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Author's Declaration

I hereby certify that this thesis is my original work. It has not been submitted, either in part or whole, for a degree award at other universities. Where information has been derived from other sources, I confirm that it has been clearly indicated.

Silin Ye

September, 2023

Social media, top managers' characteristics, and corporate social (ir)responsibility

Abstract

This thesis focuses on corporate social responsibility (CSR) to explore three important determinants of corporate socially responsible or irresponsible behaviour from different theoretical perspectives. To understand what shapes firm social outcomes, existing literature has demonstrated a wide range of antecedents or determinants of CSR at the institutional, organizational, and individual levels. However, some potential institutional and managerial determinants have been overlooked, and this PhD project aims to fill these research gaps by conducting three empirical studies.

At the institutional level, the first study examines the role of social media in improving CSR performance with an integrated institutional and resource dependence perspective. This study theorizes and proposes that, as the online public can provide legitimacy and resources for firms, social media can exert informal institutional pressures on CSR. The theoretical framework and hypotheses are tested by data from Chinese publicly listed firms and a representative social media platform-Sina Weibo (Chinese Twitter) between 2014 and 2018. The results show that firms with more attention or more positive sentiment from the public on social media perform better at CSR, and the positive relationships are weakened when firms are with higher state ownership or efficiency. This study contributes to the literature on the institutional determinants of CSR performance by highlighting the institutional role of social media as an under-researched informal institutional force.

At the organizational and individual levels, the second and third studies address the managerial determinants of corporate social performance and corporate misconduct respectively. These two studies are building on upper echelons theory that suggests organizational outcomes could be explained by the characteristics of top managers (e.g., top management team, CEOs). For corporate social performance involving social

impact on stakeholders and external interaction with society, the second study suggests CEO sociability as a potentially prominent determinant. Since the social media presence of CEOs shows their social participation and engagement tendency (being described as "social CEOs" in literature), this study examines whether social CEOs and the implication of their social media engagement have an impact on corporate social performance. A needs-affordances-consequences approach to social CEOs is developed to understand their underlying motives and ability for social contribution, as well as the moderating effect of CEOs' social evaluation. Utilizing data of Chinese listed firms from 2009 to 2020, the empirical results show that firms with social CEOs have a higher level of corporate social performance than firms without social CEOs, and higher CEO status or better CEO reputation can further amplify this positive relationship. The second study enriches the upper echelons and CSR literature by demonstrating an unstudied but important managerial characteristic especially in the social media era that shapes firm social outcomes.

The third study shifts the focus to a common form of corporate irresponsible behavior in emerging markets (i.e., accounting fraud) to discusses how the financial misconduct is shaped by top managers' regulatory focus in China. Regulatory focus theory (RFT) proposes two kinds of regulatory focus motivating individuals, namely promotion focus (a sensitivity to gains and a desire for advancement) and prevention focus (a sensitivity to losses and a desire for security). Building on RFT and upper echelons theory, an analytical framework is built to examine whether the propensity for committing fraud varies with the types of top managers' regulatory focus. Using a sample of 14,549 firm-year observations, the empirical findings indicate that, to ensure safety, the predominantly prevention-focused managers are more likely to commit fraud than the principally promotion-focused managers, and this positive relationship is strengthened with more negative feedback from the capital market or the media. This study extends the corporate fraud literature by introducing a novel and influential motivational attribute of top managers to explain why they engage in fraudulent behavior in the context of weak investor protection and severe principle-agent problems.

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As this thesis marks the end of my long and memorable PhD journey, I'd like to take this opportunity to express my sincerest appreciation to the people and organizations who encourage and support me during my study at Birkbeck College.

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Chapter 1: Introduction

1.1 Research background and questions

Corporate social responsibility (CSR) has become commonplace among business practices and academic research over the last few decades (Aguinis and Glavas, 2012; Campbell, 2007; Gillan et al., 2021). With the increasing attention to the idea of sustainability, expressed in various forms (e.g., CSR, ESG, triple-bottom-line), stakeholders and scholars are concerned about the extent to which firms contribute to or harm social welfare when they seek self-interest (Dmytriyev et al., 2021; McWilliams and Siegel, 2001). To respond to various stakeholder expectations and achieve strategic goals such as financial gains and corporate reputation (Chernev and Blair, 2015; Lev et al., 2010; Wang and Qian, 2011), many firms make an effort to benefit society with regard to environmental protection, employee welfare, community engagement, equity, philanthropy, etc. Meanwhile, there are also plenty of examples of corporate social irresponsibility (CSiR) against stakeholders' interests such as tax avoidance and corporate accounting fraud (e.g., the Enron scandal). Given the considerable economic and social impact of corporate social (ir)responsibility on firms and stakeholders (He et al., 2021; Hoi et al., 2013; Price and Sun, 2017), there is a growing research interest in the determinants of CSR/CSiR to understand what drive firms to engage in socially responsible or irresponsible activities.

As reviewed and suggested by Aguinis and Glavas (2012), based on different theoretical orientations and focusing on various levels of analysis, the determinants of CSR could be classified as the institutional-, organizational- and individual-level drivers. At the macro level, the earlier theoretical and empirical research has explored whether and how the environmental or institutional factors shape CSR (Campbell, 2007; Frynas and Yamahaki, 2016). Specifically, to discuss the antecedents to CSR at the institutional level, the conceptual framework is primarily built through the lens of

institutional theory or stakeholder theory to explain the impact of institutional pressures and stakeholder influence from the government (Marquis and Qian, 2014), the culture (Hartmann and Uhlenbruck, 2015), investors (David et al., 2007), consumers (Christmann and Taylor, 2006), the traditional media (El Ghoul et al., 2016) and so on. Though scholars have devoted themselves to investigate numerous institutional determinants of CSR, an emerging but powerful institutional constituent which may take effect has received little attention. The rapid development of the Internet and new era of information technology have enabled social media (e.g., Twitter, Facebook, and China's Weibo) to aggregate individual influence and shape organizations as a crucial institutional force in the organizational environment. The voices from the public on social media embedded with social values and beliefs are expected to constitute social pressures and expectations on firms (Gómez-Carrasco et al., 2021; Lee et al., 2013; Unerman and Bennett, 2004). Yet, the institutional role of social media has not been discussed in the literature so its influence on CSR performance remains unclear.

At the organizational and individual levels of analysis, an extensive empirical literature has stressed the impact of top managers on firm social outcomes from the perspective of upper echelons. This stream of studies is inspired by upper echelons theory (UET), which suggests that organizations are reflections of top managers' experiences, values and personalities, so their characteristics could explain organizational outcomes (Hambrick, 2007; Hambrick and Mason, 1984). Building on UET, scholars have demonstrated that firms' participation in socially (ir)responsible activities is connected with top managers' demographical characteristics (e.g., age, gender, nationality and education); individual experience (e.g., overseas or military experiences); as well as personality traits (e.g., overconfidence, narcissism and hubris) (Bertrand et al., 2021; Bouzouitina et al., 2021; Campbell et al., 2019; Cumming, 2015; Janani et al., 2022; Law and Mills, 2017; Manner, 2010; Petrenko et al., 2016; Tang et al., 2015; Wei et al., 2018; Xu et al., 2018; Zhang et al., 2019). In addition to these common and easily observable managerial characteristics, some important and powerful managerial determinants of CSR/CSIR have been overlooked as well.

Differing from other organizational outcomes, CSR largely involves the interactions with stakeholders and contributions to society (Campbell, 2007; Liu et al., 2021). Therefore, the characteristics related to top managers' social aspects, such as sociability reflecting their social engagement tendency, may provide great explanations of corporate social performance. Although this social attribute of firm leaders is difficult to investigate so relatively absent in the past research (Wang et al., 2021), the emergence of social media offers a unique platform to observe and capture top managers' and especially CEOs' individual social engagement (Heavey et al., 2020). For example, the firm CEOs using public social media are described as "social CEOs" (Weber Shandwick, 2014). It is thus feasible and fruitful to investigate CEOs' social media engagement and study whether their sociability could affect social performance of the firms they lead.

On the other hand, since a lot of corporate socially irresponsible activities are conducted or authorized by top managers, prior researchers have focused on their personality traits (e.g., overconfidence) to explain the managerial motivations behind firm misconduct. Nevertheless, there are some underlying and proximal psychological constructs (e.g., motivational attributes) receiving less attention in CSiR research (Aguinis and Glavas, 2012), while they may provide the most direct and powerful explanation to behavior among the psychological characteristics. For example, a motivational attribute called as regulatory focus (promotion vs. prevention focus) has attracted an increasing interest in management research recently (Gamache et al., 2020; P. D. Johnson et al., 2015). Referring to regulatory focus theory (RFT), two kinds of regulatory foci are expected to motivate individuals, namely promotion focus (a sensitivity to gains and a desire for advancement) and prevention focus (a sensitivity to losses and a desire for security) (Higgins, 1997, 1998). As an individual trait directly related to motivations, regulatory focus may provide valuable insights into explaining managerial motivations for making decisions and strategies in ethical practices, especially in emerging markets suffering from widespread and severe corporate fraud. However, the implications of managers' regulatory focus for firm decisions and

outcomes have not been extended to the context of socially irresponsible activities, such as corporate fraudulent activities involving both gains and safety concerns of managers.

To summarize, in the existing literature discussing the determinants of CSR/CSiR, the emerging informal institutional factors (e.g., social media influence) at the institutional level and some important top managers' characteristics (e.g., sociability and motivational attributes like regulatory focus) at the organizational and individual levels are absent from the inquiries. To fill in the gaps and enhance the understanding of environmental and managerial determinants of CSR/CSiR, this PhD project aims to extend the literature by addressing the following research questions in three empirical studies:

1. Could public attention and sentiment from social media to firms exert any informal institutional influence on CSR performance?
2. Could CEO sociability predict corporate social performance?
3. What is the relationship between managers' regulatory focus (promotion and prevention focus) and the occurrence of corporate accounting fraud as a form of CSiR?

This PhD project sets China as the empirical context to address the questions above. Compared to developed countries, China's institutions especially the formal aspects for regulating CSR/CSiR were relatively weak until recently (Allen et al., 2005; Hass et al., 2016; Luo et al., 2017). This institutionally complex environment not only gives rise to the important role of informal institutions in externally influencing firm outcomes, but also shapes firm managers' internal motivations that affect firm behavior. Specifically, in the past, while the government was playing a paternalist role in taking social responsibility, it focused more on short-term economic growth since China's market transition (Li & Zhou, 2005; Li & Lu, 2020). In particular, "the high priority put on GDP growth" resulted in a wide range of problems such as social inequality, poor product quality, weak market institutions and environmental pollution (Luo et al., 2017). Chinese firms and the public also paid insufficient attention to CSR/CSiR with such a relatively underdeveloped institutional background. For example, focusing on

economic growth and long with the weak formal regulations, Chinese firms and managers are investigated with prevalent irresponsible behaviors in the market such as financial misconduct (Chen et al., 2016; Hass et al., 2016), making it imperative to understand the managerial motivations behind.

In recent years, the Chinese government has gradually transformed the national goal for "balancing China's extensive economic growth with the social and environmental effects of that growth" (Marquis & Qian, 2014, p. 128). One of the early signals could be tracked in China's 11th Five-Year Plan between 2006 and 2010 initiating the idea of pursuing a more "harmonious society", which has been continuously emphasized by China's later development planning. With this significant transition of national policy, more and more Chinese firms are taking both financial and social performance into account for survival, and the public (e.g., firm stakeholders) also starts to scan and evaluate firms by their performance in CSR (Lau et al., 2016; Luo et al., 2017). Meanwhile, it is interesting to notice that the government as the formal institutional constitute are shaping corporate focus with such signals for the whole society rather than the written laws or mandates (Li & Lu, 2020; Marquis & Qian, 2014). Although this kind of formal institutional influence seems to be not that direct, those signals and their wide influence on the public activate the informal influence from society, making informal institutions as critical alternative mechanisms beyond the legal minimum in China. To summarize, China's emerging market and institutional background offer an excellent setting to explore how managerial characteristics and informal institutions shape firms' CSR/CSiR behavior.

1.2 Research motivations, objectives, and potential contributions

To be specific, by addressing the first research question above, the first study aims to demonstrate the institutional role of social media in CSR performance and extend the literature of the institutional determinants of CSR. In particular, while the literature has acknowledged the role of institutional constituents such as the formal institutions (e.g., the government) (Aguilera et al., 2007; Li and Lu, 2020; Luo et al., 2017; Marquis

and Qian, 2014; Oliver and Holzinger, 2008) and informal institutional forces including the culture and mass media (Hartmann and Uhlenbruck, 2015; Ho et al., 2012; Nikolaeva and Bicho, 2011; Stahl and De Luque, 2014; Weaver, 2001; Zyglidopoulos et al., 2012), the institutional role of social media remains unclear. This is a missed opportunity which may provide valuable insight for the literature. Social media has largely changed the organizational environment nowadays (Heavey et al., 2020), which provides society with an interactive platform to present individual opinions and share values (Balasubramanian et al., 2021; Lee et al., 2013; Okazaki et al., 2019; Zhou et al., 2021). The voices from the public on social media embedded with social values and beliefs are therefore expected to constitute social pressures and expectations on firms (Gómez-Carrasco et al., 2021; Lee et al., 2013; Unerman and Bennett, 2004), leading to an important part of firms' institutional environment. Adopting an integrated institutional and resource dependence perspective on the role of social media, this study attempts to develop a theoretical framework to explain the institutional impact of social media attention and sentiment on CSR. Further, according to the divergent emphases of the two theories on organizational response to the environment (Oliver, 1991), the moderating effects of governmental influence and corporate financial situation are also discussed to suggest firm heterogeneity in the compliance with social media influence. This study is expected to contribute to institutional theory and resource dependence theory by suggesting and examining an emerging but powerful informal institutional force that shapes organizational outcomes in the age of social media. This work also enriches the social media and CSR literature which mainly focuses on the communication role of social media and ignores its institutional influence (Du and Vieira, 2012; Lee et al., 2013; Lyon and Montgomery, 2013; Saxton et al., 2019, 2021; Vo et al., 2019).

The second research objective is to explore the impact of CEO sociability on CSR by addressing the second research question. This study aims to discuss if CEOs' presence on social media could predict their willingness and ability to engage firms in CSR and thereby predict corporate social performance. Further, this work attempts to

investigate the moderating mechanism of CEOs' social evaluation to identify the boundary conditions for the influence of social CEOs on corporate social performance. The upper echelons and CSR literature has examined some managerial predictors of corporate social performance such as CEO demographics and a few self-evaluation personality traits (Bouzouitina et al., 2021; Ho et al., 2015; Janani et al., 2022; Lewis et al., 2014; McGuinness et al., 2017; O'Sullivan et al., 2021; Petrenko et al., 2016; Tang et al., 2015b; Zhang et al., 2022). However, while CSR as a firm behavior in the social domain is more about the interaction with society, CEOs' social attributes like sociability showing their social participation tendency tend to provide greater explanations. Moreover, since more and more firm executives are engaging in social media platforms, known as "social executives', it is important to understand how their sociability reflects their underlying motivation and ability, through which the firm outcomes could be explained. By doing so, this research might provide unique insight into the determinants of CSR by demonstrating that social CEOs are more socially responsible, and also enrich the UET literature by adding and exploring an under-researched but important CEO social trait that shapes firm behavior.

The third research objective is to examine whether managers' regulatory focus influences their decisions on committing accounting fraud as a common irresponsible activity of listed firms especially in emerging markets. It is investigated that if top managers' promotion or prevention focus could drive the occurrence of corporate fraud in China and how the behavior impact of regulatory focus is further shaped by the external feedback. The extant fraud literature has ignored the explanation from the inherent managerial traits especially motivational attributes, which can provide the most direct and powerful explanation to behavior among the psychological characteristics (Gamache et al., 2015; Jiang et al., 2020; Lanaj et al., 2012). Thus, the literature fails to unpack the prime motivation and psychological mechanism of top managers behind their wrongdoing, resulting in the "black box problem" identified by upper echelon scholars (Hambrick, 2007). Meanwhile, the existing research largely focuses on the developed markets, devoting less attention to emerging markets where

the managerial motivations driving fraud could be different with the market institutions (Schnatterly et al., 2018). By filling the gaps, the third empirical study extends the corporate fraud literature by introducing a novel and influential motivational attribute of top managers to open the "black box" and explain why they engage in fraudulent behavior in the context of weak investor protection and severe principle-agent problems.

1.3 Research framework

The overarching theme of this thesis is to explore the unresearched and important determinants of CSR/CSiR by conducting three independent but interrelated empirical studies. As illustrated in Figure 1.1 showing the research framework, the three studies are linked to each other through the same object of research, the levels of analysis and theoretical perspectives. Specifically, both Chapters 2 and 3 are discussing the predictors of corporate social performance and involve the same object, i.e., social media. Chapter 2 regards social media as a platform for aggregating informal public pressures, thus investigating online engagement of the public and its external influence on CSR. By comparison, Chapter 3 views social media as a channel to captures CEO sociability, thereby observing online engagement of firm CEOs and the implications of this internal managers' trait for CSR.

Similarly, Chapters 3 and 4 are interrelated as they are drawing on the same theoretical perspective-the upper echelons perspective and discussing at the same level to examine the impact of top managers' characteristics on firm social outcomes. In particular, Chapter 3 focuses on socially responsible outcomes to explore the role of CEO social attributes, and Chapter 4 pays attention to a specific irresponsible firm outcome (i.e., fraud) by looking into managers' motivational attributes.

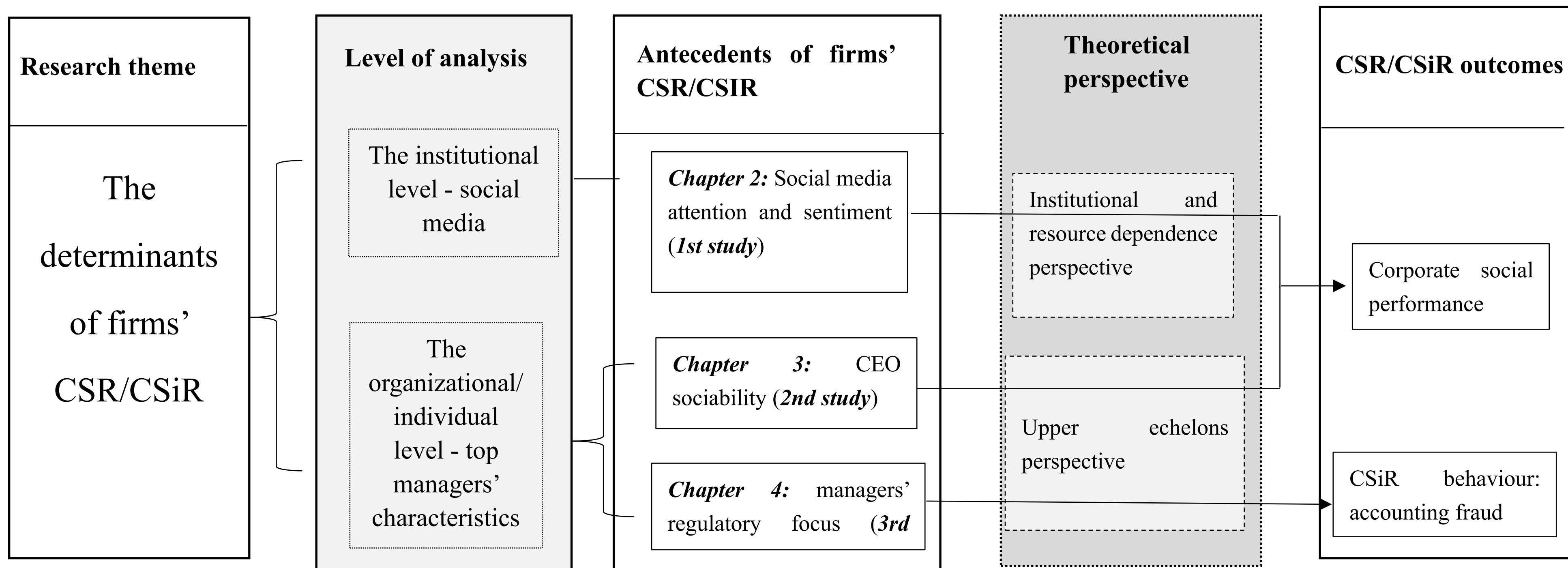

Figure 1.1 Research framework

1.4 Structure of the thesis

The structure of this thesis is organized as follows. This Chapter introduces the research background and gaps, raises the research questions, explicates the research objectives, and suggests potential contributions. Chapters 2, 3 and 4 will present three independent empirical studies to address the three afore-mentioned research questions respectively.

