THE IMPACT OF CORPORATE SOCIAL RESPONSIBILITY ON OPERATIONAL AND FINANCIAL OUTCOMES: THREE EMPIRICAL STUDIES IN CHINA

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The Impact of Corporate Social Responsibility on Operational and Financial Outcomes: Three Empirical Studies in China

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Abstract

Over the past decades, corporate social responsibility (CSR) has become increasingly important for firms to satisfy stakeholders' mounting expectations for socially responsible operations. A rapidly growing number of companies have implemented CSR initiatives (e.g., green manufacturing and recycling practices, employees' health and safety programs, and charity activities) to alleviate the negative impact of their operations on the natural environment and society. While some firms have proactively engaged in CSR initiatives, there are many other firms who are hesitant to undertake these initiatives as it remains unclear whether such initiatives contribute to their operational and financial performance.

In this thesis, we conduct three interrelated studies to examine the operational and financial performance outcomes of CSR. Study 1 investigates the relationship between CSR performance and corporate financial performance (CFP) as well as the contingency effects of critical firm-specific factors (i.e., state ownership and political connections) and industry-specific factors (i.e., industry munificence, industry dynamism, and industry complexity). Based on a panel dataset of 2,211 Chinese manufacturing enterprises from 2010 to 2017, we find that CSR performance has an inverse U-shaped relationship with CFP. This suggests that there is an optimal level of CSR performance from the CFP perspective, that is, too little or too much CSR effort can be detrimental to CFP. We further observe that state ownership attenuates the curvilinear CSR-CFP relationship whereas political connections have no such influence. Moreover, we find that industry munificence and complexity strengthen this

relationship while industry dynamism has no such influence.

Study 2 focuses on the employee dimension of CSR performance and examines the impact of employee-related CSR (ECSR) on labor productivity, which is a widely used metric of operational performance in the operations management literature. Furthermore, Study 2 investigates the moderating roles of competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity. Using a panel dataset of 2,211 Chinese manufacturing enterprises between 2010 and 2017, we find that ECSR has a positive effect on labor productivity. Additionally, cost leadership strategy reinforces the effect of ECSR on labor productivity, whereas differentiation strategy does not significantly moderate this effect. Moreover, industry safety risk intensity is found to positively moderate the linkage between ECSR and labor productivity, which implies that firms operating in industries with higher safety production risks can achieve greater labor productivity.

Study 3 focuses on the environmental dimension of CSR and particularly examines green logistics initiatives (GLIs) implemented by logistics service providers (LSPs). Study 3 investigates the effect of GLIs on LSPs' shareholder value, which is measured by the stock market reaction and can be regarded as an important indicator that reflects firms' anticipated financial performance. It further explores the moderating effects of the types of GLIs (internal versus external) and organization slack (i.e., financial slack and operational slack). We utilize the event study approach to examine LSPs in China over a 14-year time span by analyzing the stock market reaction to their announcements of GLIs. We find that the stock market reacts positively to GLI

announcements made by Chinese LSPs, thereby indicating that GLIs convey a positive signal to investors and could bring higher shareholder value for LSPs. Furthermore, such market reaction is stronger for LSPs with a lower level of operational slack, whereas their financial slack has no such influence. In addition, we observe that the market reaction is indifferent to the types of GLIs (internal versus external), which suggests that both internal and external GLIs may be important signals valued by Chinese investors.

This thesis contributes to the CSR literature by providing new insights into the curvilinear CSR-CFP relationship and its boundary conditions in the context of China. It also extends the CSR literature by unraveling the effect of ECSR on firms' labor productivity and the contextual conditions under which this effect may vary. Moreover, this thesis sheds light on the environmental management literature by elucidating the impact of GLIs on LSPs' shareholder value and the contingency factors that moderate this impact. Besides its contributions to the relevant literature, this thesis provides important implications for managers and policy makers.

Keywords: Corporate social responsibility; Corporate financial performance; Labor productivity; Shareholder value; Contingency factors; China

Publications Arising from the Thesis

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Table of Contents

List of Figures

List of Tables

Chapter 1 Introduction

1.1 Research Background

1.1.1 Practical Background

Over the past decades, it becomes increasingly important for firms to embrace corporate social responsibility (CSR) practices owing to the escalating stakeholder pressures urging them to operate in a sustainable manner (Cheung et al., 2010; Jacobs et al., 2016; Kim et al., 2018; Luo and Bhattacharya, 2006). For example, employees may pressurize firms to implement socially responsible activities to enhance their health and safety (Yin, 2017). Customers might require firms to adopt certain prosocial activities to provide products with less negative environmental impacts (Sharma and Henriques, 2005). In addition, companies must comply with environmental and social regulations or face the threat of government regulators imposing penalties and fines (Sarkis et al., 2010). Firms also encounter pressures from non-government organizations (NGOs) such as environmental groups, neighborhood groups, the media, and labor unions (Campbell, 2007). These groups can mobilize public opinion in favor of or against a company's socially responsible activities.

CSR initiatives are particularly salient in emerging economies such as China where the rapid economic development in recent years has caused severe environmental damages, including air and water pollution (Shou et al., 2020; Zhu et al., 2016). For example, in 2017, the average PM2.5 concentrations (a representative air pollution indicator) in China's 338 cities amounted to 4.3 times the air quality guidelines of World Health Organization (Greenpeace, 2018). Moreover, since manufacturing factories

discharged a large amount of toxic substances into rivers, up to 40% of China's rivers are seriously polluted (Miao et al., 2015). The wide range of social issues caused by irresponsible corporate behavior in China are also considered worrisome by the international community. For instance, the Yahoo News reported that the recent explosion in a Chinese chemical factory killed six people and injured dozens (Stebbings, 2019). In addition, the Financial Times reported that Foxconn employed illegal child labor to assemble iPhone X, acting in an irresponsible manner (Yang, 2017). To ameliorate the worsening environmental and social conditions, the Chinese government has famulated regulatory policies such as "Cleaner Production Promotion Law" (State Council of China, 2016) and "Safety Production Standards" (State Council of China, 2017). These policies push Chinese enterprises to implement CSR practices to alleviate the negative impact of their operations on the environment and society.

Many Chinese companies have engaged in CSR initiatives to improve public health, safety, and the environmental well-being. For instance, Huawei, a technology giant in China, highly emphasizes CSR in its operations. It established recycling centers for consumer products to reduce environmental pollution. By the end of 2019, Huawei had 1,300 recycling stations in 48 countries and regions around the world. Huawei also developed a supplier social responsibility code of conduct program to require its suppliers to adhere to all the applicable laws and regulations and assess suppliers' CSR performance (Huawei Sustainability Report, 2019). Another example to illustrate firms' CSR practices is Haier Group, which is a leading home appliances manufacturer in China. In 2018, Haier effectively implemented green design, green manufacturing,

green marketing, and green recycling activities, which resulted in a 16.67% reduction in its energy consumption per unit of output value, saved an equivalent of 16,787 tons of standard coal, and reduced 44,221 tons of carbon dioxide emissions (Haier CSR Report, 2019). Haier was also keen on employees' health and safety programs and charity activities.

While some firms have proactively implemented CSR initiatives, there are many other firms who are hesitant to undertake these initiatives as it remains unclear whether such initiatives contribute to their operational and financial performance. Indeed, CSR is a topic of longstanding debate in the business world today. Some researchers posit that CSR practices can yield various benefits for a firm (e.g., employee commitment, customer satisfaction, and reputation enhancement) (Kim et al., 2018), which could help boost the firm's operational and financial performance. However, others argue that socially responsible activities not only can be costly but also can compete for a firm's limited valuable resources with other critical business areas (Friedman, 1970; Luo and Bhattacharya, 2009), which would harm the firm's operational and financial performance. The confusion surrounding the performance effects of CSR impedes the decision of many companies to implement socially responsible activities. Firms face the following key questions: Should they make investments in CSR activities? Will such investments contribute to their operational and financial performance? What are the contextual conditions under which CSR can bring higher operational and financial performance for them? Answers to these enquiries are important and powerful because they can help firms gain a better understanding of how CSR performance affects their

operational and financial performance as well as how various contingency factors moderate this effect.

1.1.2 Theoretical Background

Researchers in operations and supply chain management as well as other business areas have long been interested in CSR performance and its operational and financial outcomes (Hilliard, 2012; Jacobs et al., 2016; Sodhi, 2015). CSR emphasizes that firms need to integrate environmental and social concerns into their business operations to satisfy the societal expectations of diverse stakeholder groups (Chen and Delmas, 2011). It is argued that CSR performance is a multifaceted construct, reflecting firms' responsibilities to various key stakeholders (e.g., shareholders, employees, suppliers, customers, and local communities) (Carroll, 1979; Tang et al., 2012). Firms can enhance their CSR performance by engaging in a wide variety of prosocial initiatives such as green management practices, employee welfare programs, safety production activities, and corporate philanthropy (Shou et al., 2020).

In this thesis, we conduct three interrelated studies to examine the operational and financial performance outcomes of CSR. We comprehensively review the relevant literature and identify important research gaps for Study 1, Study 2, and Study 3, respectively.

Study 1 examines the effect of the holistic CSR performance on corporate financial performance (CFP) in the context of China. While the extant studies have explored the relationship between CSR performance and CFP, the results to date are inconsistent and

even contradictory. For example, the effect of CSR on CFP is found to be positive in some studies (e.g., Oikonomou et al., 2014; Petrenko et al., 2016) but negative in others (e.g., Baird et al., 2012; Moore, 2001). This highlights the need to further examine the CSR-CFP relationship and particularly its nonlinearity to provide a more complete picture of this relationship. Nevertheless, studies on the non-linear effects are not only limited, but are also confined to the context of developed economies such as the U.S. (Barnett and Salomon, 2012) and the U.K. (Brammer and Millington, 2008). Drawing on stakeholder theory and risk mitigation theory, we theoretically and empirically demonstrate an inverse U-shaped CSR-CFP link in the context of a developing nation (i.e., China). In addition, Study 1 examines the moderating effects of crucial firm-specific factors (i.e., state ownership and political connections) and industry-specific factors (i.e., industry munificence, industry dynamism, and industry complexity) on the CSR-CFP link. Previous studies have examined some contingency factors (e.g., product quality, innovativeness, advertising intensity, and operational productivity) (Hull and Rothenberg, 2008; Jacobs et al., 2016; Luo and Bhattacharya, 2006; Servaes and Tamayo, 2013), but have largely neglected the moderating roles of state ownership and political connections, which are two critical sociopolitical factors in emerging economies (Lo et al., 2018). Besides, although prior studies have explored the important role of external environment in influencing the CSR-CFP relationship (Baird et al., 2012; Goll and Rasheed, 2004), there is a dearth of research that has systematically examined industry characteristics as contingency factors in a developing nation context.

Study 2 focuses on the employee dimension of CSR performance and examines

the impact of employee-related CSR (ECSR) on labor productivity, which is a widely used metric of operational performance in the operations management literature. A handful of studies have examined the relationship between ECSR and firms' labor productivity. Nevertheless, they are primarily conducted in the context of developed countries (e.g., Spain and U.S.) and scant attention has been devoted to emerging countries such as China (Gubler et al., 2018; Lo et al., 2014; Orzes et al., 2017; Sánchez and Benito-Hernández, 2015). Drawing upon resource-based view (RBV) of the firm, Study 2 sheds additional light on the CSR literature by investigating the ECSR-labor productivity link in the context of China. Moreover, Study 2 assesses the moderating effects of firms' competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity. Prior studies have examined some contextual factors (e.g., operational complexity, operational coupling, and labor intensity) (Lo et al., 2014; Orzes et al., 2017), yet little is known about the contingency role of the factors explored in this study.

Study 3 focuses on the environmental dimension of CSR and particularly examines green logistics initiatives (GLIs) implemented by logistics service providers (LSPs). Building on signaling theory, it investigates the effect of GLIs on LSPs' shareholder value, which is measured by the stock market reaction and could be regarded as an important indicator that reflects firms' anticipated financial performance (Brown and Warner, 1985; Fama, 1970, 1991). Some studies have empirically examined the impact of green initiatives on firms' shareholder value, yet they have found mixed results and are mainly confined to manufacturing industries or a diverse

set of industries (e.g., Ba et al., 2013; Bose and Pal, 2012; Cordeiro and Tewari, 2015; Klassen and McLaughlin, 1996; Lam et al., 2016). The extant research has paid very limited attention to the logistics industry, particularly in the Chinese context. This industry plays an increasingly important role in contributing to China's economic development. Meanwhile, this industry is pollution-intensive and poses serious risks to the environment, which highlights the importance of implementing GLIs to ease the logistics-caused pollution and resource consumption. Therefore, there is an urgent need to assess how GLIs affect the shareholder value of logistics firms in China. Besides, Study 3 investigates the moderating effects of the types of GLIs (internal versus external) and organization slack (i.e., financial slack and operational slack) on the stock market reaction to GLIs. Previous studies have explored several contingency factors (e.g., firm size, state ownership, prior environmental performance, and export intensity) (Flammer, 2013; Jacobs et al., 2010; Lam et al., 2016; Lyon et al., 2013; Sadovnikova and Pujari, 2017). However, an in-depth analysis of the contingent effects of the types of GLIs and organization slack is missing in the literature.

1.2 Research Questions

In order to fill the research gaps in the literature, this thesis aims to answer the following research questions (RQs):

RQs of Study 1: How does CSR performance influence CFP? Linear relationship or nonlinear relationship? How do firm characteristics (i.e., state ownership and political connections) and industry characteristics (i.e., industry munificence, industry

dynamism, and industry complexity) moderate the CSR-CFP relationship?

RQs of Study 2: How does ECSR performance influence labor productivity? How do competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity moderate the ECSR-labor productivity relationship?

RQs of Study 3: How does the stock market react to GLIs announced by Chinese LSPs? How do the attribute of GLIs (internal versus external) and the attribute of LSPs (abundance of organizational slack resources) influence the market reaction to GLIs of Chinese LSPs?

1.3 Research Objectives

To answer the above research questions, we set a number of objectives to guide our investigation. The central objective of this thesis is to examine the impact of CSR on firms' operational and financial performance outcomes in the Chinese context. Specifically, this thesis seeks to achieve the following objectives:

(1) To reconcile the debate over the relationship between CSR performance and CFP by theoretically hypothesizing and empirically testing the inverse U-shaped CSR-CFP relationship as well as investigating the contingency effects of critical firm-specific factors (i.e., state ownership and political connections) and industry-specific factors (i.e., industry munificence, industry dynamism, and industry complexity).

(2) To explore the effect of ECSR on firms' labor productivity and the moderating roles of competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity.

(3) To explore the effect of GLIs on LSPs' shareholder value and the moderating effects of the types of GLIs (internal versus external) and organization slack (i.e., financial slack and operational slack).

(4) To make theoretical contributions to the literature on CSR and environmental management, particularly in the Chinese context.

(5) To provide implications for managers and policy makers to help them gain a better understanding of how CSR influences firms' financial performance and labor productivity and how GLIs influence firms' shareholder value.

1.4 Research Framework and Methods

In this thesis, we conduct three interrelated studies to examine the operational and financial performance outcomes of CSR. In this part, we elaborate the interrelationships between the three empirical studies of this thesis. From a holistic perspective, Study 1 examines the effect of CSR on firms' financial performance as well as the moderating effects of sociopolitical factors (i.e., state ownership and political connections) and industry-specific factors (i.e., industry munificence, industry dynamism, and industry complexity). Furthermore, to unravel the value of CSR, we particularly focus on employee and environmental dimensions of CSR because they are two important dimensions, which have been extensively examined by previous operations management studies (Ba et al., 2013; Lam et al., 2016; Lo et al., 2014; Wiengarten et al., 2016). Specifically, given that the employee dimension of CSR is closely related to labor productivity (Gubler et al., 2018; Sánchez & Benito-Hernández, 2015), Study 2

investigates the effect of employee-related CSR on firms' labor productivity, which is a widely used metric of operational performance in the operations management literature (Lo et al., 2014; Sartal et al., 2020). Study 2 further examines the moderating effects of competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity. Considering that logistics industry plays an increasingly important role in contributing to China's economic development and logistics activities cause serious harms to the environment (Lai et al., 2011; Tian et al., 2014), Study 3 concentrates on the environmental dimension of CSR in the logistics context. Study 3 investigates the effect of GLIs on firms' shareholder value, which is measured by the stock market reaction and can be viewed as an important indicator that reflects firms' anticipated financial performance (Brown and Warner, 1985; Fama, 1970, 1991). In short, this thesis includes three interrelated studies and sheds light on the operational and financial outcomes of CSR. Figure 1.1 summarizes the overall research framework and the linkages among three empirical studies in the thesis.

Since the three studies in this thesis focus on different research questions, we employ different theories as the theoretical lenses for the three studies. Particularly, in Study 1, we choose stakeholder theory and risk mitigation theory as our theoretical lenses because they are helpful for us to explain the inverse U-shaped effect of CSR on financial performance. The theories suggest that CSR can help firms gain a number of benefits, such as stakeholder support and moral capital, but the marginal benefits would decline (Godfrey et al., 2009; Ye and Zhang, 2011). The theories are also helpful for us to explain the moderating effects of sociopolitical factors because government is an

important stakeholder of the firm. In Study 2, we employ the RBV of the firm as our theoretical lens because we recognize that ECSR activities can help a firm create high-quality human capital and RBV has been successfully applied to develop insights into human capital, which can be viewed as a source of competitive advantage (McWilliams and Siegel, 2011; Sodhi, 2015). In Study 3, we adopt signaling theory as our theoretical lens in that we examine the stock market reaction to GLIs, which emphasizes the information transmission between the firm and the investors (Connelly et al., 2011). GLIs can be viewed as a reliable signal, which can help mitigate the information asymmetry between LSPs and the investors. Overall, we employ the most suitable theory for each study given the specific research context of each study.

Since the research questions of the three studies differ, we utilize different research approaches to address the research questions. Specifically, in Study 1 and Study 2, we use the firm fixed-effect regression models with robust standard errors to test the hypotheses because we construct the panel dataset and aim to explore the long-term performance effect of CSR. In Study 3, we adopt the event study method because we intend to examine the stock market reaction to GLI events and the short-term performance effect of such events. We focus on manufacturing and logistics industries because they are considered as the major sources of environmental pollution and social issues in China. In short, we employ the appropriate research methods to examine the research questions of this thesis. Table 1.1 summarizes the theoretical lenses and research methods used in the thesis.

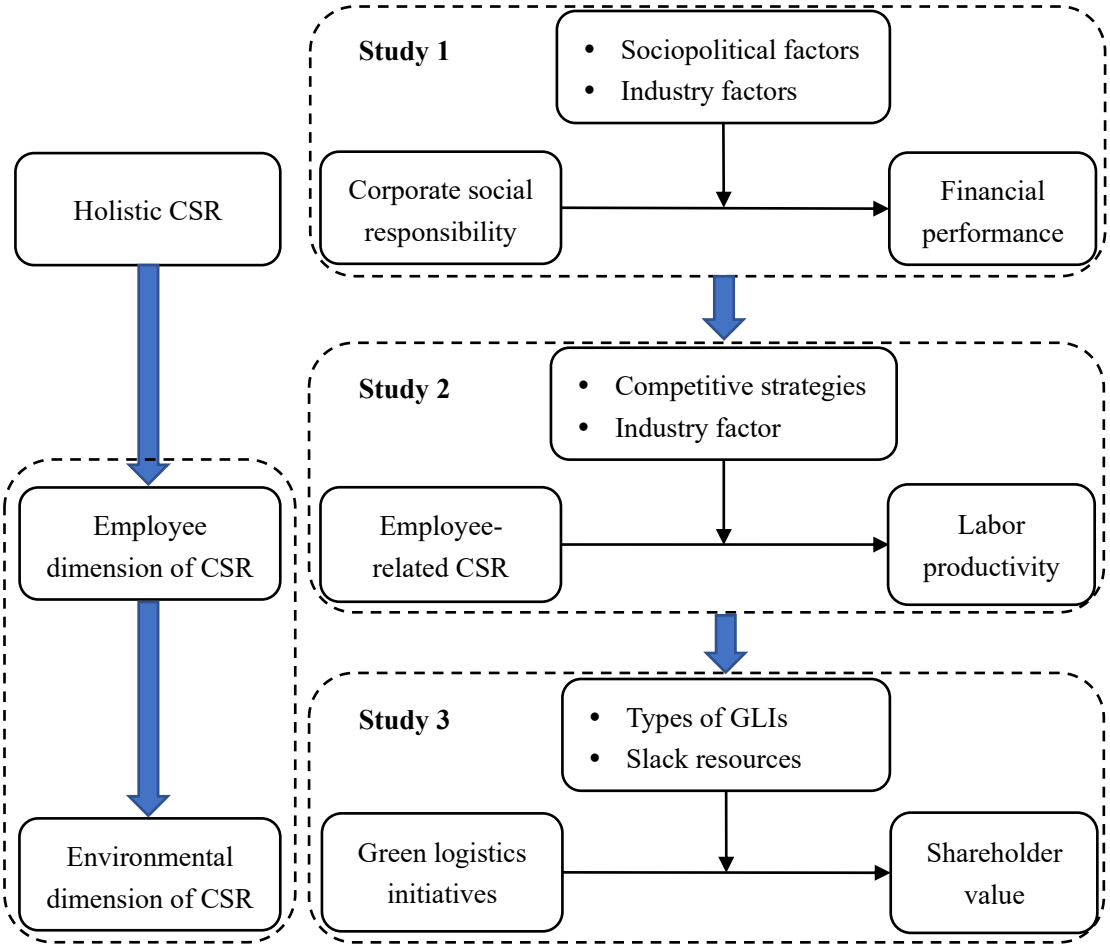

Figure 1.1 The Overall Framework of the Thesis

Table 1.1 A Summary of Theoretical Lenses and Research Methods Used in the Thesis

	Study 1	**Study 2**	**Study 3**
Theoretical lenses	• Stakeholder theory • Risk mitigation theory	• Resource-based view	• Signaling theory
Sample	• 2,211 Chinese manufacturing firms • 2010-2017	• 2,211 Chinese manufacturing firms • 2010-2017	• 44 Chinese logistics firms • 2005-2018
Research methods	• Fixed-effect regression models	• Fixed-effect regression models	• Event study • OLS regression

1.5 Research Significance

The contributions of each study are summarized at the end of each study and an overall summary of the theoretical contributions is detailed in Chapter 6. Herein, we

briefly summarize the critical contributions of our thesis as follows:

Study 1 advances the CSR literature by theoretically and empirically demonstrating an inverse U-shaped CSR-CFP link in the context of a developing nation (i.e., China). Furthermore, Study 1 contributes to the CSR research by uncovering the moderating roles of state ownership and political connections, which are two critical sociopolitical factors that some researchers have voiced (Lo et al., 2018). Finally, Study 1 adds to the CSR literature by providing a systematic analysis of how industry characteristics (i.e., industry munificence, industry dynamism, and industry complexity) could moderate the CSR-CFP link in China.

Study 2 sheds light on the CSR literature by providing new insights into the relationship between ECSR and labor productivity in the context of China. Previous studies examining this relationship are mainly confined to the context of developed nations (Gubler et al., 2018). Empirical evidence in the context of emerging economies remains sparse. Moreover, Study 2 advances knowledge by exploring how a firm's competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity moderate the ECSR-labor productivity relationship. Finally, Study 3 enriches the RBV literature by elucidating the contingency conditions that influence the effectiveness of human capital derived from ECSR.

Study 3 contributes to the environmental management literature by deepening our understanding of how GLIs affect the shareholder value of LSPs in the Chinese context. Besides, Study 3 advances knowledge on the contingency conditions by examining whether there are differential effects between internal and external GLIs and how the

market reaction is affected by organizational slack resources. Finally, Study 3 enriches the signaling theory literature by responding to the recent call of Lam et al. (2016), who encouraged the application of this theoretical perspective in the area of sustainable operations management.

1.6 Structure of the Dissertation

This dissertation includes six chapters, namely, introduction, literature review, Study 1, Study 2, Study 3, and conclusions. The specific contents of these chapters are as follows:

Chapter 1 elaborates on the practical and theoretical background, proposes the research questions and objectives, elucidates the research framework, clarifies the theoretical contributions, and introduces the structure of this thesis.

Chapter 2 provides a comprehensive literature review in order to identify the research gaps in the literature. We reviewed relevant literature on the definitions of CSR performance, the relationship between CSR and CFP, the relationship between CSR and labor productivity, and the relationship between green initiatives and shareholder value. Our comprehensive literature review identifies important research gaps for Study 1, Study 2, and Study 3.

Chapter 3 investigates the inverse U-shaped relationship between CSR performance and CFP as well as the moderating effects of critical firm-specific factors (i.e., state ownership and political connections) and industry-specific factors (i.e., industry munificence, industry dynamism, and industry complexity). Additionally, this

chapter introduces sample and data sources, measurements of variables, and estimation methods, applies Stata 14.0 to test the hypotheses, and discusses the implications for theory and practice.

Chapter 4 examines the relationship between ECSR and labor productivity as well as the moderating effects of competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity. Additionally, this chapter introduces sample and data sources, measurements of variables, and estimation methods, applies Stata 14.0 to test the hypotheses, and discusses the implications for theory and practice.

Chapter 5 examines the relationship between GLIs and shareholder value as well as the moderating effects of the types of GLIs (internal versus external) and organization slack (i.e., financial slack and operational slack). Additionally, this chapter introduces sample and data sources, the event study method, applies SPSS and Stata 14.0 to test the hypotheses, and discusses the implications for theory and practice.

Chapter 6 summarizes the dissertation's findings, highlights the theoretical, managerial, and policy implications, points out the limitations and future research directions, and provides concluding remarks.

Chapter 2 Literature Review

2.1 The Definitions of CSR Performance

Over the past three decades, CSR has received growing attention from researchers in a range of areas, including operations and supply chain management (Jacobs et al., 2016; Shou et al., 2020), marketing (Kang et al., 2016; Mishra and Modi, 2016), strategic management (Hull and Rothenberg, 2008; McWilliam and Siegel, 2000), and human resource management (Brammer et al., 2007; Turban and Greening, 1997). The extant research has provided many definitions of CSR performance. Table 2.1 summarizes several critical definitions of this term. As shown in Table 2.1, although CSR performance has a variety of definitions, they share a common focus on the impact of a firm's operations on the public or society beyond the firm's economic interests (Jacobs et al., 2016; Turban and Greening, 1997).

CSR performance is a multifaceted construct and researchers have operationalized it using various dimensions. For example, several scholars have used survey to measure CSR with nine dimensions (e.g., Zhu and Zhang, 2015; Zhu et al., 2016). In addition, based on the Kinder, Lydenberg & Domini (KLD) database, some researchers have measured CSR with seven dimensions (Jacobs et al., 2016; Kim et al., 2018). Besides, a number of studies have measured CSR with five dimensions (Gong et al., 2020; Shou et al., 2020). Overall, it is agreed that CSR performance is multifaceted, reflecting the diverse interests of various key stakeholders (e.g., shareholders, employees, suppliers, customers, and local communities) (Carroll, 1979; Tang et al., 2012). Firms can improve their CSR performance by engaging in prosocial activities such as resolving

governance and environmental issues, human rights concerns, employee welfare, and community development (Hasan et al., 2018; Kim et al., 2018). Table 2.2 summarizes the dimensions of CSR performance.

In this thesis, we conduct three interrelated studies to examine the operational and financial performance outcomes of CSR. Specifically, Study 1 examines the impact of the holistic CSR performance on CFP. Furthermore, Study 2 focuses on the employee dimension of CSR performance and investigates the impact of ECSR on firms' labor productivity. Finally, Study 3 focuses on the environmental dimension of CSR and examines the impact of GLIs on firms' shareholder value. Therefore, in this Chapter, we provide a comprehensive review on these three streams of literature and identify important research gaps for Study 1, Study 2, and Study 3, respectively.

Table 2.1 The Definitions of CSR Performance.

Authors	Definition
Carroll (1979)	"the social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time"
Wood (1991)	"a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships"
Turban and Greening (1997)	"a company's responsibilities to multiple stakeholders, such as employees and the community at large, in addition to its traditional responsibilities to economic shareholders"
Luo and Bhattacharya (2006)	"CSR is a company's activities and status related to its perceived societal or stakeholder obligations"
Jacobs et al. (2016)	"a set of management practices that minimize negative impacts and maximize positive impacts of firm operations on society"
Mishra and Modi (2016)	"CSR comprises discretionary firm activities aimed toward enhancing societal well-being"
Kim et al. (2018)	"a voluntary corporate action designed to create benefits for diverse stakeholders, including shareholders"

Table 2.2 The Dimensions of CSR Performance.

