible assets in the relationship between CSR and firm performance. Their findings demonstrate that firms engaging in socially responsible practices tend to develop intangible assets such as innovation and reputation, which in turn can improve financial performance.

Furthermore, Carroll (2021) states that stakeholder theory is one of the primary theoretical frameworks for examining issues related to corporate social responsibility. Freeman (2010) emphasizes that firms should fully consider the interests of stakeholders when making decisions, as a company is composed of multiple stakeholder groups. Stakeholders not only provide support and assistance to corporate decision-making but are also directly affected by those decisions.

Kumar et al. (2023) argue that firms engage in CSR activities with the aim of maintaining strong relationships with stakeholders, as CSR can help attract top talent, secure critical resources, enhance products and services, and ultimately increase firm value. Moreover, Lins et al. (2017) also maintain that during financial crises, stakeholders are more likely to support

firms with high levels of corporate social responsibility, as these firms are perceived to be more trustworthy.

Therefore, based on stakeholder theory, several studies have suggested that CSR can reduce information asymmetry and enhance corporate reputation. Do et al. (2023) argue that CSR reduces corporate information asymmetry through two main mechanisms. The first is the ethical theory of CSR, which suggests that firms with high levels of corporate social responsibility are expected to act with honesty and integrity in their long-term operations, as this contributes to enhancing firm value. As a result, such firms are more likely to proactively disclose transparent information to stakeholders. The second mechanism is the output route. Socially responsible firms tend to produce products that better meet stakeholder needs, which in turn attracts more institutional investment and shareholders, ultimately leading to improved information quality.

Lopatta et al. (2016) utilize data from U.S. publicly listed companies between 2004 and 2013 to examine the relationship between CSR and information asymmetry. They measure information asymmetry using abnormal returns from insider trading. Their findings reveal a negative correlation between firms' CSR scores and abnormal insider trading profits, providing evidence that CSR can help reduce information asymmetry.

Then, Xu et al. (2018) argue that export-oriented enterprises need to develop unique competitive advantages, establish cooperative relationships with external stakeholders, and reduce information asymmetry. They investigate the impact of energy conservation and emission reduction on Chinese exporting firms, analyzing data from 425 listed companies in environmentally sensitive industries spanning from 2008 to 2012 in China. The results indicate that high level of energy conservation and emission reduction are advantageous to increasing export performance as they serve as positive signals to overseas markets and consumers.

In addition, Cui et al. (2018) analyze data sourced from the U.S. between 1991 and 2010 to investigate the impact of CSR on information asymmetry. Their research demonstrates that

CSR significantly reduces information asymmetry. Apart from that, their findings also provide evidence that CSR exerts a negative influence on reputational risk and confirm the significant role of CSR in maintaining a firm's reputation and improving the information environment.

Furthermore, Fombrun and Shanley (1990) propose that stakeholders assess a firm's relative value through market and accounting signals, institutional signals, and strategic signals, which together form the foundation of corporate reputation. Branco and Rodrigues (2006) further emphasize that corporate reputation is one of the key external benefits of CSR. Firms with strong CSR practices tend to enjoy higher reputational capital, which helps maintain positive relationships with stakeholders and enhances employees' sense of identification and motivation. This, in turn, contributes to improved financial performance.

Melo and Garrido-Morgado (2012) use data from 1120 firm-year observations of 320 publicly listed U.S. companies to investigate the relationship between CSR and corporate reputation. They employ the Fortune Index to construct a corporate reputation model. The results indicate that CSR has a broad and significant positive impact on corporate reputation. Martos-Pedrero et al. (2023) indicate that the positive reputational effects generated by CSR can be transmitted to stakeholders, thereby enhancing a firm's performance in international markets.

Therefore, the discussed literature suggests that corporate social responsibility serves as a unique source of competitive advantage for firms. First, CSR enables product differentiation by incorporating sustainability attributes, and both differentiated product strategies and high-quality offerings are conducive to enhancing export performance. In addition, CSR can stimulate firms' R&D and innovation capabilities—key competencies required for entering international markets. Kara et al. (2014) argue that product sustainability is increasingly preferred by customers in international markets.

Second, CSR helps reduce information asymmetry for stakeholders and enhances corporate reputation. Gao and Zhang (2015) assert that an increasing number of companies are

voluntarily participating in social welfare activities, which can alleviate corporate crises and improve corporate reputations. When consumers in foreign markets are unfamiliar with exporting firms and their products, CSR can help lower such trade barriers by increasing firm recognition and reputation. This, in turn, reduces costs such as information costs and contributes to increased export sales. Thus, it is anticipated that CSR has a positive impact on a firm's export sales. Based on the preceding analysis, I propose the following hypothesis:

Hypothesis 1: CSR will be positively associated with the firm's export sales

3.3.3 Moderating effect of financial constraints

Sousa et al. (2008), in their review, note that early studies primarily focused on the impact of independent variables on export performance, while largely overlooking the important roles of moderating and control variables. In export performance research, moderating variables are crucial for explaining how the effects of independent variables may vary across different contexts. Therefore, they recommend that future research on export should place greater emphasis on exploring moderating effects, rather than focusing solely on main effects.

Chen et al. (2016) observe that prior to 2005, the use of moderating variables in export performance research was relatively limited. However, during the period from 2006 to 2014, the inclusion of moderating variables in such studies began to increase. They further emphasize that moderating effects capture the contextual conditions under which specific relationships are valid and recommend that future research on export performance should place greater focus on the role of moderating variables.

Financing is essential for a firm's survival and growth, as insufficient funding may cause the firm to miss out on projects with positive net present value (Kumar and Ranjani, 2018). Berman and Héricourt (2010) argue that existing literature has primarily focused on the impact of financial constraints on export trade at the national and industry levels, while the mechanisms at the firm level remain underexplored. Therefore, they suggest that examining the impact of financial constraints on exports from a firm-level perspective would deepen the understanding of firms' export behavior. They use data from nearly 5000 multinational

firms across nine developing countries to investigate the moderating effect of financial constraints on the relationship between firm productivity and export performance. Their findings indicate that financial constraints negatively moderate this relationship—the greater the financial constraints, the weaker the link between productivity and export performance.

In addition, financing is especially critical for exporting firms because they typically incur greater fixed and variable expenses, which is often classified as sunk costs, than firms operating solely in domestic markets (Greenaway et al., 2007; Berman and Héricourt, 2010; Secchi et al., 2016; Qasim et al., 2021). Minetti and Zhu (2011) argue that when exporting firms face financial constraints, it may affect both their decision to export and the scale of their export sales.

Moreover, many scholarly articles identify financial constraint as a detrimental factor for a firm's export activities. Bellone et al. (2010) examine the effect of financial constraints on corporate export behaviour, selecting a dataset consisting of 170000 firm-year observations from more than 25000 French companies spanning the years 1993 to 2005. Subsequently, they provide convinced evidence that firms with lower credit constraints are more likely to actively engage in the export market. However, their analysis indicates that there is no positive correlation between corporate financial health and the proportion of exports.

Minetti and Zhu (2011) use survey data from 4680 Italian firms collected in 2001 to examine the relationship between credit rationing and firm exports. Their findings indicate that credit rationing has a negative impact on both the likelihood of exporting and the volume of foreign sales. Moreover, the effect of credit rationing is more pronounced on export sales than on domestic sales.

Manova et al. (2015) utilize the free-on-board value of 6908 products, sourced from the Chinese Customs Office in 2005, as a sample to investigate the influence of credit constraints on corporate exports. They provide evidence that credit constraints adversely affect a company's ability to export products to other markets. In addition, these constraints also restrict the scope of products that Chinese enterprises can export.

Additionally, Muûls (2015) shares a similar perspective and selects Belgian manufacturing companies from 1999 to 2007 to assess the relationship between credit constraints and exporting. This researcher suggests that firms with lower credit constraints are more likely to engage in export and import activities. Moreover, the findings also demonstrate that firms with higher credit ratings participate more import and export activities.

Secchi et al. (2016) also utilize data from approximately 66000 Italian exporting firms between 2000 and 2003 to investigate the impact of financial constraints on firms' export performance. Their findings demonstrate that financial constraints exert a negative influence on firms' export sales.

Wang (2016) examines the relationship between financial constraints and firm exports using a sample of 5358 firm-year observations from 26 Eastern European and Central Asian countries between 2001 and 2013. The results reveal that financial constraints reduce both the likelihood of exporting and the scale of export activities.

Forte and Salomé Moreira (2018) also agree with these findings. Their study analyzes data from 12732 manufacturing SMEs in Portugal during the period from 2008 to 2012 to explore the relationship between financial constraints and export performance. Their research reveals that financial constraints have a detrimental effect on the likelihood of SMEs to export.

Then, Pietrovito and Pozzolo (2021) investigate the effect of credit constraints on SMEs' exports from emerging and developing countries, utilizing data from approximately 19000 firms between 2003 and 2014. Their analysis demonstrates that credit constraints have a negative influence on both the likelihood of exporting and the proportion of exports relative to total sales.

Moreover, Attig (2024) maintains that financial constraints may negatively affect CSR investment and summarizes several key reasons. First, CSR initiatives often require substantial short-term investments, which can impose significant cost pressures on firms.

Second, the returns from CSR are uncertain and typically realized over the long term. As a result, financially constrained firms may be less likely to engage in CSR activities.

Shen et al. (2015) carry out a case study on the Indian textile industry to identify the factors influencing CSR performance within the sector. With the assistance of industry managers, they apply the Analytical Hierarchy Process (AHP) under a fuzzy environment and suggest that financial constraints significantly hinder CSR performance in the Indian textile industry.

Bello et al. (2017) conduct 13 in-depth interviews in 2014 using semi-structured interviews and thematic analysis to investigate the key barriers to CSR practices in the hotel industry in Malawi. Their findings indicate that financial constraints, along with managers' limited awareness of CSR, are the primary factors hindering effective CSR implementation.

Leong and Yang (2021) use data on CSR from the MSCI KLD database covering the period from 1991 to 2013 to investigate the impact of financial constraints on corporate social responsibility. Their results reveal a negative correlation between financial constraints and CSR performance. Moreover, they also argue that firms facing financial constraints tend to prioritize improvements in CSR dimensions related to employee, corporate governance, and environment.

In addition, several studies have explored the moderating role of financial constraints in the relationship between CSR and firm performance. Haryanto et al. (2021) examine the moderating effect of financial constraints on the relationship between CSR disclosure and firm value. Their sample consists of 77 publicly listed manufacturing companies in Indonesia from 2012 to 2014. The results indicate that for firms facing financial constraints, CSR has a negative impact on firm value, suggesting that financial constraints negatively moderate the relationship between CSR disclosure and firm value.

Chulkov and Wang (2023) utilize nearly 22000 firm-year observations from 1991 to 2018 to examine the relationship between CSR and the quality of corporate financial reporting. Their results demonstrate a positive correlation between CSR scores and financial reporting quality.

Furthermore, by introducing financial constraints as a moderating variable, they note that financial constraints negatively moderate the relationship between CSR and financial reporting quality.

In summary, financial constraints have been shown to negatively affect both the likelihood of exporting and the scale of export activities. Given that CSR investments typically require substantial financial resources, have long-term and uncertain returns, and lack immediate profitability, firms under financial constraints may be less inclined to invest in CSR. Therefore, it is anticipated that financial constraints negatively moderate the relationship between CSR and export sales. Based on the preceding analysis, I propose the following hypothesis:

Hypothesis 2: Financial constraints have a negative moderating impact on the relationship between CSR and export sales

3.3.4 Moderating effect of firm location

Many studies have used the resource-based theory to explain the significance of geographical factors for firm export performance (Gao et al., 2010; Freeman et al., 2012; Freeman and Styles, 2014). Compared to inland firms, coastal firms benefit from lower logistics and transportation costs due to their proximity to ports. Additionally, coastal firms operate in more open markets with easier access to international trade networks. Lastly, coastal cities tend to attract a larger labor force, which means firms in these areas are more likely to employ highly skilled workers.

Zhao and Zou (2002) analyze data from 1649 Chinese manufacturing firms to investigate the effect of locational factors on export propensity and export intensity. Their findings demonstrate that location has a significant impact on both a firm's likelihood to export and the export intensity. Coastal firms, due to their various locational advantages, exhibit higher export propensity and greater export intensity compared to inland firms.

Moreover, Wu (2007) utilizes a sample from China to conduct an empirical analysis of the

export performance of Chinese firms from 1992 to 2001. The results demonstrate that firms in coastal regions exhibit superior export performance compared to those in non-coastal regions. This disparity is attributed to higher levels of infrastructure, more advanced development of the non-state sector, and greater government spending in coastal areas, all of which significantly enhance export activities.

Freeman et al. (2012) conduct interviews with Australian SME exporters through a questionnaire survey to examine the influence of firm location on export performance. Their study confirm that firm location plays a significant role in export outcomes. SMEs located in metropolitan areas benefit from more locational advantages, which contribute to enhanced export performance. Furthermore, Gallup et al. (1999) argue that the economic success of developing countries is largely driven by placing manufacturing industries in port cities. They also note that most large cities are either situated along coastlines or built near rivers that flow into the sea.

Several studies have also highlighted the influence of geographic location on corporate social responsibility. Husted et al. (2016) apply stakeholder theory to examine whether location affects firms' engagement in CSR activities. Their sample includes approximately 13000 firm-year observations from 1998 to 2009. The results reveal that firms located in major cities or financial centers are more likely to participate in CSR initiatives. They maintain that large cities near bodies of water facilitate better communication between managers and stakeholders. Additionally, these urban areas benefit from knowledge spillovers and lower the costs associated with implementing CSR. Firms in such locations are also subject to greater public scrutiny and institutional pressure, all of which contribute to improved CSR performance.

Zamir and Saeed (2020) support the conclusions of Husted et al. (2016) and investigate the relationship between firm location and CSR disclosure, utilizing a sample of 3620 firm-year observations from nine emerging market countries between 2010 and 2015. Their findings indicate that firms located closer to major cities tend to exhibit higher levels of CSR disclosure.

Moreover, Ismail (2024) investigates the relationship between firm location and CSR scores using nearly 30000 firm-year observations from 1991 to 2019. The results indicate that firms located in coastal areas tend to have higher CSR scores. The author cites research from neuroscientists and geopsychologists, suggesting that proximity to bodies of water evokes a sense of awe, which can lead individuals and organizations to engage in more socially oriented behavior.

Therefore, drawing on the resource-based theory, it can be observed that exporting firms located in major cities near bodies of water benefit from substantial advantages, such as convenient transportation, cost reduction, and access to a more skilled workforce. Meanwhile, from the perspective of stakeholder theory, such geographic locations may also enhance CSR performance. Accordingly, this chapter anticipates that proximity to bodies of water positively moderates the relationship between CSR and export sales. Based on the preceding analysis, I propose the following hypothesis:

Hypothesis 3: Proximity to bodies of water positively moderates the relationship between CSR and export sales.

3.3.5 Moderating effect of external macroeconomic factors

Previous sections have discussed that both internal and external factors influence firm export performance. Many studies have identified macroeconomic conditions as one of the key external factors affecting a firm's export outcomes (Baldauf et al., 2000; Katsikeas et al., 2000; Sousa et al., 2008). However, Katsikeas et al. (2000) point out that few studies have examined the impact of domestic macroeconomic factors on firm export sales.

Several studies have discussed the role of external macroeconomic factors in influencing firm export performance. Erickson and Hayward (1991) categorize the United States into nine regions and collect data from the Foreign Trade Division and the Industry Division of the U.S. Bureau of the Census from 1987 to investigate industrial export flows from these regions. Their findings reveal that regional political and cultural factors significantly

influence U.S. industrial export flows.

Leichenko (2000) reviews various theories to explain the causal relationship between exports and regional economies. The study employs direct manufacturing export shipments from individual states as the dependent variable to examine the causal relationships among total state manufacturing employment, state manufacturing labor productivity, total state manufacturing production, and exports across the U.S. states. They contend that a bidirectional causal relationship exists between exports and state economic growth.

In addition, some papers use GDP and GDP per capita as indicators to measure the external macroeconomic environment and explore their relationship with export performance. Majeed et al. (2006) analyze data from 75 developing countries spanning the period from 1970 to 2004 to investigate the factors influencing exports in these economies. Their results indicate that both GDP and the GDP growth rate have a positive and significant impact on export performance.

Filippini and Molini (2003) use trade data from 26 developed and developing countries between 1970 and 2000 to investigate the factors influencing their trade performance. When developed countries export manufactured goods to developing countries, both the exporting and importing countries' GDP have a positive and significant effect on export performance. However, when developing countries export manufactured goods to developed countries, only the GDP of the exporting countries is positively associated with export performance.

Furthermore, Coughlin (2012) takes advantage of data from 50 states and 190 countries to examine the factors influencing the number of exporting firms and the average export value per firm. The results suggest that state-level per capita GDP is negatively associated with the number of exporting firms but positively associated with the average export value per firm.

State GDP per capita is utilized to assess the macroeconomic environment and degree of affluence of a region. Harjanto et al. (2021) state that GDP per capita serves as an indicator for measuring the average standard of living of a population. Nsiah et al. (2012) maintain

that a sound legal system and well-developed infrastructure is positively related to state-level export performance. It is assumed that regions with higher GDP per capita possess more favorable macroeconomic and infrastructure conditions, which are beneficial for export-oriented enterprises. Additionally, this is consistent with the resource-based theory.

Moreover, two articles highlight the significant influence of the macroeconomic environment on corporate CSR practices. Porter and Kramer (2006) emphasize that firms are more likely to actively adopt CSR as a strategic tool to create competitive advantage when operating in a favorable economic environment. Campbell (2007) points out that firms are unlikely to engage in CSR activities when facing unfavorable macroeconomic conditions, such as high inflation and low productivity. Therefore, based on the preceding analysis, I propose the following hypothesis:

Hypothesis 4: State GDP per capita positively moderates the relationship between CSR and export sales.

3.4 Data and Model

3.4.1 Sample and data

The sample for this study is constructed from a combination of various data sources spanning from 1995 to 2013. Corporate social responsibility data is sourced from the MSCI ESG KLD database, while information on exporting is derived from the Historical Segments section of the Compustat database. Notably, the latest data available in the MSCI KLD ESG database is the year 2013. Moreover, Li and Wang (2022) note that substantial observations of dimensions are missing after 2013, requiring the CSR data collection before 2013 to calculate a meaningful CSR score. Annual firm financial fundamental characteristics and location of firm information are obtained from the Fundamentals Annual section of the Compustat database. Additionally, U.S. annual regional macroeconomic factors, such as state GDP and state population, are acquired from the Bureau of Economic Analysis and Census Bureau, respectively. These databases are integrated to form the initial sample for analysis.

First, the original datasets on export sales and CSR spanning from 1995 to 2013 are downloaded from the above databases. Then, comprehensive data on the total number of strengths and concerns related to Environment, Community, Human rights, Employee relations, Diversity and Products is obtained from the original CSR dataset. Following the integration of the two datasets, the combined dataset includes a total of 1599 observations. However, the dataset has 220 missing values in the total strengths associated with human rights, resulting in a final count of 1379 observations for the merged CSR and export sales dataset.

Second, the control variables' data is downloaded from the Compustat database for the period 1994 to 2014. After eliminating duplicate values and integrating these control variables with the primary dataset, the number of observations remains at 1379. Subsequently, state GDP and state population data are merged into the dataset. Due to missing values and the exclusion of non-U.S. states, the final number of observations is reduced to 1356 following the merge.

Third, the dataset exhibits 323 missing values in the research and development expense category and 4 missing values in the leverage category. Consequently, the final sample is composed of 1029 firm-year observations from 307 distinct U.S. exporting firms and all data is available for the period from 1995 to 2013.

3.4.2 Corporate social responsibility measure

The measure of corporate social responsibility utilized in this chapter is based on the MSCI KLD ESG database, which has been extensively employed in previous scholarly research, as evidenced by its citation in various studies including Kim et al. (2014), Dutordoir et al. (2018), Gloßner (2019), Hegde and Mishra (2019), Amin et al. (2020), Bu et al. (2021) and Li and Wang (2022). This database presents numerous advantages and certain limitations. It includes various public information sources, such as financial statements, governmental and non-governmental organization data, surveys, and media reports, as noted in the literature by Dutordoir et al. (2018) and Li and Wang (2022). According to MSCI ESG, approximately 60% of institutional money managers globally incorporate CSR factors into their investment

decision-making processes (Kim et al., 2014).

Moreover, the Asset4 database is also widely utilized in numerous studies, as noted by Arouri et al. (2019) and Cheung et al. (2020). This database provides CSR ratings of approximately 5000 publicly listed companies around the world, categorized into four distinct areas: Economic, Environmental, Social, and Governance. Cheung et al. (2020) argue that previous studies mainly focused on environmental and social performance when measuring CSR, overlooking the broader range of indicators. In contrast, Asset4 employs over 250 objective indicators to evaluate CSR scores, which represents a significant advantage. However, due to the lack of access to the ASSET4 database, this chapter utilizes the MSCI KLD ESG database.

However, several scholarly works raise concerns about the authenticity and validity of CSR measurement. Chatterji et al. (2016) report that there is low overlap and correlation among major social raters such as KLD, Asset4, Calvert, FTSE4Good, DJSI, and Innovest. Thus, it is imperative for companies to make decisions with caution when utilizing CSR data. Additionally, Bouten et al. (2017) also compare the CSR rating agencies MSCI KLD, Asset4, and Sustainalytics, noting that the data provided by these agencies are based on firms' reports that have not been audited. Apart from that, they also contend that variations in the interpretation of CSR theory result in differences in its measurement. Moreover, given that the measurement of CSR is fundamentally subjective, this subjectivity can compromise the accuracy of a firm's CSR assessment. Then, Pinnuck et al. (2021) also argue the issue of restatements in corporate social responsibility reports, indicating that the reliability of CSR information may be questionable.

Furthermore, a company's CSR score is evaluated using 7 qualitative categories and 6 exclusionary screens within the MSCI KLD ESG database. These 7 qualitative categories contain community, corporate governance, diversity, employee relations, environment, human rights, and products. Each category is assessed through positive (strength) and negative (concern) indicators, which are determined based on a set of criteria. The 6 exclusionary screens include alcohol, gambling, firearms, military, nuclear power, and

tobacco.

Moreover, consistent with the approaches adopted by prior research, this chapter excludes consideration of exclusionary screens due to their controversial characteristics and minimal reflection on a company's discretion in implementing CSR practices (Kim et al., 2014; Lins et al., 2017). In addition, this chapter excludes the corporate governance category, based on insights from Borghesi et al. (2014) and Dutordoir et al. (2018), and focuses on 6 categories: community, diversity, employee relations, environment, human rights, and products. This selection is justified because corporate governance does not align with the remit of a firm's CSR (Lins et al., 2017), and it is different from other categories that share a similar social and environmental dimension (Kim et al., 2014). Moreover, Dutordoir et al. (2018) also argue that the concept of CSR not only emphasizes benefits to shareholders but also caters to the broader interests of all stakeholders.

Therefore, this chapter calculates the net CSR scores by counting each firm's strengths and subtracting their concerns across 6 dimensions. For example, the net score for the environment is derived by subtracting the total concern numbers of the environment from the total strength numbers of the environment. This method of calculation is consistently applied across the remaining five dimensions. Finally, the net CSR score, representing a firm's overall level of corporate social responsibility, is derived by aggregating the net scores from all six dimensions. This approach underscores the equal significance of strengths and concerns. In addition, a higher CSR score suggests that the company's CSR policies and practices are more effective.

3.4.3 Financial constraints measure

This chapter defines financial constraints as constraints on external financing and employs the Whited and Wu financial constraint index (WW index), as formulated by Whited and Wu (2006), to measure these constraints. Additionally, prior research has proposed various methodologies to describe financial constraints. Both Hahn and Lee (2009) and Denis and Sibilkov (2010) introduce four distinct methods to characterize financial constraints.

First, the payout ratio. Fazzari et al. (1987) argue that the payout ratio can differentiate between financially unconstrained and constrained firms. Typically, unconstrained firms exhibit a high payout ratio, whereas constrained firms display a low payout ratio. Second, firm size. Gertler and Gilchrist (1994) assert that the size of a firm is a significant determinant of corporate financial constraints. Smaller, less established companies often suffer from greater information asymmetry, thereby increasing their likelihood of encountering financing difficulties. Third, bond rating. Whited (1992) employs bond rating as a proxy to assess financial constraints. Financially constrained firms are identified as those with positive debt but without an S&P bond rating. Financially unconstrained firms are identified as those with both positive debt and an S&P bond rating. Fourth, commercial paper rating. Calomiris et al. (1995) utilize commercial paper ratings as a proxy to evaluate financial constraints. Financially constrained firms are classified as those with positive debt but without S&P commercial paper ratings. Financially unconstrained firms are classified as those with both positive debt and S&P commercial paper ratings.

Moreover, numerous financial constraint indices have been documented in prior research. The KZ index, established by Kaplan and Zingales (1997), and the SA index, developed by Hadlock and Pierce (2010), are notable examples. The latter represents an adjusted version of the KZ index. Fazzari et al. (1987) argue that firms constrained by external financing, investment expenditure tends to be highly sensitive to internal financing sources. Their findings indicate that, compared to financially unconstrained firms, the investment activities of financially constrained firms exhibit greater sensitivity to fluctuations in cash flow. However, Kaplan and Zingales (1995) present a contrasting perspective. They assert that, in comparison to financially unconstrained firms, the investment behavior of financially constrained firms exhibits less sensitivity to cash flow variations. Consequently, they argue that higher sensitivities do not necessarily serve as definitive evidence of a firm's financial constraints.