In Chapter 2 presenting the first study, the institutional impact of social media on CSR is discussed and examined, interacting with the moderating effects of the government influence and firm financial situation. The theoretical framework is developed based on the integration of institutional theory and resource dependence theory. The first study reports the empirical evidence from a representative emerging market - China. China's vibrant Internet development and widespread new media usage offer an excellent setting for analyzing social media's role in CSR. The sample is constructed by Chinese publicly listed firms from 2014 to 2018 (3,362 firm-year observations) and original data from the influential social media platform in China - Sina Weibo (the Chinese version of Twitter) to test the framework and hypotheses. The fixed-effect OLS models are employed to examine the impact of social media attention and sentiment on CSR performance as well as the moderating effects of corporate state ownership and firm efficiency.

Chapter 3 includes the second empirical study that examines the relationship between CEO sociability and corporate social performance, and also tests how the social evaluation of CEOs (i.e., CEO status and CEO reputation) moderates this relationship. The framework and hypotheses are built on UET and the social media engagement literature. In particular, drawing on insights from the social media and leadership literature, a needs-affordances-consequences approach to social CEOs is developed to comprehensively understand their motives and ability of social contribution. Empirically, this study collects original data of CEOs' social media usage from Weibo and uses a sample of Chinese listed firms between 2009-2020 to test the

hypotheses.

In Chapter 4, an empirical study is conducted to examine the role of top managers' regulatory focus in the occurrence of corporate fraud. By incorporating regulatory focus theory to UET, the analytical framework is developed to explain the relationship between managers' regulatory focus and the likelihood of committing fraud. Further, this study discusses how the motivation-behavior relationship is moderated by the feedback from the capital market or the media. By employing content analysis technique to capture managers' regulatory focus and applying the panel Logit models, the hypotheses are tested based on a large sample of Chinese listed firms between 2015 and 2019 consisting of 14,549 firm-year observations.

Chapter 5 discusses and concludes the key findings, theoretical contributions, practical implications, limitations, and directions for future research.

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Chapter 2: The role of social media in CSR performance: An integrated institutional and resource dependence perspective

Abstract: Social media brings the public a platform where individuals can interactively share ideas and values. Drawing on both the institutional perspective on the motivations for corporate social responsibility (CSR) and resource dependence perspective articulating the power relations between organizations and their environment, the present study develops a theoretical framework to explain the institutional impact of social media on CSR performance, interacting with the moderating effects of state ownership and firm efficiency. We test the framework utilizing data from Chinese publicly listed firms and a representative social media platform-Sina Weibo between 2014 and 2018. We find that firms with more attention or more positive sentiment from the public on social media are more likely to perform better at CSR, and the social media's effects on CSR performance are weakened when firms are with higher state ownership and perform more efficiently. The present study contributes to the literature on the institutional determinants of CSR performance by highlighting the institutional role of social media and further identifying how firms' compliance with the institutional pressure from social media varies with the governmental influence and corporate financial situation. Our findings have important implications for understanding the impact of social media on firms and their stakeholders.

Key words: Corporate social responsibility, social media, institutional theory, resource dependence theory

2.1 Introduction

Firms engage in corporate social responsibility (CSR) driven by various motivations and contextual factors (Aguinis and Glavas, 2012; Bansal and Roth, 2000; Gillan et al., 2021). As firms could obtain legitimacy to survive by behaving socially responsibly, scholars of institutional theory (IT) have focused on the influences of different formal or informal institutions to explore the determinants of CSR (Aguinis and Glavas, 2012; Campbell, 2007; Gillan et al., 2021). Existing literature has contributed substantially to understanding this powerful lens in CSR research by uncovering the institutional roles of the government (Aguilera et al., 2007; Li and Lu, 2020; Luo et al., 2017; Marquis and Qian, 2014; Oliver and Holzinger, 2008), the culture (Hartmann and Uhlenbruck, 2015; Ho et al., 2012; Weaver, 2001), the mass media (Nikolaeva and Bicho, 2011; Stahl and De Luque, 2014; Zyglidopoulos et al., 2012) and so on. With the dramatic development of the Internet, the rise of social media provides society with an interactive platform to present individual opinions and share values (Balasubramanian et al., 2021; Lee et al., 2013; Okazaki et al., 2019; Zhou et al., 2021). Therefore, the voices from the public on social media embedded with social values and beliefs are expected to constitute social pressures and expectations on firms (Gómez-Carrasco et al., 2021; Lee et al., 2013; Unerman and Bennett, 2004), leading to an important part of firms' institutional environment. However, as a lot of research attention has been paid to the communication role of social media especially in influencing the consequences of CSR (Du and Vieira, 2012; Lee et al., 2013; Lyon and Montgomery, 2013; Saxton et al., 2019, 2021; Vo et al., 2019), we have little knowledge of its institutional influence on proactively shaping organizations' CSR performance.

As the public on social media can provide legitimacy along with valuable resources for firms, the present study builds on IT and resource dependence theory (RDT) to establish a theoretical framework for understanding the institutional role of social media in CSR, interacting with the moderating effects of governmental influence and firm financial situation. The two theories share compatible assumptions and address

phenomenon in close areas regarding the strong influence of external pressures (Okhuysen and Bonardi, 2011), so their combination can provide a powerful lens to explain how social media as an informal institutional force shapes firms' CSR performance. To be specific, based on their convergent assumptions about the importance of the environment to organizations (Meyer and Rowan, 1977; Pfeffer and Salancik, 1978), we hypothesize that to obtain legitimacy benefits and critical resources for continued survival, firms with more attention and more positive sentiment from social media audiences are more likely to perform better at CSR. Moreover, while IT emphasizes the survival value of organizational conformity to the external pressures (DiMaggio and Powell, 1983; Meyer and Rowan, 1977), RDT further stresses the organizational necessity of managing resource dependencies and power relations by responding to the external environment appropriately (Oliver, 1991; Pfeffer and Salancik, 1978). According to their divergent emphases on organizational responses, we further propose firm heterogeneity in the compliance with informal institutional influence of social media. In particular, we posit that firms' compliance with the pressure from social media in CSR varies with the governmental influence and corporate financial situation, two key contingency factors affecting the institutional complexity and firms' dependence on the public of social media.

The hypotheses are tested by a sample of Chinese publicly listed firms from 2014 to 2018 and original data from the representative social media platform in China-Sina Weibo (the Chinese version of Twitter). China is an emerging market with relatively underdeveloped formal institutions but showing the growing tendency among organizations to engage in CSR (Allen et al., 2005; Liu et al., 2021). China's government is usually regarded as a paramount institutional factor in setting rules for the market and firms, and this formal institutional constitute is complex with its multilevel hierarchy (Luo et al., 2017). For example, although some local governments in China still prioritize economic growth and ignore the long-term social responsibility, the central government has gradually realized the importance of sustainability and shaped Chinese firms' CSR through governmental signals and state ownership (Li &

Lu, 2020; Marquis & Qian, 2014). As a result, the complex influence of China's formal institutions on CSR behavior has been researched a lot. However, while scholars have stressed the value of "the alternative institutional arrangements and governing mechanisms" beyond China's formal systems of law (Allen et al., 2005, p. 99), less attention has been paid to the impact of informal institutions on firm social behavior. Thus, it is imperative to explore how the emerging informal institutional pressures such as the public's influence on social media influence corporate social performance, and moreover, how the informal influence interact with the governmental influence (e.g., state ownership). Meanwhile, China's vibrant Internet development and widespread new media usage offer an excellent setting for analyzing social media's role in firms' CSR performance.[1] By accounting for a series of robustness tests, we find strong evidence of the positive impact of social media attention and sentiment on CSR performance. Meanwhile, the impact is found to be further moderated by state ownership and firm efficiency, as such positive effect of social media is weaker when firms are with higher state ownership and efficiency.

This study makes contributions to the existing literature in several ways. First, the previous work on the institutional determinants of CSR performance has paid a lot of attention to the acknowledged institutional constituents including formal institutions (e.g., the government) as well as some informal institutional forces (e.g., the traditional media) (Aguilera et al., 2007; Li and Lu, 2020; Luo et al., 2017; Marquis and Qian, 2014; Nikolaeva and Bicho, 2011; Oliver and Holzinger, 2008; Stahl and De Luque, 2014; Zyglidopoulos et al., 2012), while a few emerging informal institutional forces like social media remain under-researched. To fill this gap, this study integrates IT and RDT to theorize about the role of social media as an unexplored but powerful informal institutional constituent in the organizational environment and especially how it affects firms' CSR outcomes.

Second, the firm's presence and CSR communication on social media have been

[1] According to the "China Internet Development Report 2021" published by Internet Society of China, at the end of 2020, the total number of Chinese netizens was 989 million and the total number of mobile Internet users exceeded 1.6 billion. Reported by Sina Weibo, its monthly active users were more than 511 million in 2020.

studied extensively in the established literature (Chu et al., 2020; Gómez-Carrasco et al., 2021; Okazaki et al., 2019; Saxton et al., 2019b, 2021). Those studies are mainly based on stakeholder theory or signaling theory to investigate how firms use social media to communicate CSR information with stakeholders. Apart from its communication role, social media is an important part of firms' institutional environment, and it can serve as an informal institutional force for driving CSR. As such, advancing a new theoretical lens on social media, the present study differs from the existing social media literature by exploring the under-researched institutional role of public users' discussion, as opposed to the firm-driven discussion on social media, in improving firms' social performance.

Third, prior theoretical work has combined IT and RDT to suggest different organizational responses to institutional environment (Oliver, 1991), providing a powerful theoretical lens for understanding the contingency factors that set the boundary conditions of institutional influences. To explain heterogenous organizational compliance with social media's influence on CSR, we develop an analytical framework by contextualizing the combination of these two complementary theories, and thus reveal the mechanisms with which governmental influence and firm financial situation moderate social media's impact on CSR performance. By exploring how the informal institutional influence from social media interacts with the governmental influence-the formal institutional pressure, we also contribute to the discussion on institutional complexity and organizational responses (Greenwood et al., 2010, 2011).

Practically, understanding the institutional influence of social media on firms' CSR is an important concern for firms and their stakeholders. The managerial implication is that although firms have realized the importance of their own participation and influence on social media (Balasubramanian et al., 2021; Feng and Johansson, 2019; Wang et al., 2021), the reverse impact from online audiences should also be carefully considered to further obtain legitimacy while integrating information and making strategies. Meanwhile, in addition to passively receiving information and taking actions after firms' activities, firm stakeholders (e.g., individual consumers and investors)

could proactively exert their influence on firm behaviors by engaging in social media discussions.

2.2 Theory and hypothesis development

2.2.1 Institutional determinants of CSR performance

Although there is no consensus on how to rigorously define CSR (McWilliams et al., 2006), few would disagree that CSR is about how firms behave responsibly to society by responding to social expectations and values when they seek self-interest such as profitability (Dmytriyev et al., 2021; McWilliams and Siegel, 2001). According to IT, by adapting to social norms embedded in the institutional logics prescribing "how to interpret organizational reality, what constitutes appropriate behavior, and how to succeed" (Thornton, 2004, p. 70), firms can obtain legitimacy and stability to survive (DiMaggio and Powell, 1983; Dowling and Pfeffer, 1975; Meyer and Rowan, 1977). The institutional perspective on CSR therefore indicates that with the legitimation needs, firms' CSR can be regarded as the desirable and appropriate behavior in response to external pressures. Thus, a large body of CSR literature employs an institutional perspective to explore the antecedents of CSR (Bansal and Roth, 2000; Campbell, 2007). For example, the media is regarded as an important component of firms' institutional environment (Nikolaeva and Bicho, 2011), which exerts influential institutional pressures on firms to conform to social values and operate in a socially responsible way (Bednar, 2012; Bitektine, 2011; El Ghoul et al., 2016; Jeong and Kim, 2019). With the radical change of information dissemination brought by the Internet, it is not surprising that more recent CSR literature sheds the light on social media (Boyd et al., 2016; Chu et al., 2020; Okazaki et al., 2020), as the supplementary and even partially substituted platform relative to the traditional media (Lyon and Montgomery, 2013).

However, compared to the institutional role well explored in the media literature

(Graf-Vlachy et al., 2020), the communication role of social media has attracted greater attention in CSR research (Balasubramanian et al., 2021; Chu et al., 2020; Lee et al., 2013; Okazaki et al., 2020; Saxton et al., 2021). As shown in Figure 2.1, the primary topic of interest in this area has been how firms and stakeholders communicate CSR information on social media after firms' CSR performance (Kesavan et al., 2013; Lyon and Montgomery, 2013; Vo et al., 2019). In line with the dominant theories applied in the literature - stakeholder theory and signaling theory, social media is viewed as the communication tool used by firms or their stakeholders to communicate firms' CSR strengths and concerns (Gómez-Carrasco et al., 2021; Saxton et al., 2019b, 2021). From the perspective of stakeholder theory or stakeholder salience theory, scholars have discussed how different groups of stakeholders focus on different CSR topics on social media (Gómez-Carrasco et al., 2021), or in turn, how firms react and respond to the online public's CSR discussion (Saxton et al., 2021). Based on signaling theory, the relevant literature suggests that social media facilitates firms to transmit signals to outsiders and build good images by presenting their CSR efforts (Saxton et al., 2019b). While stakeholder theory and signaling theory are appropriate to address the communication role of social media and therefore explain the subsequent influence of firms' CSR performance on stakeholder relationships and corporate reputations online, we have little knowledge of the proactive influence of online public discussions on firms' CSR performance. Some work has realized that social media as a public platform could offer legitimacy to firms (Du and Vieira, 2012; Vo et al., 2019). For instance, the legitimacy perspective on social media has mentioned how firms communicate their CSR issues with stakeholders on social media in an appropriate way to gain corporate legitimacy (Colleoni, 2013; Du and Vieira, 2012). Nevertheless, very little has been known on the institutional role of social media, especially in how CSR performance is shaped by the public's attention and attitude to firms on social media.

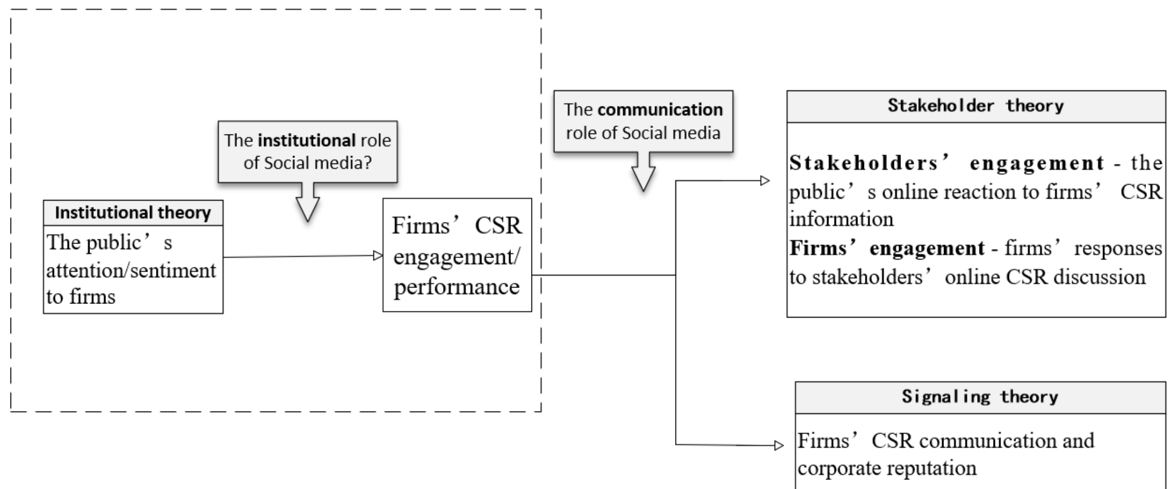

Figure 2.1 The institutional vs communication role of social media

In the present study, we adopt an integrated institutional and resource dependence perspective to understand the institutional impact of social media on CSR performance, interacting with the power of the government and firm financial efficiency. Both IT and RDT assume that "organizational choice is limited by a variety of external pressures" (Oliver, 1991, p. 146). Specifically, IT argues that organizations have to obey social norms and beliefs in the environment for legitimacy (DiMaggio and Powell, 1983; Dowling and Pfeffer, 1975; Meyer and Rowan, 1977), and RDT suggests that organizations depend on the external environment for resources (Pfeffer and Salancik, 1978). With the legitimacy lens and the resource lens respectively, the two theories share compatible arguments "regarding the strong influence of social pressures and power" on organizational outcomes (Okhuysen & Bonardi, 2011, p. 8). The arguments of the two theories are also interdependent, because legitimacy can bring resources to organizations, while valuable resources are accessible for legitimate organizations. For social media, the public online can provide legitimacy along with valuable resources for firms, making corporate behaviors shaped by this informal institutional force. Thus, the combination of IT and RDT can provide a powerful theoretical lens for explaining social media influence on firm social behavior.

2.2.2 Influence of social media on CSR performance

Compared to the traditional media from which the public passively receives

information (Castelló et al., 2016), social media offers an open platform where information and communication could be interactive and dialogue (Kent and Taylor, 2016). As social media users, firm stakeholders and the general public could actively participate in the discussion to present their attention and share public attitude to a firm. With the power and resources in the hands of the online public, social media serves as a stage for aggregating individual influences on the firm. Based on IT, the firm could enjoy benefits and avoid penalties from social media audiences by complying with their norms and values, known as the 'legitimacy benefit argument' and 'illegitimacy penalty argument' (Meyer & Rowan, 1977; Zuckerman, 1999). The legitimacy benefits suggest the access to resources as well as the increasing survival capabilities for legitimate organizations (Meyer & Rowan, 1977), while the illegitimacy penalties are the losses for firms who behave inappropriately so are categorized as illegitimate organizations by the public (Hannan, 2010). According to RDT, organizations must acquire external resources to survive (Pfeffer and Salancik, 1978), and such resource dependence brings power to the external environment (Ulrich and Barney, 1984). Hence, both theoretical perspectives of IT and RDT have argued "the importance of obtaining legitimacy for purposes of demonstrating social worthiness and mobilizing resources" (Oliver, 1991, p. 150).

Consequently, combining IT and RDT together, by offering legitimacy associated with valuable resources, social media could develop its institutional influence and power on corporate behaviors. For instance, when a firm is legitimate to social media audiences, it can acquire financial and labor resources from online investors and prospective employees to improve productivity, and its legitimacy also attracts more consumers in the market to increase profitability (Price and Sun, 2017; Sreen et al., 2021). Meanwhile, public opinion tends to support the legitimate firm when it is involved in dispute and crisis (B. Wu et al., 2021). With regard to the behavior in the social domain, since society as a whole is the beneficiary of firms' social contribution, socially responsible behavior is therefore the appropriate behavior expected by the audiences on social media. With this underlying institutional logic held by the public

that leads to a consistent expectation of CSR, social media as a public platform can form informal pressures on firms regarding their responsibilities to society, thus shaping CSR performance through the individuals' discussion and views.