Dimensions of CSR	References
Organizational governance; Human rights; Labor practices; Environmental protection; Fair operating practices; Consumer issues; Community involvement and development; Supply chain practices; Political responsibility	Tong et al. (2018); Zhu and Lai (2019); Zhu and Zhang (2015); Zhu et al. (2016)
Employee; Customer; Investor; Community; Environment; Supplier	Mishra and Suar (2010)
Community; Corporate governance; Diversity; Employee relations; Environment; Human rights; Product	Jacobs et al. (2016); Kim et al. (2018); Luo and Bhattacharya (2006); Mishra and Modi (2016)
Shareholders; Employees; Suppliers and customers; Environment; Community	Gong et al. (2020); Shou et al. (2020); Wang et al. (2019); Xiong et al. (2016)

2.2 The Relationship between CSR and CFP

Over the past decades, scholars have sought to determine whether CSR performance leads to better CFP. Therefore, we conducted a systematic review of literature on the CSR-CFP relationship to wrap our hands around the existing knowledge on this specific relationship. Additionally, we also believed that such an exercise could justify the need for our enquiry on this widely studied phenomenon. Specifically, we performed a keyword search in the electronic database (i.e., Web of Science), using the keywords "corporate social responsibility" and "corporate social performance" during the period from 1990 to 2019. To narrow the scope to a manageable number of papers[1], we selected 27 top-tier journals in the field of

[1] The journals covered in this review include: *Academy of Management Review, Academy of Management Journal, Human Relations, Human Resource Management, Journal of Applied Psychology, Journal of Consumer Psychology, Administrative Science Quarterly, Organization Science, Strategic Management Journal, Strategic Entrepreneurship Journal, Journal of Consumer Research, Journal of International Business Studies, Journal of Marketing, Management Science, Journal of Operations Management, Manufacturing and Service Operations Management, Production and Operations Management, Entrepreneurship Theory and Practice, Journal of Business Ethics, Journal of Business Venturing, Journal of Management, Journal of Management Studies, Journal of Marketing Research, Journal of the Academy of Marketing Science, Organization Studies, Organizational Behavior and Human Decision Processes,* and *Research Policy.* These journals are in the list of FT50 or UTD24. They are commonly recognized as the top-tier and primary outlets within the broad field of management research.

management. Our initial search resulted in 645 articles. We carefully screened the full texts of each of these articles and excluded those that do not empirically examine the relationship between CSR and CFP. By means of this search strategy, we were able to identify 41 relevant articles.

The summary of these papers is presented in Table 2.3, which reports the hypothesized CSR-CFP link, the moderating factors of this link, the data type and source, the country/region context, and the major findings. Our systematic review indicates a dearth of research that provides empirical evidence on the nonlinear effect of CSR on CFP in general as well as in the specific context of emerging economies. Most of the studies have proposed a linear relationship between CSR and CFP; only three papers have postulated a non-linear CSR-CFP relationship. Overall, these empirical studies have generated mixed results: positive effect (e.g., Oikonomou et al., 2014; Petrenko et al., 2016), negative effect (e.g., Baird et al., 2012; Moore, 2001), and neutral effect (e.g., Laan et al., 2008; McWilliam and Siegel, 2000). It is worth noting that while three studies have empirically examined the non-linear CSR-CFP link, they have been conducted in the context of developed economies such as the U.S. (Barnett and Salomon, 2012; Sun et al., 2019) and U.K. (Brammer and Millington, 2008). Indeed, only six papers have examined the CSR-CFP link in emerging economies and none of them has investigated a non-linear CSR-CFP link.

Along with the financial outcome of CSR performance, many studies have examined some firm-level contingency factors that could impact this outcome. Specifically, scholars have considered the contingent role of product quality (Luo and

Bhattacharya, 2006), innovativeness (Hull and Rothenberg, 2008), advertising intensity (Servaes and Tamayo, 2013), operational productivity (Jacobs et al., 2016), managerial efficiency (Cho and Lee, 2017), and competitive action (Kim et al., 2018). However, because of China's unique sociopolitical systems, state ownership and political connections could be considered as the two most critical factors that need to be addressed (Lo et al., 2018). Yet, their contingency roles remain, to date, unexamined in the extant CSR literature. Additionally, scholars have emphasized that the CSR-CFP relationship is dependent on industry-level factors such as industry type (Baird et al., 2012), industry differentiation (Hull and Rothenberg, 2008), and environmental munificence and dynamism (Goll and Rasheed, 2004). Nevertheless, these studies are confined to developed nations and a comprehensive investigation into the vital role of key industry characteristics, including industry munificence, dynamism, and complexity (Boyd, 1995; Chen et al., 2017), in moderating the CSR-CFP relationship in the Chinese context is lacking in the literature. Considering that the market environments in China are different from those in developed nations, such an enquiry can contribute new knowledge to both theory and practice.

Table 2.3 A Review of Literature on the CSR-CFP Link.

Studies	Proposed CSR-CFP link	Moderator	Data type	Data source	Country/region	Major findings
Waddock and Graves (1997)	Linear (positive)		Cross-sectional	KLD database	United States	CSR positively affects CFP
McWilliam and Siegel (2000)	Linear[1]		Panel data (1991-1996)	KLD database	United States	CSR does not significantly affect CFP
Moore (2001)	Linear[1]		Panel data (1997-1999)	Content analysis (annual reports)	United Kingdom	CSR negatively affects CFP
Ruf et al. (2001)	Linear (positive)		Panel data (1991-1995)	KLD database	United States	CSR positively affects CFP
Simpson and Kohers (2002)	Linear (positive)		Panel data (1993-1994)	Community Reinvestment Act Ratings	United States	CSR positively affects CFP
Goll and Rasheed (2004)	Linear[1]	Industry munificence; Industry dynamism	Cross-sectional	Survey	United States	CSR does not significantly affect CFP; Industry munificence and industry dynamism positively moderate the CSR-CFP link
Luo and Bhattacharya (2006)	Linear (positive)	Product quality; Innovativeness capability	Panel data (2001-2003)	FAMA database	United States	CSR positively affects CFP through customer satisfaction; Product quality and innovativeness capability positively moderate the CSR-CFP link

Bird et al. (2007)	Linear[1]		Panel data (1991-2003)	KLD database	United States	CSR positively affects CFP
Brammer and Millington (2008)	Linear and non-linear[2]		Panel data (1990-1999)	Charitable donations	United Kingdom	CSR has a U-shaped effect on CFP
Laan et al. (2008)	Linear (positive)		Panel data (1997-2002)	KLD database	United States	CSR does not significantly affect CFP
Hull and Rothenberg (2008)	Linear (positive)	Innovation capability; Industry differentiation	Panel data (1998-2000)	KLD database	United States	CSR positively affects CFP; Innovation capability and industry differentiation negatively moderate the CSR-CFP link
Makni et al. (2009)	Linear (positive)		Panel data (2004-2005)	MJRA database	Canada	CSR does not significantly affect CFP
Shen and Chang (2009)	Linear[1]		Cross-sectional	Survey	Taiwan	CSR positively affects CFP
Cheung et al. (2010)	Linear[1]		Panel data (2001-2004)	CLSA CG Ratings	Asian regions[3]	CSR positively affects CFP
Mishra and Suar (2010)	Linear (positive)		Cross-sectional	Survey	India	CSR positively affects CFP
Jo and Harjoto (2011)	Linear (positive)		Panel data (1993-2004)	KLD database	United States	CSR positively affects CFP
Soana (2011)	Linear[1]		Cross-sectional	AXIA Ratings	Italy	CSR does not significantly affect CFP

Baird et al. (2012)	Linear (positive)	Industry type	Panel data (2001-2008)	KLD database	United States	CSR negatively affects CFP; The effect varies across different industries
Barnett and Salomon (2012)	Non-linear (U-shaped)		Panel data (1991-2006)	KLD database	United States	CSR has a U-shaped effect on CFP
Tang et al. (2012)	Linear[1]	Pace, relatedness, consistency, and path of the CSR engagement strategy	Panel data (1995-2007)	KLD database	United States	CSR positively affects CFP; Relatedness, consistency, and path of the CSR strategy positively moderate the CSR-CFP link; Pace of the CSR strategy does not significantly moderate the CSR-CFP link
Erhemjamts et al. (2013)	Linear (positive)		Panel data (1995-2007)	KLD database	United States	CSR positively affects CFP
Servaes and Tamayo (2013)	Linear[1]	Advertising intensity	Panel data (1991-2005)	KLD database	United States	CSR does not significantly affect CFP; Advertising intensity positively moderates the CSR-CFP link
Wang and Choi (2013)	Linear (positive)	Temporal consistency and interdomain consistency of CSR; Knowledge intensity	Panel data (1995-2000)	KLD database	United States	CSR positively affects CFP; Temporal consistency and interdomain consistency positively moderate the CSR-CFP link; The moderating effect of consistency is positively affected by knowledge intensity
Peng and Yang (2014)	Linear[1]	Control-cash flow divergence	Panel data (1996-2006)	Pollution control Investments data	Taiwan	CSR positively affects CFP; Control-cash flow divergence negatively moderates the CSR-CFP link
Oikonomou et al. (2014)	Linear (positive)		Panel data (1991-2008)	KLD database	United States	CSR positively affects CFP; Firms with uniformly positive and uniformly negative

						CSR indicators have higher CFP than those with mixed CSR indicators
Flammer (2015)	Linear[1]		Panel data (1997-2011)	CSR proposals	United States	CSR positively affects CFP
Wang and Berens (2015)	Linear (positive)		Panel data (2005-2009)	KLD database	United States	Economic CSR positively affects CFP through public reputation; Ethic CSR positively affects CFP through financial reputation; Philanthropic CSR positively affects CFP through public reputation
Wei et al. (2015)	Linear (positive)		Cross-sectional	Survey	China	Environmental CSR positively affects CFP through political legitimacy and business legitimacy
Harjoto and Laksmana (2016)	Linear (positive)		Panel data (1998-2011)	KLD database	United States	CSR positively affects CFP through corporate risk taking
Jacobs et al. (2016)	Linear (positive)	Operational productivity	Panel data (1999-2009)	KLD database	United States	CSR positively affects CFP; Operational productivity positively moderates the CSR-CFP link
Kang et al. (2016)	Linear (positive)		Panel data (1991-2009)	KLD database	United States	CSR positively affects CFP
Petrenko et al. (2016)	Linear (positive)		Panel data (1991-2012)	KLD database	United States	CSR positively affects CFP
Su et al. (2016)	Linear (positive)	Capital market development; Information diffusion	Panel data (2001-2004)	CLSA Ratings	Emerging markets[4]	CSR positively affects CFP; Capital market development and information diffusion negatively moderate the CSR-CFP link

Zhao and Murrell (2016)	Linear[1]		Panel data (1991-2013)	KLD database	United States	CSR does not significantly affect CFP
Cho and Lee (2017)	Linear (positive)	Managerial efficiency	Panel data (2003-2011)	KLD database	United States	CSR positively affects CFP; Managerial efficiency positively moderates the CSR-CFP link
Shiu and Yang (2017)	Linear (positive)		Panel data (2000-2008)	KLD database	United States	CSR positively affects CFP
Hasan et al. (2018)	Linear (positive)	Discretionary cash; Income stream uncertainty	Panel data (1992-2009)	KLD database	United States	CSR positively affects CFP through total factor productivity; Discretionary cash and income stream uncertainty positively moderate the CSR-CFP link
Platonova et al. (2018)	Linear (positive)		Panel data (2000-2014)	Content analysis	Five countries[5]	CSR does not significantly affect CFP
Que´re´et al. (2018)	Linear (positive)		Panel data (2000-2008)	Vigeo ratings	20 European countries	CSR does not significantly affect CFP
Kim et al. (2018)	Linear (positive)	Competitive action	Panel data (2000-2005)	KLD database	United States	CSR positively affects CFP; Competitive action positively moderates the CSR-CFP link
Sun et al. (2019)	Non-linear (inverted U-shaped)	Marketing capability	Panel data (2000-2010)	KLD database	United States	CSR has an inverted U-shaped effect on CFP; Marketing capability negatively moderates the CSR-CFP link

Notes: [1] The authors do not propose a formal hypothesis indicating whether CSR is positively or negatively related to CFP.

[2] The authors propose that the relationship between CSR and CFP could be positive, negative, inverted U-shaped, or U-shaped.

[3] The Asian regions include China, Hong Kong, Taiwan, Korea, Singapore, India, Indonesia, Malaysia, and Thailand.

[4] The emerging markets include China, Hong Kong, Taiwan, Korea, Singapore, India, Indonesia, Malaysia, Philippines, and Thailand.

[5] The five countries include Saudi Arabia, Bahrain, Kuwait, Qatar, and the United Arab Emirates.

2.3 The Relationship between CSR and Labor Productivity

The relationship between CSR performance and employee-related outcomes has gained increasing attention from researchers. Previous studies have investigated the effect of CSR on employees' subjective outcomes such as job satisfaction (Story and Castanheira, 2019), identification with the company (Kim et al., 2010), and organizational commitment (Brammer et al., 2007). There are also several studies that focus on the effect of CSR on employees' objective outcomes including labor productivity (Hilliard, 2012; Stuebs and Sun, 2010). Labor productivity reflects a firm's efficiency in utilizing labor resources to produce goods (Sartal et al., 2020). It is an important dimension of firms' operational performance.

We review the key empirical studies on the relationship between CSR and labor productivity. The summary of these studies is presented in Table 2.4, which reports the moderating factors of this relationship, the data type and source, the country/region context, and the major findings. Our literature review indicates that only a limited number of studies have empirically examined the link between CSR and labor productivity. The extant research has explored the impact of various dimensions of CSR on firms' labor productivity, including environmental performance (Lannelongue et al., 2017; Ma et al., 2020), corporate philanthropy (Deng et al., 2019; Gao and Yang, 2016), and employee responsibility (Gubler et al., 2018; Lo et al., 2014; Orzes et al., 2017; Sánchez and Benito-Hernández, 2015).

Our study investigates how employee-based CSR performance influences firms' labor productivity. While some studies have examined the effect of corporate wellness

programs (Gubler et al., 2018), employee responsibility (Sánchez and Benito-Hernández, 2015), Occupational Health and Safety Assessment Series (OHSAS) 18001 certification (Lo et al., 2014), and Social Accounting (SA) 8000 certification (Orzes et al., 2017) on firms' labor productivity, they are conducted in the context of developed countries (e.g., Spain and U.S.). The extant research has paid scant attention to emerging countries such as China. Therefore, we aim to shed additional light on the CSR literature by investigating the ECSR-labor productivity link in the context of an emerging economy (i.e., China).

More importantly, our literature review indicates that few studies have focused on the contingency factors that moderate the ECSR-labor productivity relationship. Some contextual factors (e.g., operational complexity, operational coupling, and labor intensity) have been examined by prior studies (Lo et al., 2014; Orzes et al., 2017), yet little research has explored the moderating role of firms' competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity, which are critical firm- and industry-specific factors (Hambrick, 1983; Yamakawa et al., 2011). Our study seeks to extend the CSR literature by providing new insights into the boundary conditions of the ECSR-labor productivity relationship.

Table 2.4 A Review of Literature on the Link between CSR and Labor Productivity.

Studies	Moderator	Data type	Data source	Country/region	Major findings
Stuebs and Sun (2010)		Panel data (2006-2008)	Fortune	United States	CSR positively affects labor efficiency and labor productivity but does not significantly affect labor costs
Hilliard (2012)		Cross-sectional	Experiment	Spain	CSR positively affects labor productivity
Lo et al. (2014)	Operational complexity; Operational coupling	Panel data (1999-2011)	Firm annual reports; COMPUSTAT	United States	OHSAS 18001 certification positively affects safety performance, sales growth, labor productivity, and profitability; Operational complexity and operational coupling have positive moderating effects
Sánchez and Benito-Hernández (2015)		Cross-sectional	Survey	Spain	Relationships with employees and responsibility in processes positively affect labor productivity; Relationships with the community, environmental responsibility, and responsibility in product quality do not significantly affect labor productivity
Gao and Yang (2016)	Self-compared salaries; Social-compared salary; Firm visibility	Panel data (2001-2010)	CSMAR database	China	Corporate philanthropy positively affects labor productivity; Self-compared salaries and firm visibility have positive moderating effects; Social-compared salary does not have a significant moderating effect
Orzes et al. (2017)	Country development; Cultural features; Labor intensity	Panel data (1989-2013)	COMPUSTAT Global and SAAS databases	Multiple countries/regions	SA 8000 certification positively affects sales growth and labor productivity but does not significantly affect profitability; Two cultural features (i.e., power distance and uncertainty avoidance) have positive moderating effects; Country development and labor intensity do not have significant moderating effects

Hasan et al. (2018)	Discretionary cash; Income stream uncertainty	Panel data (1992-2009)	KLD database	United States	CSR positively affects total factor productivity, which in turn positively affects firms' financial performance; Discretionary cash and income stream uncertainty positively moderate the link
Gubler et al. (2018)		Panel data (2009-2012)	Survey; Experiment	United States	Corporate wellness programs positively affect labor productivity
Lannelongue et al. (2017)	Capital intensity	Cross-sectional	EU Emissions Trading System	23 European countries	Environmental management practices negatively affect labor productivity; Capital intensity has a negative moderating effect
Deng et al. (2019)	Internal CSR; Government subsidy	Panel data (2011-2017)	Hexun and CSMAR databases	China	External CSR has a S-curve relationship with labor productivity; Internal CSR has a positive moderating effect; Government subsidy does not have a significant moderating effect
Ma et al. (2020)	Quality management	Cross-sectional	Hexun and CSMAR databases	China	Environmental performance negatively affects labor productivity; Quality management has a positive moderating effect

2.4 The Relationship between Green Initiatives and Shareholder Value

Research on green initiatives and their impact on a firm's shareholder value has proliferated in recent years. Green initiatives represent firms' efforts to continuously minimize the negative impact of their operations caused to the natural environment (Lam et al., 2016). Shareholder value is measured by the stock market reaction and could be regarded as an important indicator that reflects firms' anticipated financial performance (Brown and Warner, 1985; Fama, 1970, 1991).

We provide a comprehensive review on the critical empirical studies that adopted the event study approach to investigate the relationship between green initiatives and shareholder value. The summary of these studies is presented in Table 2.5, which reports the specific events examined by each study, the moderators, the industry context, the sample period, the data source, the country/region context, and the major findings.

Our literature review indicates that a body of studies have examined whether environmental initiatives are beneficial for improving firms' shareholder value, yet the results have largely been inconclusive. Some studies have shown a positive effect of green initiatives on the market value of firms. For example, Klassen and McLaughlin (1996) studied the shareholder value effects of environmental awards and environmental crises. They found a positive effect for environmental awards and a negative effect for environmental crises. Ba et al. (2013) investigated the wealth effect of green vehicle innovation announcements in the automobile industry. They observed that the stock market reacts positively to these announcements. In addition, analyzing a sample of 117 announcements of eco-friendly initiatives by U.S. enterprises, Flammer

(2013) found a positive stock market reaction. However, there are some other studies revealing no effect or a negative effect of environmental initiatives on a firm's shareholder value. For instance, Lyon et al. (2013) found that the market reaction to green company awards is insignificant. The results of Paulraj and De Jong (2011) indicated that ISO 14001 certification has a negative impact on the market value of manufacturing firms. The negative wealth effect was also observed by Jacobs (2014), who studied voluntary emissions reduction announcements.

While several studies have evaluated the shareholder value of corporate environmental initiatives, they are mainly confined to manufacturing sectors or a diverse set of sectors (e.g., Ba et al., 2013; Bose and Pal, 2012; Cordeiro and Tewari, 2015). Nevertheless, the mixed findings generated from previous studies may not be directly applicable to the logistics industry. Ahmed et al. (2012) found that the market reaction to a specific event does vary across industries. Some studies indicate that green practices adoption by LSPs can help them enhance reputation and gain differentiation advantages (Maas et al., 2014), contributing to their financial performance and market value. However, others reveal that environmental logistics activities entail significant costs and risks and cannibalize LSPs' core businesses (Perotti et al., 2012), which erodes their profitability and market value. In view of the flip side, it is pertinent to assess how the stock market reacts to the GLI announcements of LSPs and examine what factors influence the market reaction. In addition, the logistics industry is pollution-intensive and poses serious risks to the environment. A recent report by International Energy Agency (IEA) indicates that logistics industry generated nearly a

quarter of the world's CO_2 emissions in 2016 (IEA, 2018), which highlights the need for greening by LSPs and that an understanding of the performance value can better motivate their pursuit of related practices. Hence, it is timely and essential to examine the shareholder value effect of green initiatives specific to the logistics industry, which is a new study context. To our best knowledge, our research is the first attempt to investigate the stock market reaction to GLI announcements made by LSPs in China.

Our literature review further indicates that along with the literature on the shareholder value effect of environmental initiatives, several studies have focused on how the types of environmental practices moderate the market reaction. For instance, Gilley et al. (2000) and Lam et al. (2016) examined the varying influences of product-oriented and process-oriented green initiatives on a firm's shareholder value. Jacobs et al. (2010) investigated whether there are differences between the market reactions to proactive and reactive green activities. They also studied whether the market reacts differently to environmental practices that are ''achievements'' as opposed to ''intents''. However, despite several studies highlighting the distinction between internal and external GLIs (Colicchia et al., 2013, Yang et al. 2013), there is a paucity of empirical evidence regarding the difference in the shareholder value effects of these two types of GLIs.

In addition, researchers have concentrated on firm characteristics that moderate the link between environmental initiatives and shareholder value. Previous studies have investigated several firm-level contingency factors such as firm size (Jacobs et al., 2010), prior environmental performance (Flammer, 2013; Sadovnikova and Pujari,

2017), research and development expenditure (Bose and Pal, 2012), state ownership (Lam et al., 2016; Lyon et al., 2013), export exposure (Lyon et al., 2013), and organizational legitimacy (Cordeiro and Tewari, 2015). Yet, there is little understanding of how the two specific types of organizational slack resources (i.e., financial slack and operational slack) affect the market reaction to GLIs and their contingency roles remain as a research void so far. Our research intends to shed light on the environmental management literature by untangling the contingent effects of organizational slack on the GLIs-shareholder value link.

Table 2.5 A Review of Literature on the Link between Green Initiatives and Shareholder Value.

Studies	Event	Moderator	Industry	Sample period	Data source	Country/region	Major findings
Klassen and McLaughli (1996)	Environmental awards; Environmental crises	Industry pollution intensity; Adoption time	Manufacturing sectors, electrical utility and oil and gas sectors	1989-1990	NEXIS and CRSP databases	United States	Environmental awards positively affect shareholder value; Environmental crises negatively affect shareholder value; Industry pollution intensity has a positive moderating effect; Adoption time does not have a significant moderating effect
Gilley et al. (2000)	Environmental initiatives	Product-driven or process-driven environmental initiatives	A diverse set of sectors (including manufacturing and service sectors)	1983-1996	WSJ and CRSP databases	United States	Environmental initiatives do not significantly affect shareholder value; Product-driven environmental initiatives lead to higher shareholder value than process-driven environmental initiatives
Mathur and Mathur (2000)	Green marketing activities	Firm growth; Firm size; Advertising intensity	A diverse set of sectors (including manufacturing and service sectors)	1989-1995	WSJ, NEXIS and CRSP databases	United States	Green marketing activities negatively affect shareholder value; Firm growth, firm size, and advertising intensity have positive moderating effects
Halme and Niskanen (2001)	Environmental protection activities	Adoption time	Forest industry	1970-1996	Helsingin Sanomat database	Finland	Environmental protection activities negatively affect shareholder value; The market reaction is more negative in the more recent sample years

Jacobs et al. (2010)	Corporate environmental initiatives (CEIs)	Achievements or intents; Reactive or proactive; Self-disclosed information or third-party assessments	A diverse set of sectors (including manufacturing and service sectors)	2004-2006	CRSP database	United States	The aggregated CEIs do not significantly affect shareholder value; Certain subcategories significantly affect shareholder value; The market reaction is more positive to "achievements" than "intents"; The market reaction is indifferent to the types of CEIs (i.e., reactive versus proactive and self-disclosed information versus third-party assessments)
Paulraj and de Jong (2011)	ISO 14001 certification	Firm size; Timing of certification	Manufacturing sectors	1996-2008	Business Wire, PR-Wire, and CRSP databases	United States	ISO 14001 certification negatively affects shareholder value; Firm size has a positive moderating effect; Timing of certification does not have a significant moderating effect
Bose and Pal (2012)	Green supply chain management initiatives (GSCMIs)	Industry type; R&D expenses; Timing of adoption; Remanufacturing or recycling; Firm size; Corporate sustainability stewardship; Growth potential	A diverse set of sectors (including manufacturing and service sectors)	1997-2009	Factiva and CRSP databases	United States	GSCMIs positively affect shareholder value; Manufacturing firms, firms with higher R&D expenses, early adopters, smaller firms, firms that are not included in the Dow Jones Sustainability Index, and firms with lower growth potential have higher shareholder value
Ba et al. (2013)	Green vehicle innovation	Innovation type; Market segment	Automobile sector	1996-2009	Factiva and Thomson ONE databases	United States	Green vehicle innovation positively affects shareholder value; The market reaction is more positive to incremental innovation than radical

							innovation; The market reaction is more positive to higher-priced cars than lower-priced cars
Flammer (2013)	Eco-friendly initiatives; Eco-harmful initiatives	External pressure; Prior environmental performance; Prior environmental concerns	A diverse set of sectors (including manufacturing and service sectors)	1980-2009	WSJ, CRSP, and KLD databases	United States	Eco-friendly initiatives positively affect shareholder value; Eco-harmful initiatives negatively affect shareholder value; External pressure and prior environmental concerns have a positive moderating effect; Prior environmental performance has a negative moderating effect
Lyon et al. (2013)	Green Company Awards	Firm size; Industry pollution intensity; State ownership; Industry concentration; Leverage ratio; Export intensity	Manufacturing sectors	2008-2011	China Entrepreneur Club and CSMAR databases	China	Green Company Awards negatively affect shareholder value; Firms operating in industries with low-pollution and high-concentration, and privately controlled firms have higher shareholder value; Firm size, leverage ratio, and export intensity do not have significant moderating effects
Dam and Petkova (2014)	Environmental supply chain sustainability programs (ESCSPs)	Consumer pressure	A diverse set of sectors (including manufacturing and service sectors)	2005-2011	CDP and CRSP databases	United States	ESCSPs negatively affect shareholder value; The market reaction is more negative for firms operating in industries with less consumer pressures
Jacobs (2014)	Voluntary emissions reduction (VER)	Timing of announcement; Emissions type;	A diverse set of sectors (including manufacturing	1990-2009	WSJ and CRSP databases	United States	VER does not significantly affect shareholder value; The market reaction decreases over time; The market reaction is more positive if the reduction is for greenhouse gas rather than other

		Achievements or intents	and service sectors)				emissions types and if the reduction is “intents” rather than “achievements”
Cordeiro and Tewari (2015)	Newsweek Green Rankings	Firm size; Organizational legitimacy	A diverse set of sectors (including manufacturing and service sectors)	2009	US magazine Newsweek and CRSP databases	United States	Newsweek Green Rankings positively affect shareholder value; Firm size has a positive moderating effect; organizational legitimacy has a negative moderating effect
Lam et al. (2016)	Corporate environmental initiatives (CEIs)	Process-focused or product-focused CEIs; State ownership; Third-party certified or self-declared CEIs	A diverse set of sectors (including manufacturing and service sectors)	2005-2014	WiseNews and CSMAR databases	China	CEIs negatively affect shareholder value; The market reaction is more negative for process-focused CEIs than for product-focused CEIs; The market reaction is more negative for state-owned enterprises than for privately controlled firms; The market reaction is indifferent to the third-party certified or self-declared CEIs
Sadovnikova and Pujari (2017)	Green Strategic Partnership	Partnership type; Prior positive/negative green performance; Industry pollution intensity	A diverse set of sectors (including manufacturing and service sectors)	2005-2007	FACTIVA, CRSP, KLD, and COMPUSTAT databases	United States	Green Strategic Partnership positively affects shareholder value; The partnership type, prior negative green performance, and industry pollution intensity have negative moderating effects; Prior positive green performance does not have a significant moderating effect

2.5 Summary

In this Chapter, we provide a comprehensive review on the relevant literature and identify important research gaps in the literature. Our literature review focuses on three important parts, which are summarized as follows:

(1) The relationship between CSR and CFP

A number of studies have examined the linear relationship between CSR performance and CFP, yet the results are inconsistent and ambiguous (Jacobs et al., 2016; McWilliams and Siegel, 2000; Moore, 2001). This emphasizes the need to further examine the CSR-CFP relationship and particularly its nonlinearity to provide a more complete picture of this relationship. However, studies on the non-linear effects are not only limited, but are also confined to the context of developed economies such as the U.S. (Barnett and Salomon, 2012; Sun et al., 2019) and the U.K. (Brammer and Millington, 2008). Considering the differences in CSR practices in developing and developed nations (Sharma, 2019), our study contributes to this research stream by exploring the non-linear CSR-CFP relationship in the context of a developing nation (i.e., China). In addition, previous studies examining the CSR-CFP linkage have largely neglected the moderating roles of state ownership and political connections, which are two critical sociopolitical factors in emerging economies (Lo et al., 2018). Finally, although prior studies have underscored the important role of external environment in shaping the CSR-CFP relationship (Baird et al., 2012; Goll and Rasheed, 2004), limited studies have systematically examined industry characteristics as contingency factors in a developing nation context.