Additionally, Kaplan and Zingales (1997) also maintain that their results are not affected by measurement errors in Tobin's Q or by the presence of outliers. In contrast, the results of Fazzari et al. (1987) are acknowledged to be partially influenced by outliers. Nevertheless,

Fazzari et al. (1996) also provide detailed responses to the critique by Kaplan and Zingales (1995). Firstly, they argue that the operational definition of financial constraints employed is incorrect. Secondly, the second main finding of the Kaplan and Zingales study does not conflict with the conclusions drawn by Fazzari, Hubbard, and Petersen (FHP). Thirdly, the Kaplan and Zingales study fails to account for the heterogeneity of firm behaviour, and their classification methods are fraught with several issues.

Furthermore, Whited and Wu (2006) develop the WW index in response to inquiries regarding the impact of financial constraints on asset returns. They indicate that the KZ index fails to effectively distinguish firms exhibiting characteristics relevant to financial constraints. Moreover, in contrast to the KZ index, the WW index corresponds directly to firm characteristics associated with external finance constraints. Subsequently, they employ the Generalized Method of Moments (GMM) to acquire fitted values of the shadow value, which helps to avoid significant issues such as sample selection biases, simultaneity, and measurement errors. However, they also acknowledge the limitations of their index, noting that it does not reflect the influence of financial constraints on privately and venture capital-financed firms.

In addition, Hadlock and Pierce (2010) also question the validity of the KZ index. They introduce the SA index and point out that the KZ index experiences modelling issues as it includes both quantitative and qualitative information in dependent and independent variables. They collected qualitative information on firms from 1995 to 2004, highlighting several advantages of the SA index. Firstly, the SA index is notably advantageous due to its incorporation of a wider range of exogenous factors. Secondly, it utilizes firm size and age as significant indicators of financial constraints. Thirdly, existing research provides evidence for the validity of the SA index. Moreover, they also indicate that there is no obvious relevance between the KZ index and the SA index, but a significant correlation exists between the WW index and the SA index, largely because the WW index also includes the firm size variable.

However, the sample contains many missing values for firm age, preventing the use of the

SA index in this chapter. Consequently, the WW index has been selected to assess financial constraints. Moreover, numerous studies have utilized the WW index to measure financial constraints, including works by Mulier and Merlevede (2016), Chong and Kim (2019), Yang et al. (2019), and Banerjee et al. (2020). According to Balafas et al. (2018) and Banerjee et al. (2020), the WW index is calculated as follows:

$$WW_{it} = -0.091 * CF_{it} - 0.062 * DIVPOS_{it} + 0.021TLTD_{it} - 0.044LNTA_{it} + 0.102ISG_{it} - 0.035SG_{it} \quad (1)$$

Here, WW is the financial constraint index of firm *i* in year *t*. CF is the ratio of cash flow to the total assets of firm *i* in year *t*. DIVPOS is a dummy variable that equals 1 if firm *i* pays a cash dividend in year *t*, and 0 otherwise. TLTD is the ratio of long-term debt to total assets of firm *i* in year *t*. LNTA is the logarithm of total assets of firm *i* in year *t*. ISG is the firm *i* 3-digit industry sales growth in year *t*. SG is the sales growth of firm *i* in year *t*. A lower value of WW suggests less financial constraint for the firm.

3.4.4 Specifications for the effect of CSR on a firm's export sales

To investigate the relationship between CSR and corporate export sales in the United States, this chapter employs the following econometric model:

$$Y_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 X_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{it} \quad (2)$$

Here, Y_{it} is the logarithm of the export sales of firm *i* in year *t*, as documented by Zou and Stan (1998). CSR_{it} is the net CSR score of firm *i* in year *t*. X_{it} contains control variables of firm *i* in year *t*. Fixed effects are denoted as follows: μ_i is firm fixed effect, ω_t is year fixed effect, θ_j is industry fixed effect and ε_{it} is the error term.

For control variables, firm size is represented by the logarithm of the total assets (Tsao and Lien, 2013; Xu et al., 2018). Firm size is a well-recognized control variable (Ullah et al., 2021). Tsao and Lien (2013) argue that firm size reflects its financial capacity, which in turn can influence the availability of resources to support its operations in foreign markets.

Moreover, larger firms may encounter increased costs, thereby reducing the effects of diversification. Therefore, the effect of firm size on export performance is unclear.

Lin et al. (2011) assert that a larger firm size is positively correlated with international activities, and it also facilitates companies' ability to cope with complex international information. Similarly, subsequent studies have indicated that firm size positively influences performance (Chen et al., 2016; Ullah et al., 2021). However, research by Vithessonthi and Racela (2016) and Xu et al. (2018) suggests that the impact of firm size may also be negative.

Moreover, leverage is the asset-liability ratio (Mohr and Batsakis, 2017; Xu et al., 2018). Hsu et al. (2013) maintain that leverage significantly influences firm performance and the ability for expansion. Tsao and Lien (2013) also suggest that higher leverage ratios may lead managers to give up promising investment opportunities. Then, the studies by Mohr and Batsakis (2017) and Xu et al. (2018) contend that firm leverage exerts a negative effect. However, Chen et al. (2016) and DasGupta et al. (2022) argue that firm leverage does not have a significant influence. Additionally, Elango and Sethi (2007) describe a differentiated impact of firm leverage based on the economic context. They argue that in small open economies, the influence of firm leverage is statistically negligible. Conversely, in large economies that engage moderately in international trade, firm leverage is associated with a significant and adverse effect on economic performance.

Subsequently, profitability is the ratio of net income to total assets (Chen et al., 2016; DasGupta et al., 2022). Chen et al. (2016) argue that financing plays a pivotal role in internationalization and a company's financial status significantly impacts this process. Similarly, profitability is selected as a control variable in this analysis. Then, Chen et al. (2016) maintain that firm profitability does not have a significant effect on internationalization. However, DasGupta et al. (2022) demonstrate that firm profitability has a positive and significant influence on internationalization.

Furthermore, liquidity is the logarithm of the number of cash and short-term investments (DasGupta et al., 2022). The study asserts that liquidity contributes to the availability of

slack resources. In addition, the researchers also reveal that liquidity does not significantly influence internationalization.

Moreover, capital intensity is the ratio of property, plant and equipment to total sales (Ullah et al., 2021). Riley et al. (2017) argue that physical capital intensity plays an important role in corporate high-tech production technologies, and it facilitates a reduction in firm's production cost. Then, they also maintain that capital intensity significantly and negatively influences abnormal returns. Additionally, Ullah et al. (2021) assert that capital intensity does not exert a significant impact on export performance.

In addition, R&D ability is quantified as the ratio of research and development expenses to total sales. R&D ability is crucial in both internationalization and performance (Lin et al., 2011; Hsu et al., 2013; Chen et al., 2016). Ullah et al. (2021) emphasize that the United States leads globally in R&D expenditure, with a significant portion of these funds allocated to the manufacturing sector. Furthermore, they assert that the manufacturing sector is important to the export of the United States. The results from Brouthers et al. (2009), Hsu et al. (2013) and Chen et al. (2016) suggest that R&D does not significantly influence outcomes. However, Lin et al. (2011) provide evidence that the R&D ratio exerts a negative and significant effect on firm performance.

Apart from that, this chapter also utilizes state GDP per capita in the U.S. as a control variable to investigate the impact of the regional macroeconomic factor on corporate export performance. Alshamsi and Azam (2015) argue that GDP per capita significantly contributes to foreign direct investment inflow. Furthermore, Aslam et al. (2021) maintain that GDP per capita is positively correlated with CO2 emissions in China.

3.4.5 Summary statistics

Definitions for all variables used in this model are presented in Table 3-1, while Table 3-2 provides the summary statistics for these main variables. The mean value of Log (export sale) is 4.715 and the standard deviation is 1.761, suggesting that significant variation exists in export sales among the firms. Furthermore, the mean value of CSR is -0.271 and the standard

deviation is 2.033, which also indicate that significant variation exists in CSR standings among the firms. These findings also prove that the CSR capabilities among exporting companies in the sample are relatively low, and the degree of emphasis on CSR among exporting companies varies greatly.

However, when compared to findings from previous studies, both the mean values and standard deviations of CSR are consistent. For example, the mean values of CSR, as reported by Gloßner (2019) and Li and Wang (2022), are also negative, recorded at -0.060 and -0.044, respectively. Similarly, the standard deviations in these studies approximate 2, with values of 2.180 and 2.295, respectively. Although other studies, such as those by Bhandari and Javakhadze (2017), Hegde and Mishra (2019) and Dunbar et al. (2020), report positive mean values for CSR, these values are slightly above zero, and the standard deviation remain around 2. In addition, the mean value and standard deviation for state GDP per capita are 0.045 and 0.009, respectively.

Moreover, export sales and CSR are critical variables in this chapter. Thus, the sample is divided into two groups based on the median values of export sales and CSR, respectively, to examine the differences between groups with low and high export sales (and CSR) in summary statistics. Tables 3-3 and 3-4 present the results. In Table 3-3, the standard deviations of Log (export sale) for the high and low export groups are 1.085 and 1.125, respectively, indicating that exporters' performance is relatively stable. However, there are differences in the standard deviations of CSR. In the high export sale group, the standard deviation values of CSR exceed 2, consistent with the primary summary statistics shown in Table 3-2, whereas in the low export sale group, the standard deviation is only 1.696. In addition, the mean values and standard deviation of state GDP per capita exhibit consistency between the low and the high export sale groups.

Additionally, Table 3-4 illustrates that the mean values and standard deviations of Log (export sale) are nearly consistent for both the low CSR and high CSR groups. Moreover, the standard deviations of CSR in both groups are also less than 2. Similarly, the mean values and standard deviations of state GDP per capita are also nearly equal across both the low

CSR and high CSR groups.

Table 3-1 Variable definition

Variable	Definition	Source
Log (export sale)	The logarithm of export sale of firm i in year t	Compustat
CSR	The score of corporate social responsibility of firm i in year t	MSCI KLD ESG
Firm size	The logarithm of total assets of firm i in year t	Compustat
Leverage	The asset–liability ratio of firm i in year t	Compustat
Profitability	The ratio of net income over total assets of firm i in year t	Compustat
Liquidity	The logarithm of cash and short-term investments of firm i in year t	Compustat
Capital intensity	The ratio of property, plant and equipment to total sales of firm i in year t	Compustat
R&D ability	The ratio of research and development expense to total sales of firm i in year t	Compustat
GDP per capita	The ratio of state GDP to state population in the U.S.	Bureau of Economic Analysis, Census Bureau

Table 3-2 Summary statistics

Variable	Obs	Mean	P10	Median	P90	Std. dev.	Min	Max
Log (export sale)	N = 1029	4.715	2.569	4.685	7.004	1.761	0.000	9.973
CSR	N = 1029	-0.271	-2.000	0.000	2.000	2.033	-8.000	9.000
Firm size	N = 1029	7.006	5.053	6.841	9.407	1.615	3.345	11.589
Leverage	N = 1029	0.181	0.000	0.170	0.386	0.178	0.000	1.705
Profitability	N = 1029	0.035	-0.048	0.050	0.128	0.143	-1.845	0.560
Liquidity	N = 1029	4.752	2.849	4.735	6.809	1.550	0.000	9.101
Capital intensity	N = 1029	0.562	0.174	0.429	1.142	0.464	0.037	6.480

R&D ability	N = 1029	0.127	0.004	0.033	0.192	1.202	0.000	37.347
GDP per capita	N = 1029	0.045	0.031	0.044	0.056	0.009	0.022	0.068

Table 3-3 Descriptive statistics: Firms categorized into low and high export sale groups
This table presents the descriptive statistics for firms categorized into low and high export sale groups based on the median value of export sales.

Low export sale group								
Variable	Obs	Mean	P10	Median	P90	Std. dev.	Min	Max
Log (export sale)	N = 515	3.346	1.742	3.635	4.504	1.125	0.000	4.685
CSR	N = 515	-0.412	-2.000	0.000	2.000	1.696	-8.000	9.000
Firm size	N = 515	6.006	4.667	5.923	7.562	1.129	3.345	9.871
Leverage	N = 515	0.150	0.000	0.092	0.384	0.187	0.000	1.705
Profitability	N = 515	0.025	-0.097	0.048	0.132	0.169	-1.845	0.560
Liquidity	N = 515	4.055	2.467	4.050	5.694	1.280	0.006	7.253
Capital intensity	N = 515	0.537	0.165	0.420	1.037	0.494	0.037	6.480
R&D ability	N = 515	0.189	0.004	0.043	0.199	1.694	0.000	37.347
GDP per capita	N = 515	0.046	0.034	0.046	0.058	0.009	0.022	0.068
High export sale group								
Log (export sale)	N = 514	6.087	4.884	5.834	7.570	1.085	4.689	9.973
CSR	N = 514	-0.130	-3.000	0.000	3.000	2.315	-7.000	9.000
Firm size	N = 514	8.007	6.183	7.892	10.087	1.394	4.924	11.589
Leverage	N = 514	0.212	0.000	0.208	0.392	0.162	0.000	1.395
Profitability	N = 514	0.045	-0.029	0.053	0.123	0.110	-1.009	0.410
Liquidity	N = 514	5.450	3.538	5.518	7.284	1.482	0.000	9.101
Capital intensity	N = 514	0.587	0.182	0.437	1.193	0.431	0.042	2.597

R&D ability	N = 514	0.065	0.004	0.027	0.184	0.102	0.000	0.957
GDP per capita	N = 514	0.043	0.030	0.043	0.054	0.009	0.024	0.068

Table 3-4 Descriptive statistics: Firms categorized into low and high CSR groups
This table presents the descriptive statistics for firms categorized into the low and high CSR groups based on the median CSR value.

Low CSR group								
Variable	Obs	Mean	P10	Median	P90	Std. dev.	Min	Max
Log (export sale)	N = 515	4.586	2.392	4.642	6.780	1.755	0.000	9.012
CSR	N = 515	-1.734	-3.000	-1.000	-1.000	1.216	-8.000	0.000
Firm size	N = 515	6.965	5.074	6.879	8.764	1.546	3.497	11.555
Leverage	N = 515	0.191	0.000	0.177	0.413	0.192	0.000	1.705
Profitability	N = 515	0.033	-0.045	0.049	0.126	0.133	-1.018	0.560
Liquidity	N = 515	4.709	2.909	4.735	6.462	1.442	0.000	8.521
Capital intensity	N = 515	0.557	0.178	0.429	1.109	0.494	0.050	6.480
R&D ability	N = 515	0.178	0.002	0.025	0.196	1.695	0.000	37.347
GDP per capita	N = 515	0.046	0.033	0.046	0.058	0.009	0.024	0.068
High CSR group								
Log (export sale)	N = 514	4.845	2.741	4.715	7.182	1.758	0.000	9.973
CSR	N = 514	1.195	0.000	1.000	3.000	1.581	0.000	9.000
Firm size	N = 514	7.047	5.005	6.836	9.619	1.682	3.345	11.589
Leverage	N = 514	0.171	0.000	0.162	0.360	0.161	0.000	1.395
Profitability	N = 514	0.037	-0.048	0.053	0.129	0.152	-1.845	0.356
Liquidity	N = 514	4.795	2.784	4.735	6.935	1.651	0.006	9.101
Capital intensity	N = 514	0.567	0.170	0.425	1.179	0.432	0.037	2.692
R&D ability	N = 514	0.076	0.007	0.0418	0.190	0.092	0.000	0.796

GDP per capita	N = 514	0.043	0.030	0.043	0.056	0.009	0.022	0.068

3.5 Empirical Analysis

3.5.1 Role of firm's CSR in export sales

Table 3-5 presents the analysis of the relationship between a firm's CSR score and its export sales in the United States, with the dependent variable in all columns being the logarithm of export sales. First, in column (1) of Table 3-5, only year fixed effect is controlled. Then, in column (2) of Table 3-5, both year and industry fixed effects are controlled. Finally, in column (3) of Table 3-5, both year and firm fixed effects are controlled. Standard errors are corrected for clustering at the firm level.

Moreover, the coefficients of CSR across columns (1) through (3) are consistently positive and statistically significant, which suggests that engaging in corporate social responsibility and related activities significantly enhances the export sales of enterprises in the United States. The result is statistically significant at a 10% significance level when only controlling for year fixed effect. Additionally, when controlling for both year and industry fixed effects and both year and firm fixed effects, the coefficients of CSR are statistically significant at the 5% significance level. Therefore, these findings confirm Hypothesis 1.

For economic implications, this implies that a one-standard-deviation increase in CSR is associated with a rise in the export sales of enterprises by 0.108%, 0.120% and 0.116%, respectively. Following the methodology described by Dutordoir et al. (2018), the economic significance is calculated by multiplying the standard deviation of CSR by its coefficient, resulting in an approximation (for example, $0.053 \times 2.033 = 0.107749 \approx 0.108$).

Additionally, as previously discussed, according to the resource-based theory and signalling theory, corporate social responsibility can enhance a company's reputation, decrease information asymmetry and generate economic value, thereby facilitating an increase in export sales in international markets. Moreover, El Ghoul et al. (2011) and Kim et al. (2014) also indicate that corporate social responsibility is negatively correlated with both the cost

of capital and the risk of stock price crashes. Therefore, this association suggests that companies engaged in CSR activities may have greater resources available for exporting.

In addition, the results presented in Table 3-5 also indicate that firm size has a positive impact on the export sales of companies at a 1% significance level in columns (1) through (3) when controlling for different fixed effects. Then, the firm's leverage negatively impacts export sales when only controlling for year fixed effect in column (1) and controlling for both year and industry fixed effects in column (2). These findings are consistent with those reported by Tsao and Lien (2013). Thus, this demonstrates that firms with greater assets and lower levels of debt are likely to experience increased export sales. Then, the coefficient of GDP per capita is positive and significant at a 5% significance level in column (2) when both year and industry fixed effects are controlled. Additionally, the results indicate that other control variables do not significantly impact a firm's export sales.

Table 3-5 The impact of CSR on corporate export sales

This table presents baseline results on the impact of a firm's CSR score on corporate export sales in the United States. The dependent variable is the logarithm of export sales of firm *i* in year *t*. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Log (export sale)		
Independent variable	(1)	(2)	(3)
CSR	0.053*	0.059**	0.057**
	(0.031)	(0.024)	(0.023)
Firm size	0.892***	0.846***	0.482***
	(0.073)	(0.071)	(0.085)
Leverage	-1.033*	-1.084**	-0.381
	(0.540)	(0.544)	(0.427)
Profitability	0.099	0.356	-0.028
	(0.370)	(0.356)	(0.150)
Liquidity	0.007	-0.054	0.001
	(0.060)	(0.051)	(0.036)
Capital intensity	-0.199	0.026	0.042
	(0.162)	(0.214)	(0.223)
R&D ability	-0.025	-0.046	-0.036
	(0.036)	(0.042)	(0.032)
GDP per capita	7.022	23.095**	-10.231
	(10.829)	(10.462)	(17.273)

Year FE	Yes	Yes	Yes
Industry FE	No	Yes	No
Firm FE	No	No	Yes
Observations	1029	1007	934
R-squared	0.619	0.767	0.912

3.5.2 Role of financial constraints in the effect of CSR on export sales

To examine the moderating effect of financial constraints on the relationship between CSR and export sales, the WW index is included in the analysis. An interaction term, CSR*WW, is then constructed and incorporated into the regression model. The specified model is defined as follows:

$$Y_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 WW_{it} + \beta_3 X_{it} + \beta_4 CSR_{it} * WW_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{it} \quad (3)$$

Here, Y_{it} is the logarithm of the export sales of firm *i* in year *t*. CSR_{it} is the net CSR score of firm *i* in year *t*. WW_{it} is financial constraints index of firm *i* in year *t*. X_{it} contains control variables of firm *i* in year *t*. $CSR_{it} * WW_{it}$ is an interaction term. Fixed effects are denoted as follows: μ_i is firm fixed effect, ω_t is year fixed effect, θ_j is industry fixed effect and ε_{it} is the error term.

Table 3-6 presents the empirical findings concerning the moderating effect of financial constraints on the relationship between CSR and export sales. However, the coefficients associated with the interaction term CSR*WW are not statistically significant across columns (1) through (3). The results indicate that the financial constraints do not exhibit a significant moderating effect on the impact of CSR on export sales. Thus, the result leads to the rejection of Hypothesis 2, which asserts that financial constraints have a negative moderating impact on the relationship between CSR and export sales.

Berman and Héricourt (2010) state the likely reason is that firms incur high sunk costs primarily when entering foreign markets for the first time. In subsequent export activities, financial constraints are less likely to hinder the scale of exports, as continued export behavior is perceived by financial institutions as lower risk. Bellone et al. (2010) maintain

that exporting firms generally exhibit strong financial conditions prior to entering export markets. This suggests that firms typically do not initiate exports while facing financial constraints, which helps explain why the effect of financial constraints are not statistically significant in this analysis.

Table 3-6 The moderating effect of financial constraints on the relationship between CSR and export sales

This table presents baseline results on the moderating effect of financial constraints on the relationship between CSR and export sales in the United States. The dependent variable is the logarithm of export sales of firm *i* in year *t*. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Log (export sale)		
Independent variable	(1)	(2)	(3)
CSR	-0.069	-0.049	0.060
	(0.129)	(0.111)	(0.103)
WW	0.728	-0.147	-0.341
	(1.283)	(1.167)	(0.738)
CSR*WW	-0.308	-0.278	0.007
	(0.328)	(0.270)	(0.234)
Firm size	0.933***	0.843***	0.466***
	(0.108)	(0.098)	(0.094)
Leverage	-1.054*	-1.085*	-0.376
	(0.558)	(0.554)	(0.430)
Profitability	0.151	0.325	-0.051
	(0.371)	(0.351)	(0.157)
Liquidity	0.003	-0.055	0.001
	(0.062)	(0.051)	(0.036)
Capital intensity	-0.204	0.005	0.047
	(0.166)	(0.210)	(0.227)
R&D ability	-0.030	-0.046	-0.036
	(0.037)	(0.042)	(0.033)
GDP per capita	5.997	22.293**	-10.072
	(10.994)	(10.611)	(17.006)
Year FE	Yes	Yes	Yes
Industry FE	No	Yes	No
Firm FE	No	No	Yes
Observations	1025	1004	932
R-squared	0.620	0.767	0.912

3.5.3 Role of firm location in the effect of CSR on export sales

This chapter also aims to investigate the moderating effect of firm location on the relationship between CSR and export sales in the United States. States situated along the coast, bays, or lakes are categorized as coastal areas. The sample includes 15 non-coastal states and 23 coastal states. A dummy variable, Coast, is introduced to distinguish between coastal and non-coastal firms, assigning a value of 1 to firms located in coastal areas, and 0 otherwise. Subsequently, an interaction term, CSR*Coast, is formulated and incorporated into the analytical model. The model is specified as follows:

$$Y_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 Coast_{it} + \beta_3 X_{it} + \beta_4 CSR_{it} * Coast_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{it} \quad (4)$$

Here, Y_{it} is the logarithm of the export sales of firm *i* in year *t*. CSR_{it} is the net CSR score of firm *i* in year *t*. $Coast_{it}$ is a dummy variable. If a firm is situated in coastal areas, the value is 1, and 0 otherwise. X_{it} contains control variables of firm *i* in year *t*. $CSR_{it} * Coast_{it}$ is an interaction term. Fixed effects are denoted as follows: μ_i is firm fixed effect, ω_t is year fixed effect, θ_j is industry fixed effect and ε_{it} is the error term.

Table 3-7 presents the results concerning the moderating effect of firm location on the relationship between CSR and export sales in the United States. It suggests that the coefficients of the interaction term CSR*Coast are statistically insignificant across columns (1) through (3). The findings indicate that the proximity to bodies of water does not exhibit a significant moderating effect on the relationship between CSR and export sales. Consequently, the result leads to the rejection of Hypothesis 3, which asserts that the proximity to bodies of water positively moderates the relationship between CSR and export sales.

The possible explanations are that, first, the United States has a highly developed logistics infrastructure, which reduces the relative advantage of geographic proximity to bodies of water. Even firms that are not located near water can engage in international trade at comparable costs through an efficient transportation network. Second, CSR represents a unique strategic resource for firms and serves as a positive signal to international consumers,

enhancing corporate reputation. This signalling effect is likely driven more by a firm's internal values and external image, rather than its geographic location.

Table 3-7 The moderating effect of firm location on the relationship between CSR and export sales
This table presents baseline results on the moderating effect of firm location on the relationship between CSR and export sales in the United States. The dependent variable is the logarithm of export sales of firm *i* in year *t*. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Log (export sale)		
Independent variable	(1)	(2)	(3)
CSR	0.076	0.080	0.038
	(0.097)	(0.053)	(0.035)
Coast	0.396	0.275	
	(0.241)	(0.204)	
CSR*Coast	-0.029	-0.027	0.024
	(0.100)	(0.059)	(0.041)
Firm size	0.885***	0.837***	0.480***
	(0.073)	(0.071)	(0.085)
Leverage	-1.022*	-1.087**	-0.380
	(0.532)	(0.546)	(0.425)
Profitability	0.144	0.359	-0.029
	(0.366)	(0.357)	(0.150)
Liquidity	0.020	-0.044	0.000
	(0.059)	(0.051)	(0.036)
Capital intensity	-0.160	0.047	0.031
	(0.162)	(0.213)	(0.228)
R&D ability	-0.029	-0.050	-0.035
	(0.036)	(0.041)	(0.032)
GDP per capita	-1.312	17.112	-11.493
	(10.805)	(11.970)	(17.987)
Year FE	Yes	Yes	Yes
Industry FE	No	Yes	No
Firm FE	No	No	Yes
Observations	1029	1007	934
R-squared	0.623	0.768	0.912

3.5.4 Role of external macroeconomic factors in the effect of CSR on export sales

To examine the moderating effect of state GDP per capita on the relationship between CSR and export sales, an interaction term, CSR*GDP per capita, is then constructed and incorporated into the regression model. The specified model is defined as follows:

$$Y_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 GDP\ per\ capita_{it} + \beta_3 X_{it} + \beta_4 CSR_{it} * GDP\ per\ capita_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{it} \quad (5)$$

Here, Y_{it} is the logarithm of the export sales of firm *i* in year *t*. CSR_{it} is the net CSR score of firm *i* in year *t*. $GDP\ per\ capita_{it}$ represents state-level GDP per capita. X_{it} contains control variables of firm *i* in year *t*. $CSR_{it} * GDP\ per\ capita_{it}$ is an interaction term. Fixed effects are denoted as follows: μ_i is firm fixed effect, ω_t is year fixed effect, θ_j is industry fixed effect and ε_{it} is the error term.