On one hand, the CSR-related discussion may drive the firm to actively respond to social needs (Gómez-Carrasco et al., 2021). For example, consumers on social media may give attention to the firm regarding product quality and security (Chu et al., 2020) and individual shareholders tend to be concerned about corporate governance and firm value (Zhou et al., 2021), while the general public could discuss the firm's contributions to social issues like equality and environmental sustainability (He et al., 2021; Saxton et al., 2019). As such, there are more demands and pressures on the firm to improve CSR. Even the general discussion about a firm also implies higher visibility of the firm (Zyglidopoulos et al., 2012), so it is more closely witnessed and monitored by social audiences in doing bad or good to society. For instance, when a more visible firm behaves inappropriately towards society, it can be confronted with harsher illegitimacy punishment because of its wide range of social media audiences.

On the other hand, there could be different tones and sentiments of the discussions on social media. When the discussion about a firm on social media is overall more positive, the firm is evaluated more favorably and more supported by the public. Such better social evaluation can further raise the performance expectation and public scrutiny for the firm (George et al., 2016; Y.-C. Jeong & Kim, 2019). Likewise, since CSR is the appropriate behavior to social media audiences, the firm is motivated to perform better at CSR to meet the increasing expectations and withstand the stronger scrutiny, so that it can maintain the public trust and defend its legitimacy.

Taken as a whole, to seek legitimacy for organizational stability and survival, the firm with a higher level of attention and more positive sentiment from social media is more likely to perform better at CSR that is in line with the cognitions and values of social audiences. We thus hypothesize:

Hypothesis 1a: firms with a higher level of social media attention are more likely to perform better at CSR.

Hypothesis 1b: firms with more positive sentiment from social media are more likely to perform better at CSR.

In addition, the convergent assumptions and interdependent arguments of IT and RDT indicate that social media can exert pressures and power on firms, and hence play an institutional role in motivating CSR by public attention and attitude. While IT emphasizes the survival value of organizational conformity to the external power (DiMaggio and Powell, 1983; Meyer and Rowan, 1977), it fails to elaborate whether and how the organizational compliance may vary with the context of institutional pressures (Oliver, 1991). However, RDT stresses that with external pressures, it is also necessary for organizations to manage resource dependencies and power relations by responding to the external environment differently and appropriately (Pfeffer and Salancik, 1978). For example, previous scholars combine the divergent foci of IT and RDT to theorize that when organizations face more multiple institutional demands from the environment or are less dependent on the specific institutional constituent, they are less likely to conform to its institutional pressure (Oliver, 1991). Therefore, in our context, although firms are motivated to comply with the institutional pressures and expectations from social media to gain legitimacy and resources, the degree of firm compliance tends to be heterogenous depending on contingency factors, two of which could be governmental influence and firm financial situation. These factors are shaping the institutional complexity and firms' dependence on social audiences, thereby providing the boundary conditions of social media's impact on CSR.

2.2.3 Moderating role of governmental influence: state ownership

When social media as an informal institutional force plays a role together with the government, one of the most important formal institutional forces (X. R. Luo et al., 2017), there could be multiple demands on organizations from the government and the public on social media. Also, the dependence on the government versus on the public opinions tends to be distinct for firms with different levels of governmental

involvement.

First, firms with higher state ownership are confronted with more multiple constituent demands in the institutional environment, which may weaken firms' willingness and ability of complying with institutional pressures from social media. While the public on social media expects firms to satisfy social demands such as environmental sustainability, employees' welfare, and donations (Manetti and Bellucci, 2016; Saxton et al., 2021), the government requires firms with state ownership to respond to political demands (Li and Lu, 2020; Luo et al., 2017), such as supporting infrastructure development. These political demands, however, are not always compatible and coherent with social expectations, and are sometimes at the expense of social benefits such as environmental protection (G. Zhang, 2013), especially in emerging and transitional markets like China. [2] Hence, when there are possibly incompatible institutional pressures, the informal public pressures from social media tend to be overlooked because scarce resources might be allocated to respond to demands from the formal institution.

Meanwhile, as suggested by Pfeffer and Salancik (1978), the more the organizations depend on the source of institutional pressures, the more likely they are to conform to the pressures. When firms are with a higher level of state ownership, they are more dependent on the government rather than the public, since the access to vital resources for development and survival is more likely to be authorized and provided by the government rather than the public (Ferri and Liu, 2009). Thus, the lower dependence upon the public on social media decreases the likelihood of firms' conformity to social pressures in respect of social responsibility expected by the public. In contrast, firms with lower state ownership or privately held firms depend more on the public, as the relevant stakeholders in society support those firms with necessary resources such as finance and consumption instead of the government (Li and Lu, 2020). Therefore, institutional pressures from social media are more effective for firms with lower state

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[2] For example, a lot of local governments in China advocates that economic development is the primary concern, which is manifested in the emphasis on GDP growth by provincial governments (X. R. Luo et al., 2017).

ownership.

In conclusion, since firms with lower or even no state ownership are under less multiple institutional pressures and more dependent on the public, they are more willing to and capable of responding to social demands, so more likely to be regulated by social media attention and sentiment in CSR. Hence, we postulate:

Hypothesis 2a: The institutional effect of social media attention on CSR performance is moderated by state ownership as such a positive relationship is stronger in firms with lower state ownership.

Hypothesis 2b: The institutional effect of positive social media sentiment on CSR performance is moderated by state ownership as such a positive relationship is stronger in firms with lower state ownership.

2.2.4 Moderating role of firm financial situation: firm efficiency

Another organizational attribute being likely to alter the multiplicity of institutional constituent demands on firms and their dependence on social media is firm efficiency because of its close but debatable relation with legitimacy (Jeong and Kim, 2019; Oliver, 1991). With the increasing importance of embracing social issues in business practice (Dmytriyev et al., 2021), firms are expected to respond to not only efficiency needs from shareholders, but also a wider scope of needs from society at large (Freeman et al., 2004; Jensen, 2002). Some may argue efficiency pressures are in conflict with legitimacy pressures taking account of resource allocation (Jeong and Kim, 2019), while others assert that firm efficiency is a fundamental part of legitimacy with respect to CSR (Aguinis and Glavas, 2012). Thus, there tends to be both tension and convergence between firm efficiency and CSR, and firm efficiency is expected to further influence the mechanism of how social media affects firms' CSR to gain legitimacy and resources.

For the multiplicity of constituent demands, some recent research proposes the tension between efficiency and legitimacy to suggest the multiple and conflicting demands from shareholders and other stakeholders. For instance, Jeong and Kim (2019)

theorize ‘legitimacy management cost’ to view corporate giving as one of corporate costs to manage external legitimacy. To reasonably allocate financial resources, firms regard the efficiency and legitimacy pressures as opposite pressures, which tend to be in conflict with each other. Drawing on their ‘legitimacy management cost’ argument, when firms perform poorly in efficiency, shareholders’ demands preclude firms to respond to other social demands like donations. Nevertheless, this tension argument might work for specific CSR activities like corporate philanthropy associated with certain stakeholders and beneficiaries but could not provide sufficient explanations for overall social responsibility involving all stakeholders in our context. In effect, it is widely acknowledged that social responsibility also includes the responsibility for shareholders which accounts for an important part of CSR (Aguilera et al., 2007; Aguinis and Glavas, 2012), so the efficiency pressure and the legitimacy pressure on CSR are not conflicting but consistent with each other. As we explained before, social media as an institutional constituent exerts influences and pressures from the public including investors. When firms perform poorly in efficiency, they are less legitimate to the public and under heavier legitimacy-seeking pressures, making social media’s institutional influence more efficient in improving their CSR performance.

Meanwhile, firms’ dependence on social media tends to vary with different financial situations. When firms’ performance shows low efficiency, the motivation of seeking legitimacy benefits from the public on social media is strengthened, and firms become more dependent on social media users. Specifically, in order to change the status quo, firms are incentivized to get the public’s support to obtain resources and reputations for profitability improvement. In conclusion, underperforming firms are confronted with coherent institutional demands in CSR and depend more on the public on social media. Accordingly, we propose that:

Hypothesis 3a: The institutional effect of social media attention on CSR performance is moderated by firm efficiency as such a positive relationship is stronger in low-performing firms.

Hypothesis 3b: The institutional effect of positive social media sentiment on CSR

performance is moderated by firm efficiency as such a positive relationship is stronger in low-performing firms.

As stated above, according to our integrated institutional and resource dependence perspective, being subjected to external pressures, organizations must respond to the demands and expectations in the external environment. By doing so, firms can obtain legitimacy and resources for continued survival (Meyer and Rowan, 1977; Pfeffer and Salancik, 1978). Accordingly, social media can serve as an informal institutional constituent in firms' external environment to motivate CSR through its institutional influence and power. Also, the integrated theoretical perspective suggests heterogeneous organizational responses to the environment (Oliver, 1991), indicating that although firms are motivated to comply with pressures and expectations on social media to gain legitimacy and resources, the degree of their compliance varies with the governmental influence and corporate financial situation. Therefore, drawing on both the institutional perspective on the motivations for CSR and resource dependence perspective articulating the power relations between organizations and their environment, our integrated analytical framework can be summarized in Figure 2.1. This framework shows not only the direct institutional impact of social media on CSR performance, but also the moderating effects of state ownership and firm efficiency.

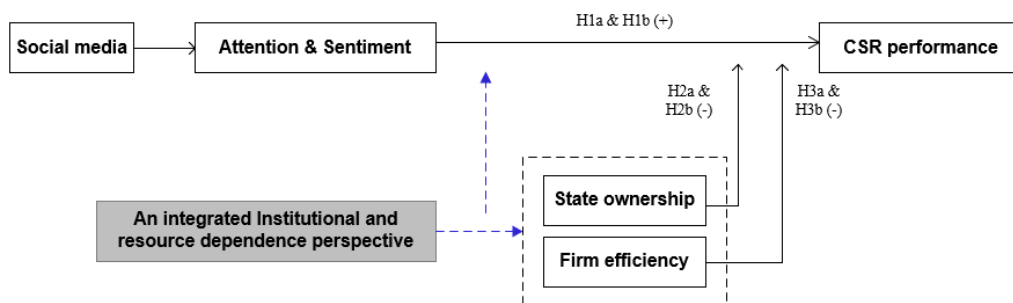

Figure 3.2 Theoretical framework and hypotheses (Study 1)

2.3 Methods

2.3.1 Sample and Data

To observe the effect of social media on CSR performance theorized in Figure 2.1, we construct a sample consisting of all the public firms listed on either the Shanghai or Shenzhen Stock Exchanges between 2014 and 2018.[3] After excluding firms in the financial industry, with special treatment and with missing information (Marquis and Qian, 2014; Zhong et al., 2021), we have a panel data set of 3,362 firm-year observations covering 848 firms across five years. Our data set is constructed utilizing multiple sources. First, following the practice in previous studies (Li and Lu, 2020; Luo et al., 2017; McGuinness et al., 2017), the CSR data are obtained from a leading independent CSR rating agency in China-Rankins CSR Ratings (RKS). This agency yearly rates all listed firms who have issued CSR reports (http://www.rksratings.com). Second, we access Sina Weibo (called as Weibo) to collect social media data, the leading Chinese microblogging platform which is known as China's version of Twitter.[4] Third, all the firm-level information is obtained from the China Stock Market and Accounting Research (CSMAR) database, featuring for comprehensive firm-level accounting and governance data (http://www.gtarsc.com). Fourth, we collect the mass media data from the Financial News Database of Chinese Listed Companies (CFND), established by the Chinese Research Database Services (CNRDS) platform with media coverage from over 400 influential online media and more than 600 professional newspapers in China.

[3] Since 2014, other blogging platforms in China like Tencent Weibo have gradually exited from the market. In April 2014, Sina Weibo finished its IPO in NASDAQ and officially changed its name to Weibo, marking its dominant role in China. Thus, our sample period starts from 2014 to ensure the comparability of social media data from Weibo. Meanwhile, the sample ends in 2018 because the latest CSR data from RKS database ended this year.

[4] Weibo is one of the most popular and influential social media platforms in China. Similar to Twitter, the global microblogging platform, Weibo serves a microblog platform to Chinese netizens while international social media platforms like Twitter and Facebook are banned in China (Feng and Johansson, 2019). The public could post, comment, reply and repost microblogs to share opinions, and the length of texts are usually limited to 140 words.

2.3.2 Variables

Dependent variable

CSR Performance. The dependent variable is measured by CSR score published by RKS annually. This Chinese independent agency follows the standards and practices adopted by other authoritative international CSR rating agencies such as the KLD database and applies the rules to China's specific context. By systematically analyzing CSR reports issued by listed firms, RKS scores their CSR performance on a scale of 0 to100. To be specific, in RKS's rating standards statement, four main categories are clarified as: (1) *overall evaluation* covering corporate strategy, governance and stakeholders; (2) *content* relating to economic performance, labour and human rights, environment, consumers, community participation, etc.; (3) *technique* assessing the quality of CSR reports; (4) *industry* evaluating the firm's usage of medium to support sustainability in specific industries. Distributed in each category, there are together 70 second-level specific indicators with different weight. After every indicator is evaluated and marked, the scores of all indicators are totaled up to give the final CSR score for the firm. The higher CSR score is, the better the firm performs at CSR.

Independent variables

Two independent variables are measured to investigate different aspects of social media's institutional effects. The first variable is *Social media attention*, measured by the number of Weibo posts related to the observation firm in the previous year of RKS ratings (with the unit as 100 posts). We have collected all the relevant microblog posts by identifying the list firm's name as the key work for searching on Sina Weibo platform.[5] To accurately measure the external institutional effect of social media, we exclude posts from official Weibo accounts owned by the listed firm itself.[6]

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[5] The large data collection is realized through 'web crawler' technique supported by JAVA software. By accessing Weibo's application programming interface (API), we set the keyword and time period in API to get relevant posts back and download information such as user account, time, post content and so on.

[6] We extract some posts about two random firms in our sample to give an idea of how the public discusses listed firms on Weibo, which are available on request.

The other independent variable is *Social media sentiment*, measured by the textual analysis of all the posts about the firm in the year. We employ the 'Bag-of-Words scheme' technique (Borochin and Cu, 2018; McGurk et al., 2020; Tetlock et al., 2008) to analyze the content of the posts and judge the public's general attitude to the firm. This text analysis technique is suitable for the large volume of posts content using daily expression (Balasubramanyan et al., 2010). *Social media sentiment* is measured by the percentage of positive words subtracting that of negative words found in the whole firm-related posts. The higher this variable, the more positive attitude held by the public on social media to the firm is, and the higher the expectation of the firm is.[7]

Moderators

The moderating effect of state ownership on the relationship between social media effects and CSR performance is tested by introducing the moderating variable-*State ownership,* which is the percentage of firm shares held by the government. The other moderator is *Efficiency*, measured by ROA (return on assets), equaling to net outcome divided by total asset. This efficiency indicator is regarded as the best measurement for the financial performance of Chinese firms and has been validated by related research (Marquis and Qian, 2014; Peng and Luo, 2000; Zhong et al., 2021).

Control variables

Variables that could potentially be related to CSR performance are controlled for, including organizational- and institutional-level variables. *Age* is measured by the number of years since the firm was established. To take into account firms' operation and financial situation (Adams and Hardwick, 1998), we also include *Leverage* measured by the ratio of total debts to total assets and *Growth* measured by the annual growth in total sales. Meanwhile, the effects of the internal and external governance have been considered. *Ln(BoardSize)* is the natural logarithm of numbers of board members, as board characteristics may affect CSR outcome (Zhong et al., 2021a). *Female executive ratio* is the percentage of female executives in top management team

[7] Since both the dependent and independent variables are continuous variables, to control for outliner effects, we also winsorize the variables at 1% and 99%.

including the director of the board, president, CEO, and vice president. We include the gender related variable because McGuinness et al. (2017) suggest board gender diversity has a positive impact on CSR. Since ownership structure may have an effect on CSR outcome (Gillan et al., 2021; Neubaum and Zahra, 2006), we control for: *Executives' shareholdings*, measured by the percentage of firm shares held by executives; *Institutional ownership*, the sum of percentage of stock holdings from institutional investors; *Ownership concentration*, measured by the percentage of shares held by the ten largest shareholders. To rule out alternative explanations that firms may invest in CSR after corporate misconduct for recovering CSR reputation (Ferrés & Marcet, 2021; B. Wu et al., 2021), *CSR concern* is included as a dummy variable equaling to 1 if the firm has been involved in any socially irresponsible behavior in the previous year.[8] To control for institutional effect of the mass media (Y.-C. Jeong & Kim, 2019; Zyglidopoulos et al., 2012), we introduce *Media attention* measured by the yearly amount of media coverage mentioning the firm's name, as well as *Media sentiment* measured by the percentage of positive media coverage subtracting that of negative media coverage in the whole media coverage.

Table 1 shows descriptive statistics and correlation coefficients of all our variables. The results show that *CSR score* has a mean value of 41.41, with a standard deviation (SD) of 11.48. The mean CSR score is higher than that in earlier years, e.g., 36.49 between 2009 and 2014 (Li and Lu, 2020), showing the overall improvement of CSR performance for Chinese listed firms. For our independent variables, *Social media attention* has a mean value of 17.85 while the mean of *Social media sentiment* is 0.04, which means there are averagely 1,785 posts about the list firm in Weibo every year and the public shows overall positive and optimistic attitude to the firm. To exclude the concern of potential multicollinearity, we further calculate variance inflation factors (VIFs) of our models and the highest VIF is 3.28 (from 1.90 to 3.28), below the cut-off value of 10, suggesting there is no multicollinearity.

[8] The corporate social irresponsible behavior data are from the Chinese Corporate Social Responsibility Database (CCSR) of the CNRDS platform, recording corporate misconduct in six dimensions including Product, Charity and controversial issues, Diversity, Corporate governance, Employee relations, Environment.

Table 1 Descriptive statistics and correlations (Study 1)

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*CSR score*	41.41	11.48															
2	*Social media attention*	17.85	25.93	0.23**														
3	*Social media sentiment*	0.04	0.01	0.08**	0.20**													
4	*State ownership*	0.05	0.13	0.05**	0.01	-0.03*												
5	*Efficiency*	0.04	0.06	0.02	0.08**	0.10**	-0.05**											
6	*Age*	24.28	5.10	0.00	-0.08**	-0.03	-0.04*	-0.03										
7	*Leverage*	0.49	0.20	0.17**	0.05**	-0.02	0.09**	-0.43**	0.09**									
8	*Growth*	0.33	5.18	0.01	0.02	0.00	0.01	0.02	-0.00	0.03								
9	*Ln(BoardSize)*	2.36	0.26	0.15**	0.07**	-0.07**	0.10**	-0.08**	0.04*	0.12**	0.05**							
10	*Female executive ratio*	0.13	0.14	-0.05**	0.01	0.05*	-0.05**	0.11**	0.05**	-0.15**	0.02	-0.10**						
11	*Executive's shareholdings*	0.03	0.09	-0.11**	-0.03	0.07**	-0.11**	0.16**	-0.14**	-0.17**	0.01	-0.17**	0.05**					
12	*Institutional ownership*	0.54	0.23	0.24**	0.11**	-0.01	0.21**	0.11**	-0.22**	0.06**	0.05**	0.08**	-0.10**	0.03				
13	*Ownership concentration*	0.59	0.16	0.28**	0.14**	-0.01	0.25**	0.02	-0.42*	0.21**	0.01	0.22**	-0.13**	-0.46**	0.07**			
14	*CSR concern*	0.30	0.46	0.04*	0.01	-0.02	-0.01	-0.11**	-0.02	0.09**	-0.01	0.05**	-0.14**	-0.03	-0.02	-0.01		
15	*Media attention*	209.50	256.29	0.20**	0.035**	0.12**	-0.02	0.02	-0.03	0.15**	0.01	0.02	-0.03	0.06**	0.09**	0.08**	0.07**	
16	*Media sentiment*	0.17	0.24	0.04*	-0.06**	0.06**	-0.01	0.21**	-0.02	-0.10**	-0.03	-0.05**	0.02	0.08**	-0.07**	-0.08**	0.13**	-0.10**

Note: n = 3,362. * $p<0.05$, ** $p<0.01$

2.3.3 Regression models

To test our hypotheses, we construct the firm fixed-effect Ordinary Least Squares (OLS) models with robust standard errors to test the effect of social media attention and sentiment on CSR performance. Since firms with better CSR performance may also lead to more discussion and more positive public attitude on social media (Lee et al., 2013; Vo et al., 2019), we lag our independent variables by one year in our models. The model specification is:

$$\text{CSR score}_{\text{I,t}} = \alpha + \beta_0 \text{ Social media attention}_{\text{I,t}-1} + \beta_1 \text{Control variable}_{\text{I,t}-1} + \varepsilon_{\text{I,t}} \quad \text{(Equation 1)}$$

$$\text{CSR score}_{\text{I,t}} = \alpha + \beta_0 \text{ Social media sentiment}_{\text{I,t}-1} + \beta_1 \text{Control variable}_{\text{I,t}-1} + \varepsilon_{\text{I,t}} \quad \text{(Equation 2)}$$

where $Control_variable$ is a set of control variables including *Age, Leverage, Growth, Ln(BoardSize), Female chairperson, Executive's shareholdings, Institutional ownership, Ownership concentration, CSR concern, Media attention* and *Media sentiment*. The year and industry fixed effects are controlled for in the models.