(2) The relationship between CSR and labor productivity

Several studies have empirically examined the link between various dimensions of CSR and labor productivity (Hilliard, 2012; Lannelongue et al., 2017; Ma et al., 2020; Stuebs and Sun, 2010). Nonetheless, the extant studies on the ECSR-labor productivity link are mainly conducted in the context of developed countries (e.g., Spain and U.S.) and scarce attention has been devoted to emerging countries such as China (Gubler et al., 2018; Lo et al., 2014; Orzes et al., 2017; Sánchez and Benito-Hernández, 2015). Our study sheds additional light on the CSR literature by investigating the ECSR-labor productivity link in the context of China. Moreover, prior studies have ignored the contingent effects of firms' competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity on this link. Our study extends the CSR literature by offering new insights into the boundary conditions of the ECSR-labor productivity link.

(3) The relationship between green initiatives and shareholder value

Some studies have empirically examined the impact of green initiatives on firms' shareholder value, yet the results are mixed (Ba et al., 2013; Klassen and McLaughlin, 1996; Lam et al., 2016). Previous studies are mainly confined to manufacturing industries or a diverse set of industries (e.g., Ba et al., 2013; Bose and Pal, 2012; Cordeiro and Tewari, 2015) and limited attention has been paid to the logistics industry. This industry is pollution-intensive and poses serious risks to the environment, which deserves further exploration, particularly in the Chinese context. Our study contributes to the environment management literature by assessing how GLIs affect the shareholder

value of LSPs. More importantly, we examine whether there are differential effects between internal and external GLIs and how the market reaction is affected by organizational slack resources, which have not been addressed in the literature. Our study advances knowledge on the contingency conditions under which the market reaction to GLIs may vary.

Chapter 3 Study 1: Golden Goose or White Elephant? Exploring the Nonlinear Performance Effects of Corporate Social Responsibility

3.1 Introduction

CSR has become a strategic priority for many companies operating in developed and developing nations (Shou et al., 2020; Zhao and Murrell, 2016). For instance, Apple has embraced CSR to reduce energy consumption, enhance employee health and safety, and support local communities (Dudovskiy, 2019). Haier Group, which is a leading home appliances manufacturer in China, has also initiated CSR practices, including green manufacturing and recycling, disaster relief, and charity activities (Haier CSR Report, 2019). While some firms have proactively implemented CSR practices, there are many other firms who are hesitant to undertake these practices as it remains unclear whether investments in such practices pay off in terms of CFP. Some researchers argue that better CSR performance can yield various benefits for a firm such as reputation enhancement, stakeholder support, and moral capital, which could help boost CFP (Jacobs et al., 2016; Kim et al., 2018). However, others contend that socially responsible activities can not only be costly, but also cannibalize a firm's limited valuable resources that could be allocated for other critical business areas (Friedman, 1970; Hull and Rothenberg, 2008), compromising the firm's profitability.

To date, empirical studies have investigated the CSR-CFP relationship with inconclusive results. While some studies show a positive effect of CSR performance on CFP (Kim et al., 2018), others reveal no such effect (McWilliams and Siegel, 2000) or

even a negative effect (Moore, 2001). A few recent studies have highlighted that the CSR-CFP relationship could be more complex and may follow a non-linear pattern. For example, Barnett and Salomon (2012) found a U-shaped CSR-CFP link whereas Sun et al. (2019) observed an inverse U-shaped CSR-CFP link. Overall, this continuing conceptual controversy and empirical inconclusiveness have resulted in fragmented literature in the field of CSR, calling for further enquiries into the CSR-CFP linkage. Specifically, Barnett and Salomon (2012) emphasized the need for scholars to investigate the nonlinearity of the CSR-CFP relationship in order to provide a more comprehensive picture of this relationship. Despite this call for research, there is clearly a paucity of research on the potential curvilinearity of the CSR-CFP link. As illustrated earlier, even the limited research on curvilinear effects has offered contradictory findings. Moreover, most of these studies are conducted in the context of developed nations.

Against this background, our study aspires to shed additional light on the curvilinear effect of CSR on CFP in the context of developing nations (e.g., China). Specifically, drawing upon stakeholder theory (Sun et al., 2019) and risk mitigation theory (Godfrey et al., 2009), we posit that the financial performance of firms increases at low levels of CSR performance (due to stakeholder support and positive moral capital). Yet, marginal financial gains decrease after a certain level of CSR performance because more than optimal investments in CSR could aggravate the cost burdens on firms and finally result in declining benefits (Ye and Zhang, 2011).

More importantly, CSR performance may not bring equal benefits for all firms,

and hence systematic evaluation of contingency conditions is required for the further understanding of the CSR-CFP linkage. We believe that such an enquiry is timely and salient given the increasing confusion surrounding this linkage. Literature has documented many differences in the way CSR is realized in developed nations as opposed to developing nations; particularly, Sharma (2019) highlighted the government-related contingencies. In this study, we argue that the effectiveness of CSR efforts in developing nations will vary with the level of firms' relationships established with the government through state ownership (state-owned enterprises or not) and political connections (firms' top managers being officials of political agencies) (Li and Zhang, 2010; Lo et al., 2018). Accordingly, we explore the contingency effects of these two critical sociopolitical factors on the CSR-CFP link. Additionally, the contingency theory suggests that the financial returns of CSR performance depend on the external environment within which firms operate (Aragon-Correa and Sharma, 2003). These external operating conditions can be broadly categorized into three industry characteristics: munificence, dynamism, and complexity (Boyd, 1995; Wiengarten et al., 2017).

This study examines these ideas using longitudinal secondary data of 2,211 Chinese firms between 2010 and 2017. China, as a developing nation, is an appropriate and important context for our study because the powerful role of the Chinese government in promoting socially responsible activities in the country makes CSR a salient issue (Lo et al., 2018). The Chinese government promotes CSR as part of its general political initiative of sustainable development. Chinese firms are highly

dependent on their national government when conducting CSR activities (Li and Zhang, 2010). Owing to China's unique political and social systems, it would be interesting and worthwhile to examine sociopolitical factors as boundary conditions. In addition, Chinese market environment has experienced dramatic changes over the last decade (Chen et al., 2017). Given its wide range of industry variations, China offers a rich context for investigating the contingent effects of industry characteristics on the CSR-CFP relationship.

Our results indicate that CSR performance has an inverse U-shaped relationship with CFP. This suggests that there is an optimal level of CSR performance from the CFP perspective, that is, too little or too much CSR effort can be harmful to CFP. The results further reveal that that state ownership attenuates this curvilinear relationship whereas political connections have no such influence. Moreover, the results suggest that industry munificence and complexity strengthen the curvilinear CSR-CFP relationship while industry dynamism has no such influence.

3.2 Theoretical Background and Hypotheses Development

3.2.1 The Inverse U-shaped Effect of CSR Performance on CFP

The benefits of CSR. Researchers have used the stakeholder theory to explain the financial benefits of CSR performance. Stakeholder theory highlights that firms should balance the needs and aspirations of all stakeholders to achieve competitive advantages (Donaldson and Preston, 1995; Jones, 1995). Freeman (1984, p. 46) defined a stakeholder as ‘‘any group or individual who can affect or is affected by the

achievement of an organization's objectives''. The key stakeholders of an organization include shareholders, employees, suppliers, customers, government regulators, and non-governmental organizations (NGOs) (Sarkis et al., 2010). Caring for the needs of the different stakeholders is salient as they control resources that can facilitate the adoption of corporate decisions. CSR provides firms with the means to fulfill stakeholder expectations of social responsibility, thereby helping them to establish favorable relationships with their stakeholders (Cheung et al., 2010). Such relations are beneficial for firms to gain stakeholder support, which contributes to their financial performance (Kim et al., 2018). For example, employees might show higher commitment to a firm that not only cares about their safety and health, but also has a good public image (Wang and Choi, 2013). Customers are likely to prefer products or services offered by socially responsible enterprises (Luo and Bhattacharya, 2006; Sen and Bhattacharya, 2001). Regulatory bodies and government may provide financial support for firms that have superior CSR performance (Flammer, 2018). NGOs, such as environmental groups, can mobilize public opinion in favor of a firm's environment preservation activities (Sarkis et al., 2010).

In addition, as argued by risk mitigation theory, superior CSR performance contributes to positive moral capital and offer "insurance-like" protection to firms (Godfrey, 2005). This theory suggests that CSR performance can help firms to reduce the risks of negative impact among important stakeholder groups (Kang et al., 2016). It is not uncommon for firms to conduct activities (e.g., discontinuing products, legal actions, and environmental accidents) that bring negative influences on the opinions of

various stakeholders. Firms operating with these negative events might be punished by stakeholders through sanctions (Godfrey et al., 2009). In essence, superior CSR performance is helpful for firms to create moral capital among various stakeholders such as affective commitment among employees, brand faith among customers, and social legitimacy among communities (Luo and Bhattacharya, 2009). Such moral capital derived from superior CSR performance can mitigate the consequences of negative events and thus provides a firm with "insurance-like" protection from the risks of being punished by stakeholders (Koh et al., 2014).

The costs of CSR. Along with these positive effects, CSR can also undermine financial returns of firms by adding costs. CSR activities consume significant corporate resources. For example, firms need to make considerable investments in green technologies, purchase of new eco-friendly facilities, environmental certifications, and employee environmental training (Sarkis et al., 2010). Voluntarily enhancing occupational health and safety standards requires substantial financial investments in purchase of safety equipment and provisions of training programs to develop a safety climate, which could significantly increase costs (Lo et al., 2014). Charitable donations and social projects cause financial outlays and place an economic burden on firms (Wang and Qian, 2011). Moreover, firms adopting CSR practices need to evaluate, plan and manage these practices, which induces managerial costs and potentially jeopardizes financial performance of firms (McWilliams and Siegel, 2001). Firms undertaking CSR activities will also draw resources and management efforts away from core areas of the business, resulting in competitive disadvantage (Hull and Rothenberg, 2008). In

addition, CSR activities may create agency problems and costs because managers are likely to pursue their own interests through these activities at the cost of shareholder wealth (Wang et al., 2008). In short, implementing prosocial activities to improve CSR performance incurs significant costs that need to be justified.

In China: the more, the better? We posit that the real world CSR-CFP relationship could be nonlinear rather than the simple linear ones assumed by many prior studies. The financial performance of firms is expected to increase first, thanks to positive stakeholder responses and the insurance-like protection derived from CSR; however, when CSR performance rises beyond a certain level, the benefits might gradually level off and could further be offset by increased costs of CSR (e.g., considerable investments in green technologies and safety equipment, charitable donations, and managerial costs). First, while stakeholder theory suggests that good CSR performance can help a firm build favorable firm-stakeholder relationships and gain support from stakeholders, there are limits to the amount and type of resources that these socially conscious stakeholders can provide for the firm. As an emerging economy, China faces the dilemma of committing resources to facilitate economic development and address the environmental and social issues (Lo et al., 2018). Thus, the Chinese government has limited resources that can be offered to sustainability-oriented firms. In addition, because of the significant differences in individual incomes between China and developed nations (Malik, 2013), Chinese customers are more sensitive to price and hence might prefer products with lower prices instead of those offered by firms with better CSR performance (Lam et al., 2016). As a result, Chinese customers can

provide limited benefits for these socially responsible firms. These limitations put a constraint on the amount of benefits that a firm can reap from CSR performance.

Second, Ye and Zhang (2011) suggested that overinvestment in CSR will not be appreciated by stakeholders and thus a sufficiently high level of CSR performance will generate little "insurance-like" protection as opposed to significant costs for the firm. If the extent of CSR performance strays beyond stakeholder expectations to address social concerns that bear little or no relation to the firm's stakeholder relations, then further investments in CSR would result in declining financial performance because the costs of CSR engagements may exceed the benefits (Brammer and Millington, 2008). Sun et al. (2019) argued that CSR becomes less attractive to consumers when it rises beyond the optimal level. Godfrey (2005) concurred by stating that excessive investments in CSR activities, beyond an optimal point, could actually generate negative returns for a firm. A real-world case can help illustrate the inverse U-shaped CSR-CFP pattern. Tianma Microelectronics Company, which is a high-technology firm, has maintained a high level of CSR performance. Nevertheless, the costs of adopting CSR activities are high, which could exceed the benefits and lead to low financial performance for the firm (ESG, 2019).

To summarize, within certain limits, higher CSR performance could help a firm gain stakeholder support, insurance value, and thus improves its financial performance. Yet, when CSR performance increases beyond an optimal point, financial performance will decline owing to the decreased marginal benefits and increased costs of expanding CSR. Therefore, based on the tenets of stakeholder theory and risk mitigation theory,

we propose that the relationship between CSR performance and CFP follows an inverse U-shaped pattern.

Hypothesis 1. CSR performance has an inverse U-shaped relationship with CFP.

3.2.2 The Moderating Effects of State Ownership and Political Connections

Government has a great influence on the operations of firms (Hillman and Hitt, 1999). Particularly in emerging economies such as China, building good relationships with the government is salient for firms given the powerful role of the government in controlling the critical resources (Lo et al., 2018). Considering the unique social and political systems in China, we focus on two key sociopolitical factors (i.e., state ownership and political connections) and examine their moderating effects on the CSR-CFP linkage.

State ownership is expected to attenuate the CSR-CFP link. In other words, when compared with state-owned enterprises (SOEs), privately controlled firms might capture more benefits from CSR performance. First, private firms typically have a larger percentage of owner-managers and encounter fewer constraints from external shareholders (e.g., the fiduciary duty to maximize shareholder value) (Li and Zhang, 2010). It is therefore easier for them to pursue objectives (e.g., improving CSR performance) beyond the maximization of shareholders' interests and gain greater benefits from CSR. Second, privately controlled firms are in greater need of gaining support from stakeholders (e.g., government) through improved CSR performance. Chinese SOEs are generally in a better position to enjoy preferential treatment from the

government, such as easier access to bank loans, greater protection of assets, and more favorable tax rates (Lo et al., 2018; Wang et al., 2019). By contrast, privately controlled firms in China have less secure property and contractual rights and are therefore in a greater need to enhance their CSR performance in order to gain benefits from stakeholders. Hence, we conjecture that CSR can be a more valuable means by which these private firms obtain stakeholder benefits. In short, by improving CSR performance, SOEs in China are likely to attain fewer benefits (i.e., stakeholder support and moral capital), which could result in lower financial performance for them.

Hypothesis 2a. The inverse U-shaped CSR-CFP relationship is weaker (flatter) for SOEs than for privately controlled firms.

Li et al. (2015) suggested that Chinese enterprises establish relationships with the government through not only government ownership, but also personal political connections. Such political connections, comprising current or former government officials in organizational operations, are regarded as a critical means for a firm to build social relations with the Chinese government (Li and Zhang, 2010). We conjecture that political connections weaken the CSR-CFP relationship. First, Chinese firms employing senior executives with political backgrounds can obtain more resources such as easier access to debt financing, lower taxation, and government contracts (Li et al., 2015; Zheng et al., 2017). It is therefore likely that the stakeholder benefits and moral capital generated by CSR performance may not be as important for these firms. By contrast, Chinese firms without political connections lack the legitimacy and political

backing to secure access to financial capital. As such, CSR can be a more valuable means by which these firms could gain stakeholder support and moral capital, which could eventually boost their competitive advantage and financial performance. Second, for firms with personal political connections, stakeholders may view their CSR as just a means that is used by senior managers to pursue their personal benefits such as prestige or political careers (Marquis and Qian, 2014). As such, stakeholders might believe that these firms' CSR engagements are only symbolic in nature. Stakeholders therefore may provide fewer benefits for firms with personal political connections than those without such connections. In short, firms with political connections may benefit less from the stakeholder support and "insurance-like" protection offered by CSR and thus obtain lower financial returns from CSR performance.

Hypothesis 2b. The inverse U-shaped CSR-CFP relationship is weaker (flatter) for firms with political connections than those without such political connections.

3.2.3 The Moderating Effects of Industry Munificence, Dynamism, and Complexity

The contingency theory emphasizes that the effectiveness of a particular management practice is dependent on the external environment (Aragon-Correa and Sharma, 2003; Galbraith, 1973). Firms need to pay attention to their operating environment to gain greater benefits from CSR. Following the classifications of previous studies (Boyd, 1995; Wiengarten et al., 2017), we categorize the external operating conditions into three industry characteristics: munificence, dynamism, and

complexity. We comprehensively examine whether these three industry characteristics moderate the relationship between CSR and CFP.

Industry munificence is regarded as an operating environment characteristic that can support the sustained growth of a firm (Aragon-Correa and Sharma, 2003). A highly munificent environment provides more business opportunities and resources for firms to grow. In such munificent industries, firms can accumulate resources including venture capital, government funds, and technical knowledge (Chen et al., 2017). Firms operating in resource-abundant industries might gain more financial benefits from CSR practices because the effectiveness of such practices depends on the availability of several critical resources such as investment capital, experts, and technical know-how (Aragon-Correa and Sharma, 2003). By contrast, firms in resource-scarce industries suffer from less resources for development (Wiengarten et al., 2017), and hence they need to emphasize their survival as well as core businesses. Goll and Rasheed (2004) argued that in a resource-poor environment, deployment of resources to CSR practices, which is mis-aligned with a firm's core business areas, is undesirable for its financial performance. In short, higher environmental munificence would magnify the financial benefits of CSR performance.

Hypothesis 3a. The inverse U-shaped CSR-CFP relationship is stronger (steeper) for firms operating in more munificent industries.

Industry dynamism refers to the degree of instability, turbulence, or unpredictable change in an organization's industry (Wang et al., 2008). We contend that industry

dynamism can amplify the impact of CSR performance on CFP. First, CSR performance can provide firms with greater advantages to compete in more dynamic environments. The contingency theory suggests that in uncertain environments, firms can achieve success by implementing more differentiated strategies (Aragon-Correa and Sharma, 2003). CSR has been widely viewed as a firm's differentiation strategy (Kim et al., 2018), which is likely to improve its chances of success in dynamic environments. Moreover, researchers have argued that it is harder for competitors to gain the information they need to replicate a firm's CSR capability in industries characterized by higher environmental dynamism (Aragón-Correa and Sharma, 2003). Thus, CSR performance can generate greater competitive advantages for firms operating in more unstable environments. Second, good CSR performance can bring firms higher reputation and greater legitimacy among stakeholders (Li and Zhang, 2010). Such legitimacy can help firms build stable relations with and gain support from stakeholders, thereby providing protection from the unpredictability of the environments. Hence, CSR performance can yield greater stakeholder-related benefits for firms operating in more dynamic industries.

Hypothesis 3b. The inverse U-shaped CSR-CFP relationship is stronger (steeper) for firms operating in more dynamic industries.

Industry complexity assesses "the extent to which a market can be characterized as competitive and heterogeneous" (Wiengarten et al., 2017, p. 33). A higher level of industry complexity indicates a lower level of industry concentration and a higher level

of industry competition. Firms that operate in highly complex or competitive industries face more challenges to differentiate themselves from rivals. Again, as CSR is widely viewed as a firm's differentiation strategy (Kim et al., 2018), it could be more beneficial for the firm to reinforce its competitive position in complex industries. Additionally, firms in such highly competitive industries have greater difficulty in obtaining resources offered by the industries, and thus are more vulnerable to adverse business events. As a result, the "insurance-like" protection derived from CSR could be more valuable for them (Godfrey, 2005; Godfrey et al., 2009). Consequently, firms that operate in a highly complex environment can attain greater stakeholder-related benefits from their CSR.

Hypothesis 3c. The inverse U-shaped CSR-CFP relationship is stronger (steeper) for firms operating in more complex industries.

Figure 3.1 depicts the conceptual model of Study 1.

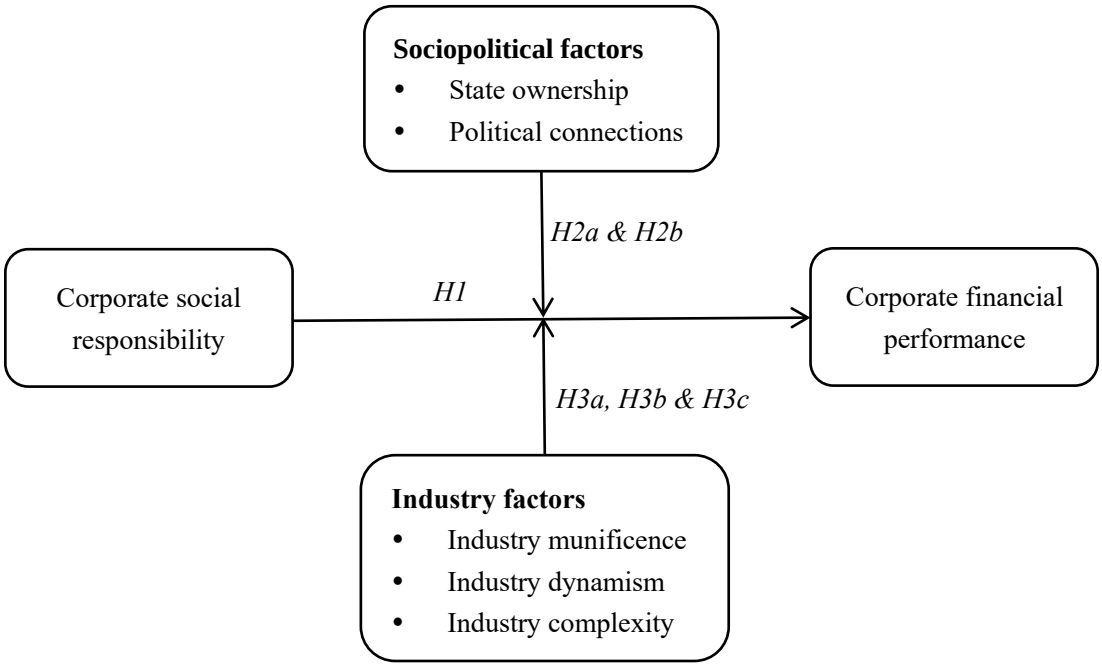

Figure 3.1 Conceptual Model of Study 1.

3.3 Methodology

3.3.1 Data and Sample

We collected data from multiple sources. First, we obtained data on CSR performance from the Hexun, an independent company in China, who provides a comprehensive evaluation of the CSR performance of publicly listed Chinese enterprises (Shou et al., 2020). Then, we collected other financial and governance data from the China Stock Market and Accounting Research (CSMAR) database, which has been widely used by previous research (Lam et al., 2016; Lo et al., 2018).

Our sample contains Chinese manufacturing firms that were listed in Shenzhen and Shanghai Stock Exchanges. We chose 2010-2017 as our sampling period, since the CSR data offered by the Hexun database were available from 2010. We focused mainly on firms in the manufacturing industries (i.e., Industries C13-C42 under the China Securities Regulatory Commission (CSRC) classification system), because they are considered as the major sources of environmental pollution and social issues in China (Lo et al., 2018). We removed the following observations in our sample: (1) observations marked with Special Treatment (ST) as they reflect irregularity in firms' operations and financial performance for two or three consecutive years; (2) B-share (foreign share) firms in that they comply with different regulations and market trading mechanisms; and (3) firms with missing data for the variables utilized in our study. The final sample has 12,048 observations from 2010 to 2017 for 2,211 firms. Panels A and B of Table 3.1 show the distribution of sample firms by industry and year. Panel C demonstrates the characteristics of sample firms in terms of total assets, sales, net

income, and the number of employees.

Table 3.1 Descriptive Statistics of Sample Firms of Study 1.

Panel A: The distribution of sample firms by industry			
2-digit CSRC codes	Industry	Frequency	Percentage (%)
C13	Farm products processing	281	2.33
C14	Food manufacturing	210	1.74
C15	Wine, drinks and refined tea manufacturing	240	1.99
C17	Textile	294	2.44
C18	Textiles, garments and apparel industry	191	1.59
C19	Leather, fur, feathers, and related products and shoe-making	45	0.37
C20	Wood processing, and wood, bamboo, rattan, palm and grass products	54	0.45
C21	Furniture manufacturing	69	0.57
C22	Papermaking and paper products	184	1.53
C23	Printing and reproduction of recorded media	38	0.32
C24	Culture and education, arts and crafts, sports and entertainment products manufacturing	67	0.56
C25	Petroleum processing, coking and nuclear fuel processing	132	1.10
C26	Raw chemical materials and chemical products	1,316	10.92
C27	Pharmaceutical manufacturing	1,112	9.23
C28	Chemical fiber manufacturing	168	1.39
C29	Rubber and plastic product industry	386	3.20
C30	Non-metallic mineral products	514	4.27
C31	Smelting and pressing of ferrous metals	240	1.99
C32	Smelting and pressing of nonferrous metals	381	3.16
C33	Metal products	321	2.66
C34	General equipment manufacturing	714	5.93
C35	Special equipment manufacturing	1,086	9.01
C36	Automobile manufacturing	602	5.00
C37	Railway, shipbuilding, aerospace and other transportation equipment manufacturing	256	2.12
C38	Electric machines and apparatuses manufacturing	1,153	9.57
C39	Computer, communication and other electronical device manufacturing	1,616	13.41
C40	Instrument and meter manufacturing	229	1.90

C41	Other manufacturing	141	1.17
C42	Utilization of waste resources	8	0.07
Total		12,048	100

Panel B: The distribution of sample firms by year

Year	Frequency	Percentage (%)
2010	1,128	9.36
2011	1,290	10.71
2012	1,384	11.49
2013	1,435	11.91
2014	1,509	12.52
2015	1,600	13.28
2016	1,746	14.49
2017	1,956	16.24
Total	12,048	100

Panel C: The characteristics of sample firms

	Mean	SD	Min.	Max.
Total assets (RMB Million)	7,633.23	23,006.76	36.98	775,296.30
Sales (RMB Million)	5,514.72	21,233.54	6.92	857,977.70
Net income (RMB Million)	294.24	1,437.13	-17,049.43	47,116.1
Number of employees (Thousands)	4.54	10.23	0.01	200.95

3.3.2 Measures

Dependent variable. We measured CFP as return on assets (ROA). ROA, a common accounting-based measure of firm financial performance, is defined as the net income divided by the average of total assets at the beginning and the end of each year (Gentry and Shen, 2013; Kim and Zhu, 2018).

Independent variable. We used the rating score offered by the Hexun database to measure a firm's CSR performance. We standardized this variable to correct its skewed distribution. The Hexun evaluation system is based on firms' CSR reports and annual reports that were published on corporate official websites. This system is similar to the Kinder, Lydenberg & Domini (KLD) evaluation system, which has been widely used to measure the CSR performance of U.S. enterprises (Kim et al., 2018; Sun et al., 2019).

Firms' CSR performance is comprehensively assessed along five dimensions: shareholder responsibility, employee responsibility, supplier and customer responsibility, environmental responsibility, and community responsibility. These five dimensions are of greatest concern to the critical stakeholder groups, which are the main foci in CSR studies (Gong et al., 2020; Wang and Choi, 2013). The final CSR score is a weighted total of the five indicators. As shown in Table 3.2, the five indicators consist of 13 secondary indicators and 37 tertiary indicators. The Hexun CSR score has been extensively adopted by previous studies (e.g., Gong et al., 2020; Shou et al., 2020; Wang et al., 2019; Xiong et al., 2016).

Moderating variables. This study examines several important moderators. First, we measured state ownership with a dummy variable that equaled to 1 if the ultimate controller of a firm was the central or local government and its agencies, and equaled to 0 if a firm was privately controlled (Wang et al., 2019; Zhou et al., 2017). Second, consistent with previous studies (Shou et al., 2020; Zheng et al., 2017), we measured a firm's political connections using the top management team (TMT) members' affiliation with the government. This variable took the value of 1 if the TMT members were officials of the central or local government, or the military; otherwise, it took the value of 0. Third, we operationalized industry munificence with a standardized measure of industry sales growth over a five-year period (Wiengarten et al., 2017). We regressed industry sales on time and used the regression slope coefficients divided by the mean sales to measure industry munificence. Fourth, we regressed industry sales on time over a five-year period and used the standard errors of the regression slope coefficients

divided by the mean sales to measure industry dynamism (Wang et al., 2008). Fifth, industry complexity was measured by 1 minus the industry Herfindahl index (Erhemjamts et al., 2013). The Herfindahl index was calculated as the sum of the squared market shares of all firms that are in the same two-digit CSRC industry. The higher value of 1 minus Herfindahl index indicates that the industry is more complex.