The coefficient of CSR*GDP per capita is positive and significant at a 5% significance level when controlling only for year fixed effect in column (1) of Table 3-8, which means that state GDP per capita exerts a positive and significant moderating influence on the relationship between CSR and a firm's export sales. In terms of economic implications, this implies that a one-standard-deviation increase in state GDP per capita enhances the effect of CSR on export sales by 0.045%. However, when both year and industry fixed effects and both year and firm fixed effects are controlled, the analysis presented in columns (2) and (3) of Table 3-8 reveals that the coefficients of CSR*GDP per capita are not statistically significant.

Based on the discussion in the previous section, a high state-level GDP per capita often indicates a favorable institutional environment and well-developed infrastructure, both of which play a critical role in supporting CSR and firm exports. This helps explain why state GDP per capita has a positive moderating effect on the relationship between CSR and firms' export sales. Therefore, the findings support Hypothesis 4 to some degree.

Table 3-8 The moderating effect of GDP per capita on the relationship between CSR and export sales
This table presents baseline results on the moderating effect of GDP per capita on the relationship between CSR and export sales in the United States. The dependent variable is the logarithm of export sales of firm *i* in year *t*. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Log (export sale)		
Independent variable	(1)	(2)	(3)
CSR	-0.165	-0.056	-0.009
	(0.102)	(0.101)	(0.091)
CSR* GDP per capita	5.008**	2.662	1.459
	(2.317)	(2.296)	(2.150)
Firm size	0.890***	0.847***	0.487***
	(0.071)	(0.070)	(0.086)
Leverage	-1.029**	-1.099**	-0.382
	(0.517)	(0.534)	(0.427)
Profitability	0.120	0.358	-0.032
	(0.363)	(0.355)	(0.150)
Liquidity	0.000	-0.055	0.001
	(0.058)	(0.051)	(0.037)
Capital intensity	-0.225	0.017	0.009
	(0.164)	(0.217)	(0.232)
R&D ability	-0.015	-0.041	-0.031
	(0.035)	(0.042)	(0.033)
GDP per capita	10.163	23.685**	-10.225
	(10.569)	(10.387)	(17.049)
Year FE	Yes	Yes	Yes
Industry FE	No	Yes	No
Firm FE	No	No	Yes
Observations	1029	1007	934
R-squared	0.622	0.768	0.912

3.5.5 Tackling endogeneity concerns

A concern regarding the preceding results is the potential endogeneity issues. One possible explanation is omitted variables bias, a common issue extensively documented in CSR-related literature (El Ghoul et al., 2011; Deng et al., 2013; Bardos et al., 2020). This bias may stem from unobservable factors that simultaneously influence both CSR and export sales, which leads to endogeneity issues. Another possible source of endogeneity is reverse causality. Exporters might hypothesize that enhancing their CSR scores will improve export performance, resulting in increased investment in CSR activities. Thus, to solve these

potential endogeneity issues, the chapter utilizes the instrumental variables approach.

First, following the methodology outlined in the studies by El Ghoul et al. (2011), Kim et al. (2014), Arouri et al. (2019), Cheung et al. (2020) and Dumitrescu and Zakriya (2021), the industry average CSR score is employed as an instrumental variable. This measure is chosen because it is relevant to a firm's individual CSR score while remaining exogenous to the firm's export sales. Thus, utilizing all the data spanning from 1995 to 2013 from the MSCI KLD ESG database, this chapter calculates the industry average CSR score to serve as the instrumental variable.

The findings are presented as follows: Table 3-9 displays the 2SLS regression results examining the effect of CSR scores on corporate export sales. For the first stage, in columns (1), (3) and (5), the coefficients of Average Ind. CSR are all positive and significant at a 1% significance level, which means that the industry average of CSR is highly correlated with the CSR variable used as an independent variable in this chapter. Moreover, the F values in the first stage are 149.030, 161.690 and 82.120, respectively, as shown in columns (1), (3) and (5), which are all above 12. This result proves that the industry average of CSR serves as a valid instrumental variable and can be used to conduct endogeneity testing.

Furthermore, the coefficients of CSR in columns (2) and (4) are positive and statistically significant across various fixed effects settings, including only control for year fixed effect, and with controls for both year and industry fixed effects. These results align with the main findings of the study. The company's CSR score demonstrates a positive correlation with its export sales. Although the coefficient of CSR presented in column (6) lacks statistical significance when both year and firm fixed effects are controlled, the sign is also positive, and it does not affect the main results. Thus, the results are consistent with the primary results discussed in the preceding section. Overall, the endogeneity test results largely support the main findings of the study.

Table 3-9 Endogeneity: Instrument variable

This table presents 2SLS regression results to address endogeneity concerns on the effect of CSR scores on corporate export sales. The dependent variable is the logarithm of export sales of firm *i* in year *t*. The industry average CSR score is employed as the instrumental variable. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Log (export sale)					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
	First stage	Second stage	First stage	Second stage	First stage	Second stage
CSR		0.105**		0.052*		0.018
		(0.047)		(0.032)		(0.039)
Firm size		0.897***		0.846***		0.474***
		(0.071)		(0.066)		(0.089)
Leverage		-0.981*		-1.084**		-0.347
		(0.516)		(0.512)		(0.432)
Profitability		0.097		0.358		-0.024
		(0.361)		(0.335)		(0.150)
Liquidity		-0.003		-0.053		0.009
		(0.058)		(0.048)		(0.038)
Capital intensity		-0.222		0.029		0.117
		(0.156)		(0.201)		(0.242)
R&D ability		-0.022		-0.046		-0.049
		(0.035)		(0.039)		(0.035)
GDP per capita		8.732		22.865**		-11.298
		(10.608)		(9.915)		(17.654)
Average Ind. CSR	0.911***		0.933***		0.767***	
	(0.075)		(0.073)		(0.085)	
F value	149.030		161.690		82.120	
Year FE		Yes		Yes		Yes
Industry FE		No		Yes		No
Firm FE		No		No		Yes
Observations		1029		1029		1029
R-squared		0.616		0.771		0.921

3.5.6 Robustness checks

3.5.6.1 Alternative measurement of key variables

In this section, the measurement of key variables is revised. Cavusgil and Zou (1994) assert that export performance should be assessed through multiple facets rather than a singular indicator. Sousa (2004) also contends that employing multiple measures of export performance can fully demonstrate the strengths and reduce the weaknesses of the indicators.

Chen et al. (2016) support this viewpoint and maintain that it improves the effectiveness of the indicator. Thus, the Log (export sale) variable is replaced by export intensity as proposed by Baldauf et al. (2000) and Hsu et al. (2013), which is defined as the ratio of export sales to total sales. The model is specified as follows:

$$Y_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 X_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{it} \qquad (6)$$

Here, Y_{it} is the export intensity of firm *i* in year *t*, which is represented by the ratio of export sales to total sales. CSR_{it} is the net CSR score of firm *i* in year *t*. X_{it} contains control variables of firm *i* in year *t*. Fixed effects are denoted as follows: μ_i is firm fixed effect, ω_t is year fixed effect, θ_j is industry fixed effect and ε_{it} is the error term.

The results, as presented in columns (1), (2) and (3) of Table 3-10, suggest that CSR maintains a positive and statistically significant impact on export intensity at the 5% significance level in column (3) when controlling for both year and firm fixed effects, although it loses significance in columns (1) and (2) when other fixed effects are controlled. Thus, the outcome is consistent with the hypothesis and align with the main findings of the study.

Furthermore, modifications are also made to the measurement of CSR. Specifically, CSR is replaced by adjCSR1 and adjCSR2. According to Deng et al. (2013) and Dutordoir et al. (2018), the calculation method employed in the empirical analysis section exhibits limitations in comparing scores across various years and categories. The adjusted CSR effectively reduce the potential drawbacks associated with the KLD data. Then, adjCSR1 is computed as follows: the strength (or concern) scores for each category in each year are divided by the total number of strength (or concern) for each category in each year to obtain adjusted strength (or concern) scores. However, there are many 0 values in human rights total strength (or concern) indicators across several years. Thus, following the methodology outlined by Li and Wang (2022), 5 categories are selected for analysis: community, diversity, employee relations, environment, and product, to compute adjCSR1. The adjusted CSR score (adjCSR1) for a firm is calculated by subtracting its adjusted total concern score from

its adjusted total strength score.

Then, for the calculation of adjCSR2, following the approach proposed by Lins et al. (2017), the strength (or concern) scores for each category in each year are divided by the maximum strength (or concern) for each category in each year to derive adjusted strength (or concern) scores. The adjCSR2 of a firm is also calculated by subtracting its adjusted total concern score from its adjusted total strength score. The model is specified as follows:

$$Y_{it} = \beta_0 + \beta_1 adjCSR1_{it}/adjCSR2_{it} + \beta_2 X_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{it} \qquad (7)$$

Here, Y_{it} is the logarithm of the export sales of firm i in year t. $adjCSR1_{it}$ is the first adjusted CSR score of firm i in year t. $adjCSR2_{it}$ is the second adjusted CSR score of firm i in year t. X_{it} contains control variables of firm i in year t. Fixed effects are denoted as follows: μ_i is firm fixed effect, ω_t is year fixed effect, θ_j is industry fixed effect and ε_{it} is the error term.

The results presented in columns (4) through (9) of Table 3-10 demonstrate that despite modifications to the measurement of CSR, CSR continues to exert a positive and significant effect on a firm's export sales as the coefficients are all positive and statistically significant when controlling for different fixed effects. Thus, these results satisfy the hypothesis presented.

Table 3-10 Robustness: The impact of CSR on corporate export sales

This table presents robustness test results on the impact of a firm's CSR score on corporate export sales in the United States. The dependent variables are export intensity, columns (1) through (3) and the logarithm of export sales, columns (4) through (9) of firm i in year t, respectively. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Export intensity			Log (export sale)					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CSR	0.004	0.005	0.004**						
	(0.004)	(0.003)	(0.002)						
adjCSR1				1.330**	1.154***	0.687*			
				(0.532)	(0.418)	(0.356)			

adjCSR2							0.124*	0.159***	0.117***
							(0.067)	(0.052)	(0.043)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No	No	Yes	No
Firm FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1029	1007	934	1029	1007	934	1029	1007	934
R-squared	0.170	0.572	0.899	0.621	0.767	0.911	0.619	0.768	0.912

3.5.6.2 Alternative time frame of sample

Gloßner (2019) select the sample period from 1991 to 2009 due to significant changes in KLD's rating methodology after 2009. However, the data on CSR between 1991 and 1994 are incomplete because of the absence of CUSIP codes. Thus, this chapter will focus on the period 1995 to 2009 for robustness checks. Additionally, Amin et al. (2020) employ the data from 2002 to 2013, arguing that KLD's definition of CSR scores has been consistent since the early 2000s. Therefore, this chapter aims to examine how the impact of CSR on export sales varies across different periods, depending on the various CSR definitions used in the KLD database and the different KLD rating methodologies. Moreover, this chapter follows their advice and conduct a robustness check. Overall, the results presented in Tables 3-11 largely align with the main findings from the previous section as all the coefficients of CSR are positive and statistically significant as shown in columns (1) through (6).

Table 3-11 Robustness: The impact of CSR on corporate export sales in different periods

This table presents robustness test results on the impact of a firm's CSR score on corporate export sales in the United States, across two distinct periods: from 1995 to 2009 and from 2002 to 2013. The dependent variable is the logarithm of export sales of firm *i* in year *t*. Columns (1) through (3) show the results from 1995 to 2009. Columns (4) through (6) show the results from 2002 to 2013. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level. ** at the 5% level, and * at the 10% level.

	Log (Export sale)					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
CSR	0.064**	0.065**	0.052*	0.081*	0.075**	0.058**
	(0.030)	(0.032)	(0.027)	(0.044)	(0.031)	(0.026)
Firm size	0.892***	0.849***	0.447***	0.829***	0.789***	0.541***
	(0.070)	(0.068)	(0.093)	(0.085)	(0.096)	(0.096)
Leverage	-0.895*	-0.731	-0.256	-1.051*	-1.249*	-0.426
	(0.489)	(0.455)	(0.438)	(0.625)	(0.739)	(0.468)

profitability	0.005	0.193	-0.151	0.017	0.379	0.002
	(0.304)	(0.297)	(0.125)	(0.452)	(0.477)	(0.190)
Liquidity	0.011	-0.022	0.038	0.058	-0.039	-0.058
	(0.056)	(0.053)	(0.037)	(0.074)	(0.066)	(0.043)
Capital intensity	-0.267	-0.085	0.118	-0.212	-0.032	-0.240
	(0.165)	(0.208)	(0.264)	(0.193)	(0.284)	(0.224)
R&D ability	-0.020	-0.039	-0.057	-0.027	-0.034	0.016
	(0.036)	(0.042)	(0.036)	(0.042)	(0.050)	(0.030)
GDP per capita	0.083	12.680	-36.838	5.214	29.563**	31.642
	(10.527)	(11.379)	(26.403)	(11.759)	(11.530)	(19.202)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Firm FE	No	No	Yes	No	No	Yes
Observations	795	776	701	804	783	730
R-squared	0.637	0.786	0.920	0.608	0.773	0.913

3.5.7 Additional analysis

3.5.7.1 CSR strengths and concerns

Drawing on the study by Kim et al. (2014), this chapter further concentrates on how CSR strength and concern affect a company's export sales from different dimensions. This approach aims to provide a more detailed understanding of the specific aspects of CSR that influence firms' export sales. Accordingly, this chapter categorizes CSR scores into CSR strengths and CSR concerns and conducts a re-estimation of Model (2). Table 3-12 reveals that the coefficient of CSR_strength is positive and statistically significant at the 10% significance level in column (1) when controlling solely for the year fixed effect.

Moreover, the analysis also demonstrates that the coefficients of CSR_concern are negative and statistically significant at the 10% and 1% significance levels in columns (5) and (6), respectively. Thus, this finding suggests that CSR strength is conducive to improving corporate export sales, while CSR concern is detrimental to corporate export sales. This is consistent with the theoretical explanation of CSR strengths and concerns.

Table 3-12 The impact of CSR strength and concern on corporate export sales

This table presents baseline results on the impact of a firm's CSR strength scores and concern scores on corporate export sales in the United States. The dependent variable is the logarithm of export sales of firm *i* in year *t*. Columns (1) through (3) show the effect of CSR strength scores on corporate export sales. Columns (4) through (6) show the effect of CSR concern scores on corporate export sales. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Log (Export sale)					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
CSR_strength	0.057*	0.035	0.018			
	(0.031)	(0.030)	(0.025)			
CSR_concern				-0.019	-0.073*	-0.092***
				(0.041)	(0.038)	(0.035)
Firm size	0.855***	0.832***	0.473***	0.899***	0.870***	0.478***
	(0.078)	(0.072)	(0.089)	(0.079)	(0.074)	(0.091)
Leverage	-1.007*	-1.078*	-0.340	-1.091**	-1.103*	-0.368
	(0.545)	(0.559)	(0.437)	(0.553)	(0.573)	(0.442)
profitability	0.122	0.369	-0.030	0.095	0.363	0.008
	(0.376)	(0.362)	(0.151)	(0.373)	(0.360)	(0.147)
Liquidity	0.008	-0.052	0.009	0.016	-0.047	0.011
	(0.060)	(0.051)	(0.038)	(0.062)	(0.052)	(0.036)
Capital intensity	-0.230	0.048	0.131	-0.166	0.037	0.083
	(0.162)	(0.216)	(0.221)	(0.166)	(0.218)	(0.211)
R&D ability	-0.021	-0.052	-0.051	-0.030	-0.047	-0.043
	(0.036)	(0.043)	(0.031)	(0.037)	(0.042)	(0.030)
GDP per capita	5.992	21.907**	-11.661	5.718	21.914**	-9.990
	(10.874)	(10.501)	(18.188)	(11.132)	(10.318)	(16.999)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Firm FE	No	No	Yes	No	No	Yes
Observations	1029	1007	934	1029	1007	934
R-squared	0.619	0.765	0.911	0.616	0.766	0.912

3.5.7.2 CSR components

In this chapter, the CSR score is an aggregate measure to represent a firm's CSR performance, which is calculated by 6 categories: community, diversity, employee relations, environment, human rights, and products. The objective of this section is to examine these distinct categories of CSR to identify which ones significantly influence corporate export sales. This contributes to a more comprehensive and integrated understanding of how different parts of

CSR influences firms' export sales.

Tables 3-13 and 3-14 present the baseline results examining the impact of various dimensions of a firm's CSR on corporate export sales in the United States. The findings from Table 3-13 reveal that the coefficient of Emp_CSR is positive and statistically significant at the 5% significance level in column (3) when both year and firm fixed effects are controlled. Moreover, the coefficient of Div_CSR is positive and statistically significant at the 10% significance level in column (5) when controlling for both year and industry fixed effects. In addition, the coefficient of Pro_CSR is also positive and statistically significant at the 5% significance level in column (7) when controlling solely for the year fixed effect.

Those results indicate that CSR scores relating to employee, diversity and product dimensions significantly enhance the company's export sales. However, when it comes to Table 3-14, although almost all the signs of coefficients across columns (1) through (9) are positive, they lack statistical significance. Therefore, this suggests that CSR activities in the areas of environment, community and human rights exert an insignificant influence on corporate export sales.

Table 3-13 The impact of various dimensions of CSR on corporate export sales

This table presents baseline results on the impact of various dimensions of a firm's CSR on corporate export sales in the United States. The dependent variable is the logarithm of export sales of firm *i* in year *t*. Columns (1) through (3) show the effect of employee CSR on corporate export sales. Columns (4) through (6) show the effect of diversity CSR on corporate export sales. Columns (7) through (9) show the effect of product CSR on corporate export sales. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Log (Export sale)								
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Emp_CSR	0.079	0.072	0.075**						
	(0.057)	(0.046)	(0.035)						
Div_CSR				0.020	0.075*	0.054			
				(0.054)	(0.044)	(0.039)			
Pro_CSR							0.188**	0.092	0.099
							(0.088)	(0.087)	(0.097)
Firm size	0.883***	0.836***	0.455***	0.882***	0.835***	0.468***	0.916***	0.853***	0.486***
	(0.075)	(0.072)	(0.086)	(0.074)	(0.071)	(0.092)	(0.075)	(0.071)	(0.092)

Leverage	-1.052*	-1.087*	-0.356	-1.067*	-1.060*	-0.329	-1.093**	-1.090*	-0.355
	(0.543)	(0.554)	(0.425)	(0.551)	(0.575)	(0.446)	(0.549)	(0.573)	(0.448)
profitability	0.068	0.335	-0.021	0.114	0.397	-0.022	0.100	0.377	-0.036
	(0.359)	(0.353)	(0.149)	(0.378)	(0.366)	(0.155)	(0.379)	(0.365)	(0.152)
Liquidity	0.012	-0.048	0.016	0.016	-0.049	0.008	0.011	-0.049	0.010
	(0.059)	(0.051)	(0.036)	(0.062)	(0.052)	(0.037)	(0.061)	(0.052)	(0.036)
Capital intensity	-0.190	0.049	0.163	-0.182	0.050	0.081	-0.166	0.047	0.140
	(0.164)	(0.217)	(0.212)	(0.167)	(0.218)	(0.230)	(0.168)	(0.219)	(0.219)
R&D ability	-0.027	-0.051	-0.057*	-0.027	-0.051	-0.043	-0.031	-0.052	-0.052*
	(0.037)	(0.042)	(0.030)	(0.038)	(0.043)	(0.033)	(0.038)	(0.043)	(0.031)
GDP per capita	5.821	21.077**	-12.766	5.246	21.854**	-11.552	7.875	22.007**	-10.445
	(11.044)	(10.468)	(17.579)	(11.106)	(10.467)	(18.240)	(10.964)	(10.347)	(17.361)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No	No	Yes	No
Firm FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1029	1007	934	1029	1007	934	1029	1007	934
R-squared	0.617	0.765	0.911	0.616	0.765	0.911	0.619	0.765	0.911

Table 3-14 The impact of various dimensions of CSR on corporate export sales

This table presents baseline results on the impact of various dimensions of a firm's CSR on corporate export sales in the United States. The dependent variable is the logarithm of export sales of firm *i* in year *t*. Columns (1) through (3) show the effect of environmental CSR on corporate export sales. Columns (4) through (6) show the effect of community CSR on corporate export sales. Columns (7) through (9) show the effect of human rights CSR on corporate export sales. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Log (Export sale)								
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Env_CSR	0.045	0.039	0.050						
	(0.063)	(0.060)	(0.037)						
Com_CSR				0.111	0.114	-0.090			
				(0.108)	(0.082)	(0.056)			
Hum_CSR							-0.012	0.247	0.264
							(0.185)	(0.190)	(0.226)
Firm size	0.896***	0.849***	0.488***	0.883***	0.841***	0.474***	0.886***	0.845***	0.469***
	(0.073)	(0.070)	(0.090)	(0.076)	(0.071)	(0.091)	(0.074)	(0.071)	(0.091)
Leverage	-1.098**	-1.106*	-0.352	-1.063*	-1.068*	-0.339	-1.083*	-1.088*	-0.332
	(0.541)	(0.563)	(0.437)	(0.554)	(0.571)	(0.444)	(0.554)	(0.569)	(0.435)
profitability	0.092	0.370	-0.025	0.110	0.377	-0.024	0.102	0.375	-0.009
	(0.369)	(0.363)	(0.153)	(0.376)	(0.365)	(0.153)	(0.376)	(0.363)	(0.158)
Liquidity	0.013	-0.051	0.007	0.017	-0.047	0.015	0.017	-0.049	0.013
	(0.060)	(0.051)	(0.036)	(0.062)	(0.051)	(0.037)	(0.062)	(0.052)	(0.036)
Capital intensity	-0.177	0.050	0.126	-0.174	0.054	0.172	-0.176	0.062	0.180

	(0.165)	(0.218)	(0.218)	(0.163)	(0.217)	(0.214)	(0.167)	(0.220)	(0.222)
R&D ability	-0.028	-0.051	-0.050	-0.030	-0.054	-0.058*	-0.028	-0.054	-0.060*
	(0.037)	(0.043)	(0.031)	(0.037)	(0.043)	(0.030)	(0.037)	(0.043)	(0.032)
GDP per capita	5.821	21.474**	-11.398	6.000	22.175**	-13.457	5.335	20.326*	-13.014
	(11.094)	(10.506)	(18.306)	(10.954)	(10.264)	(18.566)	(11.133)	(10.511)	(18.112)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No	No	Yes	No
Firm FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1029	1007	934	1029	1007	934	1029	1007	934
R-squared	0.616	0.764	0.911	0.616	0.765	0.911	0.616	0.765	0.911

3.6 Conclusion

This analysis investigates the relationship between corporate social responsibility and a firm's export sales in the United States from 1995 to 2013. The results demonstrate that corporate social responsibility exerts a positive and significant effect on a firm's export sales. Furthermore, the findings reveal that financial constraints and firm location do not have a significant moderating effect on the relationship between CSR and export sales. In addition, this chapter also presents evidence that state-level GDP per capita has a positive and statistically significant moderating effect on the relationship between CSR and export sales to some extent.

Moreover, the results of endogeneity tests and robustness checks largely align with the main findings and support the hypothesis. Furthermore, this chapter categorizes CSR into CSR strength and CSR concern, with the findings indicate that CSR strength is positively related to corporate export sales to some extent, while CSR concern adversely impacts corporate export sales. Finally, CSR dimensions related to employee, diversity and product are found to significantly enhance the company's export sales to a certain degree.

Collectively, this chapter contributes to the understanding of how corporate social responsibility influences a firm's export sales in the United States. It provides U.S. exporting companies with valuable insights into enhancing their export sales and competitiveness in a dynamic international market by emphasizing the expansion of their CSR initiatives and the

implementation of more targeted strategies.

Despite its contribution to understanding CSR impacts on U.S. exports, this chapter acknowledges several limitations. Firstly, the sample period is restricted to data collection before 2013 from the MSCI KLD ESG database. Additionally, access to alternative CSR databases was not available. Secondly, the sample size is limited when merging CSR data with export sales data from the MSCI KLD ESG and Compustat database. Thirdly, the field of CSR remains in the initial stage, and the measurement standards are not standardized. Further exploration in this area is essential, and it is suggested that researchers continue to investigate CSR and export sales more comprehensively in future studies.

3.7 Reference

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4 Reputational risk and corporate investment inefficiency: Evidence from the United States

4.1 Abstract

Utilizing a panel dataset of U.S. firms from 2007 to 2020, this chapter examines the impact of a firm's reputational risk on corporate investment inefficiency. The results reveal that reputational risk significantly and positively affects corporate investment inefficiency. Then, the findings indicate that while reputational risk increases overinvestment, it does not have a noticeable effect on underinvestment. Moreover, reputational risk positively impacts investment inefficiency across firms of varying levels of reputational risk and sizes. Notably, firms with low reputational risk and larger firms experience greater adverse effects. Then, reputational risk does not significantly affect either overinvestment or underinvestment in both large and small firms. Furthermore, this chapter also demonstrates that social and governance-related reputational risk positively affect corporate investment inefficiency, whereas environmental reputational risk does not exert a significant influence. In addition, further analysis reveals that financial constraints do not have a significant moderating effect on the relationship between reputational risk and corporate investment inefficiency. Moreover, this chapter employs an instrumental variable approach to solve the potential endogeneity problems, finding that the outcomes align closely with the main results. Subsequently, after several robustness checks, which include modifying the measurement of key variables and adjusting the time frame of the sample period, the results also largely support the main findings.