The following firm fixed-effect Ordinary Least Squares (OLS) models with robust standard errors are designed to test how state ownership and firm efficiency moderate the relation between social media effects and CSR performance:

$$CSR\ score_{i,t} = \alpha + \beta_0\ Social\ media\ attention_{i,t-1} + \beta_1 Inter\ variable_{i,t-1} + \beta_2 Control\ variables_{i,t-1} + \varepsilon_{i,t} \quad \text{(Equation 3)}$$

$$CSR\ score_{i,t} = \alpha + \beta_0\ Social\ media\ sentiment_{i,t-1} + \beta_1 Inter\ variable_{i,t-1} + \beta_2 Control\ variables_{i,t-1} + \varepsilon_{i,t} \quad \text{(Equation 4)}$$

where $Inter_variable$ represents a set of interaction terms including $Social\ media\ attention$ × *State ownership* and $Social\ media\ attention$ × *Efficiency* in Equation 3, and $Social\ media\ sentiment$ × *State ownership* and $Social\ media\ sentiment$ × *Efficiency* in Equation 4. We have also controlled for

year and industry fixed effects in the models.

2.4 Results

Table 2 demonstrates the results of the tests on our hypotheses 1a and 1b regarding the impact of social media attention and sentiment on CSR performance. Model 1 includes all the control variables as the baseline model, and it shows *Age*, *Leverage*, *Efficiency, Ln(BoardSize)*, *Executive's shareholdings, Ownership concentration*, and *Institutional ownership* have a significant influence on CSR performance. Meanwhile, *Media attention* and *Media Sentiment* to a firm have significantly positive effects on its CSR performance, in line with the media's institutional influence as documented in prior research (Graf-Vlachy et al., 2020; Y.-C. Jeong & Kim, 2019; Zyglidopoulos et al., 2012).

Model 2 tests H1a by introducing the first independent variable-*Social media attention* while all the control variables are included. The results report the positive relationship between social media attention and CSR performance, significant at the 1% level. Specifically, when there are 1000 more posts in Weibo in the year, the CSR score increases by 0.61. We also find social media attention matters in terms of economic significance by standardizing the effect. In our sample, the impact of social media attention amounts to, on average, 13.8% of a one standard deviation change in CSR score. [9] In Model 3, *Social media sentiment* positively affects *CSR score* ($P < 0.01$), which means when social media shows more positive attitude to the firm, the firm performs better at CSR, consistent with H1b. In Model 4, we include both independent variables, and their coefficients are positive and significant at the 1% level, also supporting our H1a and H1b. Thus, we find strong support for our first set of hypotheses which predict the institutional effect of social media on firms' CSR performance.

Table 2 Regression results: The influence of social media on CSR performance

Variables	Model 1	Model 2	Model 3	Model 4
Social media attention		0.061***		0.056***

[9] The regression results after standardization are available on request.

		(6.031)		(5.416)
Social media sentiment			103.428***	77.014***
			(5.468)	(3.993)
State ownership	-1.513	-1.329	-1.403	-1.264
	(-0.952)	(-0.822)	(-0.886)	(-0.785)
Efficiency	10.436***	8.417**	9.273**	7.732**
	(2.909)	(2.415)	(2.540)	(2.184)
Age	0.096**	0.112***	0.107***	0.119***
	(2.375)	(2.821)	(2.661)	(2.997)
Leverage	7.421***	7.374***	7.303***	7.291***
	(6.563)	(6.610)	(6.497)	(6.559)
Growth	-0.022	-0.024	-0.022	-0.024
	(-1.250)	(-0.966)	(-1.122)	(-0.937)
Ln(BoardSize)	4.075***	3.753***	4.272***	3.929***
	(5.689)	(5.280)	(6.020)	(5.551)
Female executive ratio	1.666	1.515	1.507	1.410
	(1.221)	(1.115)	(1.103)	(1.037)
Executive's shareholdings	-5.236**	-5.050**	-6.016***	-5.647***
	(-2.572)	(-2.511)	(-2.960)	(-2.809)
Ownership concentration	10.635***	10.947***	11.065***	11.239***
	(5.556)	(5.748)	(5.750)	(5.877)
Institutional ownership	3.982***	3.338**	3.523**	3.054**
	(2.745)	(2.325)	(2.420)	(2.120)
CSR concern	0.599	0.597	0.586	0.588
	(1.275)	(1.291)	(1.256)	(1.275)
Media attention	0.009***	0.006***	0.008***	0.006***
	(8.511)	(5.914)	(8.265)	(5.916)
Media sentiment	3.227***	3.730***	3.061***	3.561***
	(3.836)	(4.484)	(3.639)	(4.284)
Constant	15.009***	15.326***	10.774***	12.144***
	(6.198)	(6.417)	(4.311)	(4.868)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
No. of observations	3362	3362	3362	3362

Note: *t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The regression results testing moderating effects of state ownership and firm efficiency are shown in Table 3. In Model 1, we firstly add the interaction term between *Social media attention* and *State ownership* to test H2a. The coefficient of this interaction term is negative and significant at the 1% level, providing support for the hypothesis predicting that the positive relationship between social media attention and

CSR performance will be stronger in firms with lower state ownership. For H2b, we introduce the interaction term between *Social media sentiment* and *State ownership* in Model 2, but its coefficient is not statistically significant here so H2b is not supported by the results. The hypothesized moderating mechanism is that firms with higher state ownership are with more multiple institutional demands and dependence on the government, which may decrease firms' willingness and ability to respond to the expectation from social media. In particular, we highlight that the multiple institutional demands could weaken the role of social media in CSR especially when the institutional logics from the government and social media are inconsistent. However, the governmental demands and social media expectation on CSR are not absolutely incompatible. According to the institutional complexity within the government, the institutional pressures from the state at different levels are internally complex and conflicting, which is common to a broad range of political systems (Luo et al., 2017; Oates, 1999). In effect, the central government in China tends to change the development target in a more sustainable way nowadays, while the local government keeps highlighting the short-term economic growth (e.g., the priority on GDP-growth) to discourage the implementation of CSR (Luo et al., 2017). As such, the institutional pressures regarding CSR outcomes from the central government and social media are compatible, which violates the condition of hypothesized arguments on the moderating mechanism of governmental influence. Therefore, our main results do not fully validate the moderating effect of state ownership while taking the government as a monolithic entity. Accordingly, we conduct supplemental analyses considering the internal institutional complexity of the government in the next section.

To test H3a and 3b, we include the interaction terms of *Social media sentiment* × *Efficiency* and *Social media sentiment* × *Efficiency* in Models 3 and 4 respectively. The coefficients of them are both significantly negative ($P < 0.05$ and $P < 0.10$ respectively), which shows when a firm's financial performance is weaker, the social media effect on CSR performance could be strengthened, consistent with our prediction in H3a and 3b.

Table 3 Regression results: moderating effects of state ownership/firm efficiency

Variables	Model 1	Model 2	Model 3	Model 4
Social media attention	0.069***		0.081***	
	(6.461)		(5.479)	
Social media sentiment		97.579***		121.677***
		(4.973)		(5.648)
Social media attention × State ownership	-0.126***			
	(-3.274)			
Social media sentiment × State ownership		156.555		
		(0.881)		
Social media attention × Efficiency			-0.365**	
			(-2.045)	
Social media sentiment × Efficiency				-427.766*
				(-1.654)
State ownership	1.128	-7.804	-1.272	-1.477
	(0.643)	(-1.066)	(-0.792)	(-0.931)
Efficiency	8.435**	9.302**	14.801***	27.949**
	(2.422)	(2.552)	(3.372)	(2.391)
Age	0.110***	0.107***	0.110***	0.106***
	(2.753)	(2.674)	(2.759)	(2.646)
Leverage	7.293***	7.305***	7.363***	7.391***
	(6.539)	(6.501)	(6.591)	(6.629)
Growth	-0.021	-0.022	-0.024	-0.022
	(-0.930)	(-1.122)	(-0.956)	(-1.116)
Ln(BoardSize)	3.771***	4.255***	3.752***	4.291***
	(5.315)	(5.995)	(5.278)	(6.050)
Female executive ratio	1.442	1.503	1.612	1.427
	(1.063)	(1.100)	(1.188)	(1.043)
Executive's shareholdings	-5.026**	-6.001***	-5.053**	-5.965***
	(-2.499)	(-2.954)	(-2.522)	(-2.955)
Ownership concentration	10.842***	11.101***	10.693***	11.042***
	(5.688)	(5.768)	(5.602)	(5.747)
Institutional ownership	3.316**	3.511**	3.512**	3.551**
	(2.309)	(2.413)	(2.444)	(2.451)
CSR concern	0.570	0.586	0.638	0.585
	(1.233)	(1.255)	(1.383)	(1.252)
Media attention	0.006***	0.008***	0.006***	0.008***
	(5.680)	(8.274)	(5.708)	(8.218)
Media sentiment	3.684***	3.099***	3.540***	2.951***
	(4.426)	(3.684)	(4.219)	(3.524)

Constant	15.347***	11.037***	15.114***	10.001***
	(6.433)	(4.403)	(6.309)	(3.957)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
No. of observations	3362	3362	3362	3362

Note: *t* statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.5 Robustness check and further analyses

2.5.1 Sample selection bias

The measurement of CSR performance from RKS is based on the CSR reports issued by listed firms, so only firms with CSR reports are included in our sample. However, issuing such a report is a voluntary action taken by firms rather than a mandatory requirement in China. Therefore, because of potential self-selection bias in CSR reporting, the issuing and non-issuing firms are not randomly distributed, which may lead to endogeneity and estimation bias. To account for the potential bias of sample selection, we utilize Heckman's two-stage approach (Heckman, 1979) to check the robustness of our results. At the first stage, the probit model estimating the probability of issuing a CSR report by a listed firm is designed to construct the Inverse Mills' Ratio (IMR), which is added into our previous regression models shown in Equations 1 to 4, as the second stage analysis.

Since at least one variable in the first stage model should be different from those in the second stage, by referring to previous studies of CSR reports (Li and Lu, 2020; Luo et al., 2017; Marquis and Qian, 2014), we include the variables which may affect the likelihood of issuing a CSR report in the probit model as: *Stock exchange*, a dummy variable equaling to 1 if the firm is listed in Shenzhen Stock Exchanges and 0 in Shanghai Stock Exchanges, while the two stock exchanges have different regulations for firm CSR reports (Marquis & Qian, 2014); *Foreign ownership* measured by the percentage of a firm's foreign shares, to control for the influence of global norms on CSR reporting (Chapple & Moon, 2005); *Report experience*, a dummy variable

equaling to 1 if the listed firm issued a CSR report in the previous year, as the related experience may drive the firm to do so in the following year (Marquis & Qian, 2014); *Polluting industry*, a dummy variable equaling to 1 if the firm is in a polluting industry such as chemicals, iron and steel, oil refineries and mining, because firms in polluting industry tend to be under stronger public pressures for issuing CSR reports (X. R. Luo et al., 2017). *Age*, *State ownership*, *Efficiency*, and *Executive's shareholdings* as defined before are also controlled for. Then, after adjusting potential selection bias by introducing IMR in the second stage models, we have the estimation results testing our hypotheses as shown in Table 4. Models 1 and 2 test hypotheses 1a and 1b respectively, and the results suggest both *Social media attention* and *Social media sentiment* are positively related to CSR performance (P < 0.01), which are consistent with our previous findings. In Models 3 to 6, the moderating effects of state ownership and efficiency are further examined, and the results are also basically in line with our findings in previous Table 3. Thus, our results are robust after addressing sample selection bias.

Table 4 Regression results: Heckman two stage model for sample selection bias

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Social media attention	0.061***		0.070***		0.081***	
	(7.805)		(8.406)		(7.413)	
Social media sentiment		111.692***		113.119***		124.922***
		(5.557)		(5.374)		(5.454)
Social media attention × State ownership			-0.131**			
			(-2.367)			
Social media sentiment × State ownership				107.054		
				(0.600)		
Social media attention × Efficiency					-0.375***	
					(-2.619)	
Social media						-324.879

sentiment × Efficiency						
						(-1.205)
State ownership	-0.216	-0.274	1.844	-4.899		
	(-0.142)	(-0.180)	(1.023)	(-0.657)		
Efficiency	12.347***	12.982***			19.001***	27.265**
	(3.486)	(3.650)			(4.370)	(2.207)
Control variable	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Constant	8.634***	3.220	9.207***	3.692	8.485***	2.640
	(3.302)	(1.160)	(3.524)	(1.322)	(3.255)	(0.938)
IMR	-1.380***	-1.393***	-1.309***	-1.324***	-1.361***	-1.380***
	(-4.540)	(-4.561)	(-4.308)	(-4.334)	(-4.481)	(-4.516)
Wald chi2	798.41***	761.90***	790.35***	746.03***	806.90***	763.65***
No. of obs	3362	3362	3362	3362	3362	3362

Note: *t* statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.5.2 Instrumental variable analysis

In our main analyses, we have employed lagged variables to reduce the probability of the endogeneity issue resulted from reverse causality (Wiengarten et al., 2019; Zhong et al., 2021). To further alleviate the concerns of reverse causality and omitted variables, we also utilize the two-stage instrument variable (IV) analysis. As an instrument for *Social Media Attention*, we use the Internet penetration rate of the province in which the listed firm is headquartered (*Internet penetration rate*), measured by the number of Internet users divided by the number of residents of the province. According to the local bias of social media users' attention, individuals pay more attention to local firms than nonlocal firms (Y. Huang et al., 2016). For firms located in the province with a higher Internet penetration rate, local people are more active in discussing those local firms, so they can relatively attract more attention on social media platforms. However, the province's Internet penetration rate may have nothing to do with the CSR performance of local firms. For *Social Media Sentiment*, we use the instrument-*City*, a dummy variable equaling to 1 if the firm is headquartered in Beijing, Shanghai, Guangzhou, or Shenzhen. Based on the previous studies (Guo et al., 2018), it is also argued that firms from the most famous cities can get more positive attitude from the public on social media, because the public may assume they are with better background and reputations.

Table 5 presents the results of our IV analysis. The first column of each model shows the results of the first stage while the second column displays the results of the second stage. The values of F test ($p<0.0001$) for the weak identification test in the results suggest that our two instruments above are strong and relevant predictions of social media attention and sentiment respectively (Stock & Yogo, 2005). In the results of the first-stage regressions, the coefficients for *Internet penetration rate* and *City* are both significantly positive, suggesting that the Internet penetration rate of the firm's location is positively related to the social media attention to a firm, and firms located in the four cities are more likely to get positive sentiment from social media. In the second-stage regressions, both coefficients for the predicted *Social Media Attention* and *Social Media Sentiment* are positive and significant. Therefore, the findings of the IV

analysis indicate that the greater level of attention or more positive sentiment from social media can improve firms' CSR performance even after considering the possible reverse causality issue.

Table 5 Instrument variable analysis results

	Model 1		**Model 2**	
	First-stage	**Second-stage**	**First-stage**	**Second-stage**
	Social media attention	*CSR score*	*Social media sentiment*	*CSR score*
Social media attention		0.877***		
		(3.938)		
Social media sentiment				2833.550***
				(4.551)
Internet penetration rate	13.354***			
	(4.129)			
City			0.002***	
			(4.780)	
Age	-0.283***	0.324***	-0.000***	0.389***
	(-3.246)	(3.518)	(-3.772)	(3.574)
Leverage	-3.167	9.203***	-0.000	7.043**
	(-1.401)	(4.150)	(-0.222)	(2.465)
Growth	0.043	-0.057	0.000	-0.037
	(0.294)	(-0.398)	(0.281)	(-0.374)
Ln(BoardSize)	5.122***	-0.438	-0.002***	9.590***
	(2.735)	(-0.231)	(-3.346)	(4.434)
Female executive ratio	2.275	-0.581	0.001	-2.793
	(0.731)	(-0.197)	(1.121)	(-0.760)
Executive's shareholdings	-0.376	-4.330	0.008***	-28.637***
	(-0.100)	(-1.242)	(3.152)	(-3.113)
Ownership concentration	-6.593*	14.907***	-0.004**	22.197***
	(-1.729)	(3.854)	(-2.365)	(3.627)
Institutional ownership	12.137***	-5.958*	0.005***	-9.378*
	(4.383)	(-1.679)	(3.040)	(-1.671)
CSR concern	0.154	0.564	0.000	0.245
	(0.145)	(0.588)	(0.531)	(0.212)
Media attention	0.037***	-0.024***	0.000***	0.000
	(10.721)	(-2.584)	(5.043)	(0.083)
Media sentiment	-6.712***	9.461***	0.002***	-2.465
	(-3.899)	(4.972)	(2.905)	(-0.935)
Constant	-9.250	18.635***	0.0420***	-102.105***
	(-1.529)	(3.458)	(20.440)	(-3.915)

Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
No. of observations	3362	3362	3362	3362
F test	17.05		22.83	
p-value	<0.0001		<0.0001	

Note: *t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.5.3 Alternative measures and sample

To further examine individuals' effect on social media and distinguish its role from the institutional influence of mass media, we exclude posts from mass media accounts to focus on the discussion from individual users only. Accordingly, the alternative independent variables are constructed as *Individual_social media attention*, measured by the number of Weibo posts related to the observation firm sourced from individual social media accounts, as well as *Individual_social individual sentiment* measured by the text analyses of the individual users' posts. The results using the alternative independent variables are presented in Models 1 and 2 of Table 6. Both coefficients of *Individual_social media attention* and *Individual_social individual sentiment* are significantly positive, in line with our main results supporting Hypotheses 1a&b.

Meanwhile, when we construct independent variables in the main analyses, we have excluded posts from official accounts owned by listed firms to focus on the discussions by outsiders. To further check the robustness, we use a sub-sample of firms without an official account on Weibo in the year so that the online dialogue related to a firm is completely initiated by the audiences external to the firm. The regression results for the sub-sample are shown in Models 3 and 4 of Table 6. In Models 3 and 4, *Social media attention* and *Social media sentiment* are positively related to CSR performance, both significant at the 1% level. Overall, we can see that the results using the alternative explanatory variables or sub-sample remain consistent with our main findings that verify the institutional role of social media.