Control variables. We included multiple control variables that could affect CFP. First, we controlled for firm size since larger firms have more resources and may enjoy scale economies (Wang et al., 2008). It was operationalized as the natural logarithm of a firm's sales (Kim and Zhu, 2018; Lam, 2018). Second, we controlled for firm age since it may influence a firm's management practices and hence financial performance (Wang and Qian, 2011). We measured firm age with the number of years since a firm's founding (Kim et al., 2008; Wiengarten et al., 2017). Third, financial slack resources may create agency issues and thus have negative performance consequences (Nohria and Gulati, 1996). We measured financial slack as current assets divided by current liabilities (Shou et al., 2020; Su et al., 2016). Fourth, financial leverage may decrease managerial latitude and limit opportunities to explore new businesses, thereby hindering the ability of firms to generate profit. It was measured using the ratio of total debt to total assets (Kim et al., 2018). Fifth, we controlled for research and development (R&D) intensity in that technological capabilities may create value for firms. R&D intensity is measured as a firm's R&D expenditures over sales (Gentry and Shen, 2013; Kim & Zhu, 2018). Since some firms in our sample did not report R&D expenditures, we followed previous research (Barnett and Salomon, 2012) and assigned zero values

to those firm-year R&D observations that were missing. Sixth, We controlled for marketing intensity since firms with a high level of marketing capabilities may have better profitability. It is measured as the ratio of SG&A (selling, general, and administrative expenses) to sales (Krishnan et al., 2009; Wang and Qian, 2011). Seventh, we controlled for export intensity because firms operating in the global market normally face more competition and thus may have lower performance. It was measured as the foreign sales divided by total sales (Wang et al., 2019). Finally, we included year dummies to control for time-specific effects. Table 3.3 summarizes the measures, data sources, and references of the variables used in Study 1.

Table 3.2 The Measurement of CSR Performance.

Categories	Sub-categories	Items
Shareholders	Profitability	Return on equity
		Return on assets
		Ratio of profits from main business
		Ratio of profits to cost
		Earnings per share
		Undistributed profit per share
	Solvency	Quick ratio
		Current ratio
		Cash ratio
		Ratio of equity to assets
		Asset-liability ratio
	Return ability	Dividend-financing ratio
		Dividend yield ratio
		Dividends-distributable profits ratio
	Information disclosure	Punishment times for responsible persons
	Innovation ability	Expenditure on product development
		Ideas for technology innovation
		Number of technology innovation projects
Employees	Employee performance	Average income per worker
		Professional trainings
	Safety	Safety inspection
		Safety trainings
	Employee caring	Caring awareness
		Caring activities
		Monetary caring
Suppliers and customers	Product quality	Quality management awareness
		Quality management certification
	After-sales service	Customer satisfaction survey
	Integrity and reciprocity	Fair competition environment
		Training of anti-commercial bribery
Environment	Environmental governance	Environmental awareness
		Environmental management system certification
		Environmental investment
		Types of sewage discharge
		Types of energy saving
Community	Monetary donations	Ratio of income tax to total profit
		Philanthropic initiatives

Notes: Detailed data on the measurement of CSR performance can be accessed at http://stockdata.stock.hexun.com/zrbg/Plate.aspx.

Table 3.3 Measurements of Variables of Study 1.

Variable type	Variable name	Measurement	Data source	Reference
Dependent variable	CFP	Net income/(The average of total assets at the beginning and the end of each year)	CSMAR	Gentry and Shen (2013); Kim and Zhu (2018)
Independent variable	CSR performance	Hexun's CSR measurement	Hexun database	Gong et al. (2020); Wang et al. (2019)
Moderating variables	State ownership	1 if the ultimate controller of a firm was the central or local government and its agencies; 0 if a firm was privately controlled	CSMAR	Wang et al. (2019); Zhou et al. (2017)
	Political connections	1 if the TMT members were officials of the central or local government, or the military; 0 otherwise	CSMAR	Shou et al. (2020); Zheng et al. (2017)
	Industry munificence	Regression slope coefficients derived from the regression of the industry's annual sales over a 5-year period/Mean sales	CSMAR	Boyd (1995); Wiengarten et al. (2017)
	Industry dynamism	Standard error derived from the regression of the industry's annual sales over a 5-year period/Mean sales	CSMAR	Wang et al. (2008); Wiengarten et al. (2017)
	Industry complexity	$1-\sum_{i=1}^{N}\left(\frac{Sales_i}{Total\ sales}\right)^2$	CSMAR	Erhemjamts et al. (2013); Xia et al. (2016)
Control variables	Firm size	Ln(Sales)	CSMAR	Kim and Zhu (2018); Lam (2018)
	Firm age	The number of years since a firm's founding	CSMAR	Kim et al. (2008); Wiengarten et al.

			(2017)
Financial slack	Current assets/Current liabilities	CSMAR	Shou et al. (2020); Su et al. (2016)
Financial leverage	Total debt/Total assets	CSMAR	Kim et al. (2018)
R&D intensity	R&D expenditures/Sales	CSMAR	Barnett and Salomon (2012)
Marketing intensity	SG&A/Sales	CSMAR	Krishnan et al. (2009)
Export intensity	Foreign sales/Total sales	CSMAR	Wang et al. (2019)
Year dummies	Year2011-Year2017	CSMAR	Shou et al. (2020)

3.3.3 Estimation Method

We adopted the panel data approach to conduct our analyses. The Hausman test was performed to select fixed-effects or random-effects models. This test rejects the hypothesis that random-effects models are appropriate for our dataset ($\chi^2(20) = 185.96$, $p < 0.01$). Hence, we utilized firm fixed-effect regression models. We then conducted the Wald test to check for heteroskedasticity (Wooldridge, 2002). The results suggest that there is heteroskedasticity in our data. To address this issue, we estimated our models with robust standard errors.

Given the time lag between CSR and its performance effects (Wang and Choi, 2013), we lagged the independent and control variables by one year. We used the following equation to test the proposed hypotheses:

$$\begin{aligned} ROA_{it+1} = {} & \beta_0 + \beta_1 CSR_{it} + \beta_2 CSR_{it}^2 + \beta_3 State\_ownership_{it} \\ & + \beta_4 Political\_connections_{it} + \beta_5 Industry\_munificence_{it} \\ & + \beta_6 Industry\_dynamism_{it} + \beta_7 Industry\_compelxity_{it} \\ & + \beta_8 State\_ownership \times CSR_{it} + \beta_9 State\_ownership \times CSR_{it}^2 \\ & + \beta_{10} Political\_connections \times CSR_{it} \\ & + \beta_{11} Political\_connections \times CSR_{it}^2 \\ & + \beta_{12} Industry\_munificence \times CSR_{it} \\ & + \beta_{13} Industry\_munificence \times CSR_{it}^2 + \beta_{14} Industry\_dynamism \\ & \times CSR_{it} + \beta_{15} Industry\_dynamism \times CSR_{it}^2 \\ & + \beta_{16} Industry\_compelxity \times CSR_{it} \\ & + \beta_{17} Industry\_compelxity \times CSR_{it}^2 \\ & + \beta_{18} Firm\_size_{it} + \beta_{19} Firm\_age_{it} + \beta_{20} Financial\_slack_{it} \\ & + \beta_{21} Financial\_leverage_{it} + \beta_{22} R\&D\_intensity_{it} \\ & + \beta_{23} Marketing\_intensity_{it} + \beta_{24} Export\_intensity_{it} \\ & + Year\_dummies_{it} + \varepsilon_{it} \end{aligned}$$

where β_0 is a constant term; β_n (n=1, 2, 3, …, 24) are coefficients of independent variables; ε_{it} is the error term. We mean-centered the variables before creating the squared and interaction terms for interpretation purposes (Haans et al., 2016).

3.4 Results

3.4.1 Results of the Hypotheses

Table 3.4 shows the descriptive statistics and correlations. We calculated the variance inflation factor (VIF) scores for all variables, which are all lower than the threshold of 10 (Kennedy, 1998). Thus, multicollinearity is not a major issue in our study. The results of fixed-effect regression analysis are reported in Table 3.5. Model 1 includes control variables only. Model 2 adds CSR and its quadratic term to examine the curvilinear effect of CSR performance on CFP. Models 3-7 add the linear and quadratic-by-linear interactions of CSR and each of the moderators.

In Model 2, the results indicate that the coefficients of CSR as well as its squared term are both significant as well as positive ($\beta = 0.0119$, $p < 0.01$) and negative ($\beta = -0.0044$, $p < 0.01$) respectively. This implies that CSR performance has an inverse U-shaped effect on CFP, supporting *Hypothesis 1*. The results of Model 3 reveal that the interaction term between CSR-squared and state ownership is significantly positive ($\beta = 0.0045, p < 0.1$). This suggests that state ownership negatively moderates the CSR-CFP link, supporting *Hypothesis 2a*. To illustrate the interaction effect, we plotted the relationship between CSR and CFP when firms are state-owned (value = 1) and privately controlled (value = 0). Figure 3.2 shows that the inverse U-shaped curve is steeper for privately controlled firms. The results of Model 4 indicate that the coefficient of the interaction term between CSR-squared and political connections is positive but insignificant ($\beta = 0.0041$, $p > 0.1$). Therefore, *Hypothesis 2b* is not supported.

In addition, the results of Model 5 show that the coefficient of the interaction term between CSR-squared and industry munificence is negative and marginally significant (β = -0.0150, $p < 0.1$). This implies that industry munificence has a positive moderating impact on the CSR-CFP link, supporting *Hypothesis 3a*. The results of Model 6 reveal that the coefficient of the interaction term between CSR-squared and industry dynamism is insignificant (β = 0.0270, $p > 0.1$). Hence, *Hypothesis 3b* is not supported. The results of Model 7 indicate a significantly negative coefficient for the interaction between CSR-squared and industry complexity (β = -0.0249, $p < 0.05$), supporting *Hypothesis 3c*. Figures 3.3 and 3.4 show the interaction effect with two values – low (one standard deviation below the mean) and high (one standard deviation above the mean) – of industry munificence and industry complexity, respectively. Figure 3.3 demonstrates that the inverse U-shaped curve becomes steeper as industry munificence increases. Figure 3.4 demonstrates that the inverse U-shaped curve is steeper for firms operating in more complex industries. Table 3.6 summarizes the results of our hypotheses testing.

Table 3.4 Correlation Matrix of Study 1.

Variable	Mean	SD	1	2	3	4	5	6	7
1. ROA	0.039	0.152	1.000						
2. CSR	0	1.000	0.134***	1.000					
3. State ownership	0.327	0.469	-0.045***	0.117***	1.000				
4. Political connections	0.331	0.471	0.012	0.034***	-0.133***	1.000			
5. Industry munificence	0.152	0.087	-0.002	0.100***	0.022**	0.061***	1.000		
6. Industry dynamism	0.036	0.024	-0.006	0.003	-0.020**	0.016*	0.443***	1.000	
7. Industry complexity	0.922	0.066	0.018*	-0.013	-0.046***	-0.031***	-0.107***	-0.111***	1.000
8. Firm size	21.216	1.369	0.035***	0.309***	0.371***	-0.029***	-0.063***	-0.015	-0.144***
9. Firm age	14.938	5.498	-0.034***	-0.037***	0.228***	-0.063***	-0.191***	-0.109***	-0.018
10. Financial slack	3.024	5.081	0.061***	0.026***	-0.161***	0.022**	0.045***	0.020**	0.040***
11. Financial leverage	0.395	0.207	-0.137***	-0.075***	0.353***	-0.059***	-0.034***	0.005	-0.114***
12. R&D intensity	0.038	0.044	0.001	-0.050***	-0.134***	-0.028***	0.005	0.001	0.142***
13. Marketing intensity	0.180	0.155	-0.011	-0.057***	-0.123***	0.008	-0.037***	-0.073***	0.152***
14. Export intensity	0.138	0.218	-0.038***	-0.020**	-0.131***	0.019**	0.027***	0.048***	0.019**
			8	9	10	11	12	13	14
8. Firm size			1.000						
9. Firm age			0.177***	1.000					
10. Financial slack			-0.270***	-0.117***	1.000				
11. Financial leverage			0.483***	0.201***	-0.463***	1.000			
12. R&D intensity			-0.251***	-0.077***	0.203***	-0.220***	1.000		
13. Marketing intensity			-0.379***	0.013	0.124	-0.199***	0.400***	1.000	
14. Export intensity			-0.001	-0.056***	0.011	-0.020**	0.062***	-0.085***	1.000

Notes: $N = 12{,}048$. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed test).

Table 3.5 Results of Firm Fixed-effect Regression Analysis of Study 1.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	0.2137***	0.3292***	0.3355***	0.3329***	0.3158***	0.3319***	0.3015***
	(0.0610)	(0.0649)	(0.0646)	(0.0647)	(0.0653)	(0.0651)	(0.0671)
Firm size	-0.0043	-0.0087***	-0.0088***	-0.0088***	-0.0081***	-0.0088***	-0.0088***
	(0.0031)	(0.0032)	(0.0031)	(0.0032)	(0.0031)	(0.0032)	(0.0031)
Firm age	-0.0038***	-0.0030***	-0.0031***	-0.0030***	-0.0030***	-0.0030***	-0.0031***
	(0.0006)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
Financial slack	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Financial leverage	-0.0462**	-0.0286*	-0.0283*	-0.0282*	-0.0289*	-0.0286*	-0.0282*
	(0.0179)	(0.0147)	(0.0146)	(0.0144)	(0.0147)	(0.0148)	(0.0147)
R&D intensity	-0.1468	-0.1405	-0.1362	-0.1403	-0.1400	-0.1403	-0.1419
	(0.0994)	(0.0963)	(0.0951)	(0.0951)	(0.0962)	(0.0961)	(0.0976)
Marketing intensity	-0.0041	-0.0031	-0.0020	-0.0025	-0.0030	-0.0031	-0.0025
	(0.0183)	(0.0160)	(0.0153)	(0.0157)	(0.0161)	(0.0160)	(0.0159)
Export intensity	-0.0205**	-0.0183*	-0.0176*	-0.0178*	-0.0185*	-0.0183*	-0.0183*
	(0.0097)	(0.0098)	(0.0099)	(0.0100)	(0.0098)	(0.0098)	(0.0098)
Year dummies	Included	Included	Included	Included	Included	Included	Included
State ownership (SO)		-0.0313***	-0.0411***	-0.0319***	-0.0301***	-0.0314***	-0.0314***
		(0.0089)	(0.0096)	(0.0088)	(0.0090)	(0.0089)	(0.0089)
Political connections (PC)		0.0066	0.0066	0.0024	0.0066	0.0066	0.0066
		(0.0081)	(0.0080)	(0.0046)	(0.0081)	(0.0080)	(0.0081)
Industry munificence (IM)		-0.0160	-0.0146	-0.0164	0.0010	-0.0163	-0.0167
		(0.0132)	(0.0133)	(0.0131)	(0.0181)	(0.0129)	(0.0132)

Industry dynamism (ID)	-0.0056	-0.0080	-0.0046	-0.0015	-0.0308	-0.0011
	(0.0423)	(0.0423)	(0.0423)	(0.0422)	(0.0585)	(0.0425)
Industry complexity (IC)	-0.0291	-0.0286	-0.0281	-0.0299	-0.0292	0.0035
	(0.0354)	(0.0354)	(0.0357)	(0.0351)	(0.0356)	(0.0388)
CSR	0.0119***	0.0190***	0.0144**	0.0123***	0.0119***	0.0120***
	(0.0031)	(0.0053)	(0.0058)	(0.0032)	(0.0030)	(0.0031)
CSR squared	-0.0044***	-0.0063***	-0.0057**	-0.0046***	-0.0044***	-0.0044***
	(0.0014)	(0.0024)	(0.0024)	(0.0014)	(0.0013)	(0.0014)
CSR × SO		-0.0150***				
		(0.0057)				
CSR squared × SO		0.0045*				
		(0.0026)				
CSR × PC			-0.0086			
			(0.0106)			
CSR squared × PC			0.0041			
			(0.0040)			
CSR × IM				0.0359**		
				(0.0155)		
CSR squared ×IM				-0.0150*		
				(0.0087)		
CSR × ID					-0.0152	
					(0.0852)	
CSR squared × ID					0.0270	
					(0.0392)	
CSR × IC						0.0552**

							(0.0257)
CSR squared × IC							-0.0249**
							(0.0111)
F statistic	18.14***	15.69***	15.17***	14.39***	14.64***	14.27***	14.81***
R^2	0.0061	0.0100	0.0113	0.0098	0.0107	0.0100	0.0101

Notes: Robust standard errors are in parentheses. $N = 12{,}048$. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed test).

Table 3.6 Hypotheses Testing Results of Study 1.

	Hypotheses	Outcome
H1	CSR performance has an inverse U-shaped relationship with CFP.	Supported
H2a	The inverse U-shaped CSR-CFP relationship is weaker (flatter) for SOEs than for privately controlled firms.	Supported
H2b	The inverse U-shaped CSR-CFP relationship is weaker (flatter) for firms with political connections than those without such political connections.	Rejected
H3a	The inverse U-shaped CSR-CFP relationship is stronger (steeper) for firms operating in more munificent industries.	Supported
H3b	The inverse U-shaped CSR-CFP relationship is stronger (steeper) for firms operating in more dynamic industries.	Rejected
H3c	The inverse U-shaped CSR-CFP relationship is stronger (steeper) for firms operating in more complex industries.	Supported

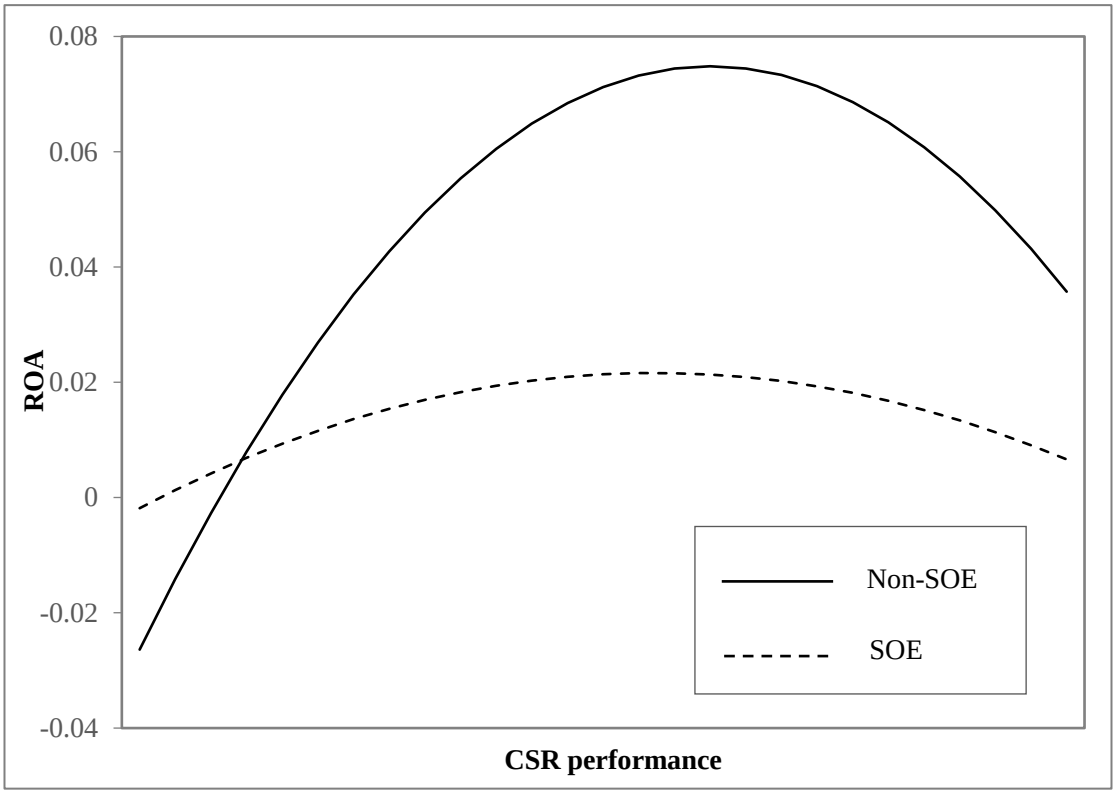

Figure 3.2 Moderating Effect of State Ownership on the CSR-CFP Link.

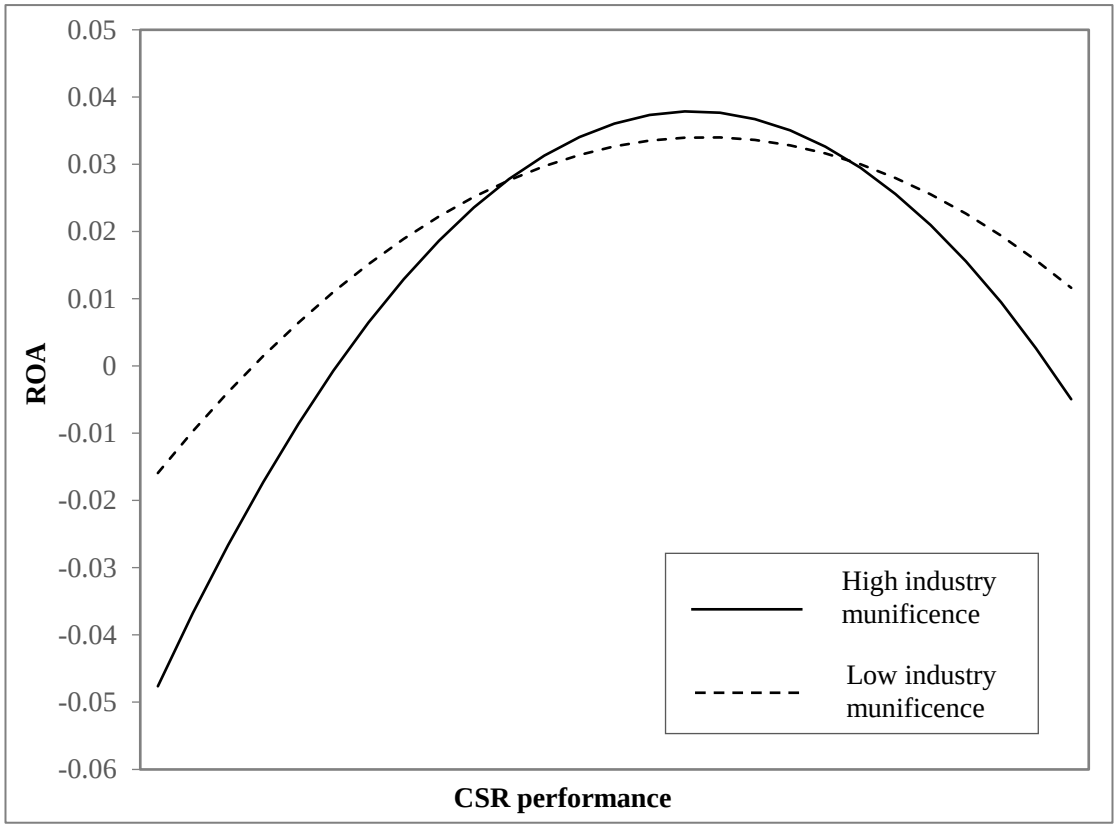

Figure 3.3 Moderating Effect of Industry Munificence on the CSR-CFP Link.

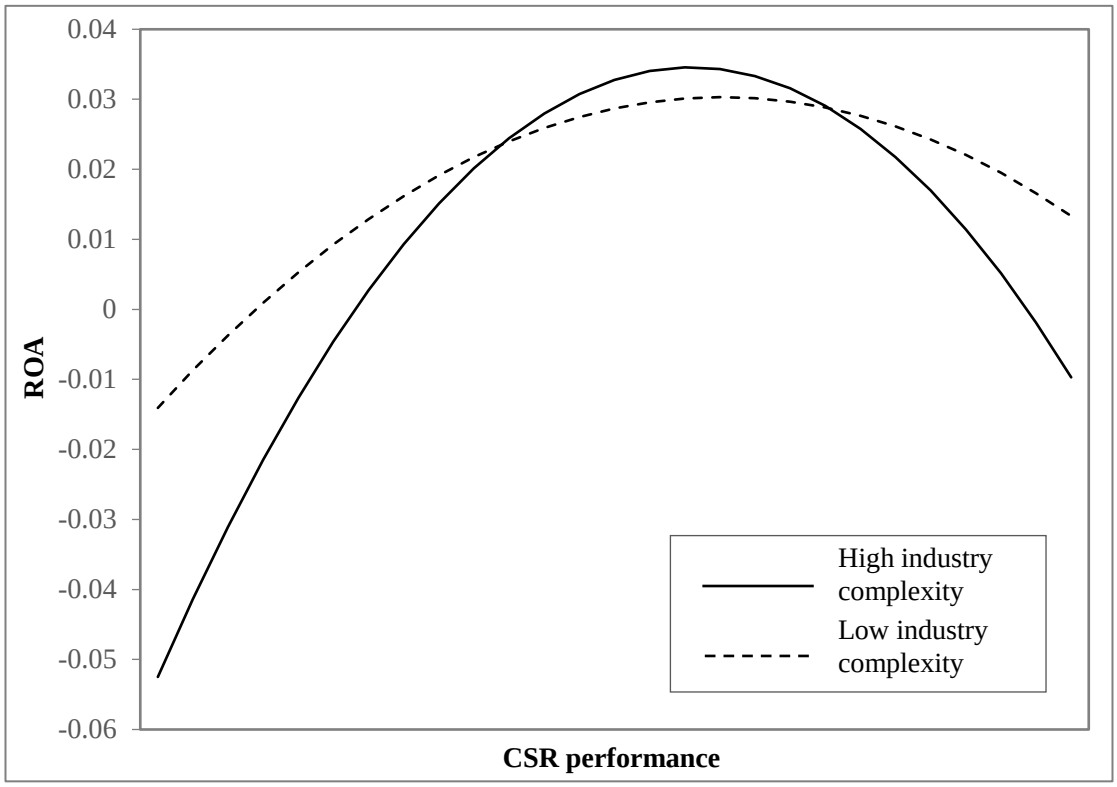

Figure 3.4 Moderating Effect of Industry Complexity on the CSR-CFP Link.

3.4.2 Additional Analyses to Address Endogeneity

Our model specification is likely to suffer from endogeneity issues, as the causality may run in both directions, from CSR to CFP and vice versa. To overcome the issue of reverse causality, we included one-year lag between independent and dependent variables (Greene, 2008). Endogeneity may also stem from omitted variables. To deal with the potential endogeneity concern, we conducted a two-stage least squares (2SLS) regression analysis. In the first stage, we regressed the endogenous variable (i.e., CSR) on the instrumental variables and other control variables. We used industry average CSR and industry average CSR-squared as instrumental variables (Haans et al., 2016). Due to the competitor pressures that firms face, they tend to mimic their peer firms' sustainable behaviors in the same industry. Therefore, the industry average level of CSR will be positively associated with a firm's level of CSR performance. Yet, the industry average level of CSR is not expected to significantly influence a firm's financial performance. The results in Table 3.7 demonstrate that the instrumental variables are significantly correlated to CSR and CSR-squared. The Anderson-Rubin and Stock-Wright tests were employed to check the validity of our instrument variables (Kim and Zhu, 2018). The results indicate that both chi-square statistics were significant, suggesting that our instruments are valid. Furthermore, the results demonstrate that the excluded instruments in the first stage regression models have *F*-statistics greater than the threshold of 10 (Kim and Zhu, 2018), which suggests that our instrument variables are not weak instruments. In the second stage, we regressed CFP on the predicted values of CSR and CSR-squared (which are obtained from the first stage analysis) and other

control variables. The results reveal that the coefficients for the predicted values of CSR and CSR-squared both achieve significance and are positive and negative, respectively. This result is consistent with our prior result and supports *Hypothesis 1*. Therefore, we could conclude that endogeneity might not be a serious concern in our study.

Table 3.7 Results of 2SLS Regression Analysis of Study 1.