Keywords: Reputational risk, Corporate investment efficiency, Overinvestment, Underinvestment, Financial constraints

4.2 Introduction

Corporate reputation exerts a significant influence on a firm's survival and success in the market (Adeabah et al., 2023). Moreover, reputation serves as a foundational element for trust, trade and reciprocal relationships among social actors, playing an important role in social and economic development (Nobanee et al., 2021). Furthermore, companies do not operate in isolation. For sustainable development, cooperation among individuals, businesses, and industries is essential, and a strong reputation acts as a crucial facilitator for fostering such collaboration (Nobanee et al., 2023).

Additionally, in the context of globalization, enterprises encounter increased challenges related to products, employers and partnerships (Eckert, 2017). A robust reputation provides substantial competitive advantages (Gatzert, 2015) and enhances corporate values (Adeabah et al., 2023). Companies with strong reputations attract more consumers and buyers, maintain a positive relationship with employees and suppliers, improve market satisfaction, and access funding at a lower cost (Nobanee et al., 2021). In addition, Fombrun and Van Riel (2004) also highlight the importance of corporate reputation in connecting with stakeholders. Bushman and Wittenberg-Moerman (2012) argue that a higher bank reputation is associated with improved profitability and credit quality.

Moreover, reputation is recognized as an intangible asset, and ranks among the most valuable assets for a company, especially within financial companies (Roberts and Dowling, 2002; Gaultier-Gaillard and Louisot, 2006; Nobanee et al., 2023). Nobanee et al. (2021) describe that reputation is the most important commodity for a company. Furthermore, Gatzert and Schmit (2016) emphasize that reputation is central to organizational value, noting that the asset value of reputation accounts for approximately 20% of the S&P 500's total market capitalization. Then, corporate reputation is regarded as a strategic resource, enhancing competitive advantage for stakeholders (Hall, 1992; Hall, 1993; Flanagan and O'Shaughnessy, 2005; Ponzi et al., 2011). Additionally, Gaudenzi et al. (2015) also assert that reputation serves as an economic resource, which plays a pivotal role in a firm's profitability.

However, corporate reputation functions as a double-edged sword. Although it can provide substantial benefits to companies, it also increases their exposure to reputational risks. Nobanee et al. (2021) note that a higher corporate reputation of the company correlates with the potential for greater damage. This phenomenon arises because stakeholders have higher expectations of companies with prominent reputations, leading to greater disappointment when these expectations are not satisfied. Therefore, protecting a favourable corporate reputation is imperative in the management of reputation risk (Eckert, 2017). Additionally, Hogarth et al. (2018) maintain that effective reputation management involves mitigating risks associated with an organization's relationship with stakeholders and the public.

The relationship between corporate reputation risk and the company is strengthening (Gatzert, 2015). Moreover, reputational risk is becoming increasingly crucial to corporate activities, due to the expansion of social media, increased regulatory examination of reputational risk, and the critical impact of reputation on organizational value (Gatzert, 2015; Gatzert et al., 2016; Eckert and Gatzert, 2017). Becchetti et al. (2022) and Razak et al. (2023) also support the viewpoint that the development in social media and advanced tools has led to in-depth research on corporate reputation risk, which has now emerged as a primary concern for global companies.

Therefore, in recent years, an increasing number of managers, supervisory agencies and scholars have directed their focus toward corporate reputational risk (Csiszar and Heidrich, 2006; Nujen et al., 2021; Zhu et al., 2022). In addition, Hasan et al. (2022) also contend that enhanced public awareness and transparency in corporate activities, and increased expectations from stakeholder have prompted both practitioners and academics to concentrate on issues of corporate reputational risk.

Moreover, reputational risk constitutes a significant component of business risk (Hasan et al., 2022). Alfiero et al. (2016) emphasize the critical role of corporate reputational risk within corporate strategy. Deloitte (2014) suggests that reputational risk ranks as the principal strategic risk. Heidinger and Gatzert (2018) maintain that managing reputational risk poses substantial challenges due to its status as the risk of risks. Nobanee et al. (2021)

agree with this perspective, stating that reputational risk represents the most significant danger to corporate performance globally.

In addition, reputational risk is harmful to companies. For example, Zhu et al. (2022) report that UBS suffered a loss of nearly $2 billion due to a trader scandal. Perry and De Fontnouvelle (2005) contend that high corporate reputation risk can result in several adverse situations: 1 loss of customers; 2 loss of employees and increased recruitment costs; 3 loss of partners; 4 increased financing costs; 5 increased costs due to regulations, fines, and other penalties. Szwajca (2018) cites several instances of corporations suffering losses because of reputational risk: Enron, Arthur Anderson, WorldCom, Adelphia, Tyco, BP and Toyota.

Thus, Hogarth et al. (2018) argue that companies should actively engage in the process of reputation management rather than only responding to reputational risks. Furthermore, in 2012, the Reputation Institute ranked reputation risk management as one of the top reputation priorities (Gaudenzi et al., 2015). Subsequently, Gatzert and Schmit (2016) incorporate reputational risk management into the broader framework of enterprise risk management. Scandizzo (2011) asserts that effective management of reputational risks requires companies to improve their decision-making processes, establish more direct reporting relationships, and clarify roles and responsibilities.

Moreover, it is well-recognized that corporate investment decisions significantly influence organizational performance (Chen et al., 2012; Lai and Liu, 2018; Ward et al., 2020). Jiang et al. (2019) and Gao et al. (2021) also contend that investment decisions exert a significant effect on the enterprise's economic activities, due to their critical role in influencing the value and development of companies. Chen et al. (2017) support this perspective and note that an effective management team and sufficient capital are fundamental elements for making sound investment decisions.

Additionally, both scholars and practitioners have consistently focused on effective fund allocation strategies (Rajkovic, 2020). Efficient allocation of capital is one of the functions of financial reporting, and good investment decisions are conducive to achieving the goal

(Chen et al., 2011; Zhang et al., 2016). Consequently, it is essential for corporate management to focus on optimizing investment decisions to ensure the best outcomes (Cao et al., 2020). Furthermore, public expectations demand that companies prioritize allocating resources to the most profitable projects. Thus, investment efficiency (the quality of a company's investment decisions) is an important topic in corporate finance (Xie, 2015; Jiang et al., 2018).

Moreover, the focus on the effect of reputational risk on the firm's investment inefficiency is motivated by the following reasons. First, reputational risk has attracted extensive attention within both academia and the media sectors (Perry and De Fontnouvelle, 2005). Zhang and Wong (2022) argue that ESG reputational risk is gaining increasing attention as managers seek to address threats arising from changing stakeholder perceptions. However, research concentrating on reputational risk and its management remains in an initial stage (Gatzert and Schmit, 2016; Zhu et al., 2022). Heidinger and Gatzert (2018) also maintain that this is still a challenging field and recommend that future studies on reputation risk should pay more attention to quantitative, qualitative and empirical methodologies.

In addition, a recent survey conducted among financial services organizations revealed that a greater number of respondents believe reputational risk as the most significant threat to a company's market value compared to other risk categories (Perry and De Fontnouvelle, 2005). Additionally, nearly 90 percent of executives consider that reputational risk plays a pivotal role in corporate activities (Hasan, et al., 2022). However, PwC (2007) suggests that only approximately half of the respondents from the financial services sector believed that their firms are effectively managing reputational risk. Therefore, it is essential to conduct further research into the effects of reputational risk on firms.

Second, corporate investment efficiency exerts a significant influence on a firm's development and financial sustainability (Ahmed et al., 2020). Meanwhile, it also plays a crucial role in national economic operations (Hua et al., 2020). Moreover, a fundamental inquiry within the fields of corporate finance is what determines capital allocation and investment (Chen et al., 2017; Deng et al., 2020). However, the complexity of capital

allocation decisions makes it challenging to empirically track capital flows or accurately identify investment opportunities and optimal investment levels (Gao and Yu, 2020). Consequently, gaining a deeper understanding of the factors that affect corporate investment efficiency is important (O'Toole et al., 2016).

Although numerous studies examining corporate investment efficiency and corporate reputational risk, there has been limited analysis on the association between reputational risk and investment efficiency. It is unexpected, especially considering that understanding investment efficiency can clarify how reputational risk affects corporate finance and firms' activities. Thus, examining the linkage between these areas is both crucial and valuable. Whether companies decrease their reputational risk could increase investment efficiency?

Third, the United States, as the most economically developed nation and one of the largest investors and recipients of investment globally, serves an important function in the international economy. According to the report released by the Bureau of Economic Analysis (BEA) in 2021, U.S. direct investments abroad increased to $6.49 trillion at the end of 2021 from $6.09 trillion at the end of 2020. Simultaneously, foreign direct investment in the United States rose to $4.98 trillion at the end of 2021 from $4.47 trillion at the end of 2020. Given the substantial volume of investments in the United States, it is imperative to analyze the investment efficiency of U.S. companies, as this has significant implications for the global economy.

Moreover, Heidinger and Gatzert (2018) argue that U.S. banks and insurers are increasingly focusing on the significance of reputation and its associated risks. Notably, several American firms, including AIG, Lehman, and Bank of America, have suffered substantial reputational damage due to financial misconduct (Kamiya et al., 2012). In addition, Xifra and Ordeix (2009) maintain that JP Morgan & Co's (JPM) participation in Banco Espa˜nol de Crédito in the early 1990s resulted in a 10% drop in shareholder value and a $1.5 billion loss in market capitalization. Thus, this establishes the third motivation to investigate this topic in the U.S. as America's prominent role in both reputational risk and investment efficiency provides a more comprehensive context for research. It is particularly interesting to explore

the potential relationship between these fields. Therefore, the research question is: How are reputational risk and corporate investment inefficiency associated?

The main contributions of this chapter are as follows. Firstly, to the best of my knowledge, this chapter represents the first analysis of the effect of reputational risk on corporate investment inefficiency in the United States. Moreover, research on reputational risk is still in its initial stages (Gatzert and Schmit, 2016; Zhu et al., 2022). Heidinger and Gatzert (2018) argue that this area requires further empirical investigation. Investment efficiency remains a critical area of study within corporate finance (Xie, 2015; Jiang et al., 2018) and research into the factors influencing corporate investment efficiency requires additional investigations. Thus, considering that the United States is the most economically developed country, this topic presents significant interest and needs to be further explored. In addition, this chapter aims to bridge the existing research gap, expand the scope of the academic field of investment efficiency, and provide a fresh perspective on the role of reputational risk in both U.S. corporate and social investment activities.

Secondly, heterogeneity will be a central focus of this chapter. Following the classification by Biddle et al. (2009), firms will be categorized into overinvested and underinvested groups. In addition, based on findings from Okuyama et al. (2021) and Zamir et al. (2022), this chapter will further segment enterprises into high reputational risk and low reputational risk enterprises and differentiate between large and small firms. Furthermore, this chapter will also examine the moderating role of financial constraints on the effect of reputational risk on corporate investment inefficiency. Considering heterogeneity provides a comprehensive understanding of the impact of reputational risk on corporate investment activities in the United States.

Thirdly, corporate investment efficiency is a critical issue in emerging markets (Menshawy et al., 2021). In comparison to developed countries, due to the lack of robust financial institutions, high levels of corruption, excessive government intervention, inadequate shareholder protection, and underdeveloped capital markets, the agency problem and information asymmetry in emerging markets are more serious, resulting in lower investment

efficiency (Al-Hiyari et al., 2023). Chen et al. (2011) also support that government intervention significantly contributes to the investment inefficiency of state-owned enterprises in emerging market countries. Therefore, in the context of economic globalization, the United States, as a leader among developed countries, offers valuable research and insights that can assist other regions, especially emerging markets, in better understanding the influence of reputational risk on corporate investment efficiency, thereby promoting both local and national economic development.

Moreover, this chapter examines the research question utilizing a dataset spanning from 2007 to 2020. Reputational risk data is sourced from the RepRisk database, which is a negative media attention indicator and based on ESG issues and negative news events from external sources, avoiding potential biases that may arise from self-reported corporate information. Additionally, information on investment inefficiency is drawn from the Compustat database.

Then, this chapter investigates how the reputational risk affects overinvestment and underinvestment. Moreover, firms' classifications are made based on varying levels of reputational risk and firm size. In addition, this chapter also categorizes reputational risk into environmental, social and governance dimensions as outlined in the RepRisk Methodology Overview (2021), to explore which types of reputational risk most significantly affect corporate investment inefficiency. Finally, this chapter examines whether financial constraints have a significant moderating effect on investment inefficiency.

Moreover, the results of this chapter indicate that a firm's reputational risk exerts a positive and significant influence on corporate investment inefficiency. Additionally, the findings also reveal that reputational risk increases corporate overinvestment, but it does not significantly affect corporate underinvestment. Subsequently, further analysis demonstrates that social and governance reputational risks are positively related to corporate investment inefficiency, whereas environmental reputational risk does not exert a significant influence on corporate investment inefficiency.

Additionally, reputational risk has a stronger positive effect on investment inefficiency in large firms compared to small firms. However, reputational risk does not have a significant impact on the overinvestment or underinvestment of both large and small firms. Moreover, the findings indicate that reputational risk exerts a greater positive impact on corporate investment inefficiency of low reputational risk firms compared to high reputational risk firms. Furthermore, the analysis reveals that financial constraints do not have a significant moderating effect on the relationship between reputational risk and corporate investment inefficiency.

In addition, this chapter addresses endogeneity and employs the instrumental variable approach, utilizing industry and state average RRI to mitigate the potential endogeneity issues, with methodologies referenced from Becchetti and Manfredonia (2022); Fafaliou et al. (2022) and Hasan et al. (2022). The results generally support the main findings of this research. Then, for the robustness checks, this chapter adopts different sample timeframes and different proxy variables for reputational risk and corporate investment inefficiency. The findings from these robustness checks also largely support the main results, which are detailed in the robustness check section.

The rest of the chapter proceeds as follows. Section 4.3 provides a review of the literature. Section 4.4 introduces the data and research methodology. Section 4.5 presents the empirical results, robustness check and further analyses. Section 4.6 is the conclusion.

4.3 Literature Review

4.3.1 Previous papers on investment efficiency

Theoretically, in an ideal market, firms should select projects with positive net present value (NPV) and allocate resources to the most profitable projects until all projects have equal marginal outputs and achieve an optimal level of investment to maximize shareholder value (Modigliani and Miller, 1958). In the real financial market with financial frictions, however, the presence of agency conflicts (Jensen and Meckling, 1976; Myers, 1977; Jensen, 1986) and information asymmetry (Myers and Majluf, 1984) serve as significant factors that hinder effective investment decisions and practices within firms.

Information asymmetry refers to the condition in which managers have more detailed knowledge about the specifics and potential outcomes of a project than investors. This disparity can lead managers to misrepresent information, thus deviating investment outcomes from their optimal efficiency (Stein, 2003). The agency problem arises from insufficient supervision when conflicts of interest occur between managers and shareholders. In such situations, managers might prioritize personal gains over the shareholders' interests, thereby adversely impacting the optimality of investment decisions (Jensen and Meckling, 1976).

Therefore, information asymmetry and agency problems may lead to both over-investment and under-investment in firms (Gomariz and Ballesta, 2014). Overinvestment indicates that firms allocate resources to projects with negative net present value, whereas underinvestment occurs when firms abandon investment projects with positive net present value (Gomariz and Ballesta, 2014; Nor et al., 2017). In other words, if management excessively invests in visible projects, this can result in overinvestment. Conversely, when projects lack visible positive net present value, management's hesitation to invest can lead to underinvestment (Zhang et al., 2016).

The information asymmetry model confirms that the information asymmetry between managers and investors may lead to over-investment. This occurs because when managers are aware that a security is overvalued or they may have better knowledge than external investors about the true value of the company's assets and growth opportunities, they are more inclined to issue new securities. If managers successfully issue overvalued securities, they may use the raised funds or capital issuance proceeds for over-investment (Baker et al., 2003; Biddle et al., 2009).

However, this may also result in under-investment. Investors may recognize such behavior by managers and respond rationally by restricting capital supply or increasing the cost of capital, thereby undervaluing newly issued securities. Consequently, managers may be forced to abandon some positive net present value projects due to insufficient funding,

leading to under-investment (Myers, 1984; Myers and Majluf, 1984).

4.3.2 Determinants of investment efficiency

Many studies suggest that firms can enhance investment efficiency by reducing information asymmetry through improving the quality of financial reporting. Verdi (2006) utilizes a dataset comprising nearly 50000 firm-year observations from 1980 to 2003 to assess the effect of financial reporting quality on corporate investment efficiency. The study reveals that high financial reporting quality mitigates both overinvestment and underinvestment. Moreover, the results also indicate that within financially constrained firms, the adverse relationship between financial reporting quality and underinvestment is more pronounced. Conversely, among financially unconstrained firms, the negative correlation between financial reporting quality and overinvestment is stronger.

Biddle et al. (2009) examine the relationship between financial reporting quality and corporate investment efficiency, selecting approximately 35000 firm-year observations during the period 1993 to 2005. Their findings demonstrate that higher financial reporting quality contributes to reducing both overinvestment and underinvestment within firms. Additionally, they also argue that firms with high-quality financial reporting exhibit greater accuracy in their investment decisions.

Additionally, Chen et al. (2011) select firm-level data from 79 World Bank countries spanning from 2002 to 2005 to investigate the impact of financial reporting quality on the investment efficiency of private firms in emerging markets. The result indicates that higher financial reporting quality positively influences corporate investment efficiency, although private firms in emerging markets always exhibit lower financial reporting quality.

Then, Gomariz and Ballesta (2014) also investigate how financial reporting quality and debt maturity affect corporate investment efficiency, utilizing data from Spanish-listed companies between 1998 and 2008. The findings demonstrate that high financial reporting quality is conducive to declining overinvestment problems. Moreover, shorter debt maturity plays a significant role in mitigating both overinvestment and underinvestment.

In addition, some studies discuss the impact of different ownership structures on investment efficiency. For example, foreign ownership and institutional ownership can both reduce information asymmetry and enhance monitoring, thereby improving investment efficiency. However, an increase in government ownership may increase information asymmetry, leading to a decline in investment efficiency.

Cao et al. (2020) investigate the effect of various forms of corporate ownership on corporate investment efficiency, focusing specifically on institutional ownership. Their study consists of nearly 8400 observations of Chinese non-financial listed firms from 2009 to 2014. Moreover, the findings indicate that institutional ownership, especially pressure-resistant institutional ownership, has a positive effect on corporate investment efficiency.

Ward et al. (2020) also investigate the relationship between institutional ownership and corporate investment efficiency. Employing a sample from the United States comprising about 92000 firm-year observations from 1995 to 2015, they maintain that institutional ownership positively influences corporate investment efficiency. Moreover, they also contend that monitoring and activism by institutional investors can increase corporate investment efficiency.

Chen et al. (2011) also use a dataset from China to investigate how government intervention affects corporate investment efficiency. The sample consists of approximately 6400 observations from 2001 to 2006, including about 4800 state-owned enterprise and 1600 non-state-owned enterprise observations. The findings suggest that executives with governmental backgrounds significantly reduce the investment efficiency of state-owned enterprises, while exhibiting no significant impact on non-state-owned enterprises.

Chen et al. (2017) examine the impact of state and foreign ownership on corporate investment efficiency by selecting approximately 3000 observations across 64 countries spanning from 1981 to 2008. Then, they argue that state ownership exerts a negative effect on corporate investment efficiency. However, foreign ownership plays a positive role in

increasing corporate investment efficiency.

Deng et al. (2020) assess the influence of government intervention, specifically through an economic stimulus package in 2008, on corporate investment efficiency among China's state-owned enterprises (SOEs), politically connected private enterprises (PCs), and non-politically connected private enterprises (NPCs), during the period from 2006 to 2010. Moreover, the findings indicate that prior to the implementation of the economic stimulus package, SOEs experienced overinvestment issues, while PCs and NPCs faced underinvestment challenges. Then, after the economic stimulus package, SOEs encountered a more severe overinvestment problem, while NPCs faced a worsened underinvestment issue. Although the economic stimulus package can provide some alleviation of underinvestment in PCs, this issue remains exist within PCs.

Moreover, Jiang et al. (2018) examine the effect of multiple large shareholders versus a single large shareholder on corporate investment efficiency in China, employing 12990 firm-year observations from 2000 to 2014. The findings indicate that companies with multiple large shareholders exhibit significantly higher corporate investment efficiency compared to those with a single large shareholder.

Opie et al. (2019) assess the relationship between corporate pyramidal ownership structure and the investment efficiency of local state-owned enterprises in China, selecting 4628 observations in the CSMAR database spanning from 2004 to 2013. Their results indicate that the corporate pyramidal ownership structure is positively related to the local SOE's investment efficiency. Additionally, the study also reveals that a greater geographical distance between the headquarters of local SOEs and their ultimate controller has a negative influence on their investment efficiency.

Then, there are also several studies discussing how monitoring reduces information asymmetry and influences corporate investment efficiency. Chen et al. (2017) explore the relationship between analysts' quality and corporate investment efficiency, selecting data primarily sourced from the Institutional Brokers Earnings Systems (IBES), the Center for

Research in Security Prices (CRSP), and the Compustat database. Their study contains approximately 31500 firm-year observations spanning from 1983 to 2011. The results indicate that high-quality analysts significantly contribute to decreasing both overinvestment and underinvestment within corporations.

Boubaker et al. (2018) examine the impact of audit quality on corporate investment efficiency, focusing on a sample of over 120 listed firms in France from 2008 to 2015. Their analysis reveals that enhanced audit quality has a positive effect on corporate investment efficiency. Specifically, for firms facing overinvestment, high audit quality can lead to a reduction in investment, while for those experiencing underinvestment, it can facilitate an increase in investment.

Moreover, Gao et al. (2021) investigate how media coverage influences corporate investment efficiency, assessing over 30000 firm-year observations of 4686 U.S. companies from 2001 to 2018. The findings reveal that media coverage effectively reduces underinvestment. However, they also contend that the media coverage can result in an increase in overinvestment.

Menshawy et al. (2021) investigate the relationship between board characteristics and corporate investment efficiency by utilizing data from 326 non-financial listed firms in Egypt over the period from 2014 to 2018. They maintain that three main board characteristics (board independence, board compensation, and board leadership) exert a positive influence on corporate investment efficiency. Moreover, they also suggest that information asymmetry adversely affects corporate investment efficiency.

In addition, some studies explore the impact of reducing information asymmetry on firms' investment efficiency from alternative perspectives. Zhang et al. (2016) examine the relationship between national culture and corporate investment efficiency by assessing 18 countries listed firms. Utilizing 146275 firm-year observations spanning from 1997 to 2009, they focus on national cultural dimensions including power distance, uncertainty avoidance, individualism and masculinity. Subsequently, the findings suggest that national culture

significantly enhances corporate investment efficiency.

Al-Hadi et al. (2017) investigate whether market risk disclosures can affect corporate investment efficiency, analyzing data from listed firms across 6 Gulf Cooperation Council (GCC) countries from 2007 to 2011, including 553 firm-year observations. Then, their findings reveal that market risk disclosures exert a negative effect on both overinvestment and underinvestment, with a particularly pronounced effect in larger firms.

Wu et al. (2022) investigate the relationship between Chinese high-speed rail construction and corporate investment efficiency, utilizing a dataset comprising 9771 observations from the period 2008 to 2017. They suggest that high-speed rail construction increases corporate investment efficiency by reducing travel time and mitigating information asymmetry between investors and firms.

Anagnostopoulou et al. (2023) explore the correlation between the quality of a firm's information environment and its corporate investment efficiency. Utilizing approximately 43000 observations from the Compustat database in the U.S. between 1996 and 2019, the results suggest that increasing a firm's information environment through the incorporation of option trade volumes exerts a positive influence on corporate investment efficiency.

Furthermore, some studies have discussed how CEOs influence investment efficiency. Chen and Lin (2012) examine the relationship between CEO optimism and corporate investment efficiency, concentrating on a sample of American firms over the period from 1992 to 2009. They conclude that in firms experiencing underinvestment, CEO optimism has a positive effect on mitigating corporate underinvestment. However, CEO optimism does not significantly impact overinvestment in corporations.

Duchin and Sosyura (2013) examine the effect of connections on corporate investment efficiency, utilizing approximately 3000 observations between 2000 and 2008. Their research primarily concentrates on the connections between divisional managers and the CEO. The results reveal that such connections hurt corporate investment efficiency under

conditions of weak governance. Conversely, in situations with high information asymmetry, these connections can increase corporate investment efficiency.

Xie (2015) also explores how CEO career concerns, represented by CEO age and newly appointed CEOs, affect corporate investment efficiency by analyzing data from Chinese listed firms from 2002 to 2009. The study discovers that younger and newly appointed CEOs tend to reduce investment levels while enhancing investment efficiency. Moreover, it finds that the impact of CEO age is more pronounced in state-owned enterprises, whereas the effect of new appointments is more significant in non-state-owned enterprises.

In addition, a highly capable management team can mitigate agency problems to increase investment efficiency. Lai and Liu (2018) investigate the influence of top management teams, specifically those with MBA qualifications and prior executive experience, on corporate investment efficiency. Analyzing 2863 firm-year observations in Taiwan from 2003 to 2008, they argue that top management teams in companies exert a positive effect on corporate investment efficiency.

Chen et al. (2021) explore the relationship between corporate management capabilities and investment efficiency by using a sample of Chinese listed companies from 2012 to 2016. They maintain that management capabilities have a negative influence on corporate underinvestment, while positively influencing overinvestment. Moreover, internal control plays a negative role in the relationship between management capabilities and overinvestment, but it beneficially influences the relationship between management capabilities and underinvestment.