Table 6 Regression results: alternative measures and sample

Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
	CSR score	*CSR score*	*CSR score*	*CSR score*
Individual social media attention	0.042***			

	(4.301)			
Individual social media sentiment		128.182***		
		(5.974)		
Social media attention			0.065***	
			(4.800)	
Social media sentiment				95.559***
				(4.309)
Age	0.107***	0.110***	0.006	0.003
	(2.651)	(2.733)	(0.134)	(0.077)
Leverage	6.325***	5.964***	6.056***	6.046***
	(6.019)	(5.698)	(5.375)	(5.353)
Growth	-0.021	-0.017	-0.052	-0.033
	(-1.035)	(-0.956)	(-0.795)	(-0.714)
Ln(BoardSize)	3.831***	4.162***	2.579***	2.975***
	(5.375)	(5.870)	(3.357)	(3.863)
Female executive ratio	1.701	1.402	1.845	1.561
	(1.248)	(1.021)	(1.246)	(1.044)
Executive's shareholdings	-3.955*	-4.777**	-1.550	-1.843
	(-1.943)	(-2.350)	(-0.641)	(-0.749)
Ownership concentration	10.370***	10.875***	8.088***	7.958***
	(5.394)	(5.690)	(3.917)	(3.792)
Institutional ownership	4.056***	3.892***	5.401***	5.822***
	(2.821)	(2.713)	(3.433)	(3.615)
CSR concern	0.598	0.577	0.443	0.457
	(1.282)	(1.231)	(0.908)	(0.928)
Media attention	0.008***	0.009***	0.012***	0.013***
	(7.080)	(8.416)	(8.333)	(9.451)
Media sentiment	4.079***	3.566***	3.993***	3.575***
	(5.044)	(4.423)	(4.658)	(4.142)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Constant	15.893***	11.488***	20.043***	15.954***
	(6.647)	(4.677)	(8.048)	(5.999)
No of obs	3362	3362	2763	2763

Note: *t* statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.5.4 Further analyses on the moderating effect of governmental influence

In response to the non-significant results concerning the moderating effect of governmental influence, we conduct supplemental analyses to further unpack how the

different levels of governmental influence moderate the impact of social media on CSR. Specifically, although the central government has gradually changed the development target in a more sustainable way, “some provincial governments continued to prioritize local GDP growth for various reason” (Luo et al., 2017, p. 326), which is at the expense of social responsibility and sustainability. The conflicting pressures from the state are mainly due to China’s complex political systems and transitional market setting. The Chinese government is multi-hierarchical and embedded with “relatively autonomous relationship between the central government and provincial governments” (Luo et al., 2017, p. 322). since China’s market transition, there are fiscal-sharing contracts between China’s central government and provincial governments, bringing the local government with direct benefits from local economic growth. For example, local governments could benefit from local GDP growth with considerable tax revenues. As a result, the local government’s pursuit of tangible benefits leads to the prioritization of short-term economic growth and the neglect of social sustainability, so the local government pressure tends to be conflicting with social media expectation of CSR.

To account for the internal institutional complexity of the government, we build on prior work to focus on state-owned enterprises (SOEs) that can be divided into central and local SOEs owned by the central and local government respectively (Luo et al., 2017). As we suggested, only local governmental pressure tends to be conflicting with social media pressure, so we adopt a more nuanced lens on governmental influence to investigate its moderating role. We use a sub-sample of SOEs (n=2002) and a dummy variable as the moderator-*Local SOE*, equaling to 1 if the firm is owned by the provincial government and 0 by the central government. The results are shown in Models 1 and 2 of Table 7. For firms controlled by the local government, the positive impacts of both social media attention and sentiment on CSR performance are weakened ($P<0.01$). The findings are consistent with the hypothesized arguments on the governmental institutional complexity. It is highlighted that the governmental influence can shape the impact of social media on CSR when the institutional pressures from the government and the public on social media are incompatible.

Table 7 Regression results: further analysis on moderating mechanisms

Variables	**Model 1**	**Model 2**
	CSR score	*CSR score*
Social media attention	0.100***	
	(5.893)	
Social media sentiment		265.969***
		(5.397)
Social media attention × Local SOE	-0.073***	
	(-3.537)	
Social media sentiment × Local SOE		-206.142***
		(-3.483)
Local SOE	-0.879	6.124**
	(-1.357)	(2.483)
Age	0.227***	0.205***
	(4.320)	(3.888)
Leverage	6.122***	5.918***
	(4.380)	(4.178)
Growth	-0.279***	-0.236***
	(-4.021)	(-3.127)
Ln(BoardSize)	2.743***	2.992***
	(2.829)	(3.056)
Female executive ratio	5.311**	5.352**
	(2.492)	(2.511)
Executive's shareholdings	41.477***	36.072***
	(2.935)	(2.653)
Ownership concentration	-2.241	-1.424
	(-0.371)	(-0.233)
Institutional ownership	20.323***	20.094***
	(3.610)	(3.511)
CSR concern	-0.194	-0.167
	(-0.317)	(-0.267)
Media attention	0.007***	0.009***
	(4.684)	(5.914)
Media sentiment	3.034***	2.139*
	(2.761)	(1.910)
Year	Yes	Yes
Industry	Yes	Yes
Constant	14.246***	5.355
	(4.534)	(1.520)
No of obs	2002	2002

Note: *t* statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.5.5 Additional tests on firm donation

Since firm donation, as a specific aspect of CSR, also attracts a lot of scholarly attention (Jeong and Kim, 2019; Qian et al., 2015; Wu et al., 2021), we use a sub-sample consisting of 785 firms in our sample who have disclosed the details of their social donation, to test the impact of social media on corporate giving. The dependent variable is *Donation* (the unit is one million RMB), a continuous variable measuring the total amount of money the firm donates to society in the whole year. Our data show that the firms donate 10.59 million to society on average (SD=31.56), and the min and max value are 0.01 and 230 million respectively. The regression results are given in Table 8. In Model 1, the coefficient of *Social media attention* is 0.276 and significant at the 1% level. Thus, when there are 100 posts more in Weibo, the firm will donate 276,000 RMB more yearly. Meanwhile the results in Model 2 indicate there is a significant positive relationship between positive sentiment on social media and firm donation, so firms with more positive sentiment would spend more in philanthropy to maintain legitimacy. By the additional tests, we find further evidence of social media's institutional effect on firm donation.

Table 8 Regression results: testing social media effect on firm donation

Variables	**Model 1**	**Model 2**
	Donation	*Donation*
Social media attention	0.276***	
	(3.724)	
Social media sentiment		292.190*
		(1.814)
Age	0.392	0.283
	(1.357)	(0.997)
Leverage	-6.771	-6.388
	(-0.527)	(-0.498)
Growth	-1.199	-1.313
	(-0.894)	(-0.920)
Female executive ratio	25.064	23.087
	(0.639)	(0.588)
Executive's shareholdings	-46.458	-50.861
	(-1.155)	(-1.285)
Ownership concentration	41.884	41.238
	(1.204)	(1.190)
Institutional ownership	-23.821	-22.148

	(-0.872)	(-0.835)
CSR concern	-3.605	-3.904
	(-0.710)	(-0.747)
Media attention	0.034**	0.043**
	(2.115)	(2.528)
Media sentiment	6.080	2.044
	(0.910)	(0.315)
Year	Yes	Yes
Industry	Yes	Yes
Constant	21.247	14.849
	(1.393)	(0.935)
No of obs	785	785

Note: *t* statistics in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.6 Discussion and conclusions

Based on an integrated institutional and resource dependence perspective on the determinants of CSR performance, we regard social media as an informal constituent of firms' institutional environment which motivates firms to respond to its influences and pressures by taking social responsibilities. In our analytical framework, the moderating effects of state ownership and firm efficiency have been considered to set the boundary conditions of social media's impact on CSR. Based on a data set from Chinese publicly listed firms and one of the most influential social media platforms, we find supports of our framework which indicates firms with more attention or more positive sentiment from social media are more likely to perform better at CSR. Overall, higher state ownership and efficiency are found to weaken the institutional effect of social media, because these two important contingency factors may lead to more multiple and possibly incompatible institutional demands, as well as less dependence on the public of social media.

As the prediction about the moderating effect of state ownership is not fully verified, we further explore the mechanism via which the governmental influence interacts with online public influence by considering the internal institutional complexity of the government (Li and Lu, 2020; Luo et al., 2017). The further analyses show that when firms are controlled by the local rather than the central government,

social media's effect on CSR performance is weakened because of the conflicting pressures between the public on social media and the local government. Our supplemental findings not only provide further explanation for the main results, but also corroborate the hypothesized arguments regarding the moderating mechanism of governmental influence. The findings suggest that when the pressures from the public and the government are multiple, and more importantly, incompatible, the governmental influence as a formal institutional pressure can shape the institutional role of social media in CSR. Since institutional complexity is common (Greenwood et al., 2011; X. R. Luo et al., 2017; Oates, 1999), our findings can also be generalized to other institutional configurations when organizations confront incompatible prescriptions from multiple institutional logics for CSR. Future research may also benefit by investigating the institutional environment with its complex and incompatible institutional logics and exploring the interactions of multiple institutional forces in other contexts.

2.6.1 Theoretical implications

This study contributes to IT and RDT by theorizing and providing empirical evidence that social media can serve as an informal institutional force in the organizational environment. In particular, we extend research on the institutional determinants of CSR performance, which have acknowledged the role of institutional constituents such as the formal institutions (e.g., the government) (Aguilera et al., 2007; Li and Lu, 2020; Luo et al., 2017; Marquis and Qian, 2014; Oliver and Holzinger, 2008) and informal institutional forces including the culture and mass media (Hartmann and Uhlenbruck, 2015; Ho et al., 2012; Nikolaeva and Bicho, 2011; Stahl and De Luque, 2014; Weaver, 2001; Zyglidopoulos et al., 2012). However, less attention has been paid to the emerging informal institutional forces such as social media, from which firms can obtain legitimacy and resources provided by online social audiences. Drawing on the integrated institutional and resource dependence perspective, we argue that social media can exert informal institutional influence on organizations' behavior through the

public's discussion. This paper thus addresses the research gap and suggests that social media is also an important part of firms' institutional environment which can shape their CSR performance.

Second, the prior work on social media and CSR is usually based on signalling theory, stakeholder theory, or legitimacy perspective to explore the attributes and outcomes of firm-driven CSR communication on social media (Du and Vieira, 2012; Gómez-Carrasco et al., 2021; Saxton et al., 2019, 2021; Vo et al., 2019). For example, previous research has investigated how firms use social media to communicate their CSR efforts with stakeholders, thereby managing the stakeholder-relationship and corporate public image (Kesavan et al., 2013; Lyon and Montgomery, 2013; Okazaki et al., 2020). This body of work, however, provides little insight into how the public users' attention and sentiment as opposed to the firm-driven discussion on social media play a proactive role in driving CSR. Focusing on public-driven social media discussion and building on the integrated theoretical perspective, the present study explores the under-researched institutional role of social media, in marked contrast to the comprehensive interpretation of its communication role (Chu et al., 2020; Gómez-Carrasco et al., 2021; Okazaki et al., 2019; Saxton et al., 2019b, 2021).

Third, by comparing institutional and resource dependence perspectives, Oliver (1991) as the pioneer theorizes that firms' conformity to institutional pressures is bounded by a series of factors such as the multiplicity of constituent demands and the organizational dependence on institutional constituents. Some empirical work has subsequently applied and validated the combination of these two theoretical perspectives while discussing the complex impacts of external environment on firms' behavior (Ingram and Simons, 1995; Tashman and Rivera, 2016). To better understand the institutional role played by social media as an under-explored institutional constituent and also answer the calls of adopting multiple theoretical perspectives on CSR (Yamahaki and Frynas, 2016), we contextualize the combination of the two theories and build a theoretical framework to explain the mechanisms with which governmental influence and firm efficiency moderate social media's impact on CSR

performance. Based on our integrated perspective, we argue firms' compliance with social media attention and sentiment in CSR performance tends to be heterogenous depending on firms' relationships with the government and firm efficiency. The argument is supported by the estimation results, and we thus contribute by empirically demonstrating that firms' willingness and ability to compliance with institutional pressures are altered by the coexistence of other institutional forces and corporate financial situation (Oliver, 1991).

Meanwhile, institutional complexity has attracted a growing research interest and the literature has called for the examination of 'how organizations cope with multiple, competing demands" (Greenwood et al., 2011, p. 320). Unlike previous studies focusing on the institutional complexity caused by the inconsistent institutional logics from an unitary institutional constituent in CSR research (e.g., the government (X. R. Luo et al., 2017)), we address the institutional complexity due to multiple institutional demands from the formal and informal institutional forces, i.e., the government and the public on social media. In addition, because of the internal complexity of governmental influence, we have investigated how the different levels of government interact with the effect of social media on CSR and find that local governmental control could weaken the social media effect. Thus, we extend the understanding of organizational responses to institutional complexity (Greenwood et al., 2010, 2011; Li and Lu, 2020; Luo et al., 2017) by demonstrating that the conflicts between institutional pressures from formal and informal sources could lead to heterogeneous responses from firms in CSR.

2.6.2 Managerial and societal implications

Our study provides practical implications for managers and firms, stakeholders, and the general public. As firms and managers gradually realize the importance of social media in influencing social audience such as impression management, marketing, and stakeholder-relationship management (Balasubramanian et al., 2021; Gómez-Carrasco et al., 2021; Saxton et al., 2021), they should also be aware of the existence of public

force online that reversely influences themselves. A wise firm would actively speak, listen, and respond to outsiders on social media to gain and maintain firm legitimacy. For example, in addition to giving one-way CSR reporting, firms and managers could investigate or engage in the interactions on public platforms to follow the public's voice and satisfy social needs appropriately. Meanwhile, firm stakeholders and even the broader public may take the advantage of the Internet's affordances to shape corporate behaviors involving stakeholder interest or public welfare. For instance, besides daily discussion to monitor firms, online supporting and boycotting actions nowadays have been recognized as efficient means taken by consumers, suppliers, and investors in influencing corporate actions (e.g., #StopHateForProfit to boycott Facebook in 2020, see He et al. (2021) for details). Lastly, regulators like the government should also realize that their influences on firms are interacting with the informal pressures from the public, so people's voice matters too in constructing a sustainable development blueprint.

2.6.3 Limitations and future research directions

As with most studies, this work has some limitations, which may offer directions to future research. First, we have viewed social media's influence as a unitary force and investigated its effect on the overall CSR performance. Although social responsibility matches attention from the whole society, which makes it reasonable to treat CSR performance and social media attention (or social media sentiment) as integral constructs respectively, we may ignore how online voices from different stakeholders take effect independently in CSR (Saxton et al., 2021), or what parts of CSR are specifically influenced by social media. Thus, future studies can further categorize and analyze the discussion on social media in more detailed (e.g., categorizing posts from different stakeholders) and explore its proactive effect on firms' specifical aspects of CSR (e.g., labour and human rights, products safety and corporate governance practices). Second, since we focus on the external effects of social media discussion on firms so exclude firms' own usage of social media, it is under-explored to discuss their

interactions. Since firms' and their executives' use of social media could also influence CSR activities by giving signals and mitigating information asymmetry (Balasubramanian et al., 2021; Feng and Johansson, 2019; Wang et al., 2021), their interplay with outsiders' attention and opinions online may result in interesting effects on CSR. Third, as another informal institutional force, the traditional media such as newspapers is among social media users which could shape firm behaviors through online engagement. Since the Internet may also reform the institutional influence of the media and journalists in a more interactive and efficient way, we suggest the future research on mass media to investigate the evolution of the media's institutional influence shaped by the Internet.

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Chapter 3: More social, more socially responsible? The impact of CEO social media use on corporate social performance

Abstract: Nowadays more and more firm CEOs are using social media to join online conversations and interact with stakeholders. As the social media presence shows their social participation tendency, those CEOs have been described as "social CEOs". Building on an upper echelons perspective of corporate social responsibility (CSR), this study examines whether social CEOs and the implication of their social media engagement have an impact on corporate social performance by developing a needs-affordances-consequences approach. Our approach explores the motives and ability of social CEOs, suggesting the positive influence of CEO sociability on CSR and also the moderating effect of CEOs' social evaluation. Using data on Chinese publicly listed firms from 2009 to 2020, we find that firms with social CEOs have a higher level of corporate social performance than firms without, and higher CEO status or better CEO reputation can further amplify the positive impact of CEO sociability on corporate social performance. This work makes important contributions to research on the determinants of CSR as well as the social media and leadership literature.

Key words: Corporate social responsibility, upper echelons theory, social CEOs, social media engagement, social evaluation

3.1 Introduction

Given the profound economic and social impact of CSR on firms and stakeholders (He et al., 2021; Hoi et al., 2013; Price & Sun, 2017), there is a growing research interest in the determinants of CSR to understand what drives CSR. A considerable emphasis of the literature has been to adopt an upper echelons perspective to explore how firm social behavior is shaped by top managers, and especially chief executive officers (CEOs) as the main representatives (Bertrand et al., 2021; Chin et al., 2013; Hambrick, 2007; Hambrick & Mason, 1984; Hrazdil et al., 2021; Wei et al., 2018). These CSR researchers have largely built on the traditional or common CEO characteristics documented in the upper echelons literature to examine managerial predictors of CSR effort, such as CEO demographics, experiences, and personality traits (Bouzouitina et al., 2021; S. Ho et al., 2015; Janani et al., 2022; Lewis et al., 2014; McGuinness et al., 2017; O'Sullivan et al., 2021; Petrenko et al., 2016; Tang et al., 2015b; L. Zhang et al., 2022). While CSR activities are more about the social influence on firm stakeholders and external interaction with society (J. L. Campbell, 2007; Liu et al., 2021), little attention has been paid to CEO social attributes that shape their willingness and ability of social engagement. In particular, CEO sociability as a trait showing social participation tendency may provide great explanation to firm social contributions. However, probably because of the great difficulty of reaching CEOs to survey their sociability (Hrazdil et al., 2021), scholars tend to evade this managerial trait so leave an important gap in both upper echelons and CSR research.

The rise of public social media provides us with an alternative channel for observing and capturing the trait of CEO sociability by presenting the social engagement of CEOs (Heavey et al., 2020; Wang et al., 2021; Weber Shandwick, 2014). The CEOs with social media participation are described as social CEOs who are willing to interact with the public (Erdoğmuş & Esen, 2018; Weber Shandwick, 2014). In the present study, we focus on CEO sociability to explore its implications for corporate social performance. To comprehensively understand CEO sociability and its further

reflection in CSR, we develop a specialized needs-affordances-consequences approach to social CEOs by drawing the insights from social media use research and leadership literature (Heavey et al., 2020; Karahanna et al., 2018; Leonardi & Vaast, 2017; Sheldon et al., 2011). Based on their psychological needs for social influence and belonging; the unique affordances in stakeholder reach and information communication; as well as the visibility consequence of CEOs' social media engagement, we suggest that social CEOs are with stronger motives and ability to engage their firms in social contributions compared to unsocial counterparts. Since the external social evaluation of CEOs may further influence their social interaction by shaping the needs, affordances, and consequences (Bitektine, 2011; Fralich & Bitektine, 2020; George et al., 2016; Liu et al., 2021), we also propose that the positive effect of CEO sociability on corporate social performance is more prominent for CEOs with a higher level of social status or reputation. Using a sample of Chinese listed firms between 2009 and 2020, we investigate the participation of their CEOs on one of the most influential social media -Weibo, a public blogging platform, and find substantial support for the hypotheses.

Our study offers three contributions to the literature. First, we provide unique insight into the determinants of CSR by demonstrating that social CEOs are more socially responsible. Past studies mainly examined the managerial predictors of CSR by following established characteristics in the upper echelons literature (Hambrick, 2007; Lewis et al., 2014; McGuinness et al., 2017; Wei et al., 2018; L. Zhang et al., 2022). For firm social behavior which underlines the interaction with society, we propose and theorize CEO sociability as a powerful driver of corporate social performance. We take advantage of CEOs' social media participation to observe their sociability and further identify the boundary condition with social evaluation of CEOs. Given the fact that the upper echelons research has largely focused on self-evaluation personality traits of firm leaders (e.g., overconfidence and hubris), our study also enriches this literature by adding a previously overlooked but important CEO social trait that shapes firm behavior.