	Stage 1 Regression		Stage 2 Regression
	DV: CSR	DV: CSR-squared	DV: ROA
Constant	-6.4184***	-1.2932	0.4137***
	(0.4927)	(1.0864)	(0.0907)
Firm size	0.3581***	0.0287	-0.0160***
	(0.0252)	(0.0529)	(0.0049)
Firm age	-0.0569***	0.0258*	-0.0011
	(0.0063)	(0.0137)	(0.0011)
Financial slack	-0.0035***	-0.0047*	-0.0001
	(0.0013)	(0.0028)	(0.0002)
Financial leverage	-0.9770***	0.6387***	-0.0092
	(0.0953)	(0.1655)	(0.0158)
R&D intensity	-0.4747	0.4849	-0.1273
	(0.3038)	(0.7372)	(0.1000)
Marketing intensity	0.1982*	0.5486*	-0.0070
	(0.1195)	(0.2944)	(0.0186)
Export intensity	-0.1386	-0.0901	-0.0159
	(0.0871)	(0.1663)	(0.0103)
Year dummies	Included	Included	Included
Industry average CSR	0.7960***		
	(0.0780)		
Industry average CSR-squared		0.9119***	
		(0.1152)	
CSR			0.0308***
			(0.0101)
CSR squared			-0.0079**
			(0.0038)
F statistic	54.58***	27.74***	16.51***
R^2	0.1849	0.1033	0.0079
Anderson-Rubin Wald test	28.79***	14.79***	
Stock-Wright LM S statistic	34.19***	15.30***	
F test of excluded instruments	336.99***	260.61***	

Notes: Robust standard errors are in parentheses. N = 12,048. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed test).

3.4.3 Robustness Checks

We conducted several robustness checks. First, we tested whether our results are sensitive to the measure of financial slack. Alternatively, we utilized quick ratio (Wiengarten et al., 2017) rather than current ratio to measure financial slack. Quick ratio is calculated as quick assets divided by current liabilities. We used this alternative measure and obtained similar results. Second, in our sample firms, approximately 6% of the observations had missing R&D expenses. Following the approach of previous research (Kim and Zhu, 2018), we replaced the missing R&D values with zero. As a robustness check, we excluded the observations with missing values and reran our analyses. Our results remain largely identical. Finally, we trimmed the independent variable by 0.5% in each tail to investigate the potential bias induced by outliers. Our results are also in agreement with the main analyses.

3.5 Discussion and Conclusions

3.5.1 Theoretical Implications

Our study provides multiple contributions to the CSR literature. First, we not only acknowledge the benefits of CSR based on stakeholder and risk mitigation theories, but also argue that those benefits may not always outweigh the costs of CSR within an emerging economy context (i.e., China). Our empirical finding supports the argument that there exists an optimal level of CSR performance (Godfrey, 2005; Ye and Zhang, 2011), thereby suggesting that firms with a moderate to not so high level of CSR performance might have higher financial performance compared to those with an

extremely high or extremely low level of CSR performance. In addition, our study represents the first attempt to provide detailed arguments and strong empirical support for an inverse U-shaped CSR-CFP relationship in the context of China, that is, too much of CSR performance might not be a good thing for firms. Indeed, considering that environmental pollution and social issues have caused severe societal problems in China and the Chinese government has endeavored to push firms to enhance CSR performance (Zhu et al., 2016), this study provides timely contributions by examining the financial implications of CSR in China.

Second, this study extends the CSR literature by providing insights into the differential moderating effects of two critical sociopolitical factors – state ownership and political connections – on the CSR-CFP relationship. We posit that both state ownership and political connections may weaken the relationship. Our results indicate that while state ownership attenuates this relationship, political connections do not significantly influence this relationship. There could be two plausible explanations for this. First, Chinese firms with personal political connections are more likely to attract extra media attention (Lo et al., 2018). Hence, their CSR engagements would be more visible to the market and stakeholders, which is favorable for them to gain more support from stakeholders. Second, Chinese firms with political connections are better able to obtain first-hand information through close relationships with policy makers (Zheng et al., 2017), thereby enabling them to obtain greater benefits from CSR. Therefore, political connections might have differing influences on the effectiveness of CSR in China, neutralizing the moderating effect on the CSR-CFP linkage. Prior studies have

examined several firm factors (e.g., advertising intensity, operational productivity, and product quality) (Jacobs et al., 2016; Luo and Bhattacharya, 2006; Servaes and Tamayo, 2013), yet neglected the possible role of state ownership and political connections, which are considered as crucial sociopolitical factors in emerging economies like China. Accordingly, we believe that our study adds to the CSR literature by identifying new boundary conditions of the CSR-CFP link.

Finally, our research sheds light on the CSR literature by offering a systematic analysis of how some key characteristics of the external operating environment affect the CSR-CFP relationship. Our results reveal that industry munificence and complexity can strengthen this relationship whereas industry dynamism has no such influence. One possible explanation is that the unstable situation of fast-growing industries in China results in ambiguous competition (Chen et al., 2017), and, as such, in dynamic environments Chinese stakeholders may not effectively gain information to evaluate firms' engagements in CSR practices. This suggests that CSR practices may be obscured in a highly dynamic environment; in such an environment, Chinese firms may not achieve remarkable competitive advantages and financial performance. Some previous studies have examined the contextual factors of industry munificence and dynamism (Goll and Rasheed, 2004; Wang et al., 2008). However, efforts have rarely been undertaken to systematically explore the contingent effects of crucial environment characteristics (i.e., industry munificence, industry dynamism, and industry complexity) using empirical data from China. As such, we strongly believe that our research complements the existing CSR literature by comprehensively investigating industry

characteristics as boundary conditions of the CSR-CFP relationship within the Chinese context.

3.5.2 Managerial Implications

Our study also has some important implications for managers. First, managers in China need to be mindful that the right question for them to ask is not whether CSR is a golden goose or white elephant for firms, but rather what level of CSR performance is preferred for their financial benefits. Our findings reveal that Chinese firms with a moderate level of CSR performance do best financially. Therefore, Chinese firms with a low level of CSR performance are encouraged to undertake more prosocial activities (e.g., green manufacturing and recycling activities, employee health and safety activities) to fully realize their financial benefits. Managers need to understand that "doing good" can contribute to the bottom line of firms. Yet, managers also need to be cautioned with stakeholders' responses when making decisions about CSR engagements. Excessive investments in CSR will induce significant costs but generate little corresponding benefits. In this case, Chinese firms may not gain the most financial returns from CSR performance.

Second, managers in China need to be aware that the financial payoffs associated with CSR performance could vary across different situations. Privately controlled firms in China are recommended to implement more prosocial activities to boost their CSR performance, which can bring greater benefits for them. Chinese government also provide positive incentives for those private firms to devote additional resources to

improving their social responsibility. Moreover, Chinese firms should make an effort to assess the external environmental characteristics and if they operate in resource-munificent or highly competitive industries, then they should proactively adopt CSR practices to attain more financial benefits. Overall, it is advisable for managers to carefully examine the contextual conditions, in totality, before embarking on CSR activities.

3.5.3 Limitations and Future Research Directions

This study has several limitations, which provides useful avenues for future research. First, this study used data from only one country (i.e., China), which impedes the generalization of the findings to other emerging economies. It is worthwhile for future research to investigate the financial impact of CSR in other emerging economies (e.g., India and Malaysia). Second, our study considers firms in manufacturing industries. Although the choice of this setting helps ensure high internal validity, it may limit the application of the insights from this study to other industries (e.g., logistics and retail industries). Hence, future research can extend this study by examining how CSR influences CFP of service firms. Finally, even though our study examines the moderating effects of several important factors on the CSR-CFP linkage, there may be other contingent factors (e.g., social capital, industry innovativeness, and industry clockspeed) that affect this linkage. Thus, an avenue for future research is to explore other boundary conditions of the CSR-CFP link to offer more insights into this link.

Chapter 4 Study 2: Corporate Social Responsibility and Labor Productivity: The Moderating Role of Competitive Strategies and Industry Safety Risk Intensity

4.1 Introduction

Firms encounter growing pressures to address employee-related social issues such as employees' health and safety problems (Lo et al., 2014; Wiengarten et al., 2016). Employees often suffer from occupational illness and accidents in the manufacturing settings (Pagell et al., 2014). The National Bureau of Statistics of China (NBSC) reported that in 2019, the safety production incidents in China caused 29,519 deaths (NBSC, 2020). This highlights that it is essential for firms to implement employee-related CSR (ECSR) activities to improve employee well-being and alleviate the negative impact of their operations on the society.

An increasing number of firms have devoted efforts to undertaking ECSR initiatives. For example, Haier Group has implemented safety inspection programs, employee safety training programs, and employee wellness and caring activities to enhance employees' health and safety (Haier CSR Report, 2019). The prevalence of such activities is not surprising given the increasing workplace injuries and illnesses. Previous research has underscored that ECSR activities can bring operational benefits for firms: labor productivity (Gubler et al., 2018; Sánchez and Benito-Hernández, 2015). ECSR activities are beneficial for improving employees' job satisfaction and gratitude and reciprocity, which can enhance employees' motivation to work harder and hence firms' labor productivity (Brammer et al., 2007; Story and Castanheira, 2019). In

addition, firms engaging in ECSR activities are better able to retain talented employees and attract a higher-quality workforce, which could increase employees' work ability and thus firms' labor productivity (Flammer and Luo, 2017; Turban and Greening, 1997).

Despite the fact that a handful of studies have examined the relationship between ECSR and labor productivity, scant attention has been paid to the boundary conditions of this relationship. This study intends to fill this gap by analyzing the effect of ECSR on firms' labor productivity and the contingency factors that moderate this effect. Drawing on resource-based view (RBV) of the firm (Barney, 1991; Wernerfelt, 1984), we posit that ECSR helps a firm create high-quality human capital, which can be regarded as the firm's valuable resources and an importance source of competitive advantage and superior performance. More importantly, ECSR may not bring equal benefits for all firms, and hence contingency conditions deserve attention in better understanding the link between ECSR and labor productivity. Researchers have highlighted the importance of firms' competitive strategies and categorized them into two typical strategies: cost leadership and differentiation (Hambrick, 1983; Porter, 1980, 1985). We argue that these two types of competitive strategies may affect the extent of benefits that firms can obtain from ECSR. Accordingly, we explore the moderating effects of competitive strategies on the relationship between ECSR and labor productivity. In addition, the effect of ECSR on labor productivity is likely dependent on the external operating environment. ECSR activities might be more important for firms operating in industries with higher safety production risks, thereby bringing

greater benefits for these firms. Therefore, we explore the moderating role of industry safety risk intensity on the ECSR-labor productivity linkage.

This study examines the proposed hypotheses using a panel dataset of 2,211 Chinese manufacturing enterprises between 2010 and 2017. We find that ECSR has a positive effect on firms' labor productivity. Additionally, cost leadership strategy reinforces the effect of ECSR on labor productivity, whereas differentiation strategy has no such influence. Moreover, we observe that industry safety risk intensity positively moderates the linkage between ECSR and labor productivity, which implies that firms operating in industries with higher safety production risks can achieve greater labor productivity.

4.2 Theoretical Background and Hypotheses Development

4.2.1 RBV of the Firm

We employ the RBV of the firm as our theoretical lens. RBV suggests that firms gain competitive advantage and superior performance through resources that are valuable, rare, difficult to imitate, and non-substitutable (Barney, 1991; Peteraf, 1993). RBV describes the firm as a unique collection of resources (Grant, 1991; Penrose, 1959). A firm's resources include tangible (e.g., raw materials and equipment) and intangible assets (e.g., firm image, information, and human capital), which are either owned or controlled by the firm (Wernerfelt, 1984, 2016). Researchers have sought to differentiate between resources and capabilities and defined capabilities as a firm's abilities to deploy its resources to achieve desired outcomes (Amit and Schoemaker,

1993). RBV treats resources and capabilities as the most important sources of competitive advantage and business success.

RBV has been used to explain the competitive advantage derived from CSR activities (Branco and Rodrigues, 2006; McWilliams and Siegel, 2011). It is argued that engaging in ECSR activities can help a firm create high-quality human capital, which can be regarded as the firm's valuable resources (Lo et al., 2014; Surroca et al., 2010; Wiengarten et al., 2016). Moreover, developing the ECSR activities requires significant investments in time, technology, and skills, which make it difficult for competitors to imitate in the short term (McWilliams and Siegel, 2011; Sodhi, 2015). Therefore, from the RBV perspective, ECSR can enable firms to achieve competitive advantage and superior operational performance.

4.2.2 The Effect of ECSR on Labor Productivity

Based on RBV of the firm, we posit that ECSR can improve a firm's operational performance in terms of labor productivity. First, the implementation of ECSR activities can strengthen employees' motivation to work harder. The costly adoption of ECSR activities designed to enhance employees' well-being may boost employees' job satisfaction by credibly signaling to them firms' concern for their health and safety (Bayram et al., 2017; Gubler et al., 2018). Employees with higher job satisfaction will be more willing to work harder, which in turn can improve firms' labor productivity. Moreover, employees may feel gratitude to firms for offering wellness programs to them (Story and Castanheira, 2019). They might be more inclined to work harder to

reward firms that care about their health and safety. Consequently, ECSR activities are helpful to foster employees' commitment to organizational practices and improve their motivation to work harder, which in turn increase firms' labor productivity.

Second, ECSR activities are beneficial for improving employees' ability to work. Firms that engage in ECSR activities pay careful attention to the safety risks of production activities (Bayram et al., 2017). They may develop safety inspection programs to enhance workplace conditions. It is argued that employees who work in a safer environment will be better able to do their job (Lo et al., 2014). In addition, the professional education and career development activities (Bai and Chang, 2015) or safety training programs (Pagell et al., 2014) can strengthen employees' work capability. These activities enable workers to be more capable of performing the working tasks and dealing with the potential operational risks. Besides, ECSR activities are beneficial for firms to retain talented employees and attract a higher-quality workforce, which contribute to the accumulation of human resources (Flammer and Luo, 2017; Turban and Greening, 1997; Surroca et al., 2010). This in turn helps increase firms' labor productivity.

The above discussion indicates that ECSR helps improve employees' job motivation and work ability, thereby contributing to firms' labor productivity. Therefore, we posit that firms that implement ECSR activities can realize improvements in labor productivity.

Hypothesis 1. ECSR has a positive effect on labor productivity.

4.2.3 The Moderating Effect of Competitive Strategies

Researchers have emphasized that there are two basic types of competitive strategies: cost leadership and differentiation (Porter, 1980, 1985). We expect that ECSR has varying influences on labor productivity, depending on these two types of competitive strategies.

Hambrick (1983) maintained that firms with a focus on cost leadership strategy have advantages in utilizing their assets and optimizing their resources. They are cost leaders and pay great attention to asset use and operating expenses (Duanmu et al., 2018; Porter, 1980, 1985). Cost leadership reflects firms' advancements in operational efficiency.

We conjecture that cost leadership strategy strengthens the effect of ECSR activities on labor productivity because the effectiveness of such activities depends on the resources provided by firms. Specifically, cost leadership indicates that firms have greater efficiency in using the resources to produce goods (Yamakawa et al., 2011). They have cost advantages and their products have lower costs than competitors' equivalent products (Duanmu et al., 2018; Panwar et al., 2016). As such, firms that are cost leaders may have more resources that can be allocated to support the implementation of ECSR activities. This allows firms to implement ECSR initiatives more effectively and thus capture greater operational benefits from such initiatives. Moreover, firms with a higher level of cost leadership strategy might possess managerial skills and capabilities to better control the explicit costs caused by ECSR practices (Chen et al., 2018). As a result, they are likely more efficient in undertaking

ECSR initiatives and thus attain greater operational benefits from such initiatives. In sum, when firms have a higher level of cost leadership strategy, they are more capable of conducting ECSR activities to motivate employees to work harder and improve employees' work ability, which could yield greater labor productivity for them.

Hypothesis 2a. Cost leadership strategy positively moderates the effect of ECSR on labor productivity.

Firms with a focus on differentiation strategy can create value that is perceived by customers as unique (Hambrick, 1983; Li et al., 2008). Differentiation is mainly manifested in firms' innovation and marketing orientations (Yamakawa et al., 2011). Firms can differentiate themselves by developing new products that are valued by customers or providing high-quality services for customers. The innovation and marketing orientations are beneficial for firms to satisfy customers' current or future demands and create brand loyalty (Danso et al., 2019; Laari et al., 2018).

We posit that differentiation strategy reinforces the effect of ECSR activities on labor productivity. First, employees who work in firms with a greater focus on differentiation strategy may think that these firms will invest more resources in innovation and marketing activities rather than employee-based CSR activities (Yamakawa et al., 2011). They have lower expectations about these firms' investments in prosocial activities towards them. As such, the engagement of ECSR activities by firms with a greater focus on differentiation strategy is more of a surprise to employees, which could further improve employees' motivation to work harder. Second, firms with

a higher level of differentiation strategy are more innovative and thus are better able to implement prosocial activities with innovative solutions (Chen et al., 2018; Danso et al., 2019). For example, they command a better position to develop new production processes to mitigate safety risks and improve working conditions. Therefore, firms with a greater focus on differentiation strategy are able to undertake ECSR activities more effectively, which could further enhance employees' work ability. In short, differentiation strategy enlarges the effect of ECSR activities on employees' motivation and ability to work, which could lead to higher labor productivity for firms.

Hypothesis 2b. Differentiation strategy positively moderates the effect of ECSR on labor productivity.

4.2.4 The Moderating Effect of Industry Safety Risk Intensity

Industry safety risk intensity refers to the extent to which an industry encounters safety production risks (Cigolini and Rossi, 2010). Safety production risks pose serious threats to employees' health and safety (De Koster et al., 2011; Wiengarten et al., 2016). The safety risk intensity of an industry to which a firm belongs is expected to positively moderate the relationship between ECSR and labor productivity. First, when firms operate in industries with higher safety production risks, employees may pay more attention to the safety risks and require firms to implement more ECSR activities to take care of their health and safety (Pagell et al., 2014). As such, these firms that undertake ECSR activities are likely more effective in improving employees' motivation to work harder, which in turn could bring higher labor productivity for them.

Second, firms operating in industries with higher safety production risks are perceived to have greater negative impacts on employees and the society at large (Lo et al., 2014). In such circumstances, ECSR activities are more important for these firms as they are in greater need of preventing occupational accidents and ensuring that workers are safe. Thus, ECSR activities might be more beneficial to enhance employees' work capability when firms operate in industries with higher safety production risks. In short, industry safety risk intensity magnifies the effect of ECSR on employees' motivation and ability to work, which could result in higher labor productivity.

Hypothesis 3. The positive effect of employee-related CSR on labor productivity is stronger for firms operating in industries with higher safety risks.

Figure 4.1 depicts the conceptual model of Study 2.

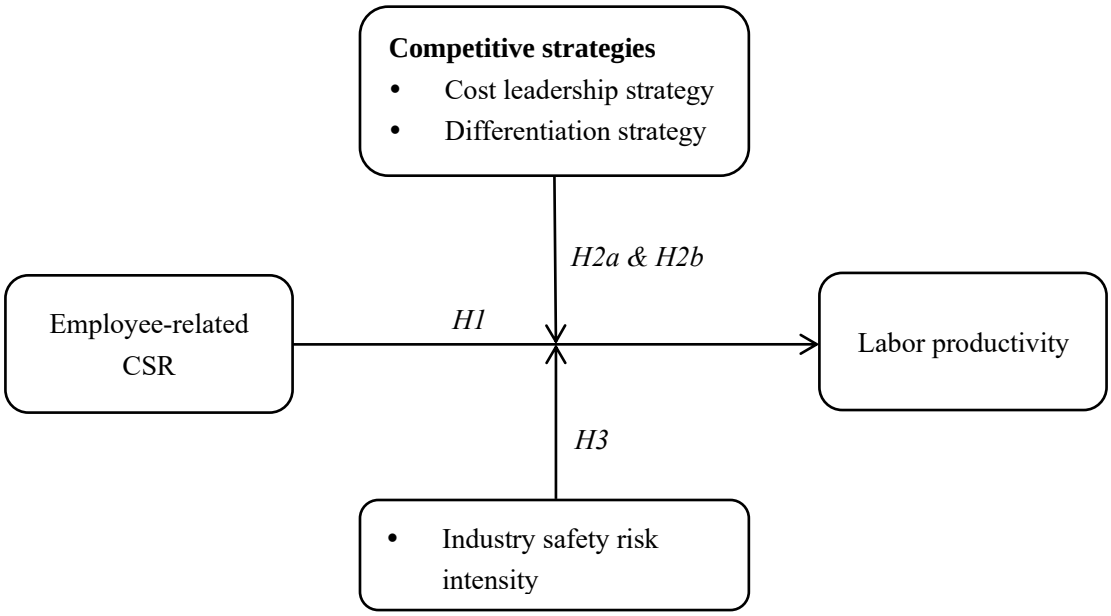

Figure 4.1 Conceptual Model of Study 2.

4.3 Methodology

4.3.1 Data and Sample

As with Study 1, we collected CSR data from the Hexun database and financial and governance data from the CSMAR database. Additionally, we obtained data on the variable of industry safety risk intensity from The State Council of China and the provincial-level development data from the National Bureau of Statistics of China (NBSC).

Our sample contains Chinese manufacturing firms that were listed on Shenzhen and Shanghai Stock Exchanges. We dropped the following observations in our sample: (1) observations marked with Special Treatment (ST) as they reflect irregularity in firms' operations and financial performance for two or three consecutive years; (2) B-share (foreign share) firms in that they comply with different regulations and market trading mechanisms; and (3) firms with missing data for the variables utilized in our study. The final sample has 12,040 observations from 2010 to 2017 for 2,211 firms. Panels A and B of Table 4.1 show the distribution of sample firms by industry and year. Panel C demonstrates the characteristics of sample firms in terms of total assets, sales, net income, and the number of employees.

Table 4.1 Descriptive Statistics of Sample Firms of Study 2.

Panel A: The distribution of sample firms by industry

2-digit CSRC codes	Industry	Frequency	Percentage (%)
C13	Farm products processing	281	2.33
C14	Food manufacturing	210	1.74
C15	Wine, drinks and refined tea manufacturing	240	1.99
C17	Textile	294	2.44
C18	Textiles, garments and apparel industry	191	1.59
C19	Leather, fur, feathers, and related products and shoe-making	45	0.37
C20	Wood processing, and wood, bamboo, rattan, palm and grass products	54	0.45
C21	Furniture manufacturing	69	0.57
C22	Papermaking and paper products	184	1.53
C23	Printing and reproduction of recorded media	38	0.32
C24	Culture and education, arts and crafts, sports and entertainment products manufacturing	67	0.56
C25	Petroleum processing, coking and nuclear fuel processing	132	1.10
C26	Raw chemical materials and chemical products	1,315	10.92
C27	Pharmaceutical manufacturing	1,111	9.23
C28	Chemical fiber manufacturing	168	1.40
C29	Rubber and plastic product industry	386	3.21
C30	Non-metallic mineral products	513	4.26
C31	Smelting and pressing of ferrous metals	240	1.99
C32	Smelting and pressing of nonferrous metals	381	3.16
C33	Metal products	321	2.67
C34	General equipment manufacturing	714	5.93
C35	Special equipment manufacturing	1,085	9.01
C36	Automobile manufacturing	601	4.99
C37	Railway, shipbuilding, aerospace and other transportation equipment manufacturing	256	2.13
C38	Electric machines and apparatuses manufacturing	1,151	9.56
C39	Computer, communication and other electronical device manufacturing	1,615	13.41
C40	Instrument and meter manufacturing	229	1.90
C41	Other manufacturing	141	1.17

C42	Utilization of waste resources	8	0.07
Total		12,040	100

Panel B: The distribution of sample firms by year

Year	Frequency	Percentage (%)
2010	1,126	9.35
2011	1,288	10.70
2012	1,382	11.48
2013	1,435	11.92
2014	1,508	12.52
2015	1,599	13.28
2016	1,746	14.50
2017	1,956	16.25
Total	12,040	100

Panel C: The characteristics of sample firms

	MeanSD		Min.	Max.
Total assets (RMB Million)	7,632.11	23,010.87	36.98	775,296.30
Sales (RMB Million)	5,517.03	21,240.28	6.92	857,977.70
Net income (RMB Million)	294.32	1,437.59	-17,049.43	47,116.10
Number of employees (Thousands)	4.54	10.23	0.01	200.95

4.3.2 Measures

Dependent variable. Following previous studies (Datta et al., 2005; Koch and McGrath, 1996; Sartal et al., 2020), we measured a firm's labor productivity using the natural logarithm of the ratio of sales to the number of employees. Labor productivity is a widely used metric of operational performance in the operations management literature (Sartal et al., 2020).

Independent variable. We measured a firm's employee-related CSR based on the rating score offered by the Hexun database. The second dimension of Hexun's CSR measurement focuses on a firm's commitment in employee responsibility. We used this dimension to operationalize a firm's employee-related CSR performance. Detailed measurement items are shown in Table 3.2.

Moderating variables. This study examines three important moderators. First, following previous studies (Chen et al., 2018; Yamakawa et al., 2011), we operationalized cost leadership strategy as the combination of three ratios including cost efficiency, capital intensity, and capital expenditure. Cost efficiency is measured as the ratio of cost of goods sold (COGS) to sales. Capital intensity is measured as the ratio of total assets to sales. Capital expenditure is measured as the ratio of the net expenditure for plant and equipment to sales. We summed up the above three variables to create a composite variable for cost leadership strategy. We then reversed the value of cost leadership strategy, since the lower the value, the greater the focus on cost leadership strategy. Second, in line with previous studies (Chen et al., 2018; Yamakawa et al., 2011), we operationalized differentiation strategy as the sum of two ratios including marketing intensity and R&D intensity. Marketing intensity is measured as the ratio of a firm's general selling and administration expenses (SG&A) to sales. This variable captures a firm's efforts to make investments in marketing and selling related activities in order to differentiate itself from competitors by strengthening its product image and after-sale services (Krishnan et al., 2009). R&D intensity is measured as the ratio of R&D expenditures to sales. This variable reflects a firm's product differentiation through its innovation activities (Hull and Rothenberg, 2008). We created a composite variable for differentiation strategy by aggregating the above two ratios, because they measure different aspects of differentiation strategy. Third, we measured industry safety risk intensity with a dummy variable that was coded as 1 if a firm operates in industries with a high level of safety production risks and 0 otherwise.

We define industries with high safety risk intensity based on the classification standard offered by the State Council. The government has provided specific classifications of the industries with high production safety risks (The State Council, 2016). Table 4.2 presents the classifications of Chinese manufacturing industries with high safety production risks.

Control variables. We included multiple control variables that could affect labor productivity. First, we controlled for firm size since larger firms have more resources to implement high-involvement work practices and thus may achieve higher labor productivity (Datta et al., 2005). It was operationalized as the natural logarithm of a firm's sales (Kim and Zhu, 2018; Lam, 2018). Second, we controlled for firm age since the potential learning curves may positively influence firms' labor productivity (Sartal et al., 2020). We measured firm age with the number of years since a firm was established (Wiengarten et al., 2017). Third, financial slack resources may allow firms to engage more in high-involvement work practices, which could lead to higher labor productivity (Deng et al., 2019). We measured financial slack as current assets divided by current liabilities (Shou et al., 2020; Su et al., 2016). Fourth, financial leverage may hamper firms' ability to conduct employee-related activities and thus negatively affect their labor productivity. It was measured using the ratio of total debt to total assets (Kim et al., 2018). Fifth, compared to privately controlled firms, state-owned firms may be less efficient in utilizing resources to undertake production activities and thus have lower labor productivity (Zhou et al., 2017). We measured state ownership with a dummy variable that was coded as 1 if the ultimate controller of a firm was the central

or local government and its agencies, and 0 if a firm was privately controlled (Wang et al., 2019). Sixth, firms with political connections may gain easier access to government-controlled resources, which could enable them to have more resources to implement high-involvement work practices and achieve higher labor productivity (Gao and Yang, 2016). We measured political connections as a dummy variable took the value of 1 if the TMT members were officials of the central or local government, or the military and 0 otherwise (Shou et al., 2020; Zheng et al., 2017). Seventh, we controlled for three industry-level variables (i.e., industry munificence, industry dynamism, and industry complexity), because the nature of resource munificence, dynamism, and competition in an industry might affect a firm's implementation of employee-related activities and thus its labor productivity (Datta et al., 2005). We operationalized industry munificence with a standardized measure of industry sales growth over a five-year period (Wiengarten et al., 2017). We regressed industry sales on time and used the regression slope coefficients divided by the mean sales to measure industry munificence. We regressed industry sales on time over a five-year period and used the standard errors of the regression slope coefficients divided by the mean sales to measure industry dynamism (Wang et al., 2008). We measured industry complexity as 1 minus the industry Herfindahl index (Erhemjamts et al., 2013). The Herfindahl index was calculated as the sum of the squared market shares of all firms that are in the same two-digit CSRC industry. The higher value of 1 minus Herfindahl index indicates that the industry is more complex. Eighth, we controlled for regional-level market development in that a well-developed market can provide more skilled labor resources for firms,

which are beneficial for them to improve labor productivity. Consistent with previous research (Gao and Yang, 2016), we measured market development as the natural logarithm of the ratio of a province's or region's gross domestic product (GDP) to its population. We used the value of the province or region where a firm's head-quarter operates to measure the level of market development for the firm. Finally, we included year dummies to control for any unobserved time-specific effects. Table 4.3 summarizes the measures, data sources, and references of the variables used in Study 2.