4.3.3 Corporate reputation and performance

Recent trends indicate an increased focus on corporate reputation among both managers and academics (Nobanee et al., 2023). In a commencement address at Harvard, Charles Fombrun and Christopher Foss stated "*In today's world, where ideas are increasingly displacing the physical in the production of economic value, competition for reputation becomes a significant driving force propelling our economy forward. Manufactured goods often can be*

evaluated before the completion of a transaction. Service providers, on the other hand, usually can offer only their reputations" (Csiszar and Heidrich, 2006).

However, varied perspectives across disciplines have led to different definitions of corporate reputation within the scholarly literature (Eckert, 2017). Corporate reputation is defined as "*The observers' collective judgments of a corporation based on assessments of the financial, social, and environmental impacts attributed to the corporation over time*" (Barnett et al., 2006). Walter (2016) argues that reputation serves as a critical competitive force across various fields and represents the public's social evaluation of individuals or organizations.

Furthermore, Szwajca (2018) maintains that corporate reputation consists of two dimensions: sympathy (emotional identification) and competence (rational identification). Emotional identification contains factors such as trust, faith, first impressions, while rational identification includes service quality, financial performance and growth. Although numerous definitions of corporate reputation exist in the literature (Fombrun et al., 2000; Rindova et al., 2005; Walker, 2010; Helm, 2011; Clardy, 2012), the definition most commonly adopted is from (Fombrun, 1996), who defines it as "*A perceptual representation of a company's past actions and future prospects that describes the firm's overall appeal to all of its key constituents when compared with other leading rivals*."

There are several studies discussing how reputation can affect information asymmetry. Cao et al. (2012) explore the relationship between corporate reputation and financial reporting quality, utilizing a dataset from the Fortune 1000 that contains approximately 8000 firm-year observations between 1995 and 2009. The results reveal that corporate reputation is positively correlated with financial reporting quality. In addition, the study also indicates that corporate reputation exerts a positive influence on audit fees, due to widespread concerns about reputation.

Cao et al. (2015) examine the impact of corporate reputation on the cost of equity, utilizing reputation scores from "America's Most Admired Companies" list as a proxy for corporate reputation. Their study includes nearly 9300 firm-year observations spanning from 1987 to

2011. Then, they conclude that corporate reputation exerts a negative influence on the cost of equity and this effect rises with the degree of information asymmetry.

There are also several studies exploring how reputation can reduce agency problems. John and Nachman (1985) develop a model to study the agency relationship between corporate insiders and external creditors. They demonstrate that reputation can emerge endogenously in equilibrium and may be linked to favorable investment opportunities. Specifically, their findings indicate that such reputation can reduce agency costs and address the under-investment problem in leveraged firms.

Diamond (1989) develops a model to examine whether reputation plays a mitigating role in conflicts of interest between borrowers and lenders. They contend that if a borrower has a short credit history, the reputation effect does not have a significant impact on conflicts of interest between borrowers and lenders. However, over time, a strong reputation can ultimately eliminate such conflicts. Additionally, they demonstrate that reputation not only influences a borrower's investment behavior but also plays a crucial role in their long-term economic benefits.

Gomes (2000) also establishes a model to investigate whether reputation can mitigate agency problems. Specifically, the agency problem they refer to is the conflict between controlling shareholders and minority shareholders. Their findings indicate that managers can reduce efficiency losses caused by agency problems by building a strong reputation with minority shareholders, thereby increasing the likelihood of a successful initial public offering (IPO).

4.3.4 Reputational risk and performance

Currently, the concept of reputational risk lacks a universally accepted definition (Zhou and Wang, 2020). The Board of Governors of the Federal Reserve System in 2004 stated that "*Reputational risk is the potential that negative publicity regarding an institution's business practices, whether true or not, will cause a decline in the customer base, costly litigation, or revenue reductions*" (Perry and De Fontnouvelle, 2005). Scott and Walsham (2005) provide a more comprehensive definition of reputation risk as "*The potential that actions or events*

negatively associate an organization with consequences that affect aspects of what humans value." Nobanee et al. (2023) describe "*Reputational risk represents the possible loss of financial resources, social capital, or market share arising from harming the reputation of a business*."

Furthermore, numerous studies reference the definition of reputational risk provided by Basel Committee in 2009 (Scandizzo, 2011; Feria-Dominguez et al., 2013; Fiordelisi et al., 2013; Gatzert et al., 2016; Butt et al., 2022). Basel Committee (2009) defines reputational risk as the "*Risk arising from negative perception on the part of customers, counterparties, shareholders, investors, debtholders, market analysts, other relevant parties or regulators that can adversely affect a bank's ability to maintain existing, or establish new, business relationships and continued access to sources of funding*."

In addition, several scholarly articles adopt the reputational risk definition proposed by the Comite´ Europe´en des Assurances (CEA) and the Groupe Consultatif Actuariel European in 2007 (Gatzert et al., 2016; Eckert and Gatzert 2017), which describes it as the "*Risk that adverse publicity regarding an insurer's business practices and associations, whether accurate or not, will cause a loss of confidence in the integrity of the institution. The reputational risk could arise from other risks inherent in an organization's activities. The risk of loss of confidence relates to stakeholders, which include, inter alia, existing and potential customers, investors, suppliers, and supervisors*."

Moreover, many studies have documented the negative impact of reputational risks, arising from environmental issues and significant operational losses, on stock market returns (Capelle-Blancard and Laguna, 2010; Gillet et al., 2010; Feria-Dominguez et al., 2013; Heflin and Wallace, 2017). Therefore, ESG reputational risk, which is an independent third-party evaluation based on the level of media attention to negative information (ESG issues), has been gaining increasing attention. Maintaining a positive ESG corporate reputation is crucial for firms, as it influences their financing costs and ability to sustain long-term operations (Zhang and Wong, 2022).

Some studies suggest that CSR or ESG performance enhances investment efficiency by reducing information asymmetry or mitigating agency problems. Cohen et al. (2011) conduct an interview survey with 750 retail investors and reveal that these investors prefer to seek third-party sources of information when searching for corporate social responsibility information. Kim et al. (2012) indicate that CSR plays a significant role in enhancing investor confidence, financial transparency, and information quality. Additionally, CSR can also help reduce financial risk.

Moreover, Khediri (2021) assesses the relationship between corporate social responsibility scores and corporate investment efficiency, utilizing a dataset of 1256 firm-year observations across 13 Western countries over the period from 2004 to 2011. The results indicate that the corporate social responsibility scores are positively related to enhanced corporate investment efficiency.

Al-Hiyari et al. (2023) agree with the findings of Khediri (2021) to some extent and extend the investigation to emerging markets. They examine a dataset comprising 1353 firm-year observations from 7 emerging market countries between 2011 and 2019. Their results reveal that companies with higher ESG performance exhibit higher corporate investment efficiency.

Zamir et al. (2022) assess the relationship between corporate social responsibility and corporate investment efficiency, concentrating on a sample from nine emerging economies spanning from 2015 to 2017. Their findings demonstrate that corporate social responsibility significantly reduces corporate underinvestment, especially in large companies, whereas it does not have a significant influence on corporate overinvestment.

Additionally, Glossner (2017) examines the relationship between ESG risk and stock returns using monthly data from 2007 to 2015. The result suggests that ESG risk has a negative impact on stock returns, as negative stock returns are observed in portfolios consisting of firms with high ESG risk.

Maung et al. (2020) explore how reputational risk affects cross-border mergers and

acquisitions. The study analyzes 248 cross-border M&A transactions from 37 different countries. The authors maintain that when the target firm exhibits greater reputational risks, particularly exceeding those of the acquirer, a reduced acquisition premium is observed in cross-border transactions. Consequently, acquirers face significant capital costs associated with higher reputational risks.

Furthermore, Hasan et al. (2022) assess how reputational risk influences corporate cash holding among publicly listed companies in the United States, analyzing a dataset of approximately 5800 firm-year observations over the period from 2007 to 2018. In addition, they contend that reputational risk exerts a positive effect on corporate cash holding, especially for companies at the growth, maturity and shakeout stages. Moreover, they observe that this positive relationship is stronger among firms experiencing severe financing constraints and agency problems.

Based on the above discussion, first, Cao et al. (2012) suggest a positive correlation between corporate reputation and financial reporting quality. Additionally, numerous studies have demonstrated that high financial reporting quality can reduce information asymmetry, thereby improving investment efficiency (Verdi, 2006; Biddle et al., 2009; Chen et al., 2011). Cook et al. (2019) point out that firms with low CSR performance fail to provide a favorable information environment and high-quality accounting information. Therefore, it is reasonable to infer that an increase in corporate reputation risk may lead to financial reporting information asymmetry, thereby reducing investment efficiency.

Second, Gao et al. (2021) emphasize the role of the media in corporate investment efficiency. In this chapter, reputational risk is defined as negative media coverage of a firm's ESG performance. This suggests that firms experiencing reputation risk may have certain information asymmetry or agency issues, which are subject to third-party media scrutiny and criticism, potentially leading to a decline in investment efficiency.

Third, Benlemlih (2017) indicates that firms with high CSR performance tend to prefer short-term debt financing, while Gomariz and Ballesta (2014) demonstrate that short-term

debt can enhance investment efficiency by reducing information asymmetry, as high-quality firms often engage in short-term borrowing. Therefore, if a firm faces high reputational risk, it indicates poor CSR performance, which in turn increases information asymmetry and reduces investment efficiency. Thus, it is anticipated that reputational risk is detrimental to a firm's investment decisions and performance. The first hypothesis is formally stated as follows:

Hypothesis 1: Reputational risk is positively related to corporate investment inefficiency

Moreover, Chen et al. (2017) explain that when managers face potential costs such as stock price declines or market value deterioration, they may experience significant pressure from analysts, leading to reputational damage and exposing the firm to reputation risk. In such situations, managers may exhibit two types of behavior: short-termism and opportunism.

He and Tian (2013) examine the relationship between financial analysts' coverage and corporate innovation using data from U.S. publicly listed firms from 1993 to 2005 and the sample consists of 25860 firm-year observations. Their findings indicate that financial analysts hinder corporate innovation by exerting substantial pressure on managers, causing them to neglect long-term innovation project investments and instead focus on short-term objectives.

Irani and Oesch (2016) estimate the relationship between analyst coverage and earnings management using 61442 firm-year observations. Their findings suggest that corporate managers, in an effort to meet financial analysts' expectations, are more likely to engage in real activities manipulation rather than accrual-based earnings management. However, such behavior may prevent firms from making optimal decisions, ultimately increasing long-term costs. This highlights that managerial opportunism may have adverse effects on firms.

Therefore, it is reasonable to infer that when corporate reputational risk increases, managers may face pressure from investor, stakeholder and the board of directors and exhibit short-sighted behavior in investment decisions to meet their expectations. Consequently, managers

might increase their investments to regain confidence among investors, stakeholders and the board of directors, leading to overinvestment when they allocate resources to projects with negative net present value. Therefore, it is anticipated that firms facing high reputational risk are more likely to engage in overinvestment.

Moreover, Gao et al. (2021) point out that media oversight can mitigate agency problems. Heightened reputation risk reflects growing negative media coverage of corporate ESG issues. Therefore, the escalation of reputational risk is not necessarily driven by information asymmetry but is more likely a consequence of worsening agency problems. As discussed in previous sections, a surge in agency problems may contribute to overinvestment.

Additionally, Gao et al. (2021) also maintain that the media can expose agency problems within firms to the public, which may discourage external investors from investing, potentially leading to underinvestment. However, Hasan et al. (2022) argue that when corporate reputation risk increases, firms tend to hold more cash because they believe that firms will anticipate potential financial constraints in advance, holding more cash ensures that they have sufficient capital for sound investments and helps reduce costs. As a result, in the short term, firms are unlikely to experience underinvestment due to capital shortages.

Thus, this chapter does not expect that reputational risk is directly related to underinvestment. If firms exhibit low reputational risk, this typically indicates that their investment efficiency is either normal or favourable. Conversely, firms with high reputational risk are expected to increase their investments, as discussed previously. In other words, when a firm experiences high reputational risk, its managers are likely to increase investment to generate greater profits and thereby satisfy investors, stakeholders and the board of directors. Therefore, based on the preceding analysis, I propose the following hypotheses:

Hypothesis 2: Reputational risk increases corporate overinvestment

Hypothesis 3: Reputational risk does not affect corporate underinvestment

4.4 Data and Model

4.4.1 Sample and Data

The sample is constructed from the integration of multiple data sources spanning the years from 2007 to 2020. Reputational risk data is sourced from the RepRisk database. Information on corporate investment inefficiency and annual firm financial fundamental characteristics is extracted from the Fundamentals Annual module within the Compustat database. The above databases are merged to construct the initial sample.

First, the original data on corporate investment and reputational risk for the period from 2007 to 2020 are downloaded from the above databases. This chapter adopts the methodology outlined by Biddle et al. (2009) to calculate corporate investment inefficiency. Subsequently, the integration of investment inefficiency and reputational risk datasets produces a comprehensive dataset comprising 10690 observations.

Second, control variables are derived from the Compustat database. Then, this chapter also mainly utilizes the methodology described by Biddle et al. (2009) for the calculation of control variables. Consequently, the dataset containing control variables is merged with the previously combined dataset. After the exclusion of missing values from the control variables, the final sample is composed of 3602 firm-year observations from 588 distinct U.S. firms and all data is available for the period from 2007 to 2020.

4.4.2 Reputational risk measure

Laurence Fink, Chairman and CEO of BlackRock, argues that integrating ESG-related reputational risk into a firm's core strategy significantly impacts long-term financial performance and value creation (Asante-Appiah and Lambert, 2022). Additionally, Wong and Zhang (2022) also maintain that companies should pay more attention to ESG reputation, which is beneficial to corporate financing. Moreover, Hasan et al. (2022) assert that numerous studies have categorized ESG reputation risk attribution within a separate theoretical system. Furthermore, Darnell (2017) argues that the current reputational risk index (RRI) from the RepRisk database effectively measures ESG-related reputational risk.

The measure of reputational risk in this chapter is based on the RepRisk database, which has been extensively utilized in previous scholarly research (Maung et al., 2020; Okuyama et al., 2021; Speitmann, 2021; Asante-Appiah et al., 2022; Becchetti and Manfredonia, 2022; Fafaliou et al., 2022). According to the RepRisk Methodology Overview (2021), "*RepRisk uses AI and machine learning with human intelligence to translate big data into actionable business intelligence and risk metrics. With daily-updated data synthesized in 23 languages, RepRisk covers above 180000 public and private companies and above 45000 infrastructure projects of all sizes, in every sector and market. Moreover, RepRisk consists of 28 core issues and covers 73 Topic Tags. Further, the Ten Principles of the UN Global Compact can be specifically mapped to RepRisk's 28 Issues*."

In addition, the RepRisk Index is defined in the RepRisk Methodology Overview (2021) as: "*The RepRisk Index (RRI) is a proprietary algorithm developed by RepRisk that dynamically captures and quantifies a company's or project's reputational risk exposure to ESG issues. The RRI facilitates an initial assessment of the ESG risks associated with investments or business relationships, allows the comparison of a company's exposure with that of its peers, and helps track risk trends over time*." Moreover, the RRI ranges from 0 (the firm has no ESG-related reputational risk) to 100 (the firm has the highest ESG-related reputational risk). RRI score between 0-24 reflects low-risk exposure; between 25-49 indicates medium-risk exposure; between 50-59 corresponds to high-risk exposure; between 60-74 represents very high-risk exposure; between 75-100 denotes extremely high-risk exposure.

Furthermore, the RepRisk database also includes a RepRisk Rating (RRR) and the definition is "*A letter rating (AAA to D) that facilitates corporate benchmarking against a peer group and the sector, as well as integration of ESG and business conduct risks into business processes. The Rating provides decision support in risk management, compliance, investment management, and supplier risk assessment*" (RepRisk Methodology Overview, 2021). Moreover, the difference between the RRI and the RRR is that the RRR focuses on not only the firm's performance but also country and sector affiliations. Thus, this chapter employs the current RRI (The current media and stakeholder attention on ESG issues in a firm) to measure reputational risk among publicly listed firms. Following the methodologies

proposed by He et al. (2021) and Okuyama et al. (2021), this study converts monthly RRI data into an annual average RRI for analysis.

Moreover, the RepRisk database offers several advantages. First, the RepRisk index serves as an independent third-party evaluation. RepRisk Index measurement is based on the degree of media attention to negative information (ESG issue). Therefore, it is not subject to criticism from the company about ethics or greenwashing (Darnell, 2017; Becchetti et al., 2022; Hasan et al., 2022). Second, the RepRisk database assigns different weights to distinct ESG issues and distinguishes between major and minor ESG issues. Third, the database is updated daily, ensuring that the data remains current and relevant.

However, there are also several disadvantages associated with the RepRisk database, as identified by Fafaliou et al. (2022). First, the RepRisk's assessment of ESG reputational risk may occasionally fail to reflect actual ESG issues within a company. For example, companies with large polluting emissions might still receive favourable ESG reputational risk ratings. Second, the RepRisk database does not include all listed companies, and not all companies publish ESG reports. Third, the RepRisk database's ability to collect information is constrained by specific regulatory situations.

4.4.3 Corporate investment inefficiency measure

Drawing on Biddle et al. (2009), this chapter estimates firm-specific investment models that incorporate growth opportunities and uses residuals to represent firm investment inefficiency. The model is formulated as follows:

$$Investment_{i,t+1} = \beta_0 + \beta_1 sale\ growth_{i,t} + \varepsilon_{i.t+1} \quad (1)$$

Here, $Investment_{i,t+1}$ is the sum of capital expenditures, R&D expenditures, and acquisitions minus sales of PPE, scaled by lagged total assets of firm i in $t+1$ year. $sale\ growth_{i,t}$ is the percentage change in sales of firm i from year $t-1$ to t. The residual $\varepsilon_{i.t+1}$ represents investment inefficiency of firm i in $t+1$ year. This chapter estimates equation (1) utilizing the 48-industry classification framework as proposed by Fama and

French (1997), ensuring that each industry year contains at least 20 observations. Additionally, according to the definition provided by Gao et al. (2021), positive residuals are classified as overinvestment, while the absolute value of negative residuals is defined as underinvestment.

4.4.4 Specifications for the effect of reputational risk on corporate investment inefficiency

To investigate the relationship between reputational risk and corporate investment inefficiency in the United States, this chapter estimates the following model:

$$Y_{i,t+1} = \beta_0 + \beta_1 Average\ RRI_{i,t} + \beta_2 X_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{i,t+1} \qquad (2)$$

Here, $Y_{i,t+1}$ is the corporate investment inefficiency of firm *i* in year *t+1*. $Average\ RRI_{i,t}$ is the average current reputational risk index (RRI) of firm *i* in year *t*. X_{it} contains control variables of firm *i* in year *t*. μ_i is the firm fixed effect, ω_t is the year fixed effect, θ_j is the industry fixed effect and $\varepsilon_{i,t+1}$ is the error term.

For control variables, this chapter primarily references the studies such as Biddle et al. (2009), Ben-Nasr and Alshwer (2016), Lai and Liu (2018) and Rajkovic (2020). To accurately reflect the financial situation of the company, this chapter controls for variables including firm size (Firm size), financial slack (Slack), dividend payment (Dividend) and leverage (Ind. K-structure). Specifically, firm size is the logarithm of the total assets. In addition, slack is defined as the ratio of cash to PPE. The dividend is a dummy variable. If the firm pays a dividend, the value is 1, 0 otherwise. Ind. K-structure represents the mean K-structure for firms within the same 3-digit SIC code.

Firm size is recognized as a critical control variable in the literature (Ullah et al., 2021). Tsao and Lien (2013) contend that firm size is related to the financial capacity of the company, which affects the resources available to support international market operations. Moreover, larger firms often face increased costs, thereby reducing the benefits of diversification. This perspective is supported by several studies indicating a negative impact of firm size (Biddle

et al., 2009; Chen et al., 2017; Gao et al., 2021; Tsai et al., 2021; Anagnostopoulou et al., 2023). Gao et al. (2021) suggest that slack has a negative effect on overinvestment. However, Anagnostopoulou et al. (2023) maintain that the influence of slack is not statistically significant in their study.

Furthermore, several studies have demonstrated that dividends exert a negative influence on outcomes (Biddle et al., 2009; Chen et al., 2017; Anagnostopoulou et al., 2023). Hsu et al. (2013) contend that leverage is an important factor of firm performance and expansion capacity. Tsao and Lien (2013) also assert that managers may give up good investment chances due to a higher leverage ratio. Anagnostopoulou et al. (2023) argue that leverage positively influences investment efficiency. Gao et al. (2021) maintain that Ind. K-structure is not statistically significant in their analysis. Other research indicates a detrimental impact of leverage (Biddle et al., 2009; Chen et al., 2017; Tsai et al., 2021).

Moreover, to adequately reflect the liquidity of the company, this chapter includes control variables such as the Z score (Z-score), cash flow from operations (CFOS), frequency of losses (Loss) and cash (Cash). The Z-score serves as an indicator of a firm's financial health, as established by Altman (1968). CFOS is calculated as the ratio of cash flow from operations to sales. Loss is a dummy variable. If net income before extraordinary items is negative, the value is 1, 0 otherwise. Cash is measured as the ratio of cash and short-term investments to total assets.

These studies assert that Z-score and Loss negatively impact the research outcomes (Biddle et al., 2009; Chen et al., 2017; Tsai et al., 2021). However, Anagnostopoulou et al. (2023) suggest that both Z-score and Loss exert a positive influence on investment efficiency. Moreover, those papers reveal that CFOS has a negative effect in their studies (Biddle et al., 2009; Chen et al., 2017; Tsai et al., 2021). However, Gao et al. (2021) and Anagnostopoulou et al. (2023) find that CFOS does not have a significant effect on investment efficiency.

Then, market-to-book value (MTBV) is defined as the ratio of the market value of total assets to the book value of total assets, which serves to control for firm growth opportunities. To

mitigate the distortion of firm investment efficiency by business uncertainty, this chapter incorporates the following controls: SD (CFO), the standard deviation of the cash flow from operations deflated by the average total assets from years t−5 to t−1; SD (Sales), the standard deviation of the sales deflated by the average total assets from years t−5 to t−1; SD (Inv), the standard deviation of investment from years t-5 to t-1.

These studies argue that the MTBV and the SD (CFO) positively affects outcomes (Biddle et al., 2009; Chen et al., 2017; Gao et al., 2021; Tsai et al., 2021). However, Anagnostopoulou et al. (2023) suggest that both MTBV and SD (CFO) exert a negative influence on investment efficiency. Then, Biddle et al. (2009), Chen et al. (2017), Gao et al. (2021) and Anagnostopoulou et al. (2023) acknowledge a positive effect of SD (Inv). Moreover, Biddle et al. (2009) and Chen et al. (2017) report a negative impact of SD (Sales). Gao et al. (2021) identifies a positive role for SD (Sales). Tsai et al. (2021) and Anagnostopoulou et al. (2023) contend that SD (Sales) does not significantly influence their study outcomes.

In addition, the investment choices of an enterprise may depend on its different stages in the life cycle. Established companies may exhibit higher levels of capital investment. Thus, this chapter includes control variables such as the tangibility of the firm's assets (Tangibility), firm age (Age), and the operating cycle (Opcycle). Tangibility is defined as the ratio of PPE to total assets. Age is calculated as the difference between the firm's first year of appearance in the CRSP and the current year. Opcycle represents the duration of the operating cycle. Furthermore, this chapter also considers the profitability of the company and includes a measure of profitability (the ratio of net income to total assets).

Several studies (Biddle et al., 2009; Chen et al., 2017; Tsai et al., 2021; Anagnostopoulou et al., 2023) argue that Tangibility positively influences outcomes. However, Gao et al. (2021) report a negative effect of Tangibility. Then, those papers (Chen et al., 2017; Gao et al., 2021; Anagnostopoulou et al., 2023) assert that Age is not statistically significant, but Biddle et al. (2009) maintain that Age exerts a negative effect on their research findings. Additionally, Biddle et al. (2009), Chen et al. (2017), Gao et al. (2021) and Tsai et al. (2021) indicate a negative impact of the Opcycle, whereas Anagnostopoulou et al. (2023) suggest that Opcycle

does not significantly affect their analysis results.

4.4.5 Summary Statistics

Definitions for all variables used in this model are provided in Table 4-1, while Table 4-2 presents the summary statistics for these main variables. The mean value of investment inefficiency in this chapter is -0.121, with a standard deviation of 0.208. Previous research by Gomariz and Ballesta (2014) and Cook et al. (2019) report mean values of investment inefficiency at -0.086 and -0.006, respectively, with the standard deviations of 0.135 and 0.118, respectively. Moreover, although the mean values of investment inefficiency are around -9 and the standard deviations of investment inefficiency are about 10 in studies by Rajkovic (2020) and Anagnostopoulou et al. (2023), the signs remain consistent.

In addition, the mean value and standard deviation of the average RRI are 0.052 and 0.089, respectively. However, for clarity in this chapter, the average RRI is presented as the original average RRI scaled by 100. Thus, the mean value and standard deviation of the original average RRI are 5.183 and 8.944, respectively, aligning closely with findings from prior research (Okuyama et al., 2021; Speitmann, 2021; Asante-Appiah and Lambert, 2022; Fafaliou et al., 2022). Furthermore, the mean values and standard deviations of control variables are consistent with those reported in earlier studies (Cook et al., 2019; Rajkovic, 2020; Gao et al., 2021).