Second, we extend extant knowledge of the implications of CEO social media

engagement for firm outcomes. A few prior research has shown the effect of executives' social media use on information communication of firms, which further affects corporate financial outcomes (Elliott et al., 2018; Feng & Johansson, 2019; Wang et al., 2021). Meanwhile, while the social media literature has emphasized the importance of CEO social media use in connecting to and influencing stakeholders (Heavey et al., 2020), there is a dearth of studies on its role in firm outcomes in the social domain. Adopting an upper echelons perspective, we consider social media engagement as an indicator of CEO sociability that reflects the needs, affordances, and consequences for CEOs, thereby shaping firm social outcomes. We thus provide a new conceptual understanding for the nascent literature on CEO social media use and firm outcomes.

Third, our integrative needs-affordances-consequences approach to social CEOs also contributes to social media and leadership literature by highlighting the comprehensive investigation on the three aspects of leaders' social media use. We draw on insights from social media research and meanwhile account for CEOs' identity to develop this integrative framework for understanding social CEOs (Heavey et al., 2020; Karahanna et al., 2018; Leonardi & Vaast, 2017; Sheldon et al., 2011), thus offering a comprehensive ang rich lens for the literature.

The rest of the paper is organized as follows. Section 2 reviews the literature and develops our hypotheses. In Section 3, the sample and data, measures of variables, and econometric models are described. Section 4 presents our estimation results, including supplemental analyses and robustness check. The last section offers discussion and conclusions.

3.2 Literature review and hypothesis development

3.2.1 Upper echelons and CSR

Upper echelons theory suggests that the organization is a reflection of its top executives who interpret the situations and make strategic choices for the organization

according to their values and cognitive bases (Hambrick, 2007; Hambrick & Mason, 1984). Organizational outcomes can therefore be explained by executives' personal characteristics associated with their experiences, values, and personalities. Based on this theory, top executives can set the ethical tone of a firm and make decisions about CSR engagement (Saha et al., 2020; Zhao et al., 2023), thereby shaping the social performance of the firm. Since "the CEO is generally seen as the firm's main representative" (Bertrand et al., 2021, p. 535), prior CSR work has addressed the impacts of CEOs' demographical and background characteristics on CSR performance, including the gender (S. Ho et al., 2015; McGuinness et al., 2017), education (Lewis et al., 2014), and foreignness (Bertrand et al., 2021). Similarly, as individual experiences greatly influence the personalized interpretation of the strategic situations, scholars have unveiled the role of CEOs' overseas (L. Zhang et al., 2022), disaster (O'Sullivan et al., 2021), and marketing experiences (Janani et al., 2022) in driving CSR engagement. Moreover, recent CSR researchers also shed light on some most common psychological traits of CEOs such as their narcissism and hubris (Bouzouitina et al., 2021; Petrenko et al., 2016; Tang et al., 2015b).

However, differing from other organizational-level outcomes, CSR is more about responding to stakeholder demands and benefiting social welfare (J. L. Campbell, 2007), which involves the interaction with stakeholders and the external influence on society. Therefore, among the individual characteristics, the sociality (or sociability) of CEOs may provide greater explanation for their CSR involvement. In particular, sociability is a prominent social related trait that shows individual social engagement tendency and especially their own willingness to connect to society and interact with stakeholders (Erdoğmuş & Esen, 2018; Nadkarni & Herrmann, 2010; Wang et al., 2021). Such a characteristic hence may more accurately indicate CEOs' motives and ability for social contributions. However, with the challenges of reaching firm top executives and the difficulties of capturing the underlying traits (Hrazdil et al., 2021), the existing upper echelons research is almost silent on whether and how CEO sociability shapes their firms' CSR outcomes.

The emergence of public social media platforms enables the observation of firm CEOs' sociability, since they can choose whether or not to leverage social media to engage in social interactions with stakeholders and the general public online. Those who use social media are viewed as social CEOs (Tsai & Men, 2017; Weber Shandwick, 2014). Thus, to investigate CEO sociability and explore its implications for CSR, we focus on the presence and engagement of CEOs on social media and discuss how this social engagement behavior predicts corporate social performance.

3.2.2 Social CEOs and CSR

As social media is widely used by people to interact with the outside world, the social media literature has focused on "social" individuals and discussed the potential causes and consequences of people having social interactions on public platforms (Junglas et al., 2013; Leonardi & Vaast, 2017; Miles & Mangold, 2014; Treem & Leonardi, 2013). For example, from a psychological perspective, Karahanna et al. (2018) theorize about individuals' inner needs motivating their social media use and the affordances enabled by it. Nevertheless, compared to ordinary users, social CEOs as the spokespersons of firms are expected to be with distinguishing features among social media users (Huang & Yeo, 2018; Wang & Chen, 2020), e.g., in greater need of social influence and impression management (Heavey et al., 2020). As such, we adopt a needs-affordances-consequences approach to social CEOs, which integrates the views on individuals' social media usage in the literature and meanwhile considers social CEOs' identity and position. This more contextualized approach is further taken to explain the specific motivations and ability of social CEOs for engaging in CSR.

At the needs level, social influence need is one of the most important psychological needs motivating firm leaders' presence on social media (Heavey et al., 2020), as social media offers them a public stage for self-presentation and impression management (Etter et al., 2019; Karaduman, 2013; A. Nadkarni & Hofmann, 2012; Nolan, 2015). Social CEOs, who are more willing to present themselves in public and impact others than unsocial CEOs, are therefore more cared about their social images

and reputations (Alghawi et al., 2014; Kietzmann et al., 2011). The social influence need behind social media engagement is in line with one of the motives for CSR engagement, because the CSR literature has extensively discussed the image-building and reputation improvement as the outcomes of CSR engagement (Fombrun & Shanley, 1990; Park et al., 2014; Williams & Barrett, 2000; B. Wu et al., 2021). Thus, the need for social influence of social CEOs tends to motivate their involvement in CSR.

Another significant psychological need pertinent to social media use is the need for relatedness and belonging (Karahanna et al., 2018; A. Nadkarni & Hofmann, 2012; Sheldon et al., 2011). For firm leaders, social media facilitates the "connective and communal interaction" between themselves and stakeholders (Heavey et al., 2020, p. 1493). Compared to unsocial counterparts, CEOs using social media tend to be more concerned about "what's going on in the world" and seeking for the link with society (Wang et al., 2021; Weber Shandwick, 2014). This type of need indicates the motivations for interacting, being connected to, and experiencing caring for others (Deci & Ryan, 1991), implying individuals' prosocial tendency (Pavey et al., 2011). As a prosocial behavior, CSR is a common strategical means of building relationships and bonds with stakeholders (Bendixen & Abratt, 2007; Dmytriyev et al., 2021; Elms & Phillips, 2009), which can satisfy the relatedness need of social CEOs. Thus, from the perspective of individual needs, social media engagement is potentially motivated by the social influence and relatedness needs of CEOs. The two types of psychological needs of social CEOs can meanwhile function as their inner motives for CSR involvement, which drive them to contribute more value to society for the branding and belonging effects of CSR that meet their needs.

The affordance lens on social media use further suggests the benefits and abilities for social CEOs afforded by the new technology for communication (Heavey et al., 2020; Leonardi & Vaast, 2017; Majchrzak et al., 2013). The concept of affordances is sourced from the technology literature and defined as "action possibilities afforded by a technology to users" (Karahanna et al., 2018, p. 739); in the context of information technology such as social media, affordances are what a social media user can

potentially do through using social media (Markus & Silver, 2008). For example, the openness to information and knowledge is one of the most powerful affordances of social media as an interactive communication tool (Baptista et al., 2017; Leonardi & Vaast, 2017). This affordance can equip CEOs with stronger ability of information processing – “to inform, update, and exchange knowledge with stakeholders” (Heavey et al., 2020, p. 1494). For example, social CEOs can initiate the dialogue with online stakeholder to solicit feedback, as the CEO of Airbnb-Brian Chesky used twitter to post on Jan 2, 2022: “If @Airbnb could launch anything in 2022, what would it be?”, and he finally received thousands of ideas from the online public including CSR-related suggestions (e.g., helping the exhibition of local community culture). In addition to the participation in online dialogue, firm CEOs as the audience of conversations on social media also benefit from their access to big data in real time (Kietzmann et al., 2011; Wang et al., 2021), making them more informed than the unsocial CEOs. This social media affordance leads to greater stakeholder reach and information superiority, which allow social CEOs to better respond to the demands of stakeholders and perform better at CSR.

For the consequences of CEOs’ social media use, the higher visibility has been demonstrated as a direct outcome of this social engagement behavior (V. Huang & Yeo, 2018; Leonardi, 2014; Weber Shandwick, 2014). Similar to other public exposure such as media coverage (Godos-Díez et al., 2020; Graf-Vlachy et al., 2020; Kang & Han Kim, 2017; Zyglidopoulos et al., 2012), CEOs’ presence on public-open social media platforms can garner large-scale attention from online audiences. Because of social media’s advantages in the speed and range of information dissemination (Feng & Johansson, 2019), CEOs’ presence on social media can even attract much more public attention than on the traditional media. The greater attention means higher social visibility of the CEOs and their firms behind, suggesting that their behaviors are under the heightened public scrutiny and stronger social pressure (Godos-Díez et al., 2020; Liu et al., 2021). As documented in CSR literature, the public pressure is regarded as an extrinsic factor causing CSR activities (Zyglidopoulos et al., 2012). For social CEOs,

the public have one more alternative and effective channel to monitor them in doing bad or good to society, resulting in higher stress on them to behave in a socially accepted way.

In short, based on our needs-affordances-consequences approach to CEOs' social media use, their main psychological needs of "social influence" and "relatedness" may reflect the intrinsic willingness of social CEOs to contribute to society, while the consequence for their visibility implies the extrinsic motivation forcing them to behave socially responsible. Meanwhile, the affordances of using social media like information and communication advantages can enhance their ability of benefiting stakeholders. As a result, both the motives and ability of social CEOs to engage in CSR are expected to be stronger than those of their unsocial counterparts, resulting in better CSR outcomes. We therefore hypothesize:

Hypothesis 1: firms with social CEOs have a higher level of corporate social performance than firms without.

3.2.3 The moderating effect of social evaluation

According to upper echelons theory, external forces in the environment can further shape managerial perceptions so impact how much the managerial characteristics are reflected in firm strategy and performance (Hambrick, 2007). In our context, firm CEOs as social actors are embedded in a socially interacted environment consisting of interrelationships and mutual influence (Dmytriyev et al., 2021; Heavey et al., 2020). As such, in their interactions with stakeholders, CEOs are not only driven by their inner personal sociability, but also further subject to social forces from the environment. For example, the stakeholder community and society at large can evaluate firm leaders to form the external perception and social judgement of them (Bitektine, 2011; George et al., 2016; Washington & Zajac, 2005). Based on the theory, when CEOs perceive and interpret the social evaluation of themselves, the managerial perceptions can externally influence their motives and ability to interact with society (Liu et al., 2021), which

affects the reflection of their sociability in firms' decisions and behavior concerning CSR.

There are two main forms of social evaluation in the literature - status and reputation. Specifically, status is the relative position or the standing within the social order (George et al., 2016; Wejnert, 2002), emphasizing the act of social acceptation (Bitektine, 2011). Reputation is defined as "beliefs or perceptions held about the quality of a focal actor" (George et al., 2016, p. 1), focusing on the differences and comparisons among individuals. Both higher-level status and reputation lead to two major impacts on CEOs, which are "being in the spotlight" effect and the Matthew effect (Liu et al., 2021; Merton, 1968). The "being in the spotlight" effect suggests that the greater social acceptance and favor resulting from the higher evaluation of firm CEOs tend to make them under the spotlight with a greater level of attention and positive emotional responses from the public (Magee & Galinsky, 2008; Rindova et al., 2006; Wei et al., 2018). The Matthew effect demonstrates the comparative advantages of CEOs with good reputation and high status because of their access to valuable resources (Bothner et al., 2012; Graffin et al., 2008). Below, we discuss how these two mechanisms of social evaluation externally affect the needs, affordances, and consequences of social CEOs, and thus influence their willingness and ability to engage in CSR.

At the needs level, when social CEOs are with relatively good reputation or high status, to match social favor and maintain social acceptance in the spotlight, they are in greater need of impression management through social interactions (Kietzmann et al., 2011; Rindova et al., 2006). Thus, the "being in the spotlight" effect can amplify the social influence need of social media use, which strengthen the relationship between CEO sociability and CSR effort. By contrast, the public holds relatively negative attitudes towards CEOs with bad reputation or pays less attention to low-status CEOs (Fralich & Bitektine, 2020; Reuber & Fischer, 2010; Sohn et al., 2009). This lower social evaluation tends to impair the motives of social CEOs for connecting to the public and influencing others. Since the lower social evaluation decreases those psychological needs of social CEOs, the CEOs are less willing to make social

contributions.

For the ability of social CEOs, social media affords them the openness to information and the convenience of stakeholder communication. Due to the "being in the spotlight" effect, the social media engagement of CEOs with higher status or reputation tend to receive more online discussion related to them and their firms (Heavey et al., 2020), so that they can enjoy more information affordances and wider stakeholder reach. Moreover, higher status and better reputation facilitate social CEOs to gain resources from key stakeholders because of the Matthew effect (Bothner et al., 2012; Fralich & Bitektine, 2020), making executives better utilize the information affordances of social media to respond to social demands. For example, with the access to political resources and social capital (Wang & Qian, 2011), the information processing and stakeholder reach of social CEOs can be strengthened to fulfill social responsibilities, e.g., by conveying the public demand to the government (Liu et al., 2021). Hence, with a higher level of social evaluation, social CEOs can benefit from more information affordance and better leverage it in CSR activities, resulting in better CSR performance.

Visibility as the major consequence of CEOs' social media engagement is the extrinsic motivation for their CSR effort. For social CEOs with higher social ranking or reputation, the "spotlight" can raise stakeholder attention and expectation on social media (Graffin et al., 2008; Piazza & Castellucci, 2014), so further increase the visibility of social CEOs and enhances the public scrutiny. Therefore, higher social evaluation also augments the extrinsic pressure for CEOs on social media, which amplifies the role of CEO sociability in CSR. To summarize, when social CEOs are with higher levels of status or reputation, the "being in the spotlight" effect and the Matthew effect are identified, which strengthen their motives and ability to engage in CSR. We therefore propose:

Hypothesis 2: The higher the status of CEOs, the greater the positive effect of CEO sociability on corporate social performance.

Hypothesis 3: The better the reputation of CEOs, the greater the positive effect of

CEO sociability on corporate social performance.

3.3 Data and method

3.3.1 Sample and data source

Our sample is constructed by Chinese firms publicly listed on Shanghai or Shenzhen Stock Exchanges between 2009 and 2020. The sample period starts at 2009 as Weibo was launched that August. Following others, we exclude firm observations with missing data, special treatment, or in finance-related industries (N. Jeong et al., 2021; Marquis & Qian, 2014; Zhong et al., 2021b). The final sample consists of 7421 observations that include 2078 CEO and firm combinations.

To test our hypotheses, we obtain data from multiple sources. The CEO social media engagement data are collected from one of the most influential public platforms in China-Weibo, known as the Chinese Twitter. This social media dominates online social interactions and information communication in China. The CSR data are based on the Environmental, Social and Governance Database of Listed Company (CESG) established by the Chinese Research Data Services (CNRDS) platform. Our firm- and executive-level data come from the China Stock Market and Accounting Research (CSMAR) database.

3.3.2 Measures

Dependent variables

We use CESG ratings to measure social performance of firm observations. As a well-developed CSR rating database in China that has been widely used in recent years (Yang et al., 2022), the CESG focuses on CSR evaluations of Chinese listed firms by following the rules and framework of the famous KLD database. Differing from other

Chinese CSR databases, the CESG includes multiple CSR pillars and dimensions to rate both socially responsible and irresponsible aspects of firms, i.e., CSR strengths and concerns. Specifically, the database reports the strength and concern ratings in six areas of CSR: product, charity and socially controversial issues, diversity, governance, employee, and environment. Following previous studies (Chin et al., 2013; Janani et al., 2022; O'Sullivan et al., 2021), our main dependent variable is *CSP* (corporate social performance) measured by the net score of the total strength score and the total concern score for the firm in the fiscal year. The total strength (or concern) scores are calculated by summing strength (or concern) ratings in the six dimensions. For additional analyses, we also construct a set of dependent variables utilizing the comprehensive CESG data. For example, *CSR_strength* and *CSR_concern* are measured by the total strength and concern scores respectively so that both responsible and irresponsible performance are separately investigated. Similarly, to further measure social performance in specific dimensions, we also calculate the net scores in the six areas to construct the sub-dimensional measures including *CSR_product, CSR_charity, CSR_diversity, CSR_governance, CSR_employee,* and *CSR_environment*.

Independent variables

To measure CEO sociability by social media data, we firstly identify the CEO for each firm observation as documented in annual reports. With the name list of 1081 CEOs, we use their names to search individual accounts on Weibo to check if the CEO has owned an account and if so, when did the CEO register the account. The search and information collection are carried out by the computer programming of web crawler to make an initial list of CEOs' Weibo accounts. As duplicate names are quite common, a CEO name may match multiple accounts so further work is needed to confirm the accurate account owned by the CEO. Thus, we manually check account information such as the account label, user verification and post contents, then compare them with CEO information to obtain the final CEO-Weibo account list. With this list, we construct our independent variable- *Social CEO*, a dummy variable taking the value of

1 if the CEO has owned a Weibo account in the previous year of CSR rating and 0 otherwise. Therefore, in line with the literature (Wang et al., 2021; Weber Shandwick, 2014), the CEO with a Weibo account is a social CEO who is more likely to have social interactions with the public.

Moderators

To test the moderating mechanism, two moderating variables are constructed by measuring status and reputation of CEOs respectively - *CEO status* and *CEO reputation*. Based on the status literature, individual status can be measured in different aspects such as economic, political and social status (Liu et al., 2021; Weber, 1947). Since the wealth data of Chinese CEOs are usually nontransparent or inaccurate, we use CEO information in the political and social areas to measure CEO status. With China's institutional setting, political connection of firm executives is a common means of governmental influence in both public and private sectors, which meanwhile signals social prestige of the executives especially "the prestige of the social and political resources" (Wu et al., 2018, p. 171). While CEOs' political connection is common in state-owned enterprises taking a large proportion of Chinese listed firms, it's also usual for CEOs in the private sector to hold political positions in this institutional context (Ding et al., 2014). For example, a Chinese CEO is with a higher-level of status in the firm and society if he or she holds a position in the political institutions such as the National People's Congress (NPC), the central or local government, the Chinese People's Political Consultative Conference (CPCC), or the Communist Party Committee (Li et al., 2008; Wu et al., 2018). In this study, we therefore measure *CEO status* by the political position, and this moderator equals to 1 if the CEO is an NPC deputy or CPPCC member (i.e., higher status), 0 otherwise. We focus on these two specific institutions to investigate social acceptance of CEOs because their members are always viewed as *people's representatives* in China and widely acknowledged by the public.

The other moderator is *CEO reputation*, measured by the overall affectivity of

media coverage related to the CEO (Deephouse, 2000; Wei et al., 2018). The media coverage data are collected from the *China Enterprise News* and the *China Entrepreneur*, the two most famous newspapers publishing news associated with firm executives. Specifically, building on the Janis-Fader coefficient of imbalance (Deephouse, 2000), we construct this moderator based on the formula below:

$$CEO\ reputation = \begin{cases} \frac{P^2 - PN}{T^2}, & if\ P > N \\ 0, & if\ P = N \\ \frac{PN - N^2}{T^2}, & if\ P < N \end{cases}$$

where P is the amount of positive media coverage about the CEO, N is the amount of negative media coverage about the CEO, and T is the amount of total media coverage including neutral coverage about the CEO. Thus, the value of this moderator falls into -1 to 1, and -1 indicates completely negative coverage while 1 indicates completely positive coverage. The bigger this moderator is, the better reputation the CEO has.