Table 4.2 Chinese Manufacturing Industries with High Safety Production Risks.

2-digit CSRC codes	Industry
C25	Petroleum processing, coking and nuclear fuel processing
C26	Raw chemical materials and chemical products
C27	Pharmaceutical manufacturing
C28	Chemical fiber manufacturing
C31	Smelting and pressing of ferrous metals
C32	Smelting and pressing of nonferrous metals

Table 4.3 Measurements of Variables of Study 2.

Variable type	Variable name	Measurement	Data source	Reference
Dependent variable	Labor productivity	Ln(Sales/The number of employees)	CSMAR	Datta et al. (2005); Koch and McGrath (1996)
Independent variable	ECSR performance	The second dimension of Hexun's CSR measurement	Hexun database	Gong et al. (2020); Wang et al. (2019)
Moderating variables	Cost leadership strategy	Sales/(COGS + Total assets + Capital expenditure)	CSMAR	Chen et al. (2018); Yamakawa et al. (2011)
	Differentiation strategy	(R&D expenditures + SG&A)/Sales	CSMAR	Chen et al. (2018); Yamakawa et al. (2011)
	Industry safety risk intensity	1 if a firm operates in industries with a higher level of safety production risks; 0 otherwise.	The State Council	Adapted from Lyon et al. (2013)
Control variables	Firm size	Ln(Sales)	CSMAR	Kim and Zhu (2018); Lam (2018)
	Firm age	The number of years since a firm's founding	CSMAR	Kim et al. (2008); Wiengarten et al. (2017)
	Financial slack	Current assets/Current liabilities	CSMAR	Shou et al. (2020); Su et al. (2016)
	Financial leverage	Total debt/Total assets	CSMAR	Kim et al. (2018)
	State ownership	1 if the ultimate controller of a firm was the central or local government and its agencies; 0 if a firm was privately controlled	CSMAR	Wang et al. (2019); Zhou et al. (2017)
	Political connections	1 if the TMT members were officials of the central or local	CSMAR	Shou et al. (2020);

		government, or the military; 0 otherwise		Zheng et al. (2017)
	Industry munificence	Regression slope coefficients derived from the regression of the industry's annual sales over a 5-year period/Mean sales	CSMAR	Boyd (1995); Wiengarten et al. (2017)
	Industry dynamism	Standard error derived from the regression of the industry's annual sales over a 5-year period/Mean sales	CSMAR	Wang et al. (2008); Wiengarten et al. (2017)
	Industry complexity	$1-\sum_{i=1}^{N}\left(\frac{Sales_i}{Total\ sales}\right)^2$	CSMAR	Erhemjamts et al. (2013); Xia et al. (2016)
	Market development	Ln(GDP/Population in a region)	NBSC	Gao and Yang (2016)
	Year dummies	Year2011-Year2017	CSMAR	Shou et al. (2020)

4.3.3 Estimation Method

We adopted the panel data approach to conduct our analyses. The Hausman test was performed to select fixed-effects or random-effects models. This test rejects the hypothesis that random-effects models are appropriate for our dataset ($\chi^2(20) = 298.32$, $p < 0.01$). Hence, we utilized firm fixed-effect regression models. We then conducted the Wald test to check for heteroskedasticity (Wooldridge, 2002). The results suggest that there is heteroskedasticity in our data. To address this issue, we estimated our models with robust standard errors.

To mitigate reverse causality, all the independent and control variables were lagged by one year (Kim and Zhu, 2018). We employed the following equation to test the proposed hypotheses:

$$\begin{aligned} Labor\ productivity_{it+1} = {} & \beta_0 + \beta_1 ECSR_{it} + \beta_2 Cost\ leadership_{it} \\ & + \beta_3 Differentiation_{it} + \beta_4 Industry\ safety\ risk\ intensity_{it} \\ & + \beta_5 ECSR \times Cost\ leadership_{it} + \beta_6 ECSR \times Differentiation_{it} \\ & + \beta_7 ECSR \times Industry\ safety\ risk\ intensity_{it} + \beta_8 Firm\ size_{it} \\ & + \beta_9 Firm\ age_{it} + \beta_{10} Financial\ slack_{it} + \beta_{11} Financial\ leverage_{it} \\ & + \beta_{12} State\ ownership_{it} + \beta_{13} Political\ connections_{it} \\ & + \beta_{14} Industry\ munificence_{it} + \beta_{15} Industry\ dynamism_{it} \\ & + \beta_{16} Industry\ complexity_{it} + \beta_{17} Market\ development_{it} \\ & + Year\ dummies_{it} + \varepsilon_{it} \end{aligned}$$

where β_0 is constant term; β_n (n=1, 2, 3, …, 17) are a set of regression coefficients of independent variables; ε_{it} is the error term.

4.4 Results

4.4.1 Results of the Hypotheses

Table 4.4 demonstrates the descriptive statistics and correlations. We calculated the variance inflation factor (VIF) scores for all variables, which are all lower than the

threshold of 10 (Kennedy, 1998). Thus, multicollinearity is not a major issue in our study.

The results of fixed-effect regression analysis are reported in Table 4.5. Model 1 only includes control variables. Model 2 includes the main effect of ECSR. Models 3-5 add the interaction terms between ECSR and moderators (i.e., cost leadership strategy, differentiation strategy, and industry safety risk intensity), respectively.

In Model 2, the results indicate that the coefficient of ECSR is significantly positive ($\beta = 0.0054$, $p < 0.01$). This suggests that ECSR has a positive effect on labor productivity, which supports *Hypothesis 1*.

The results of Model 3 reveal that the coefficient for the interaction term between ECSR and cost leadership strategy is significantly positive ($\beta = 0.0463$, $p < 0.01$). This suggests that cost leadership positively moderates the linkage between ECSR and labor productivity, supporting *Hypothesis 2a*. To illustrate the interaction effect, we plotted the relationship between ECSR and labor productivity using two values of cost leadership strategy: low (one standard deviation below the mean) and high (one standard deviation above the mean). Figure 4.2 shows that the slope line is more positive for firms with a higher level of cost leadership strategy, which confirms *Hypothesis 2a*.

The results of Model 4 indicate that the coefficient of the interaction term between ECSR and differentiation strategy is negative but insignificant ($\beta = -0.0213$, $p > 0.1$). Thus, *Hypothesis 2b* is not supported. The results of Model 5 reveal that the coefficient of the interaction term between ECSR and industry safety risk intensity is significantly

positive ($\beta = 0.0082, p < 0.05$). This implies that industry safety risk intensity positively moderates the relationship between ECSR and labor productivity, supporting *Hypothesis 3*. Figure 4.3 shows the interaction effect when firms operate in industries with high safety risk intensity (value = 1) and low safety risk intensity (value = 0). As shown in Figure 4.3, the slope line is more positive for firms operating in industries with high safety production risks. Table 4.6 summarizes the results of our hypotheses testing.

Table 4.4 Correlation Matrix of Study 2.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. Labor productivity	13.633	0.762	1.000								
2. ECSR	2.653	3.283	0.176***	1.000							
3. Cost leadership strategy	0.353	0.131	0.373***	0.105***	1.000						
4. Differentiation strategy	0.218	0.177	-0.328***	-0.063***	-0.273***	1.000					
5. ISRI[a]	0.278	0.448	0.211***	0.050***	0.084***	-0.026***	1.000				
6. Firm size	21.217	1.368	0.503***	0.319***	0.464***	-0.392***	0.136***	1.000			
7. Firm age	14.937	5.499	0.118***	0.007	0.044***	-0.009	0.043***	0.178***	1.000		
8. Financial slack	3.025	5.082	-0.086***	-0.063***	-0.117***	0.161***	0.022**	-0.270***	-0.117***	1.000	
9. Financial leverage	0.395	0.207	0.214***	0.137***	0.106***	-0.233***	0.039***	0.484***	0.201***	-0.463***	1.000
10. State ownership	0.327	0.469	0.119***	0.255***	0.085***	-0.141***	0.101***	0.370***	0.228***	-0.162***	0.353***
11. Political connections	0.331	0.471	-0.026***	-0.018**	-0.038***	0.001	0.024***	-0.029***	-0.063***	0.022**	-0.059***
12. Industry munificence	0.152	0.087	-0.086***	0.080***	0.077***	-0.031***	-0.087***	-0.063***	-0.191***	0.045***	-0.034***
13. Industry dynamism	0.036	0.024	-0.007	0.019**	0.074***	-0.063***	-0.070***	-0.015*	-0.109***	0.020**	0.005
14. Industry complexity	0.922	0.066	-0.059***	-0.017*	-0.127***	0.168***	0.227***	-0.144***	-0.018**	0.040***	-0.114***
15. Market development	10.927	0.452	0.113***	-0.040***	0.005	0.062***	-0.133***	-0.010	0.074***	0.027***	-0.116***

	10	11	12	13	14	15
10. State ownership	1.000					
11. Political connections	-0.133***	1.000				
12. Industry munificence	0.022**	0.061***	1.000			
13. Industry dynamism	-0.020**	0.016*	0.443***	1.000		
14. Industry complexity	-0.046***	-0.031***	-0.107***	-0.111***	1.000	
15. Market development	-0.194***	-0.053***	-0.145***	-0.073***	0.047***	1.000

Notes: N = 12,040. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed test). [a] ISRI = Industry safety risk intensity.

Table 4.5 Results of Firm Fixed-effect Regression Analysis of Study 2.

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	7.2849***	7.9950***	8.0288***	7.9938***	8.0049***
	(0.5891)	(0.5998)	(0.5983)	(0.6011)	(0.5993)
Firm size	0.2758***	0.2217***	0.2202***	0.2221***	0.2217***
	(0.0198)	(0.0227)	(0.0226)	(0.0228)	(0.0227)
Firm age	0.0179***	0.0283***	0.0285***	0.0283***	0.0283***
	(0.0045)	(0.0049)	(0.0049)	(0.0049)	(0.0049)
Financial slack	0.0007	0.0011	0.0011	0.0011	0.0011
	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)
Financial leverage	0.0402	0.0818	0.0831	0.0839	0.0818
	(0.0752)	(0.0756)	(0.0755)	(0.0753)	(0.0755)
State ownership	-0.2269***	-0.2207***	-0.2222***	-0.2194***	-0.2201***
	(0.0829)	(0.0841)	(0.0834)	(0.0842)	(0.0839)
Political connections	0.0068	0.0094	0.0098	0.0092	0.0094
	(0.0175)	(0.0173)	(0.0172)	(0.0173)	(0.0173)
Industry munificence	0.1170	0.1180	0.1148	0.1163	0.1216
	(0.0900)	(0.0890)	(0.0888)	(0.0889)	(0.0891)
Industry dynamism	-0.3654	-0.4129*	-0.4182*	-0.4133*	-0.4259*
	(0.2501)	(0.2492)	(0.2486)	(0.2492)	(0.2498)
Industry complexity	0.1047	0.0488	0.0536	0.0487	0.0459
	(0.2365)	(0.2352)	(0.2357)	(0.2354)	(0.2351)
Market development	0.0228	0.0291	0.0282	0.0285	0.0289
	(0.0369)	(0.0367)	(0.0368)	(0.0368)	(0.0368)
Year dummies	Included	Included	Included	Included	Included

Cost leadership strategy (CLS)		0.5785***	0.5809***	0.5784***	0.5781***
		(0.1156)	(0.1153)	(0.1155)	(0.1155)
Differentiation strategy (DS)		-0.0266	-0.0276	-0.0261	-0.0260
		(0.0572)	(0.0577)	(0.0596)	(0.0572)
Industry safety risk intensity (ISRI)		0.1276	0.1281	0.1271	0.1314
		(0.0917)	(0.0917)	(0.0914)	(0.0917)
ECSR		0.0054***	0.0045**	0.0045**	0.0026
		(0.0020)	(0.0021)	(0.0021)	(0.0025)
ECSR × CLS			0.0463***		
			(0.0177)		
ECSR × DS				-0.0213	
				(0.0146)	
ECSR × ISRI					0.0082**
					(0.0039)
F statistic	66.98***	56.20***	53.59***	53.46***	53.95***
R^2	0.2566	0.2778	0.2780	0.2770	0.2789

Notes: Robust standard errors are in parentheses. $N = 12{,}040$. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed test).

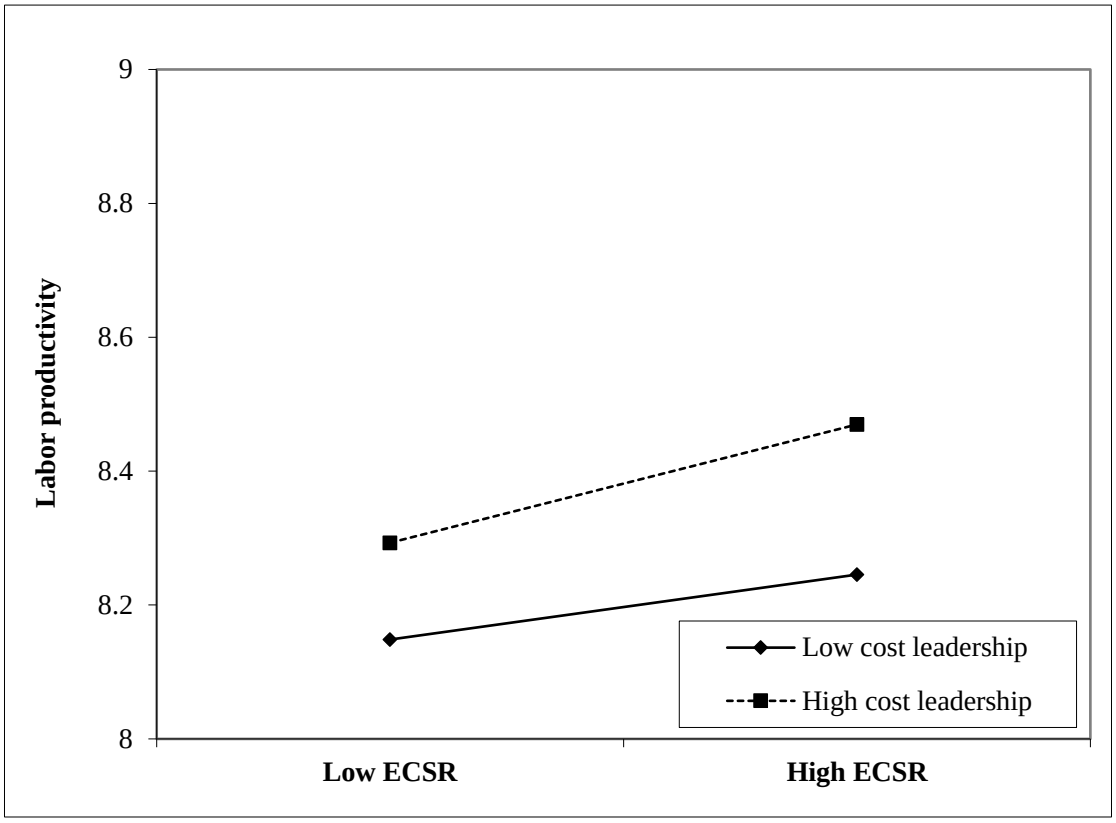

Figure 4.2 Moderating Effect of Cost Leadership Strategy on the ECSR-labor productivity Link.

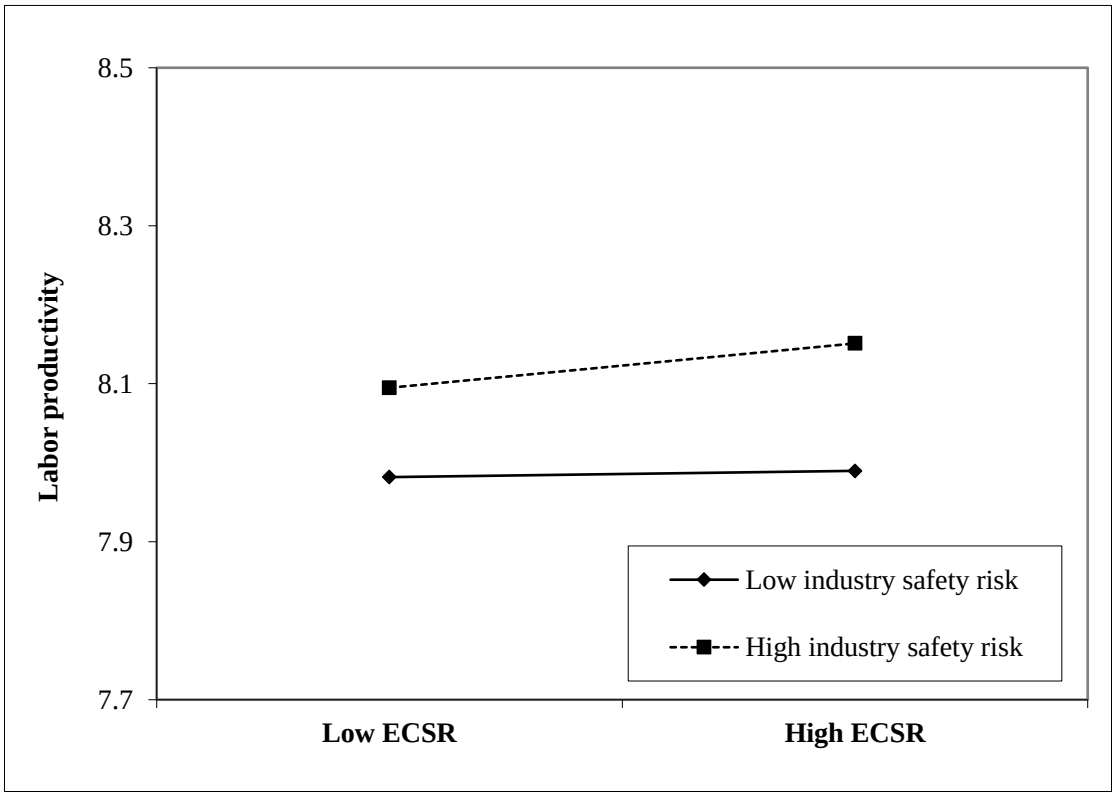

Figure 4.3 Moderating Effect of Industry Safety Risk Intensity on the ECSR-labor productivity Link.

Table 4.6 Hypotheses Testing Results of Study 2.

	Hypotheses	Outcome
H1	ECSR has a positive effect on labor productivity.	Supported
H2a	Cost leadership strategy positively moderates the effect of ECSR on labor productivity.	Supported
H2b	Differentiation strategy positively moderates the effect of ECSR on labor productivity.	Rejected
H3	The positive effect of ECSR on labor productivity is stronger for firms operating in industries with higher production safety risks.	Supported

4.4.2 Additional Analyses to Address Endogeneity

Our model specification is likely to suffer from endogeneity issues because of reverse causality. To overcome this issue, we included one-year lag between independent and dependent variables (Greene, 2008). Endogeneity may also stem from omitted variables. To deal with the potential endogeneity concern, we conducted a two-stage least squares (2SLS) regression analysis. In the first stage, we regressed the endogenous variable (i.e., ECSR) on the instrumental variable and other control variables. We used industry average CSR as the instrumental variable. Due to the competitor pressures that firms face, they tend to mimic their peer firms' sustainable behaviors in the same industry (Sarkis et al., 2010). Thus, the industry average level of ECSR will be positively associated with a firm's level of ECSR performance. Yet, the industry average level of ECSR is not expected to significantly influence a firm's labor productivity. The results in Table 4.7 show that the instrumental variable is significantly correlated to ECSR. The Anderson-Rubin and Stock-Wright tests were employed to check the validity of our instrument variable (Kim and Zhu, 2018). The results indicate that both chi-square statistics were significant, suggesting that our instrument is valid. Furthermore, the results demonstrate that the excluded instruments in the first stage

regression models have *F*-statistics greater than the threshold of 10 (Kim and Zhu, 2018), which suggests that our instrument variable is not weak instrument. In the second stage, we regressed labor productivity on the predicted values of ECSR (which is obtained from the first stage analysis) and other control variables. The results demonstrate that the coefficient for the predicted value of ECSR is significantly positive. This result is consistent with our prior result and supports *Hypothesis 1*. Therefore, we could conclude that endogeneity is not a serious concern in our study.

Table 4.7 Results of 2SLS Regression Analysis of Study 2.

	Stage 1 Regression	Stage 2 Regression
	DV: ECSR	DV: Labor productivity
Constant	-3.6124 (2.3280)	7.3105*** (0.5893)
Firm size	0.4937*** (0.0633)	0.2519*** (0.0211)
Firm age	-0.0215 (0.0229)	0.0270*** (0.0054)
Financial slack	-0.0179*** (0.0049)	0.0015 (0.0012)
Financial leverage	-0.0985 (0.2510)	0.0413 (0.0752)
State ownership	-0.4752** (0.2370)	-0.2030** (0.0835)
Political connections	-0.0391 (0.0852)	0.0082 (0.0175)
Industry munificence	-0.4624 (0.4801)	0.0895 (0.0894)
Industry dynamism	-1.2444 (1.3747)	-0.1693 (0.2540)
Industry complexity	-1.8646* (0.9706)	0.1510 (0.2337)
Market development	-0.3795*** (0.1421)	0.0403 (0.0373)
Year dummies	Included	Included
Industry average ECSR	0.8341*** (0.0996)	
ECSR		0.0434*** (0.0123)
F statistic	24.92***	63.98***
R^2	0.1275	0.2559
Anderson-Rubin Wald test	17.46***	
Stock-Wright LM S statistic	17.79***	
F test of excluded instruments	144.38***	

Notes: Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed test).

4.4.3 Robustness Checks

We conducted several robustness checks. First, we tested whether our findings are sensitive to the measure of financial slack. Alternatively, we utilized quick ratio (Wiengarten et al., 2017) rather than current ratio to measure financial slack. Quick ratio is calculated as quick assets divided by current liabilities. We used this alternative measure and obtained similar results. Second, in our sample firms, approximately 6% of the observations had missing R&D expenses. Following the approach of previous research (Kim and Zhu, 2018), we replaced the missing R&D values with zero. As a robustness check, we excluded the observations with missing values and reran our analyses. Our results remain largely identical. Finally, we trimmed the independent variable by 0.5% in each tail to investigate the potential bias induced by outliers. Our results are also in agreement with the main analyses.

4.5 Discussion and Conclusions

4.5.1 Theoretical Implications

Our study provides multiple contributions to the CSR literature. First, it takes an initial step in examining the relationship between ECSR and labor productivity in the context of China. Our results indicate that ECSR is beneficial for improving firms' labor productivity. This supports the notion of RBV that ECSR helps a firm create high-quality human capital, which can be regarded as the firm's valuable resources and an important source of competitive advantage and operational performance (McWilliams and Siegel, 2011; Sodhi, 2015). Our finding concurs with that of some previous studies.

For example, Gubler et al. (2018) found that corporate wellness programs can enhance firms' labor productivity. Sánchez and Benito-Hernández (2015) observed that employee social responsibility is positively associated with labor productivity. Lo et al. (2014) evidenced that OHSAS 18001 certification improves employees' health and safety as well as firms' labor productivity. However, previous studies are confined to the context of developed nations (i.e., Spain and U.S.) and scant attention has been paid to emerging economies such as China. Our research provides further empirical evidence on the ECSR-labor productivity relationship in the context of China, which enriches the existing CSR literature.

Second, our study advances the CSR literature by offering deeper insights into the contingency factors of the ECSR-labor productivity relationship. Our results indicate that cost leadership strategy strengthens the effect of ECSR activities on labor productivity whereas differentiation strategy has no such influence. One plausible reason is that firms with a focus on differentiation strategy will make considerable investments in innovation and marketing activities (Chen et al., 2018; Yamakawa et al., 2011), which leaves less resources for supporting the implementation of ECSR activities. This may impair the effectiveness of the adoption of ECSR activities and thus employees' motivation and ability to work. Thus, differentiation strategy might have differing influences on the effectiveness of ECSR in China, neutralizing the moderating effect on the ECSR-labor productivity linkage. Moreover, our results suggest that industry safety risk intensity reinforces the effect of ECSR activities on labor productivity, implying that firms can gain greater operational benefits from ECSR when

they operate in industries with higher safety production risks. Previous studies have examined some contextual factors (e.g., operational complexity, operational coupling, and labor intensity) (Lo et al., 2014; Orzes et al., 2017), yet there is a void of research exploring the moderating roles of firms' competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity. Accordingly, our study complements the extant CSR research by identifying new boundary condition of the ECSR-labor productivity link.

4.5.2 Managerial Implications

Our study also provides some important insights for managers. First, our study reveals that ECSR is beneficial for improving firms' labor productivity. This finding allows managers to better decide whether to invest resources to implement ECSR activities. For example, firms can develop safety inspection and training programs to improve working conditions. They can also undertake caring activities to enhance employees' well-being. These activities are helpful for Chinese firms to increase employees' motivation to work harder and their work ability, thereby enhancing their labor productivity. Therefore, Chinese firms are advised to consider ECSR as strategic actions to improve their competitive advantage and labor productivity.

Second, managers need to be aware that the effect of ECSR on labor productivity could be contingent on different factors. It is worth noting that Chinese firms with a greater focus on cost leadership strategy can attain higher labor productivity from ECSR activities. They are therefore recommended to invest more resources to develop

the ECSR programs. In addition, when Chinese firms operate in industries with higher safety production risks, ECSR can bring greater labor productivity for them. Thus, they should assess the external environment and the industry safety risk intensity in order to gain more operational benefits from ECSR activities. Overall, managers are advised to carefully examine their competitive strategies and industry safety production risks before engaging in ECSR activities.

4.5.3 Limitations and Future Research Directions

Our study is not without limitations, which point out the avenues for future research. First, this study used data from only one country (i.e., China), which hampers the generalization of our results to the context of other emerging economies. It is worthwhile to investigate the impact of ECSR on labor productivity in other emerging economies (e.g., India and Thailand). Second, our study considers firms in manufacturing industries. Although the choice of this setting helps ensure high internal validity, the insights derived from our study might not be appliable to other industries (e.g., logistics and retail industries). Hence, future research can extend this study by examining how ECSR influences labor productivity of service firms. Finally, our study examines the moderating effects of several important factors on the ECSR-labor productivity linkage, but there may be other contingent factors (e.g., employee characteristics and operational flexibility) that influence this linkage. Thus, an avenue for future research is to explore other boundary conditions of the ECSR-labor productivity link.

Chapter 5 Study 3: How Does the Stock Market Value Green Logistics Initiatives? Evidence from China

5.1 Introduction

Environmental sustainability is an operations challenge for many companies where logistics activities are important part for managerial attention owing to their severe damages to the environment (Bask et al., 2018; Colicchia et al., 2013). For example, transportation logistics activities can cause a high rate of greenhouse gas (GHG) emissions (Tian et al., 2014). According to a recent report by the International Energy Agency (IEA), the transportation sector was one of the largest contributors to GHG emissions, accounting for approximately 25% of the emitted CO_2 worldwide in 2016 (IEA, 2018). Therefore, servicing as the logistics arm of many enterprises, the green initiatives of logistics service providers (LSPs) to mitigate their operational harms to the natural environment are a growingly important concern in the society.

Many LSPs have begun to adopt green logistics initiatives (GLIs) to alleviate the negative environmental impact of their operations (e.g., noise pollution, GHG emissions, and waste). GLIs refer to the management practices that aim at lessening environmental damages and conserving resources in handling cargo movements (Lai et al., 2011; Ubeda et al., 2011). Colicchia et al. (2013) underscored the importance of distinguishing between internal and external GLIs. Internal GLIs involve green actions that are implemented and managed independently by an individual LSP (Bask et al., 2018). External GLIs require coordination and collaboration with other members such as suppliers, customers, and other LSPs to jointly improve resource utilization

efficiency and environmental performance (Yang et al., 2013). Some leading Chinese LSPs such as JD Logistics Company highly emphasize green practices in their operations (Fan, 2017). Some of JD's exemplary practices include the use of recyclable packaging and dissolvable materials, electric vehicles, route optimization, and collaboration with customers to jointly resolve environmental problems and achieve environmental common goals collectively.