Table 4-1 Variable definition

Variable	Definition	Source
Investment	The sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment, scaled by lagged total assets of firm i in year t+1.	Compustat
Investment inefficiency	The signed residual (the deviation from expected total investment) of firm i in year t+1 following Model (1)	Compustat
Average RRI	The average current RRI of firm i in year t scaled by 100	RepRisk
Firm size	The logarithm of total assets of firm i in year t.	Compustat

MTBV	The ratio of the market value of total assets to book value of total assets of firm i in year t.	Compustat
SD (CFO)	The standard deviation of the cash flow from operations deflated by average total assets of firm i from years t−5 to t−1.	Compustat
SD (Sales)	The standard deviation of the sales deflated by average total assets of firm i from years t−5 to t−1.	Compustat
SD (Inv)	The standard deviation of investment of firm i from years t−5 to t−1.	Compustat
Z -Score	A measure of financial health, calculated as 3.3 * pretax income + net sales + 0.25 * retained earnings + 0.5 * (current assets - current liabilities)/total assets of firm i in year t.	Compustat
Tangibility	The ratio of PPE to total assets of firm i in year t.	Compustat
K-structure	The ratio of long-term debt to the sum of long-term debt to the market value of equity of firm i in year t.	Compustat
Ind. K-structure	The mean K-structure in the same SIC 3-digit industry of firm i in year t.	Compustat
CFOS	The ratio of CFO to sales of firm i in year t.	Compustat
Slack	The ratio of cash to PPE of firm i in year t.	Compustat
Dividend	A dummy variable of firm i in year t. If the firm pays a dividend, the value is 1, 0 otherwise.	Compustat
Firm age	The difference between the first year when the firm i appears in CRSP and the current year.	Compustat
Opcycle	The log of receivables to sales plus inventory to COGS multiplied by 360 of firm i in year t.	Compustat
Loss	A dummy variable of firm i in year t. If net income before extraordinary items is negative, the value is 1, 0 otherwise.	Compustat
Cash	The ratio of cash and short-term investments to total assets of firm i in year t.	Compustat
Profitability	The ratio of net income to total asset of firm i in year t.	Compustat

Table 4-2 Summary statistics

Variable	Obs	Mean	P10	Std. dev.	P90	Min	Max
Investment inefficiency	N = 3602	-0.121	-0.264	0.208	0.083	-1.215	3.627
Average RRI	N = 3602	0.052	0.000	0.089	0.188	0.000	0.650
Firm size	N = 3602	6.692	4.516	1.705	8.758	0.083	12.836
MTBV	N = 3602	2.886	1.025	4.922	5.255	0.228	205.243
SD (CFO)	N = 3602	0.135	0.023	0.500	0.256	0.001	13.315
SD (Sales)	N = 3602	0.237	0.054	0.309	0.485	0.002	7.212
SD (Inv)	N = 3602	0.194	0.018	0.766	0.379	0.000	18.508
Z-Score	N = 3602	0.438	-1.001	12.173	2.648	-540.098	6.128
Tangibility	N = 3602	0.195	0.027	0.176	0.451	0.000	0.901
Ind. K-structure	N = 3602	0.142	0.060	0.100	0.273	0.000	0.894
CFOS	N = 3602	-0.279	-0.004	7.863	0.000	-371.598	0.140
Slack	N = 3602	16.531	0.084	241.092	15.778	0.000	10631.670
Dividend	N = 3602	0.244	0.000	0.429	1.000	0.000	1.000
Firm age	N = 3602	20.524	8.000	8.254	29.000	1.000	52.000
Opcycle	N = 3602	4.602	3.267	1.043	5.590	0.000	11.168
Loss	N = 3602	0.346	0.000	0.476	1.000	0.000	1.000
Cash	N = 3602	0.267	0.022	0.243	0.649	0.000	0.991
Profitability	N = 3602	-0.067	-0.316	0.926	0.139	-36.547	5.365

4.5 Empirical results

4.5.1 Role of reputational risk in corporate investment inefficiency

Table 4-3 presents the results of the relationship between a firm's reputational risk and investment inefficiency, where corporate investment inefficiency serves as the dependent variable across all columns. First, in column (1) of Table 4-3, only the firm fixed effect is controlled. Then, in column (2) of Table 4-3, both year and firm fixed effects are controlled. Finally, in column (3) of Table 4-3, both year and industry interaction fixed effect and firm fixed effect are controlled.

Moreover, the coefficients of Average RRI across columns (1) through (3) are consistently positive and statistically significant, which indicates that Average RRI has a positive and significant influence on corporate investment inefficiency. In other words, a high reputational risk index is associated with reduced investment efficiency. The results are statistically significant at a 1% significance level in columns (1) and (3) when only controlling for firm fixed effect and both year and industry interaction fixed effect and firm fixed effect. Additionally, the result is statistically significant at a 5% significance level in column (2) when both year and firm fixed effects are controlled.

For economic implications, following the methodology described by Biddle et al. (2009) and Tsai et al. (2021), the economic significance is calculated by multiplying the standard deviation of the average RRI by its coefficient, resulting in an approximation (for example, $0.155 \times 0.089 = 0.013795 \approx 0.014$). It indicates that a one-standard-deviation increase in the average RRI is associated with a 0.014%, 0.008% and 0.016% increase in corporate investment inefficiency, respectively. In addition, it is in line with the findings of these studies (Capelle-Blancard and Laguna, 2010; Heflin and Wallace, 2017; Maung et al., 2020) which suggest that reputational risk adversely affects firm performance. Moreover, as previously discussed, reputational risk is considered the greatest threat to corporate performance around the world (Nobanee et al., 2021). Therefore, the result satisfies Hypothesis 1.

Additionally, the results for control variables presented in Table 4-3 indicate that Firm size,

SD (CFO), Slack, Loss and Profitability have a negative and significant effect on corporate investment inefficiency. Moreover, similarly to Average RRI, variables such as MTBV, SD (Inv), Z-Score and Cash contribute positively and significantly to corporate investment inefficiency. Furthermore, other control variables do not significantly impact corporate investment inefficiency. In addition, it is also noted that due to controlling for firm fixed effects in all cases, Firm Age is omitted to avoid multicollinearity issues.

Table 4-3 The impact of reputational risk on corporate investment inefficiency

This table presents baseline results on the impact of a firm's reputational risk on corporate investment inefficiency in the United States. The dependent variable is the investment inefficiency of firm *i* in year *t*. The independent variable is the average of the current RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency		
Independent variable	(1)	(2)	(3)
Average RRI	0.155***	0.093**	0.179***
	(0.043)	(0.042)	(0.063)
Firm size	-0.077***	-0.100***	-0.098***
	(0.011)	(0.014)	(0.017)
MTBV	0.015***	0.013**	0.012
	(0.006)	(0.006)	(0.008)
SD (CFO)	-0.114**	-0.117**	-0.145**
	(0.056)	(0.057)	(0.057)
SD (Sales)	-0.049	-0.045	-0.039
	(0.031)	(0.030)	(0.037)
SD (Inv)	0.014	0.015	0.054***
	(0.009)	(0.010)	(0.015)
Z-Score	0.010***	0.009***	0.008**
	(0.003)	(0.004)	(0.004)
Tangibility	0.081	0.066	0.146
	(0.060)	(0.062)	(0.092)
Ind. K-structure	-0.082*	-0.061	
	(0.045)	(0.052)	
CFOS	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)
Slack	-0.000*	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)
Dividend	0.001	-0.015	-0.011
	(0.011)	(0.013)	(0.016)
Opcycle	-0.000	-0.001	0.002
	(0.008)	(0.008)	(0.010)
Loss	-0.038***	-0.041***	-0.039**

	(0.014)	(0.015)	(0.018)
Cash	0.152***	0.160***	0.165***
	(0.045)	(0.045)	(0.049)
Profitability	-0.114**	-0.119**	-0.107*
	(0.058)	(0.060)	(0.056)
Firm FE	Yes	Yes	Yes
Year FE	No	Yes	No
Industry#Year FE	No	No	Yes
Observations	3536	3536	2862
R-squared	0.602	0.610	0.707

4.5.2 Role of reputational risk in corporate overinvestment and underinvestment

Following the methodology employed by Gao et al. (2021) and Zamir et al. (2022), the sample is categorized into an overinvestment group and an underinvestment group to examine the effect of reputational risk on overinvestment and underinvestment. The result in column (1) of Table 4-4 reveals that when only firm fixed effect is controlled, the coefficient of Average RRI is positive and statistically significant at a 5% significance level, indicating that the Average RRI has a positive influence on overinvestment. For economic implications, it suggests that a one-standard-deviation increase in the average RRI leads to a 0.043% increase in the likelihood of overinvesting. In addition, the findings in columns (4) through (6) demonstrate that the coefficients of Average RRI are not significant, which suggests that reputational risk does not significantly affect underinvestment. The reasons are discussed in the previous section. Therefore, the results support Hypothesis 2 and Hypothesis 3.

Table 4-4 The impact of reputational risk on corporate overinvestment and underinvestment

This table presents baseline results on the impact of a firm's reputational risk on both corporate overinvestment and underinvestment in the United States. The dependent variables are the overinvestment and underinvestment of firm *i* in year *t*. The independent variable is the average of the current RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Overinvestment			Underinvestment		
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Average RRI	0.486**	0.298	0.320	-0.014	-0.015	-0.028
	(0.204)	(0.203)	(0.259)	(0.018)	(0.019)	(0.028)
Firm size	-0.111***	-0.165***	-0.161***	0.022***	0.021***	0.020***

	(0.024)	(0.029)	(0.046)	(0.003)	(0.004)	(0.005)
MTBV	0.001	-0.002	-0.011	-0.008***	-0.008***	-0.007***
	(0.016)	(0.016)	(0.017)	(0.001)	(0.001)	(0.001)
SD (CFO)	-0.131	-0.125	-0.139*	0.033	0.036	0.041
	(0.083)	(0.080)	(0.076)	(0.029)	(0.029)	(0.026)
SD (Sales)	0.033	-0.033	-0.115	0.009	0.007	0.007
	(0.094)	(0.070)	(0.075)	(0.007)	(0.007)	(0.010)
SD (Inv)	0.051**	0.052**	0.058**	-0.002	-0.002	-0.020
	(0.024)	(0.026)	(0.024)	(0.002)	(0.002)	(0.012)
Z-Score	0.013*	0.012*	0.007	-0.003***	-0.003***	-0.002**
	(0.007)	(0.007)	(0.006)	(0.001)	(0.001)	(0.001)
Tangibility	-0.406	-0.447*	-0.401	-0.033	-0.047*	-0.103***
	(0.248)	(0.234)	(0.272)	(0.026)	(0.028)	(0.039)
Ind. K-structure	-0.241	-0.526		0.127***	0.092***	
	(0.676)	(0.881)		(0.020)	(0.022)	
CFOS	0.004***	0.004***	0.004***	0.009	0.009	0.009
	(0.001)	(0.001)	(0.001)	(0.008)	(0.009)	(0.008)
Slack	-0.000	-0.000	-0.000	-0.000*	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dividend	0.102	0.095*	0.060	0.000	0.001	-0.007
	(0.064)	(0.054)	(0.077)	(0.005)	(0.005)	(0.006)
Opcycle	0.004	0.002	-0.001	0.006*	0.006*	0.006*
	(0.018)	(0.016)	(0.018)	(0.003)	(0.003)	(0.004)
Loss	-0.156***	-0.189***	-0.227***	0.010***	0.010***	0.010**
	(0.053)	(0.055)	(0.073)	(0.003)	(0.003)	(0.005)
Cash	-0.010	0.033	0.030	-0.018	-0.019	-0.018
	(0.105)	(0.090)	(0.131)	(0.017)	(0.017)	(0.019)
Profitability	-0.257***	-0.267***	-0.235***	0.010***	0.011***	0.011**
	(0.054)	(0.046)	(0.041)	(0.004)	(0.004)	(0.005)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	No	Yes	No
Industry#Year FE	No	No	Yes	No	No	Yes
Observations	449	449	307	2971	2971	2295
R-squared	0.640	0.670	0.795	0.650	0.655	0.749

4.5.3 Tackling endogeneity concerns

A concern about the results above is potential endogeneity issues. One possible reason is omitted variables bias, as suggested by Becchetti and Manfredonia (2022). Certain unobserved firm characteristics could be related to reputational risk and corporate investment efficiency, potentially leading to biased estimates. Another possible reason is reverse causality. However, Hasan et al. (2022) argue that reverse causality is unlikely to

significantly cause endogeneity as media coverage of negative news related to reputational risk is beyond the direct control of the company and negative news cannot be suppressed in today's advanced information technology era. Thus, to solve the potential endogeneity issues, the chapter employs the instrumental variables approach.

Additionally, several studies select industry average RRI as the instrument variable (Becchetti and Manfredonia, 2022; Fafaliou et al., 2022; Hasan et al., 2022). Hasan et al. (2022) also employ state average RRI as the instrument variable and they argue that companies within the same industry and state face similar environmental, social and governance risks. Thus, according to Hasan et al. (2022), this chapter utilizes two-digit sic (Same industry) average industry and state RRI as instrument variables as this analysis expects that industry- and state-level reputational risk is highly correlated with a firm's reputational risk, but they are less likely to influence the investment efficiency of individual firms.

Table 4-5 and Table 4-6 present the 2SLS regression results examining the effect of reputational risk on corporate investment inefficiency. In Table 4-5, for the first stage, in columns (1), (3) and (5), the coefficients of Mean Industry RRI are all significant at a 1% significance level, which means that the industry average of RRI is highly correlated with the Average RRI variable used as an independent variable in this chapter. Moreover, the F values in the first stage are 127.190, 49.350 and 45.180, respectively, as shown in columns (1), (3) and (5), which are all above 12. This result proves that the industry average of RRI serves as a valid instrumental variable and can be used to conduct endogeneity testing.

The coefficients of Average RRI in columns (2) and (6) of Table 4-5 are positive and statistically significant at a 1% significance level when only controlling for firm fixed effect and both year and industry interaction fixed effect and firm fixed effect, which are consistent with the main results. This indicates that reputational risk is positively related to corporate investment inefficiency.

Moreover, in Table 4-6, for the first stage, in columns (1), (3) and (5), the coefficients of

Mean State RRI are all significant at a 1% significance level, which means that the state average of RRI is highly related to the Average RRI variable used as an independent variable in this chapter. Furthermore, the F values in the first stage are 128.280, 39.250 and 17.650, respectively, as shown in columns (1), (3) and (5), which are also all above 12. Therefore, this finding also indicates that the state-level average of RRI constitutes a valid instrumental variable, thereby supporting its application in addressing endogeneity concerns.

In addition, the coefficient of Average RRI in column (2) of Table 4-6 is also positive and statistically significant at a 1% significance level, which also aligns with the primary findings. Although the coefficients of Average RRI are not significant in column (4) of Table 4-5 and in columns (4) and (6) of Table 4-6, the findings largely support the main results and have passed the endogeneity test.

Table 4-5 Endogeneity: Instrument variable

This table presents 2SLS regression results to address endogeneity concerns on the effect of reputational risk on corporate investment inefficiency in the United States. The instrument variable is 2 digit sic mean industry RRI. The dependent variable is the investment inefficiency of firm *i* in year *t*. The independent variable is the average of the current RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

		Investment inefficiency				
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
	First stage	Second stage	First stage	Second stage	First stage	Second stage
Average RRI		0.766***		-0.039		0.236***
		(0.196)		(0.218)		(0.087)
Firm size		-0.094***		-0.098***		-0.099***
		(0.013)		(0.015)		(0.015)
MTBV		0.015***		0.013**		0.012*
		(0.006)		(0.006)		(0.007)
SD (CFO)		-0.120**		-0.116**		-0.146***
		(0.060)		(0.056)		(0.051)
SD (Sales)		-0.040		-0.048		-0.039
		(0.033)		(0.030)		(0.032)
SD (Inv)		0.015		0.015		0.055***
		(0.011)		(0.010)		(0.013)
Z-Score		0.010***		0.009***		0.008**
		(0.003)		(0.004)		(0.003)
Tangibility		0.037		0.072		0.150*
		(0.063)		(0.065)		(0.082)
Ind. K-structure		-0.070		-0.069		-0.076

		(0.049)		(0.053)		(0.590)
CFOS		0.002		0.002		0.002
		(0.001)		(0.001)		(0.001)
Slack		-0.000		-0.000**		-0.000
		(0.000)		(0.000)		(0.000)
Dividend		-0.005		-0.016		-0.010
		(0.012)		(0.013)		(0.014)
Opcycle		0.000		-0.001		0.002
		(0.008)		(0.008)		(0.009)
Loss		-0.041***		-0.040***		-0.036**
		(0.015)		(0.015)		(0.016)
Cash		0.147***		0.163***		0.169***
		(0.045)		(0.046)		(0.044)
Profitability		-0.115**		-0.119**		-0.106**
		(0.054)		(0.060)		(0.050)
Mean Industry RRI	0.008***		0.009***		1.747***	
	(0.001)		(0.001)		(0.260)	
F value	127.190		49.350		45.180	
Firm FE		Yes		Yes		Yes
Year FE		No		Yes		No
Industry#Year FE		No		No		Yes
Observations		3571		3571		3571
R-squared		0.582		0.613		0.760

Table 4-6 Endogeneity: Instrument variable

This table presents 2SLS regression results to address endogeneity concerns on the effect of reputational risk on corporate investment inefficiency in the United States. The instrument variable is mean state RRI. The dependent variable is the investment inefficiency of firm *i* in year *t*. The independent variable is the average of the current RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
	First stage	Second stage	First stage	Second stage	First stage	Second stage
Average RRI		0.917***		0.118		0.325
		(0.216)		(0.244)		(0.341)
Firm size		-0.099***		-0.100***		-0.100***
		(0.014)		(0.015)		(0.016)
MTBV		0.015**		0.013**		0.012*
		(0.006)		(0.006)		(0.007)
SD (CFO)		-0.121**		-0.117**		-0.147***
		(0.061)		(0.057)		(0.051)
SD (Sales)		-0.037		-0.046		-0.039
		(0.033)		(0.031)		(0.033)

SD (Inv)		0.015		0.015		0.055***
		(0.011)		(0.010)		(0.013)
Z-Score		0.010***		0.009***		0.008**
		(0.003)		(0.004)		(0.003)
Tangibility		0.027		0.063		0.146*
		(0.064)		(0.062)		(0.084)
Ind. K-structure		-0.066		-0.062		-0.046
		(0.051)		(0.053)		(0.590)
CFOS		0.002		0.002		0.002
		(0.001)		(0.001)		(0.001)
Slack		-0.000		-0.000**		0.000
		(0.000)		(0.000)		(0.000)
Dividend		-0.007		-0.015		-0.010
		(0.012)		(0.013)		(0.014)
Opcycle		0.000		-0.001		0.002
		(0.008)		(0.008)		(0.009)
Loss		-0.042***		-0.041***		-0.037**
		(0.015)		(0.015)		(0.016)
Cash		0.146***		0.160***		0.169***
		(0.045)		(0.045)		(0.044)
Profitability		-0.115**		-0.119**		-0.106**
		(0.053)		(0.059)		(0.049)
Mean State RRI	0.008***		0.009***		0.008***	
	(0.001)		(0.001)		(0.002)	
F value	128.280		39.250		17.650	
Firm FE		Yes		Yes		Yes
Year FE		No		Yes		No
Industry#Year FE		No		No		Yes
Observations		3571		3571		3571
R-squared		0.568		0.614		0.760

4.5.4 Robustness check

4.5.4.1 Alternative time frame of sample

Gao et al. (2021) investigate the relationship between media courage and corporate investment efficiency, excluding observations during the financial crisis from 2007 to 2009 in their robustness checks. Similarly, Benlemlih and Bitar (2018) and Tsai et al. (2021) explore the impact of the financial crisis on their studies and include it in their robustness checks. Thus, this chapter will adopt their methodologies to assess the effect of reputational risk on corporate investment efficiency in different periods, both during and after the

financial crisis, as this allows for a more comprehensive and in-depth understanding of how reputational risk affects investment inefficiency across different time periods.

Table 4-7 presents the effect of reputational risk on corporate investment inefficiency during (columns 4-6) and after (columns 1-3) the financial crisis. The coefficients of Average RRI are positive and statistically significant in columns (1) through (3), which indicates that after the financial crisis, reputational risk is positively related to corporate investment inefficiency, and this is in line with the main results. However, although the coefficients' sign of Average RRI remain positive in columns (4) through (6), they are not statistically significant, suggesting that during the financial crisis, reputational risk does not significantly impact corporate investment inefficiency. This could be due to enterprises facing a broader type of risks during the financial crisis, making the impact of reputational risk on investment inefficiency relatively less significant.

Table 4-7 Robustness: The impact of reputational risk on corporate investment inefficiency in different periods

This table presents baseline results on the impact of a firm's reputational risk on corporate investment inefficiency in the United States after financial crisis from 2010 to 2020 (columns 1-3), and during the financial crisis from 2007 to 2009 (columns 4-6). The dependent variable is the investment inefficiency of firm *i* in year *t*. The independent variable is the average of the current RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Average RRI	0.130***	0.092**	0.207***	0.031	0.090	0.067
	(0.042)	(0.041)	(0.063)	(0.148)	(0.153)	(0.144)
Firm size	-0.090***	-0.112***	-0.126***	-0.265***	-0.259***	-0.195***
	(0.011)	(0.015)	(0.020)	(0.068)	(0.067)	(0.054)
MTBV	0.011	0.010	0.008	0.027***	0.025**	0.016*
	(0.007)	(0.007)	(0.010)	(0.009)	(0.010)	(0.008)
SD (CFO)	-0.127*	-0.128*	-0.161**	-0.097	-0.093	-0.062
	(0.072)	(0.073)	(0.069)	(0.122)	(0.116)	(0.107)
SD (Sales)	-0.075**	-0.072**	-0.098**	-0.022	-0.006	0.055
	(0.034)	(0.036)	(0.047)	(0.054)	(0.054)	(0.061)
SD (Inv)	0.016	0.017	0.061***	-0.691**	-0.701**	-0.410**
	(0.016)	(0.016)	(0.018)	(0.346)	(0.346)	(0.176)
Z-Score	0.009**	0.009**	0.006	-0.049	-0.054*	-0.075**
	(0.004)	(0.004)	(0.004)	(0.031)	(0.031)	(0.034)

Tangibility	0.066	0.057	0.096	-0.030	-0.026	0.028
	(0.070)	(0.073)	(0.106)	(0.262)	(0.265)	(0.364)
Ind. K-structure	0.014	-0.070		-0.069	-0.033	
	(0.060)	(0.070)		(0.091)	(0.121)	
CFOS	0.002	0.002	0.003*	0.034	0.032	0.025
	(0.002)	(0.002)	(0.002)	(0.021)	(0.021)	(0.020)
Slack	0.000	-0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Dividend	0.006	-0.004	0.001	0.056	0.047	0.019
	(0.012)	(0.013)	(0.017)	(0.060)	(0.058)	(0.066)
Opcycle	0.002	0.001	0.007	0.018	0.015	0.016
	(0.010)	(0.010)	(0.011)	(0.021)	(0.021)	(0.021)
Loss	-0.036***	-0.042***	-0.040**	-0.059***	-0.059***	-0.041*
	(0.013)	(0.014)	(0.018)	(0.023)	(0.022)	(0.025)
Cash	0.224***	0.240***	0.230***	0.088	0.097	0.145
	(0.056)	(0.057)	(0.059)	(0.104)	(0.105)	(0.123)
Profitability	-0.118**	-0.123**	-0.100**	0.195*	0.210*	0.295**
	(0.052)	(0.055)	(0.047)	(0.111)	(0.110)	(0.123)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	No	Yes	No
Industry#Year FE	No	No	Yes	No	No	Yes
Observations	2725	2725	2163	744	744	634
R-squared	0.618	0.622	0.727	0.815	0.816	0.860

4.5.4.2 Alternative measurement of key variables

He et al. (2021) convert monthly RRI to annual maximum RRI in their study. Moreover, Okuyama et al. (2021) utilize annual median RRI as the independent variable in their analysis. Thus, this chapter employs these 2 types of RRI measures to examine the effect of different forms of reputational risk on corporate investment inefficiency as this can provide a more comprehensive and nuanced understanding of how different types of reputational risk may affect corporate investment inefficiency.

The findings presented in Table 4-8 demonstrate that nearly all coefficients of Max RRI and Median RRI are positive and statistically significant, consistent with the main results. This also demonstrates that different forms of reputational risks have a positive and significant impact on corporate investment inefficiency. However, when controlling for both year and firm fixed effects in column (5), the coefficient of Median RRI is not statistically significant,

but the sign is still positive.