Control variables

To rule out alternative explanations, we have controlled for both firm- and CEO-level factors. At the firm level, we include *Age* (the number of years since the firm's establishment), *ROA* (return on asset), *Leverage* (ratio of debt to asset) following previous research (Adams & Hardwick, 1998; Bertrand et al., 2021; Tang et al., 2015b). To account for the impact of ownership structure (Gillan et al., 2021; Neubaum and Zahra, 2006), we also control for *State ownership* (the percentage of firm shares owned by the government), *Ownership concentration* (the percentage of ten largest shareholders), and *Institutional ownership* (the percentage of firm shares owned by institutional investors). Since the firm may invest in CSR after misconduct for recovering reputation (Ferrés & Marcet, 2021; Wu et al., 2021), we also include *Misconduct* equaling to 1 if the firm has been reported with any misconduct (e.g., regulatory punishment) at the previous year and 0 otherwise. At the board level (McGuinness et al., 2017), we control for *Female board ratio* (the ratio of female board members) and *CEO-chairman duality* (1 if the chairman is also the CEO and 0

otherwise). At the CEO level, we account for *CEO oversea* (1 if the CEO has oversea experience, 0 otherwise), *CEO gender* (1 if the CEO is a female, 0 otherwise), and *CEO age*, which are discussed as potential indicators of CSP in the upper echelons literature (Bertrand et al., 2021; S. Ho et al., 2015; L. Zhang et al., 2022). To alleviate reverse causality possibility, all time-varying moderators and control variables are lagged by one year.

The summary statistics and correlation coefficients are presented in Table 9. The sample mean of *CSP* indicates that the average CSR net score of our firm observations is 18.25. The mean of Social CEO is 0.03, suggesting 3% of the CEO observations have a Weibo account in the given year.

Table 9 Summary statistics and correlations (Study 2)

No.	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	*CSP*	18.25	6.25																	
2	*CSR_strength*	18.66	6.27	0.995																
3	*CSR_concern*	0.41	0.64	-0.027	0.075															
4	*Social CEO*	0.03	0.17	0.002	0.001	-0.013														
5	*CEO status*	0.15	0.35	-0.005	-0.005	0.002	0.039													
6	*CEO reputation*	0.04	0.21	0.078	0.080	0.028	0.059	0.096												
7	*Age*	17.85	5.86	0.198	0.197	-0.003	-0.010	-0.031	-0.046											
8	*ROA*	0.08	1.26	0.007	0.006	-0.011	-0.001	-0.001	0.000	0.019										
9	*Leverage*	0.48	0.20	0.082	0.091	0.090	-0.047	-0.017	0.025	0.069	-0.055									
10	*State ownership*	0.06	0.16	-0.034	-0.036	-0.019	-0.030	-0.053	-0.003	-0.173	-0.006	0.061								
11	*Ownership concentration*	0.60	0.16	0.153	0.152	-0.006	0.014	-0.025	0.057	-0.233	-0.013	0.001	0.245							
12	*Institutional ownership*	0.55	0.23	0.124	0.124	0.005	-0.006	-0.062	0.077	-0.119	-0.009	0.206	0.296	0.658						
13	*Misconduct*	0.17	0.37	0.024	0.079	0.541	-0.043	0.008	0.012	-0.034	-0.008	0.061	-0.017	-0.012	-0.002					
14	*Female board ratio*	0.12	0.11	0.054	0.041	-0.126	0.040	0.060	-0.032	0.143	-0.010	-0.132	-0.071	-0.092	-0.165	-0.073				
15	*CEO-chairman duality*	0.19	0.39	-0.002	-0.003	-0.016	0.112	0.084	0.024	-0.005	0.029	-0.109	-0.092	0.000	-0.162	-0.026	0.110			
16	*CEO oversea*	0.07	0.26	0.084	0.083	-0.007	-0.004	0.002	0.003	0.033	-0.004	-0.028	-0.037	-0.022	-0.044	-0.020	0.009	0.060		
17	*CEO gender*	0.05	0.23	0.032	0.030	-0.023	0.057	0.047	-0.004	0.029	-0.002	0.001	-0.031	-0.001	-0.040	-0.032	0.240	-0.003	0.016	
18	*CEO age*	53.17	6.56	0.143	0.144	0.006	-0.008	0.136	0.053	0.084	0.031	0.033	0.012	0.031	0.112	0.027	-0.025	-0.078	0.058	-0.011

3.3.3 Regression models

We propose that variations in CEO sociability will be reflected in variations in corporate social performance within a focal firm. Thus, to account for the within-firm effects, a fixed-effect Ordinary Least Squares (OLS) model is constructed to test our Hypothesis 1 predicting the relationship between social CEOs and corporate social performance. The model specification is:

$$\mathrm{CSP}_{\mathrm{I,t}} = \alpha + \beta_0\ \mathrm{Social\ CEO}_{\mathrm{I,t-1}} + \beta_1 \mathrm{Control\ variable}_{\mathrm{I,t-1}} + \varepsilon_{\mathrm{I,t}} \quad \text{(Equation 1)}$$

where *Control_variable* is a vector of control variables including *Age*, *ROA*, *Leverage*, *State ownership*, *Ownership concentration*, *Institutional ownership*, *Misconduct*, *Female board ratio*, *CEO-chairman duality, CEO oversea*, *CEO gender*, *CEO age*. We also controlled for the year and industry fixed effects in the model.

Meanwhile, to test our moderating mechanisms proposed in Hypotheses 2 and 3, we build a fixed-effect OLS model specified below:

$$\mathrm{CSP}_{\mathrm{I,t}} = \alpha + \beta_0\ \mathrm{Social\ CEO}_{\mathrm{I,t-1}} + \beta_1\ Inter\ variable_{i,t-1} + \beta_2\ Control\ variables_{i,t-1} + \varepsilon_{i,t} \quad \text{(Equation 2)}$$

where $Inter_variable$ represents the interaction terms including $Social\ CEO$ × *CEO status* and $Social\ CEO$ × *CEO reputation*. The year and industry fixed effects are also included in the models.

3.4 Results

3.4.1 Main results

Table 10 reports the empirical results for testing our hypotheses. In Model 1, we firstly examine the impact of social CEOs on corporate social performance by

regressing our dependent variable-*CSP* on *Social CEO* and all the control variables. The results show that the coefficient of *Social CEO* is positive and significant at the 1% level. The coefficient estimate suggests that *ceteris paribus*, firms with a social CEO have a higher rating in corporate social performance , and in particular an increase of 1.228 on average than firms without a social CEO. We therefore obtain empirical support for Hypothesis 1. Further, Hypotheses 2 and 3 predict that the positive relationship between CEO sociability and corporate social performance is amplified when the CEOs are with higher levels of status or reputation. To test this set of hypotheses, we include the corresponding moderators and interaction terms as shown in Models 2 and 3. The coefficient of *Social CEO * CEO status* is positive and significant ($P<0.1$), indicating that the positive effect of CEO sociability on corporate social performance is stronger for CEOs of higher status. Likewise, the coefficient of *Social CEO * CEO reputation* is significantly positive ($P<0.05$), suggesting the increase of CEO reputation can strengthen the positive relationship between social CEO and corporate social performance. The empirical results provide support for our moderating hypotheses.

Table 10 Regression results: main analyses

Variables	Model 1 *CSP*	Model 2 *CSP*	Model 3 *CSP*
Social CEO	1.228***	0.845*	0.948**
	(2.728)	(1.684)	(2.052)
*Social CEO * CEO status*		1.781*	
		(1.663)	
CEO status		0.285	
		(1.119)	
*Social CEO * CEO reputation*			1.832**
			(2.465)
CEO reputation			0.190
			(0.959)
Age	0.948	0.958	0.946
	(0.404)	(0.409)	(0.404)
ROA	0.015	0.018	0.016
	(0.490)	(0.582)	(0.500)
Leverage	0.406	0.397	0.414
	(0.910)	(0.890)	(0.927)

State Ownership	-0.088	-0.094	-0.094
	(-0.262)	(-0.278)	(-0.280)
Ownership concentration	2.331***	2.357***	2.317***
	(2.875)	(2.906)	(2.858)
Institutional ownership	-0.469	-0.487	-0.456
	(-0.721)	(-0.748)	(-0.701)
Female board ratio	0.746	0.732	0.771
	(1.249)	(1.227)	(1.293)
Misconduct	-0.118	-0.129	-0.128
	(-0.646)	(-0.704)	(-0.699)
CEO-chairman duality	-0.404**	-0.404**	-0.405**
	(-2.454)	(-2.454)	(-2.461)
CEO oversea	0.544**	0.523**	0.546**
	(2.263)	(2.175)	(2.273)
CEO gender	0.358	0.337	0.362
	(1.292)	(1.217)	(1.308)
CEO age	-0.000	-0.002	-0.000
	(-0.009)	(-0.229)	(-0.048)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Constant	1.530	1.470	1.568
	(0.054)	(0.051)	(0.055)
Obs.	7421	7421	7421
Within R^2	0.419	0.420	0.420

Note: *t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.4.2 Additional analyses

To explore more on the relationship between social CEOs and CSR, we carry out an extensive array of additional tests to further look at CEO social media engagement behavior as well as the different CSR areas.

First, for social CEOs in our sample, besides a dummy variable measured by CEO presence on social media, the degrees of their sociability can be further investigated according to their engagement behavior on social media. Therefore, we conduct a supplemental analysis with the subsample of social CEOs (N=229) to explore whether the degree of CEO sociability can predict corporate social performance as well. The new independent variable is *CEO posts* measured by natural logarithm of one plus the number of posts created by the CEO in the given year (The mean of post numbers is

80.26, SD=216.25). We posit that more CEO posts indicate a higher degree of sociability because the CEO interactives more actively with the online public. Following our main hypothesis, *CEO posts* as the proxy of CEO sociability degree is expected to have positive effect on corporate social performance (*CSP*). Table 11 presents the empirical results for this additional analysis. As shown in Model 1, the coefficient of *CEO posts* is positive and significant at the 1% level, suggesting that corporate social performance is better for social CEOs having more posts. We also test the moderating mechanisms regarding social evaluation of CEOs in Model 2 and 3. The coefficient of *CEO posts * CEO status* is positive and significant ($P<0.05$), and the coefficient of *CEO posts * CEO reputation* is positive although not significant. The results are basically consistent with our main results, suggesting that higher levels of social evaluation can strength the relationship between CEO sociability degree and corporate social performance. Overall, our findings here provide further support for all our hypotheses by focusing on the degree of CEO sociability.

Table 11 Empirical results for additional analysis on CEO sociability degree

	Model 1	Model 2	Model 3
Variables	*CSP*	*CSP*	*CSP*
CEO posts	0.480***	0.242	0.446**
	(2.723)	(1.221)	(2.428)
*CEO posts * CEO status*		0.979**	
		(2.548)	
CEO status		-0.194	
		(-0.154)	
*CEO posts * CEO reputation*			0.352
			(0.766)
CEO reputation			1.115
			(0.702)
Age	0.229***	0.119	0.228***
	(2.613)	(1.245)	(2.612)
ROA	7.236	8.868	6.966
	(1.152)	(1.430)	(1.111)
Leverage	8.060***	7.315***	7.847***
	(3.463)	(3.172)	(3.378)
State Ownership	-0.544	0.730	-0.308
	(-0.168)	(0.227)	(-0.095)

Ownership concentration	-0.752	-2.181	0.557
	(-0.187)	(-0.549)	(0.137)
Institutional ownership	-0.402	-0.049	-1.444
	(-0.170)	(-0.021)	(-0.597)
Female board ratio	10.592***	10.539***	11.506***
	(2.737)	(2.690)	(2.957)
Misconduct	1.607	0.877	1.547
	(1.143)	(0.624)	(1.103)
CEO-chairman duality	-0.465	-0.285	-0.482
	(-0.503)	(-0.311)	(-0.523)
CEO oversea	0.099	0.526	0.129
	(0.055)	(0.297)	(0.072)
CEO gender	-0.917	-0.377	-1.020
	(-0.658)	(-0.273)	(-0.734)
CEO age	0.239***	0.236***	0.244***
	(2.892)	(2.907)	(2.958)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Constant	-4.647	-1.110	-5.016
	(-0.815)	(-0.194)	(-0.882)
Obs.	229	229	229
Within R^2	0.460	0.478	0.463

Note: *t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Second, as suggested by CSR research, firm social performance can be deconstructed considering its socially responsible and irresponsible aspects (O'Sullivan et al., 2021; Tang et al., 2015b). Accordingly, to corroborate the mechanism underpinning our findings about the impact of social CEOs on corporate social performance, we replace the dependent variable in Equation 1 with *CSR strength* and *CSR concern* respectively, as shown in Models 1 and 2 of Table 12. The coefficient of *Social CEO* in Model 1 is positive and significant (P<0.01); it is negative but not significant in Model 2. This indicates that CEO sociability significantly elevates socially responsible performance while not significantly alleviating CSR concerns. The findings here reveal the asymmetric influence of CEO sociability on socially responsible and irresponsible behavior of the firm. We reason that compared with addressing CSR concerns, engaging in good deeds can better respond to the social influence and relatedness needs of social CEOs. Given that firms usually report less on

their CSR concerns while emphasizing much on CSR strengths (Yang et al., 2022), reducing irresponsible behavior may play only a marginal role in improving CEO image and bonding with stakeholders. Therefore, this additional analysis suggests that social CEOs improve corporate social performance mainly by enhancing positive aspects of CSR rather than by restraining negative aspects.

Table 12 Empirical results for CSR strength/concern as dependent variables

Variables	Model 1 *CSR strength*		Model 2 *CSR concern*	
Social CEO	1.190***	(2.676)	-0.038	(-0.563)
Age	0.796	(0.344)	-0.152	(-0.431)
ROA	0.017	(0.544)	0.001	(0.310)
Leverage	0.589	(1.336)	0.183***	(2.730)
State Ownership	-0.050	(-0.148)	0.039	(0.767)
Ownership concentration	2.322***	(2.899)	-0.010	(-0.079)
Institutional ownership	-0.470	(-0.730)	-0.000	(-0.004)
Female board ratio	0.507	(0.859)	-0.239***	(-2.667)
Misconduct	0.117	(0.647)	0.236***	(8.566)
CEO-chairman duality	-0.363**	(-2.237)	0.040	(1.630)
CEO oversea	0.573**	(2.413)	0.029	(0.801)
CEO gender	0.388	(1.421)	0.031	(0.740)
CEO age	-0.002	(-0.193)	-0.002	(-1.211)
Constant	3.731	(0.132)	2.201	(0.513)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Obs.	7421		7421	
Within R^2	0.433		0.027	

Note: *t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Lastly, as scholars have also called for the investigation on different dimensions of CSR (Orlitzky et al., 2017; Wang et al., 2016), we conduct the analyses to test the

possibly heterogeneous impacts of social CEOs on six areas of CSR. The results are shown in Table 13. The dependent variables of Models 1 to 6 are *CSR_product, CSR_charity, CSR_diversity, CSR_governance, CSR_employee,* and *CSR_environment* respectively. We can see that the coefficient of *Social CEO* is positive and significant at the 10% level in Model 1, so firms with social CEOs are found with better performance in product-dimension responsibility (e.g., product satisfactory and product safety). Similarly, the coefficients of *Social CEO* in Models 4-6 show that firms with social CEOs significantly perform better at social responsibility in corporate governance (P<0.05), employee relations (P<0.1) and environmental protection (P<0.1). Hence, our results suggest that firms with social CEOs are more likely to take social responsibilities specifically towards consumers, investors, employees, and the environment.

Table 13 Empirical results for different dimensions of CSR

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables	*CSR_ product*	*CSR_ charity*	*CSR_ diversity*	*CSR_ governance*	*CSR_ employee*	*CSR_ environment*
Social CEO	0.325^{*}	0.083	0.017	0.245^{**}	0.269^{*}	0.280^{*}
	(1.795)	(0.533)	(0.176)	(2.017)	(1.709)	(1.668)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	7.222	2.813	-7.457	-6.654	12.694	-7.237
	(0.627)	(0.285)	(-1.241)	(-0.861)	(1.268)	(-0.679)
Obs.	7421	7421	7421	7421	7421	7421
Within R^2	0.070	0.266	0.251	0.437	0.250	0.085

Note: *t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.4.3 Robustness check

Alternative measure for the dependent variable

Apart from the CESG database, there is another well-established database for Chinese CSR research named RKS ratings (Li and Lu, 2020; Luo et al., 2017; McGuinness et al., 2017). Similarly, RKS is an independent rating agency aiming at CSR evaluation in China. RKS reports annual CSR score (0-100) for each firm issuing CSR reports by evaluating the firm's overall social contribution, the content and quality of CSR reports, etc. With this alternative database, we reconstruct a dependent variable-*RKS score* to replicate the main analyses, and the regression results are shown in Table 14. In line with prior results, the coefficient of *social CEO* in Model 1 is positive and significant at 5% level, suggesting firms with social CEOs have higher CSR scores. The coefficients of interaction terms in Models 2 and 3 are also significantly positive, consistent with previous findings that support our moderating hypotheses.

Table 14 Empirical results for alternative dependent variable

	Model 1	Model 2	Model 3
Variables	*RKS score*	*RKS score*	*RKS score*
Social CEO	2.251**	1.215	1.734*
	(2.435)	(1.174)	(1.793)
*Social CEO * CEO status*		4.566**	
		(2.177)	
CEO status		0.459	
		(0.869)	
*Social CEO * CEO reputation*			2.664*
			(1.790)
CEO reputation			-0.020
			(-0.054)
Age	1.335***	1.339***	1.335***
	(37.887)	(37.677)	(37.863)
ROA	-0.209	-0.220	-0.209
	(-0.375)	(-0.395)	(-0.376)
Leverage	0.934	0.903	0.934
	(0.949)	(0.918)	(0.949)
State Ownership	-1.085*	-1.085*	-1.083*
	(-1.683)	(-1.683)	(-1.680)

Ownership concentration	4.570***	4.672***	4.563***
	(2.697)	(2.758)	(2.693)
Institutional ownership	-3.062**	-3.145**	-3.057**
	(-2.339)	(-2.402)	(-2.335)
Female board ratio	-3.062**	-3.055**	-3.047**
	(-2.420)	(-2.415)	(-2.408)
Misconduct	0.033	-0.007	0.039
	(0.079)	(-0.018)	(0.092)
CEO-chairman duality	-0.480	-0.490	-0.473
	(-1.350)	(-1.378)	(-1.330)
CEO oversea	0.068	0.011	0.073
	(0.126)	(0.021)	(0.137)
CEO gender	0.411	0.345	0.412
	(0.703)	(0.589)	(0.705)
CEO age	0.017	0.013	0.017
	(0.827)	(0.616)	(0.832)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Constant	14.773***	14.862***	14.774***
	(9.575)	(9.619)	(9.573)
Obs.	5126	5126	5126
Within R^2	0.308	0. 309	0.309

Reverse causality issue

To partially alleviate the reverse causality issue that socially responsible firms are more likely to appoint a social CEO, we use lagged variables in our main analysis. For robustness check, we conduct further analysis to address this issue in a more formal manner. In our panel sample, it is investigated that for firms previously without social CEOs but having one later, the presence of social CEO is usually resulted from the turnover of CEOs. As a result, the social CEO appointment can be regarded as a treatment, which provides a methodological setting for "event study" to examine the dynamic treatment effect (Balasubramanian et al., 2021; McGuinness et al., 2017). Specifically, the treatment group comprises the firm observations with social CEO appointment, and the control group consists of the firm observations without the appointment. Building on Balasubramanian et al. (2021), the dynamic treatment model is designed as follow:

$$CSP_{I,t} = \alpha + \beta_0\ Weibo^{t-2} + \beta_1\ Weibo^{t-1} + \beta_2\ Weibo^{t} + \beta_3\ Weibo^{t+1} + \beta_4\ Weibo^{t+2} + \beta_5 \text{Control variable}_{I,t} + \varepsilon_{I,t}$$

where $Weibo^{t-2}$, $Weibo^{t-1}$, $Weibo^{t}$, $Weibo^{t+1}$, and $Weibo^{t+2}$ are dummy variables, equaling to 1 if the observation year is two years prior to the appointment, one year prior to the appointment, the appointment year, one year after the appointment, and two years after the appointment respectively, 0 otherwise. With the estimation model above, the coefficients of dummy variables therefore suggest whether there are systematic differences between the treatment and control groups in CSP during the five observed time.