Although GLIs have become a viable way for LSPs to ease their caused environmental harms, it remains unclear whether pursuing GLIs can financially benefit LSPs and contribute to their shareholder value. Extant sustainability-related research has mainly investigated the shareholder value effect of environmental initiatives within the manufacturing sectors or a diverse set of sectors (Ba et al., 2013; Dam and Petkova, 2014; Jacobs et al., 2010), yet the logistics industry has received scant attention on the performance value of environmental preservation (El Baz and Laguir, 2017). Some researchers posit that GLIs are favorable for LSPs to establish a good public image with which they can gain customer support and hence sales revenue (Maas et al., 2014). Nonetheless, others argue that undertaking environmental logistics practices requires significant financial investments (Abbasi and Nilsson, 2016; Laari et al., 2018), and the costs may outweigh the resulting benefits, compromising the adopter firms' performance and market value. Based on case evidences, Perotti et al. (2012) found that some LSPs in Italy fail to achieve the expected economic gains due to incremental expenses incurred by green practices implementation. This raises the doubt of whether GLIs pay off for LSPs and if GLIs are beneficial for the shareholder wealth of LSPs.

So far, there is a dearth of research that provides empirical evidence on the shareholder value of GLIs, particularly for LSPs and in context of China where the booming e-commerce development triggers growing shipping needs and demands for logistics services.

This study seeks to fill this gap by using the event study approach to examine the shareholder value effect of GLIs for LSPs through analyzing the stock market reaction to their GLI announcements in the context of China. Our choice of China as the research context is based on several reasons. First, the Chinese logistics industry plays an increasingly important role in contributing to economic growth of the country. This industry has recently seen substantial growth fueled by rapid development in e-commerce and online retail sales. According to the statistics of China Federation of Logistics and Purchasing (CFLP), the demand for logistics services in China has been growing at a very fast pace where the total logistics value increased by 6.7% in 2017 (CFLP, 2018). However, the mounting logistics service demands and activities have led to severe environmental damages including air pollution and GHG emissions. The Netherlands Environmental Assessment Agency reported that China emitted the largest amount of GHG emissions in 2017, accounting for about 27% of the global volume (Olivier and Peters, 2018). Thus, it is timely and crucial to examine the shareholder value of green initiatives adopted by Chinese LSPs, which can be an incentive for them to lessen the environmental harms caused by their logistics operations. Second, prior studies concerning the market value of environmental practices mainly focus on developed countries, especially in the U.S. context (e.g., Cordeiro and Tewari, 2015;

Flammer, 2013; Gilley et al., 2000), yet few studies have put emphasis on emerging economies like China (Lam et al., 2016). Compared with developed economies, developing economies are characterized by less institutional pressures for green practices adoption, lack of financial resources to support green activities, and lack of appropriate and comprehensive laws encouraging green practices (Garcia et al., 2017). Such institutional differences might influence the adoption of green practices by LSPs and the financial gains from embracing these initiatives. Consequently, research focusing on the performance value of GLIs in the context of emerging economies such as China is highly desired to answer these enquiries.

In addition to investigating *whether* it pays to be green for LSPs in China (i.e., the shareholder value effect), this study addresses *when* it pays to be green for deeper insights into the shareholder value of green initiatives. Specifically, we explore how the market reaction is moderated by the attribute of GLIs (internal versus external) and the attribute of LSPs (abundance of organizational slack resources). Different types of GLIs may convey different signals to investors, resulting in different stock market reactions. Moreover, slack resources refer to "the pool of resources in an organization that is in excess of the minimum necessary to produce a given level of organizational output" (Nohria and Gulati, 1996, p. 1246). Vanacker et al. (2017) mentioned that slack resources form a continuum ranging from unabsorbed to absorbed slack. The former represents a firm's resources that are readily available for redeployment, such as cash and receivables (Singh, 1986), while the latter comprises a firm's resources that cannot be easily redeployed, such as excess production capacity and overhead expenses (Voss

et al., 2008). In this study, we focus on unabsorbed financial slack and absorbed operational slack to capture both opposing ends of the continuum and examine their impact on the market reaction to GLIs.

Drawing on signaling theory (Connelly et al., 2011), we theorize that GLIs signal to investors concerning a LSP's superior corporate social responsibility (CSR) reputation and intended financial performance, which may positively influence investors' perception and thus the firm's shareholder value (Gilley et al., 2000). Moreover, the extent to which investors value GLIs may depend on how they view the observable characteristics of GLIs and firms. The attributes of LSPs and GLIs may convey additional signals to investors, resulting in different stock market reactions to GLI announcements of LSPs. Based on a sample of 140 GLI announcements made by Chinese LSPs, our results indicate that the stock market reacts positively to the signal of GLIs issued by LSPs and such reaction is stronger for LSPs with a lower level of operational slack. However, financial slack and the types of GLIs have no such signaling effect on the market reaction.

5.2 Theoretical Background and Hypotheses Development

5.2.1 Signaling Theory

Signaling theory is applied to the situation of information transmission between two parties where certain underlying attributes of one party are unobservable to the other party (Spence, 1973, 1974). The information transmission is beneficial for mitigating information asymmetry between two parties. This theory is based on three

critical concepts guiding our hypotheses development, which are the signaler, the signal, and the receiver (Connelly et al., 2011). The signaler is the party who has an information advantage over the other party, who is the intended receiver of the signal. The signal can be regarded as the activities of individuals or firms in a market that transmit information to others in the market (Connelly et al., 2011). The signals conveyed by the signaler are beneficial to mitigate information asymmetry between the signaler and the receiver (Zerbini, 2015). The efficacy of the signal is associated with two important properties: signal observability and signal cost (Narasimhan et al., 2015). The former refers to how well receivers can notice and identify the signal and the latter refers to the expenses induced by conveying the signal (e.g., implementation costs).

Scholars have applied the signaling theory to various contexts including sustainable operations management. For example, Narasimhan et al. (2015) viewed Forest Stewardship Council certification as a signal conveyed by sustainability-oriented firms to their customers and stakeholders. Jacobs (2014) examined how voluntary emissions reduction activities serve as a reliable signal to convince investors about their green operations capability. Zhang et al. (2017) posited that clean development mechanism activities send a positive signal to investors and are beneficial to improve firms' shareholder value. Lam (2018) utilized sustainable supply chain management practices as a valid signal sent by firms to their investors, which could help reduce their financial risks.

In line with prior studies, we argue that GLIs serve as a signal conveyed by LSPs (i.e., the signaler) to investors (i.e., the receiver). Researchers have highlighted that

signals must be costly to become reliable (Narasimhan et al., 2015). GLIs are costly as logistics firms need to make considerable investments in activities such as the use of recycled and ecological materials for packaging, the adoption of green technologies, and the purchase of new eco-friendly vehicles or ships (Colicchia et al., 2013; Perotti et al., 2012). Thus, from the signaling theory perspective, GLIs underpinned by high investment costs transmit reliable signal to investors. Moreover, GLIs are helpful for LSPs to alleviate information asymmetry between them and investors. Investors generally have less information about LSPs' environmental performance. GLIs of LSPs portray the social responsibility aspect of their operations, which conveys credible information to investors and mitigates the information asymmetry between them.

5.2.2 The Shareholder Value Effect of GLIs

Based on signaling theory, GLIs serve as a reliable signal, which transmits information to investors that LSPs can benefit from GLIs through achieving revenue growth and cost reduction. The improvement in future financial performance would lead to positive stock market reaction.

First, GLIs are helpful for promoting LSPs' reputation and social image (Evangelista et al., 2017), which are likely to enhance customer satisfaction and bring business opportunities such as shareholder investments, thereby boosting their sales revenue. Additionally, GLIs can allow LSPs to enter new markets that are sensitive to environmental issues, which can help increase their income (Laari et al., 2018; Maas et al., 2014). Especially in the increasingly competitive Chinese logistics market, adopting

GLIs can be an effective way for LSPs to gain differentiated advantages and enlarge market share (Yang et al., 2013).

Second, GLIs are beneficial for LSPs to achieve cost reductions. Although implementing GLIs can increase costs, ranging from significant investments, operational and training costs to the costs of purchasing environmentally friendly equipment (Abbasi and Nilsson, 2016; Laari et al., 2018), GLIs can help LSPs reduce their expenditures on compliance with environmental regulatory requirements (Colicchia et al., 2013). Fewer environmental damages caused by waste pollution and excessive emissions are desirable goals of green logistics practices for LSPs to pursue. Through these initiatives (e.g., the use of recycled and ecological materials for packaging, energy-efficient materials handling equipment, alternative fuels, and lower energy transport modes), LSPs can lessen resources consumption, thereby reducing their operating costs (Bask et al., 2018). With improvements in environmental performance, the extra costs for environmental control and monitoring can also be saved (Jacobs et al., 2010).

In short, we posit that announcing GLIs conveys a signal to investors about a LSP's future superior financial performance. The anticipated financial performance improvement can be perceived by investors as a positive signal and is rewarded by the stock market (Ba et al., 2013; Zhang et al., 2017).

Hypothesis 1. The stock market reacts positively to the GLI announcements made by LSPs.

5.2.3 The Moderating Effect of the Types of GLIs

According to signaling theory, the characteristics of the signal itself affect the signal's reliability and quality, thereby influencing investors' perception of the signal and the market reaction (Jacobs, 2014). In this study, we focus on the differential effects of internal and external GLIs on LSPs' shareholder value.

LSPs have extended their internal environmental initiatives to external ones by cooperating with their suppliers, customers, and other logistics firms (Colicchia et al., 2013; Evangelista et al., 2017). We conjecture that internal GLIs are likely to receive greater stock market reaction than external ones. First, compared with internal GLIs, external GLIs require additional coordination and control costs. For instance, undertaking external green initiatives (e.g., coordinated logistics and transportation programs with suppliers and customers) requires LSPs to devote considerable resources to manage the processes of other partners (Centobelli et al., 2020; Evangelista, 2014), which incurs significant costs pertaining to coordination and control. This may increase a LSP's operating costs and adversely influence its financial performance. Moreover, compared to internal GLIs that involve fewer activities for cooperation with other partners, external GLIs are less controllable. Dam and Petkova (2014) maintained that a firm has less oversight and control regarding what other actors in the supply chain are doing. It is possible that other members do not commit significant resources to the collaborative environmental logistics projects and are simply "greenwashing" their organization in pursuit of higher profits. As a result, it is highly uncertain if the implementation of external GLIs can really pay off for LSPs. Thus, compared with

external GLIs, internal ones may have greater potential to create financial value for LSPs. Such a difference might send different signals to investors, leading them to react more favorably to internal GLIs.

Hypothesis 2. The positive stock market reaction to GLI announcements is greater for internal GLIs than for external ones.

5.2.4 The Moderating Effect of Financial and Operational Slack

The signaling theory suggests that the characteristics of the signaler influence investors' perception of the quality of the signal and hence the market reaction (Lam et al., 2016; Narasimhan et al., 2015). In this study, we focus on how two specific types of organizational slack of LSPs (i.e., financial slack and operational slack) affects the market reaction to GLIs. Financial slack and operational slack represent unabsorbed and absorbed slack respectively and may have varying influences on the market reaction to GLIs.

Financial slack represents extra financial resources, which a firm maintains by holding cash or other financial instruments (Bourgeois, 1981; Voss et al., 2008). These financial resources are currently uncommitted and can be easily deployed in a short time, allowing for greater managerial discretion (Kim et al., 2008; Seifert et al., 2004). Firms can utilize financial slack resources for supporting the implementation of various activities, and even employ these resources to adopt some risky projects.

We expect that the market reaction is stronger for LSPs possessing higher financial slack. Greater financial slack allows LSPs to more effectively focus on and implement

green logistics efforts relative to those without such slack. Specifically, owing to the high flexibility and ready deployment nature of financial slack, firms can better manage the uncertainties and risks associated with novel practices (Nohria and Gulati, 1996) such as executing green logistics activities. For example, the purchase of new energy-efficient vehicles and vessels to reduce energy consumption and pollution emissions entails significant uncertainties and risks for investment returns (Abbasi and Nilsson, 2016; Lai et al., 2011). Insufficient financial slack can be a handicap for firms to effectively manage less certain initiatives (Nohria and Gulati, 1996) such as green logistics practices, the implementation of which may impair a LSP's financial performance. Having financial slack will avail more resources for LSPs to embark on green practices, which could improve the effectiveness of such initiatives and thus convince the investors for better chance of success and financial prospects. Thus, thanks to the greater economic potentials by executing the performance promises in GLIs, the stock market might react more positively to GLIs by LSPs that possess a higher level of financial slack.

Hypothesis 3a. The positive stock market reaction to GLI announcements is greater when the LSPs have a higher level of financial slack.

Operational slack consists of labor or physical excesses in the firm's operational process (Azadegan et al., 2013). Operational slack is absorbed and tied to specific tasks within a firm (Voss et al., 2008). Different from financial slack, operational slack has low flexibility and cannot be easily recovered and deployed. It is therefore often

regarded as a firm's operational inefficiency (Ju and Zhao, 2009; Wiengarten et al., 2019). There are three types of operational slack: labor slack, capacity slack, and inventory slack (Azadegan et al., 2013; Wiengarten et al., 2019). Since LSPs normally do not have inventory, we only consider the former two types of operational slack.

We posit that LSPs with a lower level of operational slack can experience more positive market reactions from GLIs. Specifically, a lower level of operational slack suggests better organizational capability to transform inputs (i.e., labor and fixed assets) into outputs (i.e., sales) and greater operational efficiency (Azadegan et al., 2013; Wiengarten et al., 2019). Such capability can enable LSPs to more effectively leverage their green logistics management inputs. For instance, many LSPs find it challenging to execute their green logistics activities, such as emissions and waste reduction programs and effective implementation of new environmental logistics technologies (El Baz and Laguir, 2017; Evangelista, 2014). LSPs with higher operational efficiency command a better position to minimize the costs of undertaking these green actions and succeed in transforming environmental initiatives into business performance. The operations management researchers have also highlighted the important role of operational efficiency in enabling firms to reduce the costs of their environmental efforts (e.g., King and Lenox, 2001; Rothenberg et al., 2001). Consequently, a lower level of operational slack may affect investors' perception that LSPs can implement their environmental initiatives in a more cost-effective manner and achieve the desired goals as well as greater financial gains. Consequently, investors might react more positively to GLIs of LSPs that possess lower operational slack.

Hypothesis 3b. The positive stock market reaction to GLI announcements is greater when the LSPs have a lower level of operational slack.

Figure 5.1 depicts the conceptual model of Study 3.

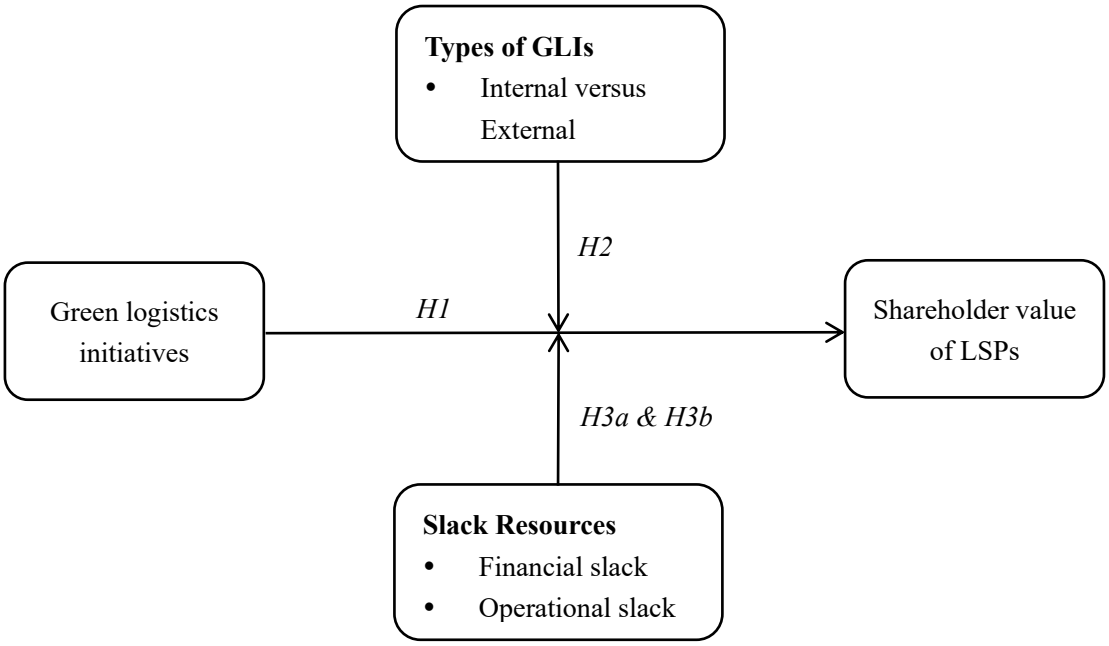

Figure 5.1 Conceptual Model of Study 3.

5.3 Methodology

5.3.1 Data and Sample

We collected data from two sources. First, we obtained GLI announcements of Chinese firms in the logistics industries (i.e., two-digit CSRC G53-G60 codes) from the *WiseNews* database. This database is the most comprehensive Chinese news source, which covers more than 1,600 newspapers and periodicals published in China and has been used by a number of studies (e.g., Lam et al., 2016; Lo et al., 2018; Wiengarten et al., 2020). To provide a comprehensive overview of GLIs by Chinese LSPs, we searched the database for the period from 2005 to 2018. In searching the GLI-related announcements, we used the Chinese versions of the relevant keywords such as

"emission reduction", "alternative fuels", "intermodality", "green packaging", "green warehousing", "energy conservation", and "environmental protection". We carefully screened all the searched announcements and excluded those that were (1) not directly related to GLIs (e.g., the government's environmental policies and public opinions on environmental issues), (2) within a span of five trading days for the same firm (these announcements were dropped because stock market reactions could be cofounded by multiple events), or (3) confounded with other activities (e.g., key executive appointments and annual earnings announcements) (Flammer, 2013). If there are multiple announcements related to the same event, we retained the announcement with the earliest publication date. This screening process led to a sample of 140 announcements spanning 44 LSPs for our data analyses. Table 5.1 provides the distribution of these announcements by industry, year, and the types of GLIs. Some examples are excerpted as follows:

- The first dual-fuel ship (i.e., "Changxun 3" 2500 tons bulk carrier) built by Chang Jiang Shipping Group Phoenix Co., Ltd. has officially passed the review of the maritime experts. The dual-fuel engine that used diesel and natural gas can help significantly reduce the fuel consumption (Changjiang Daily, October 14, 2012).
- Xiamen Port Development Co., Ltd. purchased 30 LNG tractors from JAC Gallop. The LNG tractors used liquefied natural gas as fuels and can save more energy than traditional diesel tractors (China Business Times, July 19, 2013).
- Dalian Port Co., Ltd. has built a new 1100 TEU container vessel and put it into operations formally. The container vessel is about 152 meters long, 25 meters wide,

and 13.8 meters high. Compared to other container vessels in China, this one is more energy-efficient and can effectively help reduce pollution emissions (China News Service, November 10, 2017).

Then, we collected stock price data and other financial information available in the CSMAR database. Table 5.2 shows the descriptive statistics of the sample firms. Sample statistics are based on the most recent fiscal year before the announcement date.

Table 5.1 Description of the Sample of 140 GLI Announcements.

Panel A: Distribution of sample by industry			
Two-digit CSRC codes	Industry	Frequency	Percentage (%)
G53	Railroad transportation	2	1.43
G54	Highway transportation	13	9.29
G55	Water transportation	75	53.57
G56	Air transportation	36	25.71
G60	Postal industry	14	10.00
Total		140	100.00
Panel B: Distribution of sample by year			
Year	Frequency		Percentage (%)
2005	3		2.14
2006	4		2.86
2007	6		4.29
2008	12		8.57
2009	6		4.29
2010	6		4.29
2011	7		5.00
2012	11		7.86
2013	17		12.14
2014	10		7.14
2015	6		4.29
2016	14		10.00
2017	16		11.43
2018	22		15.71
Total	140		100.00
Panel C: Distribution of sample by types of GLIs			
Types of GLIs	Frequency		Percentage (%)
Internal GLIs	93		66.43
External GLIs	47		33.57
Total	140		100.00

Table 5.2 Descriptive Statistics of Sample firms of Study 3.

	Total assets (RMB Million)	Sales (RMB Million)	Net income (RMB Million)	Employees (Thousands)
Mean	47,709.44	23,470.50	1,664.94	20.07
Median	22,767.30	8,489.92	684.76	7.17
SD	56,627.82	31,956.80	3,677.69	30.60
Min.	551.11	205.37	-8,838.83	0.02
Max.	218,329.00	127,489.00	20,853.97	136.43

5.3.2 Event Study Analysis

We used the event study approach to estimate the shareholder value effect of GLI announcements made by Chinese LSPs. This method has been widely used by operations management researchers (e.g., Ba et al., 2013; Jacobs, 2014; Lam et al., 2016). It measures the stock market reaction to specific events while controlling for the market-wide movements on stock prices (Brown and Warner, 1985). The abnormal returns offer a measure of the percent change in stock price associated with an event. The underlying theory of event study method is Efficient Market Hypothesis, which suggests that in an efficient market, the wealth impact of an event will be reflected immediately in the stock prices (Fama, 1970, 1991; MacKinlay, 1997). Thus, we can evaluate the shareholder value effect of GLI announcements through observing the deviations of stock market returns over a relatively short-time period.

Our analysis proceeds in two steps. First, we calculated the abnormal returns associated with the GLI events to test *Hypothesis 1*. Next, we analyzed these abnormal returns with cross-sectional regression models to test *Hypothesis 2*, *Hypothesis 3a*, and *Hypothesis 3b*.

We began with defining the timeline for our event study (see Figure 5.2). In line

with prior event studies (Ba et al., 2013; Liu et al., 2020; Paulraj and De Jong, 2011; Zhang et al., 2017), we employed a three-day event period (i.e., days -1 to +1) to account for possible information leakages before the event and possible announcements made after stock market closures. The day of the GLI announcement is denoted as the event date t = 0. The day immediately preceding the announcement day is T_2 = -1, while the day immediately following the announcement day is T_1 = +1. If the announcement is not made on a trading day, the subsequent trading day is treated as day 0. In line with previous research (Jacobs, 2014), the estimation window of our event study consists of 200 trading days, from day T_4 = -210 to day T_3 = -11. We ended the estimation period ten trading days prior to the event day, in order to avoid any potential anticipation effects considering that the market may foresee the event in days prior to the formal announcement.

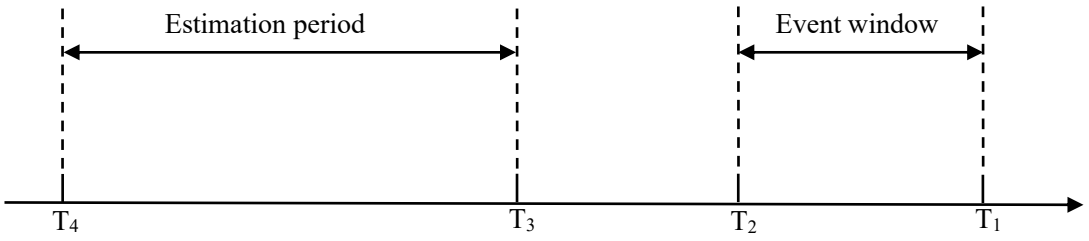

Figure 5.2 The Timeline of Event Study.

Abnormal return provides a measure of how much a stock price deviates from its expected value. Consistent with prior event studies (e.g., Ba et al., 2013; Jacobs et al., 2010; Lam et al., 2016), we employed the market model to calculate abnormal returns. This model posits a linear relationship between the return on the stock and market return over a given time period. For any stock i, we have:

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

with $E[\varepsilon_{it}] = 0$ and $Var[\varepsilon_{it}] = S_{\varepsilon_i}^2$, where R_{it} is the return of stock i on day t; R_{mt} is the return of market portfolio on day t; ε_{it} is the error term; α_i is the intercept of the model; β_i is the slope of the model capturing the systematic market risk; and $S_{\varepsilon_i}^2$ is the variance parameter of the model. Because our sample firms are traded on both the Shanghai and Shenzhen stock markets, different benchmarks are used to represent the return of market portfolio for firms listed in these two different markets. We employed Shanghai Composite Index (Shenzhen Component Index) as the return of market portfolio for firms listed on the Shanghai Stock Market (Shenzhen Stock Market).

We estimated α_i, β_i, and $S_{\varepsilon_i}^2$ using ordinary least squares (OLS) regression over an estimation period of 200 trading days (Jacobs et al., 2010). A firm might not have complete data in some cases. We required that all events had a minimum of 40 stock return observations in the estimation period (Jacobs, 2014). The abnormal return of firm i on day t is the difference between the firm's actual stock return and the expected stock return, as shown in the following formula:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \quad (2)$$

for $\mathrm{t} \in \{T_2, \dots, T_1\}$, where AR_{it} is the abnormal return of stock i on day t; R_{it} is the actual return of stock i on day t; $\hat{\alpha}_i + \hat{\beta}_i R_{mt}$ is the expected return of stock i on day t. Following previous studies (Ba et al., 2013; Liu et al., 2020), we computed the cumulative abnormal return (CAR) by aggregating the abnormal returns across time for each event observation within the event window using the following formula:

$$CAR_i(T_2, T_1) = \sum_{t=T_2}^{T_1} AR_{it} \quad (3)$$

where CAR_i is the cumulative abnormal return for firm i over a given time period $[T_2, T_1]$.

We used *t*-test to examine whether the mean abnormal returns are different from zero. The mean abnormal return for day t is expressed as:

$$\overline{AR}_t = \sum_{i=1}^{N} \frac{AR_{it}}{N} \quad (4)$$

where AR_{it} is the abnormal return of firm i on day t; and N is the number of announcements in the sample. To test the statistical significance of the mean abnormal return $\overline{AR}_t$, each AR_{it} is divided by its estimated standard deviation $\hat{S}_{\varepsilon_i}$ to obtain a standardized abnormal return. The abnormal returns are assumed to be independent across events and follow the normal distribution with mean 0 and variance $\hat{S}_{\varepsilon_i}^2$ under the null hypothesis. According to the central limit theorem, the sum of the N standardized abnormal returns is approximately normal with an average of 0 and variance N. Therefore, the test statistic for day t is calculated as:

$$TS_t = \sum_{i=1}^{N} \frac{AR_{it}/\hat{S}_{\varepsilon_i}}{\sqrt{N}} \quad (5)$$

The test statistic for the multiple-day period is obtained in a way similar to that for a single day, as shown in the following formula:

$$TS_e = \sum_{i=1}^{N} \frac{\left(\sum_{t=T_2}^{T_1} AR_{it}\right) \Big/ \sqrt{\sum_{t=T_2}^{T_1} \hat{S}_{\varepsilon_i}^2}}{\sqrt{N}} \quad (6)$$

To assess the robustness of the results, we supplemented the *t*-test with two non-parametric tests. We used the Wilcoxon signed-rank test to examine whether the median

abnormal return is different from zero. We also employed one-sample binomial sign test to examine whether the percentage of positive abnormal returns is different from 50%. The results are reported in Section 5.4.1.

5.3.3 Cross-sectional Regression Analysis

Consistent with prior event studies (Ba et al., 2013; Flammer, 2013), we developed a cross-sectional regression model to examine the moderating effects of the hypothesized factors on the market reaction toward GLIs, as shown below:

$$CAR_i = \beta_0 + \beta_1 Internal\ vs.\ External_i + \beta_2 Financial\ slack_i + \beta_3 Ln(Sales\ to\ PPE)_i + \beta_4 Ln(Sales\ to\ labor)_i + \beta_5 Firm\ size_i + \beta_6 Firm\ age + \beta_7 Government\ share + \beta_8 Industry\ competition + \beta_9 Time\ trend + \varepsilon_i \quad (7)$$

where CAR_i is the cumulative abnormal return of firm i from day T_2 to T_1; β_0 is constant term; β_n (n=1, 2, 3, …, 9) are a set of regression coefficients for moderating and control variables; and ε_i is the error term. The moderating and control are defined below.

Moderating variables. This study examines the following moderating factors:

Internal versus external GLIs. This variable is coded as 1 if the environmental initiative is an internal GLI and 0 if the environmental initiative is an external GLI.

Financial slack. We considered unabsorbed financial slack because it represents a firm's extra uncommitted financial resources, which are highly flexible and can be readily utilized to support the green practices implementation. We measured financial

slack using the current ratio, which is calculated as current assets divided by current liabilities (Shou et al., 2020; Su et al., 2016).

Operational slack. Following Azadegan et al. (2013), we used two measures of operational slack: (1) the natural logarithm of industry-adjusted ratio of annual sales to plant, property, and equipment (PPE); and (2) the natural logarithm of industry-adjusted ratio of annual sales to labor. Azadegan et al. (2013) also used the natural logarithm of days in inventory as a measure of operational slack for manufacturing firms. Yet, because we focus on LSPs and such kind of firms normally do not have inventories, this measure is not suitable for our study. The two measures that are used in this study reflect a firm's operational slack in capacity and labor. To control for the difference in operational slack across industries, we developed industry-adjusted measures of operational slack. Specifically, we took the difference between the sample firm's operational slack and the industry mean slack (based on two-digit CSRC codes). A higher value of this difference indicates lower operational slack.