Table 4-8 Robustness: The impact of reputational risk on corporate investment inefficiency

This table presents baseline results on the impact of a firm's reputational risk on corporate investment inefficiency in the United States. The dependent variable is the investment inefficiency of firm *i* in year *t*. The independent variables are the max current RRI (columns 1-3) and the median current RRI (columns 4-6). Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Max RRI	0.096***	0.065***	0.114***			
	(0.025)	(0.024)	(0.032)			
Median RRI				0.118***	0.062	0.130**
				(0.040)	(0.039)	(0.057)
Firm size	-0.077***	-0.100***	-0.098***	-0.076***	-0.099***	-0.097***
	(0.011)	(0.014)	(0.017)	(0.011)	(0.014)	(0.017)
MTBV	0.015***	0.013**	0.012	0.015***	0.013**	0.012
	(0.006)	(0.006)	(0.008)	(0.006)	(0.006)	(0.008)
SD (CFO)	-0.114**	-0.117**	-0.145**	-0.113**	-0.117**	-0.145**
	(0.056)	(0.058)	(0.057)	(0.056)	(0.057)	(0.057)
SD (Sales)	-0.048	-0.045	-0.040	-0.049	-0.046	-0.040
	(0.031)	(0.030)	(0.036)	(0.031)	(0.030)	(0.037)
SD (Inv)	0.014	0.015	0.054***	0.014	0.015	0.053***
	(0.009)	(0.010)	(0.015)	(0.009)	(0.010)	(0.015)
Z-Score	0.010***	0.009***	0.008**	0.010***	0.009***	0.008**
	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
Tangibility	0.079	0.065	0.143	0.084	0.068	0.150
	(0.060)	(0.062)	(0.092)	(0.060)	(0.062)	(0.092)
Ind. K-structure	-0.081*	-0.060		-0.083*	-0.062	
	(0.045)	(0.052)		(0.045)	(0.052)	
CFOS	0.002	0.002	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Slack	-0.000*	-0.000**	-0.000	-0.000*	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dividend	0.001	-0.015	-0.009	0.001	-0.015	-0.011
	(0.011)	(0.013)	(0.016)	(0.011)	(0.013)	(0.016)
Opcycle	-0.000	-0.001	0.002	-0.000	-0.001	0.002
	(0.008)	(0.008)	(0.010)	(0.008)	(0.008)	(0.010)
Loss	-0.038***	-0.042***	-0.040**	-0.038***	-0.041***	-0.039**
	(0.014)	(0.015)	(0.018)	(0.014)	(0.015)	(0.018)
Cash	0.152***	0.160***	0.165***	0.152***	0.161***	0.165***
	(0.045)	(0.045)	(0.049)	(0.045)	(0.045)	(0.049)
Profitability	-0.114**	-0.119**	-0.107*	-0.114**	-0.119**	-0.107*
	(0.058)	(0.059)	(0.056)	(0.058)	(0.060)	(0.057)

Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	No	Yes	No
Industry#Year FE	No	No	Yes	No	No	Yes
Observations	3536	3536	2862	3536	3536	2862
R-squared	0.602	0.610	0.707	0.601	0.609	0.706

Moreover, several papers utilize the logarithm of annual current RRI as the independent variable (Asante-Appiah and Lambert 2022; Becchetti and Manfredonia, 2022; Hasan et al., 2022). Following their methodologies, the coefficients of Log (Average RRI) in columns (1) through (3) of Table 4-9 are all positive and statistically significant, which aligns with the main findings. In addition, this chapter also employs the logarithm of investment inefficiency as the dependent variable to determine whether the results would be changed. The results in columns (4) through (9) reveal that the coefficients of both Average RRI and Log (Average RRI) are consistently positive and statistically significant. This also demonstrates that reputational risk has a positive and significant impact on corporate investment inefficiency.

Table 4-9 Robustness: The impact of reputational risk on corporate investment inefficiency

This table presents baseline results on the impact of a firm's reputational risk on corporate investment inefficiency in the United States. The dependent variables are the investment inefficiency (columns 1-3) and Log (investment inefficiency) (columns 4-9) of firm *i* in year *t*. The independent variables are the average of the current RRI (columns 4-6) and the Log (the average of the current RRI) (columns 1-3 and 7-9). Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency			Log (investment inefficiency)					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Average RRI				0.119***	0.069*	0.148***			
				(0.035)	(0.036)	(0.055)			
Log (Average RRI)	0.167***	0.098**	0.193***				0.128***	0.073*	0.159***
	(0.048)	(0.046)	(0.069)				(0.039)	(0.040)	(0.061)
Firm size	-0.077***	-0.100***	-0.098***	-0.065***	-0.082***	-0.078***	-0.064***	-0.082***	-0.078***
	(0.011)	(0.014)	(0.017)	(0.007)	(0.010)	(0.012)	(0.007)	(0.010)	(0.012)
MTBV	0.015***	0.013**	0.012	0.014***	0.012***	0.012**	0.014***	0.012***	0.012**
	(0.006)	(0.006)	(0.008)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)
SD (CFO)	-0.114**	-0.117**	-0.145**	-0.054**	-0.057**	-0.075***	-0.054**	-0.057**	-0.075***
	(0.056)	(0.057)	(0.057)	(0.027)	(0.027)	(0.028)	(0.027)	(0.027)	(0.028)
SD (Sales)	-0.049	-0.045	-0.040	-0.035**	-0.031*	-0.022	-0.035**	-0.031*	-0.022

	(0.031)	(0.030)	(0.037)	(0.018)	(0.018)	(0.021)	(0.018)	(0.018)	(0.021)
SD (Inv)	0.014	0.015	0.054***	0.008	0.009*	0.031***	0.008	0.009*	0.031***
	(0.009)	(0.010)	(0.015)	(0.005)	(0.005)	(0.008)	(0.005)	(0.005)	(0.008)
Z-Score	0.010***	0.009***	0.008**	0.008***	0.008***	0.007***	0.008***	0.008***	0.007***
	(0.003)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Tangibility	0.081	0.066	0.146	0.083	0.076	0.167**	0.083	0.076	0.167**
	(0.060)	(0.062)	(0.092)	(0.051)	(0.053)	(0.074)	(0.051)	(0.053)	(0.074)
Ind. K-structure	-0.082*	-0.061		-0.127***	-0.103**		-0.127***	-0.103**	
	(0.045)	(0.052)		(0.038)	(0.043)		(0.038)	(0.043)	
CFOS	0.002	0.002	0.002	1.71e-04	1.86e-04	2.00e-04	1.71e-04	1.87e-04	2.01e-04
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Slack	-0.000*	-0.000**	-0.000	-0.000***	-0.000***	-0.000	-0.000***	-0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dividend	0.001	-0.015	-0.011	-0.001	-0.014	-0.009	-0.001	-0.014	-0.009
	(0.011)	(0.013)	(0.016)	(0.011)	(0.012)	(0.015)	(0.011)	(0.012)	(0.015)
Opcycle	-0.000	-0.001	0.002	-0.004	-0.005	-0.003	-0.004	-0.005	-0.003
	(0.008)	(0.008)	(0.010)	(0.006)	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)
Loss	-0.038***	-0.041***	-0.039**	-0.028***	-0.031***	-0.030***	-0.028***	-0.031***	-0.029***
	(0.014)	(0.015)	(0.018)	(0.009)	(0.009)	(0.011)	(0.009)	(0.009)	(0.011)
Cash	0.152***	0.160***	0.165***	0.142***	0.150***	0.151***	0.142***	0.150***	0.151***
	(0.045)	(0.045)	(0.049)	(0.036)	(0.037)	(0.040)	(0.036)	(0.037)	(0.040)
Profitability	-0.114**	-0.119**	-0.107*	-0.065***	-0.070***	-0.061***	-0.065***	-0.070***	-0.061***
	(0.058)	(0.060)	(0.056)	(0.025)	(0.027)	(0.023)	(0.025)	(0.027)	(0.023)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	No	Yes	No	No	Yes	No
Industry#Year FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	3536	3536	2862	3535	3535	2861	3535	3535	2861
R-squared	0.602	0.610	0.707	0.644	0.651	0.742	0.644	0.651	0.741

Gomariz and Ballesta (2014) utilize a distinct method to calculate investment inefficiency in their robustness check. They introduce a dummy variable NEG into equation (1) and re-calculate investment inefficiency. If a firm's sales growth is negative, the value is 1, 0 otherwise. The modified model is structured as follows:

$$Investment_{i,t+1} = \beta_0 + \beta_1 NEG_{i,t} + \beta_2 sale\ growth_{i,t} + \beta_3 NEG * sale\ growth_{i,t} + \varepsilon_{i.t+1} \quad (3)$$

Here, $Investment_{i,t+1}$ is the sum of capital expenditures, R&D expenditures, and acquisitions minus sales of PPE, scaled by lagged total assets of firm *i* in *t+1* year.

$sale\ growth_{i,t}$ is the percentage change in sales of firm *i* from year *t−1* to *t*. $NEG_{i,t}$ is a dummy variable of firm *i* in year *t*. If a firm's sale growth is negative, the value is 1, 0 otherwise. $NEG * sale\ growth_{i,t}$ is the interaction term of firm *i* in year *t*. The residual $\varepsilon_{i.t+1}$ represents investment inefficiency of firm *i* in *t+1* year.

In addition, Wang, et al. (2020), Gao et al. (2021) and Wu et al. (2022) utilize Tobin Q to replace sale growth as the proxy for growth opportunity and re-estimate the equation (1). Additionally, Gao et al. (2021) also select asset growth to replace sale growth as the proxy for growth opportunity. The models are presented as follows:

$$Investment_{i,t+1} = \beta_0 + \beta_1 Tobin\ Q_{i,t} + \varepsilon_{i.t+1} \quad (4)$$

Here, $Investment_{i,t+1}$ is the sum of capital expenditures, R&D expenditures, and acquisitions minus sales of PPE, scaled by lagged total assets of firm *i* in *t+1* year. $Tobin\ Q_{i,t}$ is the growth opportunity of firm *i* in year *t*. The residual $\varepsilon_{i.t+1}$ represents investment inefficiency of firm *i* in *t+1* year.

$$Investment_{i,t+1} = \beta_0 + \beta_1 asset\ growth_{i,t} + \varepsilon_{i.t+1} \quad (5)$$

Here, $Investment_{i,t+1}$ is the sum of capital expenditures, R&D expenditures, and acquisitions minus sales of PPE, scaled by lagged total assets of firm *i* in *t+1* year. $asset\ growth_{i,t}$ is the percentage change in assets of firm *i* from year *t−1* to *t*. The residual $\varepsilon_{i.t+1}$ represents investment inefficiency of firm *i* in *t+1* year.

Consequently, this chapter follows their methodology and re-calculates the investment inefficiency. The results presented in Table 4-10 investigate the effect of reputational risk on different forms of corporate investment inefficiency and reveal that nearly all the coefficients of Average RRI are positive and statistically significant, consistent with the primary results. Therefore, the findings of this chapter are demonstrated to be robust.

Table 4-10 Robustness: The impact of reputational risk on corporate investment inefficiency

This table presents baseline results on the impact of a firm's reputational risk on corporate investment inefficiency in the United States. The dependent variable is the investment inefficiency of firm *i* in year *t*. In columns (1-3), the NEG dummy variable is added to recalculate the investment inefficiency. Columns (4-6) and (7-9) utilize Tobin Q and asset growth, respectively, to represent growth opportunity and recalculate the investment inefficiency. The independent variable is the average of the current RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency								
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Average RRI	0.997*	0.774	1.738**	1.502***	0.711*	1.907***	1.278***	0.710*	1.676***
	(0.521)	(0.508)	(0.736)	(0.402)	(0.430)	(0.641)	(0.395)	(0.411)	(0.622)
Firm size	-0.079***	-0.090***	-0.089***	-0.076***	-0.106***	-0.101***	-0.065***	-0.090***	-0.085***
	(0.012)	(0.015)	(0.018)	(0.013)	(0.016)	(0.019)	(0.011)	(0.014)	(0.015)
MTBV	0.020***	0.019***	0.017*	-0.018***	-0.022***	-0.023***	0.020***	0.017***	0.016***
	(0.007)	(0.007)	(0.010)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
SD (CFO)	-0.116**	-0.121**	-0.150***	-0.022	-0.023	-0.040*	-0.016	-0.016	-0.041*
	(0.048)	(0.051)	(0.050)	(0.019)	(0.018)	(0.023)	(0.017)	(0.017)	(0.021)
SD (Sales)	-0.048	-0.039	-0.022	-0.043*	-0.022	-0.023	-0.049**	-0.031	-0.029
	(0.031)	(0.030)	(0.036)	(0.025)	(0.025)	(0.032)	(0.023)	(0.024)	(0.030)
SD (Inv)	0.015*	0.017*	0.051***	-0.002	0.000	0.014	0.002	0.003	0.025***
	(0.009)	(0.009)	(0.013)	(0.005)	(0.005)	(0.014)	(0.005)	(0.005)	(0.009)
Z-Score	0.011***	0.011***	0.009**	-0.002	0.010	0.017	-0.002	0.007	0.008
	(0.003)	(0.004)	(0.004)	(0.009)	(0.010)	(0.011)	(0.008)	(0.009)	(0.008)
Tangibility	0.034	0.054	0.174*	0.142**	0.132*	0.187*	0.070	0.066	0.098
	(0.066)	(0.069)	(0.097)	(0.068)	(0.068)	(0.104)	(0.058)	(0.059)	(0.090)
Ind. K-structure	-0.211***	-0.179***		-0.097**	-0.090*		-0.098**	-0.077	
	(0.057)	(0.063)		(0.042)	(0.047)		(0.041)	(0.050)	
CFOS	0.002**	0.002**	0.002**	-0.007	-0.010	-0.007	-0.007	-0.010	-0.005
	(0.001)	(0.001)	(0.001)	(0.011)	(0.011)	(0.009)	(0.013)	(0.012)	(0.010)
Slack	-0.000*	-0.000	-0.000	-0.000***	-0.000***	-0.000*	-0.000	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dividend	-0.013	-0.025*	-0.018	0.009	-0.012	-0.005	0.003	-0.015	-0.005
	(0.013)	(0.013)	(0.016)	(0.011)	(0.012)	(0.016)	(0.011)	(0.012)	(0.016)
Opcycle	-0.004	-0.004	-0.001	-0.010	-0.011*	-0.009	-0.013**	-0.014***	-0.010
	(0.009)	(0.009)	(0.010)	(0.006)	(0.006)	(0.007)	(0.006)	(0.005)	(0.007)
Loss	-0.093***	-0.093***	-0.084***	-0.032***	-0.033***	-0.036***	-0.027***	-0.028***	-0.029***
	(0.015)	(0.015)	(0.020)	(0.011)	(0.011)	(0.010)	(0.010)	(0.011)	(0.010)
Cash	0.065	0.089*	0.090	0.146***	0.151***	0.157***	0.125***	0.130***	0.129***
	(0.052)	(0.053)	(0.060)	(0.053)	(0.053)	(0.058)	(0.045)	(0.045)	(0.049)
Profitability	-0.106**	-0.111**	-0.104**	-0.045	-0.087*	-0.130***	-0.036	-0.070	-0.087*
	(0.048)	(0.048)	(0.047)	(0.043)	(0.048)	(0.047)	(0.040)	(0.046)	(0.045)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	No	Yes	No	No	Yes	No

Industry#Year FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	3525	3525	2851	3520	3520	2865	3313	3313	2659
R-squared	0.553	0.564	0.664	0.492	0.502	0.660	0.589	0.596	0.710

4.5.5 Further analyses

Existing literature on reputational risk rarely considers the impact of heterogeneity and moderating variables on the results. To enhance the robustness of the findings, this chapter adopts methodological approaches from other studies on reputational risk and investment inefficiency, aiming to provide a more comprehensive and integrated understanding of how reputational risk affects corporate investment inefficiency.

4.5.5.1 Role of environmental, social and governance reputational risk in corporate investment inefficiency

The RepRisk database includes the percentages of environmental, social and governance factors on the current RRI, as outlined in the RepRisk Methodology Overview (2021). Becchetti et al. (2022) examine the effect of environmental, social and governance RRI on the PE ratio, respectively. They mention that ESG reputational risk consists of multiple highly heterogeneous factors, with varying proportions at different times. Different types of reputational risk may influence corporate decision-making in distinct ways. Therefore, studying ESG reputational risk as a single indicator may not provide a comprehensive understanding. They suggest dividing ESG reputational risk into environmental, social, and governance components for separate analysis.

Thus, adopting their methodology, this chapter aims to determine which component of ESG reputational risk most significantly affects a firm's investment inefficiency. Table 4-11 demonstrates that when only firm fixed effect is controlled in columns (4) and (7), the coefficients of Social RRI and Governance RRI are positive and statistically significant at 10% and 5% significance levels, respectively. It indicates that both Social and Governance reputational risk exert a positive and significant influence on corporate investment inefficiency. For economic implications, the results reveal that a one-standard-deviation increase in the average Social and Governance RRI leads to a 0.002% (column 4) and 0.002%

(column 7) increase in investment inefficiency. However, the findings presented in Table 4-11 suggest that the coefficients of Environmental RRI are not significant in column (1) through (3), which reveals that environmental reputational risk does not significantly affect corporate investment inefficiency.

Table 4-11 The impact of environmental, social and governance reputational risk on corporate investment inefficiency

This table presents baseline results on the impact of a firm's environmental, social and governance reputational risk on corporate investment inefficiency in the United States. The dependent variable is the corporate investment inefficiency of firm *i* in year *t*. The independent variables are the average of the environmental, social and governance RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency								
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Environment RRI	-0.002	-0.009	-0.029						
	(0.021)	(0.020)	(0.031)						
Social RRI				0.019*	0.007	0.012			
				(0.011)	(0.011)	(0.014)			
Governance RRI							0.027**	0.014	0.021
							(0.011)	(0.011)	(0.014)
Firm size	-0.072***	-0.099***	-0.096***	-0.073***	-0.099***	-0.096***	-0.075***	-0.099***	-0.097***
	(0.011)	(0.014)	(0.017)	(0.011)	(0.014)	(0.017)	(0.011)	(0.015)	(0.017)
MTBV	0.015***	0.013**	0.012	0.015**	0.013**	0.012	0.015***	0.013**	0.012
	(0.006)	(0.006)	(0.008)	(0.006)	(0.006)	(0.008)	(0.006)	(0.006)	(0.008)
SD (CFO)	-0.112**	-0.117**	-0.144**	-0.112**	-0.116**	-0.144**	-0.112**	-0.116**	-0.144**
	(0.055)	(0.057)	(0.056)	(0.055)	(0.057)	(0.056)	(0.056)	(0.057)	(0.056)
SD (Sales)	-0.051	-0.046	-0.041	-0.051	-0.046	-0.041	-0.050	-0.046	-0.040
	(0.031)	(0.030)	(0.036)	(0.031)	(0.030)	(0.036)	(0.031)	(0.030)	(0.036)
SD (Inv)	0.014	0.015	0.053***	0.013	0.015	0.053***	0.014	0.015	0.053***
	(0.009)	(0.010)	(0.015)	(0.009)	(0.010)	(0.015)	(0.009)	(0.010)	(0.015)
Z-Score	0.010***	0.009***	0.008**	0.010***	0.009***	0.008**	0.010***	0.009***	0.008**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Tangibility	0.091	0.072	0.157*	0.090	0.071	0.156*	0.083	0.067	0.151
	(0.061)	(0.062)	(0.094)	(0.061)	(0.062)	(0.094)	(0.061)	(0.062)	(0.093)
Ind. K-structure	-0.087*	-0.065		-0.084*	-0.063		-0.086*	-0.065	
	(0.046)	(0.052)		(0.045)	(0.051)		(0.046)	(0.052)	
CFOS	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Slack	-0.000**	-0.000**	-0.000	-0.000*	-0.000**	-0.000	-0.000*	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dividend	0.002	-0.016	-0.011	0.002	-0.016	-0.011	0.002	-0.015	-0.010
	(0.011)	(0.013)	(0.016)	(0.011)	(0.013)	(0.016)	(0.011)	(0.013)	(0.016)

Opcycle	-0.000	-0.001	0.002	0.000	-0.001	0.002	-0.000	-0.001	0.002
	(0.009)	(0.008)	(0.010)	(0.009)	(0.008)	(0.010)	(0.008)	(0.008)	(0.010)
Loss	-0.036**	-0.040***	-0.036**	-0.036**	-0.040***	-0.037**	-0.035**	-0.040***	-0.036**
	(0.014)	(0.015)	(0.018)	(0.014)	(0.015)	(0.018)	(0.014)	(0.015)	(0.018)
Cash	0.153***	0.162***	0.166***	0.154***	0.162***	0.166***	0.152***	0.161***	0.166***
	(0.045)	(0.045)	(0.050)	(0.045)	(0.045)	(0.050)	(0.045)	(0.045)	(0.050)
Profitability	-0.113*	-0.119**	-0.106*	-0.113*	-0.119**	-0.107*	-0.113*	-0.119**	-0.106*
	(0.058)	(0.060)	(0.058)	(0.058)	(0.060)	(0.057)	(0.058)	(0.060)	(0.057)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	No	Yes	No	No	Yes	No
Industry#Year FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	3525	3525	2851	3525	3525	2851	3525	3525	2851
R-squared	0.601	0.609	0.706	0.601	0.609	0.706	0.602	0.610	0.707

4.5.5.2 Role of firm size in the effect of reputational risk on corporate investment inefficiency

Zamir et al. (2022) point out that firm-level investment inefficiency is related to firm size. Thus, drawing on the frameworks established by Zamir et al. (2022), this chapter considers heterogeneity and aims to investigate the impact of firm size on the relationship between reputational risk and corporate investment inefficiency, overinvestment and underinvestment. Firms are categorized as large or small based on the median value of firm size. A dummy variable Small is defined, assigning a value of 1 if a company's firm size is below the median value of firm size, and 0 otherwise. Subsequently, the interaction term Small * Average RRI is introduced into equation (2) and proceed to estimate equation (6).

$$Y_{i,t+1} = \beta_0 + \beta_1 Average\ RRI_{i,t} + \beta_2\ Small_{i,t} + \beta_3 Small_{i,t} * Average\ RRI_{i,t} + \beta_4 X_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{i,t+1} \quad (6)$$

Here, $Y_{i,t+1}$ is the corporate investment inefficiency of firm *i* in year *t+1*. $Average\ RRI_{i,t}$ is the average current reputational risk index (RRI) of firm *i* in year *t*. $Small_{i,t}$ is a dummy variable of firm *i* in year *t*. If a company's firm size is smaller than the median value of firm size, the value is 1, 0 otherwise. $Small_{i,t} * Average\ RRI_{i,t}$ is the interaction term of firm *i* in year *t*. X_{it} contains control variables of firm *i* in year *t*. μ_i is the firm fixed effect, ω_t is the year fixed effect, θ_j is the industry fixed effect and $\varepsilon_{i,t+1}$ is the error term.

In Table 4-12, the coefficient of the interaction term Small * Average RRI is negative and statistically significant at a 10% significance level in column (2) when both year and firm fixed effects are controlled, with a value of -0.136. Moreover, the coefficient of Average RRI is positive and statistically significant at a 1% significance level in column (2), with a value of 0.142. Therefore, the variation of the effect of reputational risk on corporate investment inefficiency for large firms is β_1 (0.142) and this effect for small firms is $\beta_1 + \beta_3$ (0.142-0.136=0.006).

Thus, the results suggest that reputational risk has a greater positive impact on corporate investment inefficiency for large firms compared to small firms. For economic implications, it reveals that a one-standard-deviation increase in the average RRI results in a 0.013% increase in investment inefficiency for large firms, and a 0.001% increase for small firms. Cao et al. (2012) support this conclusion. They argue that large firms, due to greater media attention, are more likely to have accounting and financial reporting errors exposed first. When such issues arise, large firms may suffer more severe consequences, which could lead to suboptimal investment decisions.

However, the coefficients of the interaction term Small * Average RRI across columns (4) through (9) in Table 4-12 are not statistically significant, which indicates that firm size does not have a moderating effect on the relationship between reputational risk and overinvestment and underinvestment.

Table 4-12 The impact of large and small firms' reputational risk on corporate investment inefficiency, overinvestment and underinvestment

This table presents baseline results on the impact of both large and small firms' reputational risk on corporate investment inefficiency, overinvestment and underinvestment in the United States. The dependent variables are the corporate investment inefficiency (columns 1-3), overinvestment (columns 4-6) and underinvestment (columns 7-9) of firm *i* in year *t*. The independent variable is the average of the current RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency			Overinvestment			Underinvestment		
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Average RRI	0.199***	0.142***	0.212***	0.612*	0.437	0.529	-0.010	-0.013	-0.021
	(0.050)	(0.049)	(0.078)	(0.314)	(0.325)	(0.400)	(0.019)	(0.019)	(0.030)
Small	-0.033*	-0.021	-0.002	-0.013	0.025	0.004	-0.000	-0.001	-0.005
	(0.017)	(0.017)	(0.022)	(0.058)	(0.058)	(0.079)	(0.006)	(0.006)	(0.007)
Small*Average RRI	-0.126	-0.136*	-0.089	-0.232	-0.267	-0.328	-0.014	-0.007	-0.020
	(0.081)	(0.080)	(0.116)	(0.396)	(0.403)	(0.451)	(0.044)	(0.044)	(0.063)
Firm size	-0.085***	-0.104***	-0.099***	-0.115***	-0.164***	-0.164***	0.021***	0.020***	0.019***
	(0.013)	(0.016)	(0.018)	(0.029)	(0.033)	(0.057)	(0.003)	(0.004)	(0.005)
MTBV	0.015***	0.013**	0.012	0.000	-0.003	-0.011	-0.008***	-0.008***	-0.007***
	(0.006)	(0.006)	(0.008)	(0.016)	(0.016)	(0.017)	(0.001)	(0.001)	(0.001)
SD (CFO)	-0.115**	-0.118**	-0.145**	-0.132	-0.124	-0.138*	0.033	0.036	0.040
	(0.056)	(0.057)	(0.057)	(0.083)	(0.080)	(0.076)	(0.029)	(0.028)	(0.026)
SD (Sales)	-0.049	-0.046	-0.039	0.036	-0.031	-0.109	0.009	0.007	0.007
	(0.031)	(0.030)	(0.036)	(0.096)	(0.071)	(0.077)	(0.007)	(0.007)	(0.010)
SD (Inv)	0.014	0.016	0.054***	0.050**	0.052**	0.059**	-0.002	-0.002	-0.020
	(0.009)	(0.010)	(0.015)	(0.024)	(0.025)	(0.025)	(0.002)	(0.002)	(0.012)
Z-Score	0.010***	0.009***	0.008**	0.013*	0.012*	0.007	-0.003***	-0.003***	-0.002**
	(0.003)	(0.004)	(0.004)	(0.007)	(0.007)	(0.006)	(0.001)	(0.001)	(0.001)
Tangibility	0.087	0.072	0.151*	-0.404	-0.450*	-0.392	-0.033	-0.047*	-0.101***
	(0.060)	(0.061)	(0.091)	(0.244)	(0.230)	(0.259)	(0.026)	(0.028)	(0.038)
Ind. K-structure	-0.091**	-0.066		-0.285	-0.549		0.126***	0.092***	
	(0.045)	(0.052)		(0.688)	(0.884)		(0.019)	(0.022)	
CFOS	0.002	0.002	0.002	0.004***	0.004***	0.004***	0.009	0.009	0.009
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.008)	(0.009)	(0.008)
Slack	-0.000**	-0.000**	-0.000	-0.000	-0.000	-0.000	-0.000*	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dividend	0.001	-0.015	-0.011	0.101	0.090*	0.054	-0.000	0.001	-0.007
	(0.011)	(0.013)	(0.016)	(0.064)	(0.054)	(0.083)	(0.005)	(0.005)	(0.006)
Opcycle	0.000	-0.001	0.002	0.004	0.003	0.001	0.006*	0.006*	0.006*
	(0.008)	(0.008)	(0.010)	(0.018)	(0.017)	(0.018)	(0.003)	(0.003)	(0.004)
Loss	-0.039***	-0.042***	-0.039**	-0.156***	-0.189***	-0.231***	0.010***	0.010***	0.010**
	(0.014)	(0.015)	(0.018)	(0.053)	(0.055)	(0.076)	(0.003)	(0.003)	(0.005)
Cash	0.156***	0.163***	0.166***	-0.005	0.039	0.037	-0.018	-0.019	-0.018
	(0.045)	(0.045)	(0.049)	(0.104)	(0.090)	(0.138)	(0.017)	(0.017)	(0.019)
Profitability	-0.112*	-0.117**	-0.107*	-0.256***	-0.268***	-0.235***	0.010***	0.011***	0.011**

	(0.057)	(0.059)	(0.056)	(0.053)	(0.045)	(0.042)	(0.004)	(0.004)	(0.005)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	No	Yes	No	No	Yes	No
Industry#Year FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	3536	3536	2862	449	449	307	2971	2971	2295
R-squared	0.603	0.610	0.707	0.640	0.670	0.796	0.650	0.655	0.749

4.5.5.3 Role of reputational risk corporate in investment inefficiency between high and low reputational risk firms

Drawing on the methodology proposed by Okuyama et al. (2021), this chapter aims to differentiate between firms with high and low reputational risk to investigate the effect of reputational risk on their investment inefficiency and to identify differences between these two categories of firms. This classification approach can provide a clearer understanding of the mechanism through which ESG reputational risk influences corporate behavior as it considers heterogeneity. Additionally, this method facilitates the distinction between different corporate strategies in response to ESG reputational risk.