Control variables. We included multiple control variables in our analysis. First, firm size may influence the market reaction in that the performance of larger firms is likely less affected by any single event (Jacobs et al., 2010). Moreover, as smaller firms tend to be less closely monitored by analysts, their announcements might be a surprise to the investors (Ba et al., 2013). Therefore, smaller LSPs may experience more positive market reactions to GLI announcements. Firm size is measured by the natural logarithm of sales (Kim and Zhu, 2018; Lam, 2018). Second, we controlled for firm age because older firms may be more experienced in implementing green activities and thus are

likely to reap greater financial benefits from these initiatives. Thus, GLI announcements may lead to stronger market reactions for older LSPs. Firm age is measured as the number of years since a firm's founding (Lam et al., 2016). Third, firms with a higher percentage of government ownership can more easily obtain resources from the government, such as subsidies, tax reductions, and loans (Zhou et al., 2017), which can help support their green initiatives and enable them to attain more financial benefits. Hence, the market reaction to GLIs may be more positive for LSPs with a higher percentage of government ownership. We measured the government share of ownership using the percentage of a firm's government-owned shares (Lo et al., 2018). Fourth, industry competition is included as a control factor. Firms that operate in highly competitive industries face more challenges to differentiate themselves from rivals (Xia et al., 2016). GLIs can be regarded as a firm's differentiation strategy, which is likely to help the firm gain better profitability in industries with a high level of competition. Thus, the stock market reaction to GLIs might be stronger for firms operating in more competitive industries. We measured industry competition as 1 minus the industry Herfindahl index (Erhemjamts et al., 2013; Xia et al., 2016). The Herfindahl index is calculated as the sum of the squared market shares of all firms that are in the same two-digit CSRC industry. A higher value of this index implies a more competitive industry. Lastly, we included time trend to account for time-specific effects. We measured time trend as the difference between a GLI announcing year and the base year 2005 (Lam et al., 2016). Table 5.3 summarizes the measures, data sources, and references of the variables used in Study 3.

Table 5.3 Measurements of Variables of Study 3.

Variable type	Variable name	Measurement	Data source	Reference
Dependent variable	Shareholder value	Cumulative abnormal return (CAR)	CSMAR	Ba et al. (2013); Zhang et al. (2017)
Independent variable	GLIs	The announcements of GLIs	WiseNews	Lam et al. (2016)
Moderating variables	Internal or external GLIs	1 if the environmental initiative is an internal GLI; 0 if the environmental initiative is an external GLI	WiseNews	Colicchia et al. (2013)
	Financial slack	Current assets/Current liabilities	CSMAR	Shou et al. (2020); Su et al. (2016)
	Operational slack	$Ln\left(\frac{Sales}{PPE}\right)_i - \frac{\sum_{i=1}^{N} Ln\left(\frac{Sales}{PPE}\right)_i}{N}$ $Ln\left(\frac{Sales}{Labor}\right)_i - \frac{\sum_{i=1}^{N} Ln\left(\frac{Sales}{Labor}\right)_i}{N}$	CSMAR	Azadegan et al. (2013)
Control variables	Firm size	Ln(Sales)	CSMAR	Kim and Zhu (2018); Lam (2018)
	Firm age	The number of years since a firm's founding	CSMAR	Wiengarten et al. (2017)
	Government share	Government-owned shares/Total shares	CSMAR	Lo et al. (2018)
	Industry competition	$1 - \sum_{i=1}^{N} \left(\frac{Sales_i}{Total\ sales}\right)^2$	CSMAR	Erhemjamts et al. (2013); Xia et al. (2016)
	Time trend	Year of GLI announcements − 2005	WiseNews	Lam et al. (2016)

5.4 Results

5.4.1 Event Study Results

The event study results are presented in Table 5.4. The table shows the abnormal returns on each day from days -1 to +1 and the 3-day CARs. The mean and median abnormal returns for days -1, 0, and the 3-day event period are all positive, suggesting that the stock market reaction to GLI announcements is captured in these days as predicted by market efficiency. For the overall sample of 140 GLI announcements, the mean 3-day CAR is 0.57% and statistically significant ($p < 0.01$) under the one-sample *t*-test. In addition, the median 3-day CAR is 0.41% and statistically significant ($p < 0.01$). In addition, 59.29% of our sample has positive CARs, which suggests that the null hypothesis is rejected at the 5% significance level. Collectively, the test results suggest that the Chinese stock market reacts positively to the GLI announcements made by LSPs, supporting *Hypothesis 1*.

Table 5.4 Abnormal Returns around Announcement Dates.

	Day -1	Day 0	Day +1	Days -1 to +1
Mean	0.22%	0.28%	0.07%	0.57%
t-statistic	1.780**	2.413***	0.628	4.114***
Median	0.31%	0.23%	0.02%	0.41%
Wilcoxon signed-rank test *Z*-statistic	1.972**	1.978**	0.424	3.613***
% abnormal returns positive	60.00%	55.71%	50.71%	59.29%
Binomial sign test *Z*-statistic	-2.282**	-1.268	-0.085	-2.113**

Notes: $N = 140$. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All *p*-values are one-tailed.

5.4.2 Cross-sectional Analysis Results

Tables 5.5 and 5.6 show the correlations between the variables and the regression results, respectively. Model 1 only includes the control variables. Model 2 adds the

hypothesized variables. The variance inflation factors (VIF) scores for all variables are less than 3, indicating that multicollinearity is not a major issue in our study (Kennedy, 1998). Our regression models are significant, with *F*-statistics of 2.00 and 2.44 for Models 1 and 2, respectively. The *R*-squared values for these two models are 6.94% and 14.45%, which are comparable to those reported in previous stock-based event studies (e.g., Lo et al., 2018; Modi et al., 2015).

Results of Model 2 reveal that the coefficient of *Internal versus external GLIs* is positive but insignificant ($\beta = 0.0027$, $p > 0.1$), indicating that the stock market does not react differently to internal and external GLIs. Thus, *Hypothesis 2* is not supported. In addition, the coefficient for *financial slack* is negative and insignificant. Therefore, *Hypothesis 3a* is not supported. Furthermore, our results indicate that the coefficient for *Ln (Sales to PPE)* is significantly positive ($\beta = 0.0043$, $p < 0.05$), and the coefficient for *Ln (Sales to labor)* is significantly positive ($\beta = 0.0040$, $p < 0.01$). This implies that the market reacts more positively to GLIs made by LSPs with a lower level of operational slack, supporting *Hypothesis 3b*.

With respect to control variables, we found that the coefficient for firm size is significantly negative. This means that the stock market reacts more positively to GLIs announced by smaller LSPs. Our results show no significant estimates for other control variables. Table 5.7 summarizes the results of our hypotheses testing.

Table 5.5 Correlation Matrix of Study 3.

Variable	1	2	3	4	5	6	7	8	9	10
1. CAR (-1, +1)	1.000									
2. GLI type	0.051	1.000								
3. Financial slack	0.124	0.039	1.000							
4. Ln (Sales to PPE)	0.126	-0.100	0.186**	1.000						
5. Ln (Sales to labor)	0.195**	-0.074	0.002	-0.026	1.000					
6. Firm size	-0.140*	0.048	-0.236***	0.132	0.235***	1.000				
7. Firm age	0.150*	-0.016	-0.053	0.042	0.222***	0.170**	1.000			
8. Government share	-0.060	0.090	0.167**	-0.047	-0.213**	-0.243***	-0.488***	1.000		
9. Industry competition	0.043	-0.028	-0.136	0.077	0.259***	0.044	0.044***	-0.390***	1.000	
10. Time trend	0.093	-0.084	0.052	0.041	0.279***	0.295***	0.513***	-0.698***	0.496***	1.000
Mean	0.572%	0.664	1.262	-0.093	-0.006	22.889	15.450	0.182	0.721	8.164
SD	1.645%	0.474	1.421	0.628	1.006	1.536	6.449	0.240	0.118	3.845

Notes: $N = 140$. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All p-values are two-tailed.

Table 5.6 Results of Cross-sectional Regression Analysis of Study 3.

	Model 1	Model 2
Constant	0.0505** (2.25)	0.0708*** (2.88)
Firm size	-0.0020** (-2.13)	-0.0028*** (-2.81)
Firm age	0.0004 (1.54)	0.0003 (1.23)
Government share	0.0026 (0.32)	0.0029 (0.34)
Industry competition	-0.0136 (-1.43)	-0.0154 (-1.52)
Time trend	0.0005 (1.01)	0.0004 (0.79)
Internal versus external GLIs		0.0027 (0.93)
Financial slack		-0.0002 (-0.19)
Ln (Sales to PPE)		0.0043** (1.92)
Ln (Sales to labor)		0.0040*** (2.82)
R^2 (%)	6.94	14.45
Adjusted R^2 (%)	3.46	8.52
F statistic	2.00*	2.44**

Notes: $N = 140$. *t*-statistics are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Two-tailed tests for control variables and one-tailed tests for hypothesized variables.

Table 5.7 Hypotheses Testing Results of Study 3.

	Hypotheses	Outcome
H1	The stock market reacts positively to the GLI announcements made by LSPs.	Supported
H2	The positive stock market reaction to GLI announcements is greater for internal GLIs than for external ones.	Rejected
H3a	The positive stock market reaction to GLI announcements is greater when the LSPs have a higher level of financial slack.	Rejected
H3b	The positive stock market reaction to GLI announcements is greater when the LSPs have a lower level of operational slack.	Supported

5.4.3 Additional Analyses to Address Self-selection Bias

We examined whether our regression analysis results suffer from self-selection bias. Engaging in green initiatives and its disclosure are voluntary, and firms may deliberately make the decisions that underlie such events. These decisions are based on private firm information which is seldom known to the markets (Sorescu et al., 2017). The self-selection of firms into the event category can result in selection bias. Therefore, self-selection bias might be a concern in our analysis. The two-stage Heckman selection

model is used to correct for this possibility (Heckman, 1979). In the first stage, we applied a probit model to estimate the probability that a firm would engage in GLIs in that year. In this stage, the value of the dependent variable is 1 if the firm engaged in GLIs in year *t* and 0 if it did not. Following the existing guidelines (Sorescu et al., 2017), we considered the independent variables used in our main analysis as conditional variables in the first stage. The inverse Mills ratio, which is calculated based on the probit estimates, is included in the second-stage model to control for potential selection bias. The results shown in Table 5.8 indicate that the selection bias term (i.e., inverse Mills ratio) in the second-stage model is insignificant, and all focal parameter estimates remain largely identical. This provides evidence that self-selection bias is not a concern in our analysis.

Table 5.8 Results of Heckman Two-step Estimation.

	Stage 1	Stage 2
Constant	-8.5712*** (-8.35)[a]	0.0760 (0.49)[b]
Firm size	0.3211*** (7.69)	-0.0030 (-0.49)
Firm age	0.0014 (0.12)	0.0003 (1.23)
Government share	0.0501 (0.17)	0.0029 (0.34)
Industry competition	0.4456 (1.52)	-0.0156 (-1.24)
Time trend	-0.0092 (-0.44)	0.0005 (0.71)
Internal versus external GLIs		0.0027 (0.91)
Financial slack	0.0031 (0.14)	-0.0002 (-0.19)
Ln (Sales to PPE)	-0.1186* (-1.85)	0.0044* (1.39)
Ln (Sales to labor)	0.0581 (0.91)	0.0040*** (2.43)
Inverse Mills ratio		-0.0012 (-0.03)
χ^2	77.52***	
Pseudo R^2 (%)	11.22	
R^2 (%)		14.45
Adjusted R^2 (%)		7.82
F statistic		2.18**

Notes: [a]*z*-statistics are reported in parentheses. [b]*t*-statistics are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Two-tailed tests for control variables and one-tailed tests for hypothesized variables.

5.4.4 Robustness Checks

We conducted additional analyses to ensure that our results are robust. First, we investigated whether our findings are sensitive to the measure of financial slack. Some studies measured financial slack as quick ratio, which is calculated as quick assets divided by current liabilities (Wiengarten et al., 2017). We used quick ratio and obtained similar results. Second, some firms in our sample have more than one announcement of GLIs in our study period. To account for potential non-independence between error terms, we clustered standard errors by firm and found that our results remain again largely identical. Finally, we used an alternative benchmark model to estimate abnormal returns to see whether our results are robust. We employed the three-factor model to estimate abnormal returns (Fama and French, 1993). This model assumes a linear relationship between the return on the stock and three factors (i.e., market risk, small minus big market capitalization, and high minus low book-to-market ratio). We obtained similar results when using this alternative benchmark model.

5.5 Discussion and Conclusions

5.5.1 Theoretical Implications

Our study contributes new knowledge in several important ways. First, it complements extant research on the stock market reaction to events related to corporate environmental initiatives. Prior studies have examined the impact of green initiatives on the shareholder value of firms with mixed findings. For example, Flammer (2013) found that U.S. companies experience a positive market reaction to the announcements

of eco-friendly initiatives. Lam et al. (2016) observed that the announcements of environmental initiatives have a negative impact on the market value of firms. Yet, the existing studies have mainly concentrated on the manufacturing sectors or a diverse set of sectors, and empirical evidence specific to the logistics industry remains elusive. Indeed, Ba et al. (2013) have emphasized the need to focus on a specific industry in order to provide more specific and insightful implications. They investigated the impact of green vehicle innovation on the market wealth of automobile firms. Our results indicate that the market reacts positively to GLIs announced by LSPs. To the best of our knowledge, this is the first study that documents the positive shareholder value effect of GLIs in the Chinese logistics context.

Second, our study advances knowledge on whether there are differences in the shareholder value effects of internal and external GLIs. Though the existing studies have explored whether the stock market reaction changes with different types of environmental practices (e.g., product-driven versus process-driven; proactive versus reactive) claimed by firms (Gilley et al., 2000; Jacobs et al., 2010; Lam et al., 2016), little is known about whether there are differences between the market reactions to internal and external GLIs. Our results indicate the market reaction to GLIs regardless of whether they are internal or external ones. One possible reason for this intriguing finding is that by working closely with suppliers, customers, and other logistics firms, Chinese LSPs may have better access to obtain environmentally friendly materials and understand customers' preferences and environmental needs (Yang et al., 2013), thereby having better chance to gain competitiveness and financial benefits. This

suggests that both internal and external GLIs may be important signals valued by Chinese investors. As such, the market might not react differently to these two types of GLIs.

Third, operations management research has called for additional assessments of the contextual factors influencing the market reaction to environmental initiatives (Lam et al., 2016). Our study enriches this contingency view by examining the varying influences of the two types of organizational slack resources on the market reaction to GLIs by LSPs in China. Our results show that the reaction is indifferent irrespective of their financial slack. This is an interesting finding, suggesting that financial slack is not an issue concerning market reaction to GLIs. One possible explanation is that in emerging economies like China there are less sustained societal pressures urging comprehensive green activities (Marquis et al., 2011), rendering a perception for investors that the financial slack resources will not be sufficiently allocated to support firms' green initiatives. As such, for LSPs with different levels of financial slack, the performance benefits of GLIs as a signal may not be convincing for investors. Moreover, our results reveal that the market responds more positively to the GLI announcements made by LSPs with a lower level of operational slack. The lower operational slack indicates a firm's higher operational efficiency, favorable for leveraging green efforts to achieve financial benefits (King and Lenox, 2001; Rothenberg et al., 2001). Thus, green actions such as GLIs are better valued by investors for LSPs characterized with lower operational slack. Previous studies on the link between environmental initiatives and shareholder value have primarily examined the moderating role of firm-level

factors (e.g., firm size, prior environmental performance, and state ownership) (Bose and Pal, 2012; Lyon et al., 2013; Sadovnikova and Pujari, 2017). We extend this stream of research by identifying new contingencies that influence the market reaction to green initiatives.

Finally, our study adds knowledge to the signaling theory literature by demonstrating the positive signaling effect of GLIs and contextual factors that moderate this effect. While prior studies have utilized signaling theory to examine the financial consequences of environmental initiatives (Jacobs, 2014; Zhang et al., 2017), limited attention has been paid to the logistics context. In response to Lam et al.'s (2016) call for more studies that employ signaling theory to explain a firm's sustainable management behavior, our findings offer new insights into how green initiatives affect firms' shareholder value within the logistics context and how various characteristics of GLIs and firms influence the effectiveness of the signal. The signaling perspective can also serve as a useful theoretical foundation for future research on GLIs.

5.5.2 Managerial Implications

Our study also provides some important implications for operations managers of LSPs. First, our findings verify that GLIs matter and improve the market value of LSPs. It is advisable for logistics firms to take a proactive rather than reactive strategy on implementing their green initiatives (e.g., the use of alternative fuels, green ships, and recycling materials for packaging). Instead of being a response to the government and/or stakeholder pressures, they should embrace GLIs as their strategic initiatives and

make investments in them. This is particularly salient in China where the logistics activities have increased dramatically and caused severe environmental pollution (Tian et al., 2014), which highlights the urgent need for sustainable development for the industry. Chinese LSPs are recommended to engage in GLIs as a means to alleviate the environmental damages caused by their logistics operations and as a signal to establish such capability with a green image to gain market support.

Second, our further moderation analyses provide logistics firms with a fine-grained understanding of the contingency conditions under which the shareholder value effect of GLIs may vary. Our findings indicate that there is no difference in stock returns between internal and external GLIs, suggesting that both types of GLIs are valued by investors. Moreover, the market reaction is not influenced by logistics firms' financial slack, which suggests that GLIs are important for both LSPs with high and low financial slack resources. Finally, it is worth noting that the financial reward is higher for LSPs possessing lower operational slack. LSPs can benefit more from GLIs by informing investors about their operational efficiency enhancement favorable for reducing the costs of green efforts. Thus, for signaling, managers of LSPs are advised to have fuller operations utilization to convince the market that their GLIs are substantive rather than symbolic in order to bring greater shareholder value for their green actions. LSPs with lower operational slack could try to engage more in green initiatives, which are favorable for their improvements of reputation and market value.

5.5.3 Limitations and Future Research Directions

There are several limitations of this study, which open up avenues for future research. First, we focus on LSPs in an emerging economy (i.e., China), which impedes the generalization of our results to the context of developed countries. Future research could contribute to the environmental management literature by contrasting the market value of GLI announcements in developed countries. A cross-country comparison research would provide generalization of results in the cross-cultural context. Second, our study focuses on the short-term impact of GLIs on shareholder value. It is desirable to explore the longitudinal performance impact of GLIs and how the performance value evolves over time, which can offer more insights into the financial value of GLIs. Finally, we consider the characteristics of the signal (i.e., different types of GLIs) and the signaler (i.e., organizational slack) as contingency factors in this study. Previous research has also highlighted that the signaling environment plays a moderating role in influencing the reliability of a signal (Connelly et al., 2011). Thus, it is worthwhile for future research to investigate the signaling environment (e.g., institutional pressures, supply chain efficiency, and supply chain complexity) that might affect the market reaction to GLIs.

Chapter 6 Conclusions

6.1 Summary of Study Findings

In this thesis, we conduct three interrelated studies to empirically examine the impact of CSR on firms' operational and financial outcomes. We briefly summarize the major findings of the three studies as follows:

(1) Major findings of Study 1

Based on a panel dataset of 2,211 Chinese enterprises from 2010 to 2017, Study 1 employs firm fixed-effect models and finds that CSR performance has an inverse U-shaped relationship with CFP. This finding suggests that there is an optimal level of CSR performance from the CFP perspective, that is, too little or too much CSR effort can be detrimental to CFP. We further observe that state ownership attenuates this relationship whereas political connections have no such influence. Moreover, we find that industry munificence and complexity strengthen the curvilinear CSR-CFP relationship while industry dynamism has no such influence.

(2) Major findings of Study 2

Using a panel dataset of 2,211 Chinese enterprises from 2010 to 2017, Study 2 employs firm fixed-effect models and finds that ECSR has a positive effect on labor productivity. This finding indicates that firms that implement employee-related prosocial activities can achieve higher labor productivity. Additionally, cost leadership strategy reinforces the effect of ECSR on labor productivity, whereas differentiation strategy does not significantly moderate this effect. Moreover, we observe that industry safety risk intensity positively moderates the effect of ECSR on labor productivity,

which implies that firms operating in industries with higher safety production risks can achieve greater labor productivity.

(3) Major findings of Study 3

Study 3 utilizes the event study approach to examine LSPs in China over a 14-year time span by analyzing the stock market reaction to their announcements of GLIs. We find that the stock market reacts positively to GLI announcements made by Chinese LSPs, thereby implying that announcing GLIs conveys a positive signal to investors and could lead to higher shareholder value for LSPs. Furthermore, such market reaction is stronger for LSPs with a lower level of operational slack, whereas their financial slack exerts no significant moderating effect. In addition, we observe that the market reaction is irrespective of the types of GLIs (internal versus external).

6.2 Research Implications

6.2.1 Theoretical Implications

This thesis contributes to the extant literature in several important ways. We recap the theoretical contributions of three studies as follows:

Based on stakeholder theory and risk mitigation theory, Study 1 theoretically and empirically shows an inverse U-shaped CSR-CFP link in the context of an emerging economy (i.e., China). Studies on non-linear effects are not only limited, but are also confined to the context of developed economies such as the U.S. (Barnett and Salomon, 2012) and the U.K. (Brammer and Millington, 2008). In view of the differences in CSR practices between developing and developed nations (Sharma, 2019), our study

contributes to the CSR literature by exploring the non-linear CSR-CFP relationship in developing nations. Furthermore, Study 1 advances CSR research by offering new insights into the moderating roles of state ownership and political connections, which are two critical sociopolitical factors that have been largely neglected by previous studies (Lo et al., 2018). Finally, Study 1 adds to the CSR literature by offering a systematic analysis of how industry characteristics could moderate the CSR-CFP link in a developing economy context.

Study 2 sheds light on the CSR literature by providing deeper insights into the impact of ECSR on firms' labor productivity as well as its contingency factors. While previous studies have explored the ECSR-labor productivity relationship (Gubler et al., 2018; Sánchez and Benito-Hernández, 2015), they are confined to the context of developed nations. Empirical evidence in the context of emerging economies remains sparse. Moreover, there is a void of research exploring the boundary conditions of the ECSR-labor productivity relationship. Our study complements the extant CSR research by examining how a firm's competitive strategies (i.e., cost leadership strategy and differentiation strategy) and industry safety risk intensity moderate this relationship. Finally, Study 2 enriches the RBV literature by elucidating the contingency conditions that influence the effectiveness of human capital derived from ECSR.

Study 3 contributes to the environmental management literature by deepening our understanding of how green initiatives influence the shareholder value of LSPs in the Chinese context. Prior studies have primarily focused on the shareholder value effect of green initiatives of firms in manufacturing industries or a diverse set of industries

(e.g., Ba et al., 2013; Flammer, 2013; Jacobs, 2014), whereas the logistics industry has received scant attention. Besides, Study 3 advances knowledge on the contingency conditions under which the market reaction may vary. We examine whether there are differential effects between internal and external GLIs and how the market reaction is affected by organizational slack, which have not been addressed in the literature. Finally, Study 3 enriches the signaling theory literature by answering the recent call of Lam et al. (2016), who encouraged researchers to apply this theoretical perspective in the area of sustainable operations management.

6.2.2 Managerial Implications

The results of this thesis also provide some profound insights for managers in China. We briefly summarize the managerial implications of three studies as follows:

Study 1 provides implications about how CSR affects firms' financial performance and how various firm- and industry-specific factors moderate this effect. Managers need to be mindful that firms with a moderate level of CSR performance do best financially. In addition, managers need to understand that the financial payoffs associated with CSR performance depend on different contexts. Privately controlled firms and firms that operate in resource-munificent and highly competitive industries are recommended to implement more prosocial activities to boost their CSR performance, which can bring greater financial benefits for them.

Study 2 informs managers in China that ECSR is beneficial for improving firms' labor productivity. Therefore, Chinese firms are advised to invest resources to

implement employee-based CSR activities to enhance their competitive advantage and labor productivity. Moreover, managers need to be aware that Chinese firms that have a greater focus on cost leadership strategy or operate in industries with higher safety production risks can attain greater operational benefits from ECSR activities. They are therefore recommended to devoting more efforts to developing the ECSR programs to gain higher labor productivity.

Study 3 informs managers in logistics operations that GLIs can boost the shareholder value of LSPs. While some practitioners have worried about the investment costs associated with GLIs, our research suggests that managers should have less lingering doubt about the market value of such practices. It is advisable for logistics firms to take a proactive rather than reactive strategy on implementing their green initiatives. Additionally, it is worth noting that the financial reward is higher for LSPs possessing lower operational slack. Thus, LSPs with lower operational slack could try to invest more resources to implement green initiatives.

6.2.3 Policy Implications

This thesis offers important implications to policy makers. Our results provide government agencies with a more nuanced understanding of the operational and financial performance effects of CSR. This can provide support in policy and regulation design. For policy makers and regulators, they can formulate policies to encourage firms to implement socially responsible activities, which can improve their labor productivity and financial performance. For example, the government could provide

subsidies for companies to enable them to adopt green manufacturing system and technologies, develop more environmental training programs, purchase new eco-friendly and safety facilities, and implement more employee wellness activities. The government bodies could also establish policies to penalize firms that do not comply with the regulations. This can pressurize firms to invest resources to undertake prosocial activities to mitigate the negative impact of their operations on the natural environment and society. Overall, the government agencies play an essential role in stimulating firms to implement CSR initiatives, which are helpful for them to enhance competitiveness and societal well-being.

6.3 Limitations and Future Research Directions

This thesis is not without limitations, which offer useful avenues for future research. First, this thesis used data from only one country (i.e., China), which hinders the generalizability of our results to the context of other economies. The institutional and cultural differences between different countries may impede the generalizability of our results. Thus, future research is encouraged to replicate our studies in the context of other countries. Second, in Study 1 and Study 2, we concentrate on firms in the manufacturing industries. Given that there are differences in CSR activities between manufacturing and service industries, it should be careful to generalize our findings to the context of service industries. It would be worthwhile for future research to conduct a comparative study to see whether our results still hold true in the context of service industries (e.g., retailing industries). Third, in Study 3, we examine the short-term

impact of GLIs on LSPs' shareholder value. It is desirable to explore the long-term performance impact of GLIs and how the performance value evolves over time, which can provide more insights into the financial value of GLIs. Fourth, Study 2 and Study 3 focus on the employee and environmental dimensions of CSR, respectively. Yet, there are other dimensions of CSR that may affect firms' operational and financial performance. For example, CSR also includes product-based dimension (e.g., high-quality innovative products with "social" benefits), supply chain-based dimension (e.g., sustainable supply chain management practices), and community-based dimension (e.g., corporate philanthropy and volunteer programs). Therefore, it would be meaningful for future research to examine the impact of other dimensions of CSR on firms' operational and financial performance. More importantly, it is intriguing to categorize CSR into internal and external CSR and explore their interaction effects on firms' performance outcomes. Fifth, in this thesis, we consider three important performance outcomes (i.e., financial performance, labor productivity, and shareholder value). Nevertheless, CSR could also influence other non-financial indicators such as customer satisfaction, innovation performance, firm risk, and firm reputation. Therefore, future research is encouraged to investigate the impact of CSR on other non-financial outcomes. Finally, in each study of this thesis, we examine several important contingency factors, which enriches the extant CSR and environmental management literature. However, there might be other contextual factors that deserve further explorations. Thus, an avenue for future research is to explore other possible contingency factors to offer more insights into the areas of CSR and sustainable operations management.

6.4 Concluding Remarks

Manufacturing and logistics industries play a pivotal role in contributing to the economic development of emerging and developed countries. However, we must pay enough attention to the negative externalities of manufacturing and logistics activities. Several critical issues (e.g., environmental degradation, emission of pollutants, water pollution, safety accidents, human rights, and child labor) need to be resolved by manufacturing and logistics enterprises. These firms should proactively implement CSR activities to alleviate the negative impact of their operations on the natural environment and society.

Our thesis provides rich empirical evidence related to the operational and financial performance effects of CSR and moderating effects of several critical contingency factors. The results offer important implications to managers, which can allay their doubts about the performance value of CSR and incentivize them to engage in socially responsible activities to improve societal well-being. Our thesis also provides critical implications for theory development and policy-making. In particular, it sheds light on the extant CSR and environmental management literature by providing new insights into the effects of CSR on operational and financial performance outcomes. The government agencies can formulate policies to encourage or push firms to implement CSR activities and operate in a sustainable manner. We hope that this thesis can inspire more studies on CSR and sustainable operations management in the contexts of different industries and countries.

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