RepRisk Methodology Overview (2021) indicates that RRI between 0 and 24 is classified as low-risk exposure. However, the sample used in this chapter does not match this classification. Thus, this analysis utilizes the mean value of the average RRI to distinguish between high and low reputational risk firms. A dummy variable, Low-risk, is assigned a value of 1 if a firm's average RRI is below the mean value of average RRI, and 0 otherwise. Then, an interaction term, Low-risk * Average RRI, is introduced into equation (2) and proceed to estimate equation (7).

$$Y_{i,t+1} = \beta_0 + \beta_1 Average\ RRI_{i,t} + \beta_2\ Low\_Risk_{i,t} + \beta_3 Low\_Risk_{i,t} * Average\ RRI_{i,t} + \beta_4 X_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{i,t+1} \qquad (7)$$

Here, $Y_{i,t+1}$ is the corporate investment inefficiency of firm *i* in year *t+1*. $Average\ RRI_{i,t}$ is the average current reputational risk index (RRI) of firm *i* in year *t*. $Low\_Risk_{i,t}$ is a dummy variable of firm *i* in year *t*. If a firm's average RRI is smaller than the mean value of

average RRI, the value is 1, 0 otherwise. $Low\_Risk_{i,t} * Average\ RRI_{i,t}$ is the interaction term of firm *i* in year *t*. X_{it} contains control variables of firm *i* in year *t*. μ_i is the firm fixed effect, ω_t is the year fixed effect, θ_j is the industry fixed effect and $\varepsilon_{i,t+1}$ is the error term.

In Table 4-13, the coefficients of Low-risk * Average RRI in columns (1) and (3) are positive and statistically significant at a 5% significance level when only controlling for firm fixed effect and both year and industry interaction fixed effect and firm fixed effect. Additionally, the coefficients of Average RRI in columns (1) and (3) are also positive and statistically significant. The results indicate that different levels of reputational risks have a positive and significant influence on corporate investment inefficiency.

Moreover, β_1 represents the variation in investment inefficiency for firms with high reputational risk when the average RRI increases from 0 to 1. For low reputational risk firms, the investment inefficiency variation is represented by $\beta_1 + \beta_3$. Thus, reputational risk exerts a greater positive impact on corporate investment inefficiency of low reputational risk firms compared to high reputational risk firms. For economic implications, it reveals that a one-standard-deviation increase in the average RRI results in an increase in investment inefficiency of 0.023% (column 1) and 0.023% (column 3) for high reputational risk firms. Furthermore, for low reputational risk firms, a one-standard-deviation increase in average RRI leads to a 0.073% and 0.078% increase in investment inefficiency.

Additionally, Cao et al. (2012) give the possible reason and argue that firms with higher reputations should have higher-quality financial reports, as they face greater media attention and public scrutiny. If their financial reporting quality is weak, they may suffer more severe reputational damage. Then, they also maintain that firms with low reputational risk may face greater media attention and public supervision, this is because the public typically holds negative expectations for companies with high reputational risk, whereas expectations tend to be favourable for companies with low reputational risk. If the reputational risk index of a low reputational risk company increases, it will exceed the media and public expectations and lead to greater changes.

Table 4-13 The impact of reputational risk on high and low reputational risk firms' investment inefficiency

This table presents baseline results on the impact of a firm's reputational risk on both high reputational risk and low reputational risk firms' investment inefficiency in the United States. The dependent variable is the investment inefficiency of firm *i* in year *t*. The independent variable is the average of the current RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency		
Independent variable	(1)	(2)	(3)
Average RRI	0.253***	0.206***	0.262**
	(0.071)	(0.071)	(0.113)
Low-risk	0.017	0.020	0.013
	(0.012)	(0.013)	(0.018)
Low-risk * Average RRI	0.571**	0.382	0.612**
	(0.287)	(0.287)	(0.283)
Firm size	-0.077***	-0.100***	-0.099***
	(0.011)	(0.014)	(0.017)
MTBV	0.015***	0.013**	0.012
	(0.006)	(0.006)	(0.008)
SD (CFO)	-0.114**	-0.117**	-0.145**
	(0.056)	(0.058)	(0.057)
SD (Sales)	-0.049	-0.046	-0.039
	(0.031)	(0.030)	(0.037)
SD (Inv)	0.014	0.015	0.054***
	(0.009)	(0.010)	(0.015)
Z-Score	0.010***	0.009***	0.008**
	(0.003)	(0.004)	(0.004)
Tangibility	0.082	0.068	0.148
	(0.060)	(0.062)	(0.092)
Ind. K-structure	-0.084*	-0.067	
	(0.045)	(0.052)	
CFOS	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)
Slack	-0.000*	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)
Dividend	8.25e-05	-0.016	-0.011
	(0.011)	(0.013)	(0.016)
Opcycle	-0.000	-0.001	0.002
	(0.008)	(0.008)	(0.010)
Loss	-0.038***	-0.041***	-0.039**
	(0.014)	(0.015)	(0.018)
Cash	0.153***	0.161***	0.167***
	(0.045)	(0.045)	(0.049)
Profitability	-0.113**	-0.119**	-0.107*

	(0.058)	(0.059)	(0.056)
Firm FE	Yes	Yes	Yes
Year FE	No	Yes	No
Industry#Year FE	No	No	Yes
Observations	3536	3536	2862
R-squared	0.603	0.610	0.707

4.5.5.4 Role of financial constraints in the effect of reputational risk on corporate investment inefficiency

Hasan et al. (2022) maintain that cash flow liquidity is crucial for firms, as it not only supports investment expenditures but also helps prevent cash shortages. Therefore, research on financing constraints is highly significant for corporations. Additionally, they suggest that in financially constrained firms, the positive impact of reputational risk on corporate cash holdings is more pronounced. Lei and Chen (2019) conclude that debt constraint has a positive influence on the relationship between corporate governance boundary and investment efficiency. Chen et al. (2013) also argue that financial constraints exert a positive and significant effect on the investment sensitivity of cash flow. Thus, building on these studies, this chapter also aims to examine whether financial constraints have a significant moderating effect on the relationship between reputational risk and corporate investment inefficiency.

Moreover, financial constraints are typically assessed using four criteria: payout ratio, firm size, bond rating and commercial paper ratings (Hahn and Lee, 2009; Denis and Sibilkov, 2010). Fazzari et al. (1987) argue that unconstrained firms typically exhibit a high payout ratio, while constrained firms may often display low payout ratio. Additionally, Gertler and Gilchrist (1994) maintain that young companies, due to their relative unfamiliarity, experience greater effects from information asymmetry, which in turn leads to significant financing challenges. Then, Whited (1992) contends that financially constrained firms are those with positive debt but without an S&P bond rating. Conversely, financially unconstrained firms are those with positive debt and an S&P bond rating. Furthermore, Calomiris et al. (1995) assert that financially constrained firms are those with positive debt

but without S&P commercial paper ratings. In contrast, financially unconstrained firms are those with positive debt and S&P commercial paper ratings.

In addition, the KZ index (Kaplan and Zingales, 1997) and the SA index, which is an adjusted version of the KZ index (Hadlock and Pierce, 2010), are wildly used to assess financial constraints. However, Whited and Wu (2006) indicate that the KZ index fails to adequately distinguish firms with features that are relevant to financial constraints. In addition, Hadlock and Pierce (2010) also question the validity of the KZ index, criticizing its modeling approach for including both quantitative and qualitative information in the dependent and independent variables. Additionally, the WW index presents several advantages. First, it correlates directly with firm characteristics associated with external financial constraints. Second, it employs the GMM method to acquire fitted values of the shadow value. Third, it effectively prevents significant issues related to sample selection, simultaneity, and measurement errors.

Furthermore, due to the substantial number of missing values regarding firm age within the sample, this chapter does not employ the SA index to assess financial constraints. Although the WW index does not indicate the influence of financial constraints on privately and venture capital-financed firms, this chapter still uses the WW index to calculate financial constraints. Moreover, numerous studies have employed the WW index to measure financial constraints (Mulier and Merlevede, 2016; Chong and Kim, 2019; Yang et al., 2019; Banerjee et al., 2020). Following the methodologies outlined by Balafas et al. (2018) and Banerjee et al. (2020), the WW index is calculated as follows:

$$WW_{it} = -0.091 * CF_{it} - 0.062 * DIVPOS_{it} + 0.021TLTD_{it} - 0.044LNTA_{it} + 0.102ISG_{it} - 0.035SG_{it} \quad (8)$$

Here, WW_{it} is the financial constraint index of firm *i* in year *t*. CF_{it} is the ratio of cash flow to the total assets of firm *i* in year *t*. $DIVPOS_{it}$ is a dummy variable of firm *i* in year *t*. If a firm pays a cash dividend, the value is 1, 0 otherwise. $TLTD_{it}$ is the ratio of long-term debt to total assets of firm *i* in year *t*. $LNTA_{it}$ is the logarithm of total assets of firm *i* in

year *t*. ISG_{it} is the 3-digit industry sales growth of firm *i* in year *t*. SG_{it} is the sales growth of firm *i* in year *t*. A lower value of the WW index indicates reduced financial constraints for the firm.

Thus, this analysis utilizes the WW index to represent financial constraints. Then, the interaction term WW *Average RRI is introduced into the equation (2) and proceed to estimate equation (9).

$$Y_{i,t+1} = \beta_0 + \beta_1 Average\ RRI_{i,t} + \beta_2\ WW_{i,t} + \beta_3 WW_{i,t} * Average\ RRI_{i,t} + \beta_4 X_{it} + \mu_i + \omega_t + \theta_j + \varepsilon_{i,t+1} \quad (9)$$

Here, Y_{it} is the corporate investment inefficiency of firm *i* in year *t+1*. $Average\ RRI_{i,t}$ is the average current reputational risk index (RRI) of firm *i* in year *t*. $WW_{i,t}$ is financial constraints of firm *i* in year *t*. $WW_{i,t} * Average\ RRI_{i,t}$ is the interaction term of firm *i* in year *t*. X_{it} contains control variables of firm *i* in year *t*. μ_i is the firm fixed effect, ω_t is the year fixed effect, θ_j is the industry fixed effect and $\varepsilon_{i,t+1}$ is the error term.

Moreover, the results presented in Table 4-14 indicate that the coefficients of WW *Average RRI are not statistically significant across columns (1) through (3), which suggest that financial constraints do not have a significant moderating effect on the relationship between reputational risk and corporate investment inefficiency. The reason may be as Hasan et al. (2022) suggested, when reputational risk increases, firms prepare for potential financial constraints by holding more cash to invest positive NPV project and reduce cost. Thus, financial constraints do not have a significant moderating effect on the relationship between reputational risk and corporate investment inefficiency.

Table 4-14 The moderating impact of financial constraints on the relationship between reputational risk and corporate investment inefficiency

This table presents baseline results on the moderating impact of financial constraints on the relationship between reputational risk and corporate investment inefficiency in the United States. The dependent variable is the investment inefficiency of firm *i* in year *t*. The independent variable is the average of the current RRI. Standard errors corrected for clustering at the firm level are reported in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

	Investment inefficiency		
Independent variable	(1)	(2)	(3)
Average RRI	0.292**	0.221**	0.285***
	(0.116)	(0.112)	(0.109)
WW	0.004	0.005	0.008**
	(0.004)	(0.004)	(0.004)
WW *Average RRI	0.359	0.334	0.271
	(0.306)	(0.296)	(0.246)
Firm size	-0.073***	-0.097***	-0.109***
	(0.011)	(0.014)	(0.019)
MTBV	0.015**	0.013*	0.011
	(0.007)	(0.007)	(0.009)
SD (CFO)	-0.117*	-0.120*	-0.151**
	(0.061)	(0.062)	(0.061)
SD (Sales)	-0.051	-0.048	-0.049
	(0.034)	(0.033)	(0.041)
SD (Inv)	0.016	0.017	0.059***
	(0.010)	(0.011)	(0.015)
Z-Score	0.009**	0.009**	0.007*
	(0.004)	(0.004)	(0.004)
Tangibility	0.079	0.073	0.142
	(0.066)	(0.068)	(0.105)
Ind. K-structure	-0.109**	-0.100*	
	(0.047)	(0.052)	
CFOS	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)
Slack	-0.000	-0.000*	0.000
	(0.000)	(0.000)	(0.000)
Dividend	0.009	-0.007	0.003
	(0.012)	(0.013)	(0.017)
Opcycle	-0.002	-0.002	0.002
	(0.009)	(0.009)	(0.010)
Loss	-0.035**	-0.038***	-0.037*
	(0.014)	(0.014)	(0.020)
Cash	0.170***	0.179***	0.190***
	(0.048)	(0.049)	(0.053)
Profitability	-0.111*	-0.116*	-0.103*
	(0.060)	(0.062)	(0.059)

Firm FE	Yes	Yes	Yes
Year FE	No	Yes	No
Industry#Year FE	No	No	Yes
Observations	3238	3238	2576
R-squared	0.612	0.619	0.717

4.6 Conclusion

This chapter examines the relationship between a firm's reputational risk and corporate investment inefficiency in the United States from 2007 to 2020. The results demonstrate that a firm's reputational risk exerts a positive and significant influence on corporate investment inefficiency. Moreover, the findings also reveal that reputational risk increases corporate overinvestment, but it does not affect corporate underinvestment. Moreover, further analysis also concludes that social and governance reputational risks are positively related to corporate investment inefficiency, whereas environmental reputational risk does not exert a significant influence on corporate investment inefficiency.

In addition, this chapter also differentiates between high and low reputational risk firms, as well as large and small firms, to understand the role of different types of firm's reputational risk in corporate investment inefficiency. Furthermore, the evidence indicates that reputational risk exerts a greater positive impact on corporate investment inefficiency of low reputational risk firms compared to high reputational risk firms. Moreover, reputational risk hurts both large and small firms' investment efficiency and it has a greater positive impact on corporate investment inefficiency of large firms compared to small firms. However, reputational risk does not significantly influence either overinvestment or underinvestment in both large and small firms. In addition, financial constraints do not have a significant moderating effect on the relationship between reputational risk and corporate investment inefficiency.

Collectively, this chapter contributes to the understanding of how a firm's reputational risk affects corporate investment efficiency in the United States. This insight could provide valuable guidance for U.S. companies on improving their investment efficiency and making

reasonable investment decisions by enhancing their reputation performance and decreasing their reputational risks. Furthermore, these findings can also be extended to related research on enterprises in other countries.

Despite the contribution of this chapter to understanding the relationship between U.S. firm's reputational risk and corporate investment efficiency, there are several limitations. First, similarly to other studies such as Gomariz et al. (2014), these proxies used are subjected to measurement error, which may lead to less precise results. Second, following the arguments in Cook et al. (2019), although the main model includes numerous control variables, it does not consider other ways in which ESG-based corporate reputational risks might impact investment efficiency, such as improvements of stakeholder relations or changes in the cost of capital. Although these limitations exist, this chapter still provides an opportunity for further research into areas of corporate reputation risk and investment efficiency.

4.7 Reference

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5 Conclusions

The thesis comprises three chapters on corporate finance. Chapter 2 examines the impact of regional foreign investment on the performance of M&As in a developing country, China. Chapter 3 explores the effect of corporate social responsibility on the exports of U.S. companies. Chapter 4 investigates the role of corporate reputation risk in corporate investment decisions in a developed country, the United States. This chapter concludes the major findings and proposes potential directions for future research.

Chapter 2 explores the impact of regional foreign investment on domestic mergers and acquisitions in China, utilizing a dataset spanning from 2011 to 2019 of Chinese listed firms. The findings suggest that regional foreign investment does not have a significant impact on firms' M&A short-term stock performance. Three main reasons may explain this result. First, the proportion of institutional investors in Chinese listed companies is very low. Consequently, the share of Qualified Foreign Institutional Investors is even smaller, making it difficult for them to provide effective monitoring, thereby limiting their impact on firm performance. Second, a relatively small sample size may increase standard errors and result in statistically insignificant coefficients. Third, the lack of significant impact from foreign investment may be attributed to the short duration of the analysis period.

Moreover, further analyses also indicate that regional corporate income tax plays a partially negative moderating role in the relationship between regional foreign investment and short-term M&A stock performance. However, there is no evidence that state-owned enterprises status of acquiring firms exerts any significant moderating influence in this relationship. The reasons can be attributed to that SOEs inherently enjoy advantages in financing, policy support, and market access. Consequently, compared with private firms, SOEs are less dependent on external conditions such as the capital, technology, and competitive pressures associated with FDI. In other words, regardless of the level of regional foreign investment, the market response to M&As carried out by SOEs may not exhibit substantial fluctuations.

Furthermore, Chapter 2 considers regional heterogeneity and examines whether foreign

investment in the western region affects the M&A performance of local firms. However, the findings provide limited support for the view that the foreign investment in China's western region may have a positive impact on firms' short-term M&A stock performance. This indicates that the government should make greater efforts to help firms in the western region absorb foreign investment and improve their M&A performance. Finally, the result reveals that regional foreign investment fails to have a statistically significant impact on the number of M&A transactions.

Chapter 3 examines the impact of corporate social responsibility on a firm's export performance, using a panel of U.S. firms over the period from 1995 to 2013. The findings indicate that corporate social responsibility has a positive and significant impact on export sales, which suggests the need for exporting firms to prioritize improvements in their CSR scores. Moreover, this chapter categorizes the sample companies into financially constrained and unconstrained firms, as well as enterprises located in coastal and non-coastal areas. The analysis indicates that neither financial constraints nor firm location have a significant moderating effect on the relationship between CSR and export sales. This suggests that the export activities of U.S. firms are not influenced by financial constraints or geographic location.

Additionally, the findings reveal that state-level GDP per capita has a positive and statistically significant moderating effect on the relationship between CSR and export sales to some extent. This suggests that fostering regional economic development and enhancing per capita GDP can assist enterprises in improving CSR performance and making more effective export decisions. Furthermore, the results also indicate that CSR strength is positively associated with corporate export sales to a certain extent, while CSR concern has a detrimental effect on corporate export sales. Moreover, CSR scores related to employee, diversity and product aspects significantly enhance the company's export sales to a certain degree. This indicates that U.S. export companies should actively work to improve their CSR strength scores and specifically focus on the CSR scores of employee, diversity and product.

Chapter 4 assesses the relationship between a firm's reputational risk and corporate

investment inefficiency, utilizing a panel dataset of U.S. firms from 2007 to 2020. The results reveal that reputational risk significantly and positively affects corporate investment inefficiency. This suggests that U.S. companies should actively consider and manage reputational risks when making investment decisions. Then, the findings indicate that while reputational risk increases overinvestment, it does not have a noticeable effect on underinvestment. This may be attributed to reputational risk diminishing the confidence of investors, stakeholders, and management, as well as impacting associated risk premiums. As a result, managers might increase their investments to regain confidence among investors, stakeholders and the board of directors, which can lead to overinvestment when resources are allocated to projects with negative net present value. Moreover, if firms exhibit low reputational risk, their investment efficiency is typically either normal or favourable.

Moreover, in this analysis, firms are categorized based on firm size and varying levels of reputational risk. The results demonstrate that reputational risk positively impacts investment inefficiency across firms of varying levels of reputational risk and sizes. Notably, firms with low reputational risk and larger firms experience greater adverse effects. Then, reputational risk does not significantly affect either overinvestment or underinvestment in both large and small firms. Furthermore, this chapter classifies reputational risk into environmental, social and governance dimensions. The findings indicate that that social and governance-related reputational risk positively affect corporate investment inefficiency, whereas environmental reputational risk does not exert a significant influence. These results imply that U.S. companies should prioritize the management of social and governance-related reputational risks in their corporate investment decision-making processes. In addition, further analysis reveals that financial constraints do not have a significant moderating effect on the relationship between reputational risk and corporate investment inefficiency.

The findings in Chapter 2 carry significant implications for companies. Despite a noticeable increase in Chinese M&As and a steady rise in foreign investment, there remains a notable scarcity in the literature. This research pioneers the analysis of the relationship between regional foreign investment and domestic M&A activities in China. This chapter endeavours

to bridge the existing knowledge gap, expand the scope of M&A research in China, and provide new insights into the effects of foreign investment on China's socio-economic progression. Moreover, this chapter also focuses on the influence of macroeconomic factors and regional heterogeneity on Chinese firms' M&A activities. Given China is a vast area, treating its regions as homogeneous would lead to inaccurate conclusions. In addition, the impact of the macroeconomic environment on corporate M&A activities is also important. Therefore, by considering both the influence of macroeconomic factors and regional heterogeneity, this chapter contributes to a more comprehensive and multidimensional understanding of Chinese firms' M&A activities. Finally, considering China's status as the largest emerging economy, its insights and practices can provide valuable guidance for governments in other emerging and developing countries. These nations can derive valuable lessons from China's strategic use of foreign direct investment and the implementation of policies that influence the M&A decisions of domestic firms, thereby enhancing M&A effectiveness and promoting economic growth at both local and national levels.

The discoveries presented in Chapter 3 shed light on the potential benefits and advantages that corporate social responsibility affords the U.S. exporting companies. This chapter contributes valuable insights, expands the scope of academic research in the field of exporting, and introduces a new perspective on the role of corporate social responsibility in the socio-economic activities of U.S. corporations. Additionally, the scarcity of data has resulted in limited research and experience regarding CSR in emerging countries. Within the framework of economic globalization, the United States, acknowledged as a leader among developed countries, holds research and expertise that could greatly benefit other regions, particularly emerging markets. Their knowledge can deepen the understanding of the role of CSR in corporate exports, thereby fostering local and national economic development.

Chapter four presents several implications for corporations making strategic investment decisions. First, it broadens the existing knowledge base and recommends that enterprises place greater emphasis on reputation risk, incorporating it within the broader framework of corporate risk management. Additionally, categorizing companies based on various criteria—financial constraints, firm size, and different levels of reputational risk—can

provide a comprehensive understanding of the impact of reputational risk on corporate investment activities in the United States. Finally, compared to developed countries, emerging markets face more severe agency problems and information asymmetries due to weaker financial institutions, high levels of corruption, excessive government intervention, inadequate shareholder protection, and underdeveloped capital markets. These factors collectively contribute to reduced investment efficiency in these regions. In the context of economic globalization, the United States, recognized as a leader among developed countries, provides essential research and insights that can aid other regions, particularly emerging markets, in comprehensively understanding the influence of reputational risk on corporate investment efficiency. This can foster economic development both locally and nationally.

The thesis acknowledges limitations. The presence of data limitations is evident in every chapter. Specifically, the second chapter exclusively examines Chinese listed companies as acquirers and neglects consideration of unlisted companies. Furthermore, this chapter does not investigate the conditions of the companies being acquired. Finally, China's M&A activities are still at a preliminary stage, and the number of M&A activities does not match the levels observed in developed countries. Therefore, it is recommended that future research could include a broader selection of acquiring firms and examine in detail the corporate characteristics of the acquired entities.

For the third chapter, first, the sample period is confined to data collection before 2013 from the MSCI KLD ESG database. Additionally, access to alternative CSR databases was unavailable. Second, the sample size is constrained when integrating CSR data with export sales data from the MSCI KLD ESG and Compustat databases. Third, the field of CSR is still in the initial stage, and the measurement standards lack standardization. Further exploration in this area is essential, and it is suggested that researchers pursue more comprehensive investigations of CSR and export sales in future studies.

For the fourth chapter, first, similarly to other studies such as Gomariz et al. (2014), these proxies employed are subjected to measurement error, potentially leading to less precise results. Second, in accordance with the arguments presented by Cook et al. (2019), although

the main model contains numerous control variables, it fails to account for other ways in which ESG-based corporate reputational risks might impact investment efficiency, such as improvements of stakeholder relations or changes in the cost of capital. Despite these limitations, this chapter still establishes a foundation for further research into corporate reputation risk and investment efficiency. Future studies are encouraged to consider these limitations and offer a more comprehensive analysis in this area.