The results of the dynamic treatment effect model are reported in Table 15. The coefficients of $Weibo^{t-1}$ and $Weibo^{t-2}$ are not significant, indicating the treatment and control groups show no significant difference in CSP one year or two years prior to the treatment. Therefore, the appointment of social CEOs of firms is not likely to be caused by the differences in corporate social performance. By comparison, the coefficients of dummy variables one year or two years after the treatment ($Weibo^{t+1}$ and $Weibo^{t+2}$) are significantly positive ($p<0.1$), suggesting the presence of social CEOs does increase subsequent CSP. Thus, we find that the better corporate social performance is caused by the presence of social CEOs but not vice versa.

Table 15 Empirical results for dynamic treatment effect

Variables	*CSP*	
$Weibo^{t-2}$	0.893	(0.812)
$Weibo^{t-1}$	-0.469	(-0.630)
$Weibo^{t}$	0.422	(0.764)
$Weibo^{t+1}$	0.964*	(1.698)
$Weibo^{t+2}$	1.053*	(1.768)
Age	2.932**	(2.208)
ROA	0.015	(0.487)
Leverage	0.454	(1.015)
State Ownership	-0.096	(-0.285)

Ownership concentration	2.345***	(2.888)
Institutional ownership	-0.501	(-0.769)
Female board ratio	0.756	(1.267)
Misconduct	-0.118	(-0.643)
CEO-chairman duality	-0.380**	(-2.315)
CEO oversea	0.536**	(2.230)
CEO gender	0.332	(1.199)
CEO age	0.002	(0.158)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Constant	-22.740	(-1.404)
Within R^2	0.419	

Note: *t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.5 Discussion and conclusions

In this study, we build on an upper echelons perspective of CSR to explore how CEO sociability is reflected in corporate social performance. Drawing on the insights from the social media use and leadership literature, we develop a needs-affordances-consequences approach on social CEOs to explain their motives and ability for improving the firm's social performance. Using a large sample of Chinese listed firms and social media data from Weibo, we find that firms with social CEOs who are interacting with the public on social media perform better at CSR than firms without social CEOs. The positive relationship is also found to be stronger when CEOs are with higher social status or reputation.

3.5.1 Theoretical implications

This work makes several contributions. First, we extend the literature on the antecedents to CSR. Building on upper echelons theory, prior CSR work has examined

CEO characteristics including demographical features, experiences, and a few personalities as the predictors of corporate social outcomes (Bouzouitina et al., 2021; S. Ho et al., 2015; Janani et al., 2022; Lewis et al., 2014; McGuinness et al., 2017; O'Sullivan et al., 2021; Petrenko et al., 2016; Tang et al., 2015b; L. Zhang et al., 2022). However, while CSR behavior highlights the interaction with firm stakeholders and society (J. L. Campbell, 2007; Liu et al., 2021), less attention has been paid to CEO sociability showing social participation tendency that may provide greater explanations. By exploring the impact of CEO sociability on firm social behavior, we examine and demonstrate an important but unstudied managerial characteristic that shapes CSR.

Second, our focus on CEO sociability also contribute to upper echelons theory by shifting the focus from the traditional personalities of top executives to a potentially prominent trait in the Internet era. While explaining the impact of executive personalities on firm outcomes, the vast majority of the studies have been focused on the core self-evaluation personalities showing CEOs' perception towards themselves such as hubris, narcissism, and overconfidence (Bouzouitina et al., 2021; Petrenko et al., 2016; Tang et al., 2015b), which are regarded as the "common" traits of firm leaders. However, apart from the self-concept characteristics, sociability as a personality trait driving people's behavior can also be found in CEOs who are the public figures in the social interaction context (Erdoğmuş & Esen, 2018; Heavey et al., 2020; Weber Shandwick, 2014). By investigating this trait of CEOs with our needs-affordances-consequences approach, we also expand the sparse upper-echelons literature on CEO sociability.

Third, we provide a new conceptual understanding to the nascent literature on CEO social media use and firm outcomes. Inspired by social media's role in information dissemination, some studies have addressed the implications of CEO social media engagement for firm-level outcomes such as capital market performance and firm acquisition strategies (Elliott et al., 2018; Feng & Johansson, 2019; Wang et al., 2021). However, its implications have not been extended to firm decisions and behavior in social context, and the question of how CEO social media engagement influences CSR

remains unanswered. To address this question, we use an upper echelons lens on CEO social media engagement as the manifestation of CEO sociability. Our findings suggest that, in addition to the effect on firm outcomes in the financial domain, CEO social media engagement also reflects their willingness and ability of social contribution so shapes firm social outcomes.

Lastly, our comprehensive needs-affordances-consequences approach to social CEOs also contributes to the social media and leadership literature. With the rise of social media, an extensive leadership literature has explored the antecedents or consequences of firm leaders' social media engagement (Heavey et al., 2020; V. Huang & Yeo, 2018; Karaduman, 2013; Kietzmann et al., 2011; Matthews et al., 2022; Mudambi et al., 2019). Meanwhile, due to their focus on certain causes or consequences of leaders' social media engagement, e.g., facilitating communication or building bond, those studies usually provide an incomplete picture of CEO social media engagement regarding their motivations and ability. As a result, "strategy theory and research on the social media engagements of strategic leaders remain disjointed" (Heavey et al., 2020, p. 1492), leading to a recent call for the rich and comprehensive framework for understanding leadership through social media use (Matthews et al., 2022). To answer the call, we develop a needs-affordances-consequences framework by fusing the views on social media use with the leadership research. This approach to social CEOs explicates their psychological needs, acquired affordances and subsequent consequences of using social media, thus providing an integrative approach for the literature.

3.5.2 Practical implications

This study also provides practical implications for firms and stakeholders. Since CSR has been gradually regarded as a necessary firm performance dimension (Aguilera et al., 2007; J. L. Campbell, 2007), firms may pay closer attention to the social aspect traits of CEOs and especially how CEO sociability might lead to stronger motives and ability of social contribution. From the perspective of CEOs, social CEOs could be

informed with the positive implications of their social engagement and better utilize the social media affordances such as stakeholder communication for improving firm social performance. For stakeholders, firm executives and leaders like CEOs used to be faraway and unreachable, and the distance precludes the public from seeing into and getting information about the top managers and their firms behind. Nowadays, as a form of public exposure and social engagement, the social media use of firm executives can give cues for their inner personalities which may shape the firm social outcomes. Thus, with the advancement of Internet, stakeholders might benefit from easier and closer investigations on firms and their leaders to make decisions.

3.5.3 Limitations and future research

There are several limitations of this study that give rise to opportunities for future research. First, we argue CEO sociability as an important managerial characteristic in affecting firm outcomes, and we rely on CEOs' behavior regarding social media engagement suggested by prior research for capturing CEO sociability. But the investigation and measure of CEO sociability deserves more discussion. If feasible, future upper echelons research may adopt an interview-based approach to measure this managerial trait and also give more insights by exploring the underlying psychological mechanism driving sociability. Second, we only focus on firm social outcomes to discuss the implications of CEO sociability, while some other firm outcomes could be influenced by social CEOs as well. For example, as social media engagement affords CEOs with unique advantages of information communication and relationship building (Elliott et al., 2018; Heavey et al., 2020), future research may extend the upper echelons lens of CEO sociability to the explanation of firm innovation outcomes such as open innovation. Third, we employ CEOs' political position to capture their status according to the existing literature and data accessibility. Some may argue that CEOs may not hold a high level of political position while their social status is high, because conceptually, social status is not defined by political status only. Therefore, more comprehensive measures are encouraged to capture CEO status if the data are available.

Lastly, this work employs a sample of publicly listed firms from only one country for the empirical analysis, so we encourage future research to test the generalizability of our findings in other contexts such as in other countries or on different social media platforms.

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Chapter 4: Approaching gains or ensuring safety? The impact of managers' regulatory focus on corporate fraud

Abstract: Based on upper echelon theory and regulatory focus theory, the study builds a conceptual framework to examine whether the propensity for committing fraud varies with the types of managers' self-regulatory focus and if so, how the behavior impact of managers' regulatory focus is shaped by external feedback on corporate performance. Utilizing a sample of Chinese publicly listed firms from 2015 to 2019, we find support for our proposed hypothesis that, to ensure safety, the predominantly prevention-focused managers are more likely to commit fraud than the principally promotion-focused managers. Our findings also indicate that such a positive relationship between managers' prevention focus predominance and fraud incidence is more prominent when the firm suffers from more negative feedback from the capital market or the media. Implications for corporate stakeholders are discussed based on our empirical evidence.

Key words: regulatory focus; safety needs; corporate fraud; external feedback; emerging market

4.1 Introduction

Corporate fraud is a common issue for the global market, which involves the deliberate actions taken by firms and their managers to mislead or deceive key stakeholders especially investors (Zahra et al., 2005). Given the harmful impact of corporate fraud on investors and the market (Chen et al., 2016; Firth et al., 2011), it is imperative to understand what drives corporate fraud. One influential explanation is based on upper echelon theory (UET), which suggests firm decisions and outcomes are reflections of top managers' characteristics (Hambrick, 2007; Hambrick and Mason, 1984), such as demographics and experiences (Benmelech and Frydman, 2015; Koch-Bayram and Wernicke, 2018; Li et al., 2022; Wahid, 2019; Xu et al., 2018), or personalities including overconfidence and narcissism (Rijsenbilt and Commandeur, 2013; Schrand and Zechman, 2012). This stream of research, however, often ignores the underlying motivational attributes which account for individual differences in how people set and view goals, and can provide the most direct and powerful explanations to people's behavior (Gamache et al., 2015; Jiang et al., 2020; Lanaj et al., 2012). Additionally, it has largely focused on the developed markets like the U.S. (Schnatterly et al., 2018), devoting less attention to the emerging markets suffering from more widespread and severer corporate fraud (Chen et al., 2016; Hass et al., 2016; Zhou et al., 2018).[10]

In this study, our goal is to examine the motivational factors of top executives that drive them to engage in fraud in an emerging market-China. Inspired by Regulatory focus theory (RFT), the motivational attribute we investigate is regulatory focus that might trigger executives' different emphases on individual achievement or safety. RFT is a well-established theory originating in the field of psychology, suggesting two kinds of regulatory foci to explain individual motivation behind behavior, namely promotion focus and prevention focus (Higgins, 1997). Promotion focus is associated with

[10] Taking China as an example, the fraud incidence of publicly listed firms has increased to nearly 10% in recent years, much higher than that of 4% in the US sample (Raghunandan, 2021) and 0.9% in the Japanese sample (Sakawa and Watanabel, 2021).

advancement, growth, and accomplishment, so it attaches people's attention to positive outcomes. By contrast, prevention focus is related to safety, protection, and responsibility, so it sensitizes people to negative outcomes (Higgins, 1997). Based on the traditional simplified 'gain-loss' frame of fraud in the existing literature (Becker, 1968; Dyck et al., 2010; Johnson et al., 2009; Zahra et al., 2005), it can be argued that promotion focus tends to motivate executives to engage in fraud for the financial gains of deceptive performance, while prevention focus might prevent them from doing that to avoid the potential losses of being caught.

However, in the context of an emerging market (i.e., China), the unique corporate governance mechanism can limit the direct financial reward of fraud for top managers (Hass et al., 2016), and the relatively weak institutional environment reduces the fraud cost (Allen et al., 2005; Chen et al., 2016; Yiu et al., 2019). Thus, the 'gain-loss' frame fails to provide sufficient explanations to executives' motivation for fraud in China. Instead, executives in China may care more about the most direct and relevant interest for themselves such as personal career concerns including the security of their job positions and long-term achievement (Cao et al., 2019; Xie, 2015; You and Du, 2012). The 'safety-achievement' frame is therefore more suitable to explain the managerial motivations behind fraud in China. We hypothesize that the greater managers' prevention focus relative to promotion focus, the more likely they are to commit fraud in order to ensure their career safety. As regulatory focus does not work in a vacuum (Gamache et al., 2015), individuals' motivation can be strengthened when their foci fit situationally specific factors, a phenomenon known as regulatory fit suggested by RFT (Camacho et al., 2003; Higgins, 1998, 2000; Spiegel et al., 2004). Hence, by incorporating the mechanism of regulatory fit into our analytical framework, the afore-hypothesized relationship between the motivation and fraudulent behavior is proposed to be moderated by the external feedback on corporate performance, which is a key situational stimulus for executives in corporate governance.

The hypotheses are tested based on a large sample of Chinese listed firms between 2015 and 2019. With a vibrant and growing capital market but an institutional

environment lack of investor protection (Allen et al., 2005), China provides a natural research setting for our work to analyze the relationship between managers' regulatory focus and corporate fraud. Our empirical evidence supports the hypothesis that for ensuring safety needs, predominantly prevention-focused relative to promotion-focused managers are more likely to engage in fraudulent activities. Further, we find that the behavior impact of managers' prevention focus predominance could be strengthened with more negative feedback from the capital market or the media. Our findings are robust to a series of tests such as addressing the partial observation problem and using alternative samples.

Our study contributes to the existing literature in the following ways. First, we provide unique insights into the research on the antecedents of fraud by combining UET and RFT. Building on UET which highlights the role of executives in organizational behavior, empirical work to date has primarily focused on executives' backgrounds or personalities as the proxies for individual cognitive frame to infer their motivation behind fraudulent behavior (Benmelech and Frydman, 2015; Koch-Bayram and Wernicke, 2018; Li et al., 2022; Rijsenbilt and Commandeur, 2013; Schrand and Zechman, 2012; Wahid, 2019; Xu et al., 2018). To move forward in fraud literature that calls for unpacking the psychological process that are driving executives' behavior (Hambrick, 2007), we integrate RFT to investigate the key motivational attribute of executives to explain why they engage in fraudulent behavior.

Second, the determinants of fraud at the management level have been studied extensively in developed countries, ignoring the fact that the fraud issue in developed and developing markets differs significantly from each other (Chen et al., 2016). The different institutional setting and corporate governance structure can lead to distinct managerial motivations for fraud (Schnatterly et al., 2018). For example, the financial gain is regarded as the key incentive for fraud of developed market managers (Becker, 1968; Dyck et al., 2010; Johnson et al., 2009; Zahra et al., 2005), but the compensation structure for executives in emerging markets may restrict the direct gains of fraud so may not be the prime motivation. To explore executives' motivation behind deviant

behavior in emerging markets, we apply the novel research approach of integrating UET and RFT to suggest managers' security needs as the driving factor of fraud. Thus, this study advances our understanding of the antecedents of fraud in the context of weak investor protection and severe principle-agent problems.

Third, we identify the boundary conditions of the executive regulatory focus-fraud relationship in line with the phenomenon of regulatory fit based on RFT. Researchers have called for an investigation on the moderating effect of the external environmental condition on the role of individuals' regulatory foci in organizational behavior (Johnson et al., 2015). We answer the call by highlighting how the fit between managers' motivational traits and firms' external situational stimuli shapes corporate misbehavior. By doing so, our study extends the understanding of regulatory fit and offers the first empirical test on the moderating role of external environmental feedback in managers' regulatory focus-behavior relationship.

Practically, understanding the influence of managers' traits on corporate fraud incidence is an important concern for corporate stakeholders. Our work provides practical implications for corporate boards to consider the impact of managers' prospective regulatory focus on governance practices while making hiring decisions and personnel arrangement. Meanwhile, investors and regulators could investigate and monitor the governance impact of managers through the lens of motivational and psychological perspective.

4.2 Literature review and hypothesis development

4.2.1 Corporate executives and fraud

Corporate fraud has attracted great research attention, as the misconduct of firms can harm the interests of investors and disrupt the order of the capital market (Chen et al., 2016; Firth et al., 2011)[11]. Especially in emerging markets with weak investor

[11] Corporate fraud can be defined differently and take a variety of forms (Zahra et al., 2005). In this

protection, the widespread financial misconduct may even hinder the economic development (Hass et al., 2016). To understand the causes of corporate fraud, previous scholarly work has suggested a number of institutional and organizational factors (Schnatterly et al., 2018; Zahra et al., 2005). According to upper echelons perspective (Hambrick, 2007; Hambrick and Mason, 1984), top executives have ultimate accountability for corporate finances that reflect their managerial skills (Gangloff et al., 2016; Li et al., 2022; Zhang et al., 2022; Zhu et al., 2020), so the executives' characteristics are deemed to be one of the most important determinants in the literature. For example, the literature documents that top managers' demographic characteristics (e.g., age and gender) or personal experiences (e.g., awards and military experiences) have significant effects on financial misconduct (Benmelech and Frydman, 2015; Koch-Bayram and Wernicke, 2018; Li et al., 2022; Wahid, 2019; Xu et al., 2018). Additionally, a few psychological characteristics especially personality traits have been introduced to the discussion as well. For example, Schrand and Zechman (2012) observe that executives' overconfidence is linked to their optimistic bias, leading to the fraud propensity. Rijsenbilt and Commandeur (2013) find that to obtain praise and admiration, highly narcissistic CEOs are more likely to undertake the fraudulent actions, which show the company's delusive financial strength.

By inferring the underlying motives of top executives from their demographics, experiences or personalities, the above evidence clearly demonstrates the impact of top managers' characteristics on corporate fraud. Nevertheless, the previous work largely overlooks how the executives' proximal motivational attributes play a role, when they can provide the most direct and powerful explanation to behavior among the psychological characteristics (Gamache et al., 2015; Jiang et al., 2020; Lanaj et al., 2012). For example, the motivational attributes such as regulatory focus, deciding how top executives view the situations and make decisions (Gamache et al., 2015), can influence how they rationalize and hence engage in misbehavior. Thus, the literature

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study, in line with previous studies (Armstrong et al., 2013; Hass et al., 2016), the fraud we discuss is financial misconduct, for example, in the form of "intentional misrepresentation of amounts or disclosures in the financial statements" (Apostolou et al., 2000, p. 181).

fails to unpack the prime motivation and psychological mechanism of top managers behind the wrongdoing, resulting in the "black box problem" identified by upper echelon scholars (Hambrick, 2007). Moreover, while the emerging markets face more severe fraud problems (Chen et al., 2016; Hass et al., 2016), most research attention has been paid to the developed markets to explain the antecedents of fraud at the management level (Schnatterly et al., 2018). Although some empirical studies have started to investigate the impact of executives' characteristics on fraud in emerging market context, they are still based on the evidence from developed markets so examine the similar characteristics of executives (e.g., gender diversity by Cumming et al. (2015), and foreign experiences by Luo and Wang (2022)). Therefore, the managerial motivations driving fraud in the emerging market are likewise unclear.

4.2.2 Regulatory focus theory

To open the above "black box" of the impact of top executives in fraudulent behavior based on UET, we introduce RFT, a well-established theory of psychology to explore executive motivations for fraud. Higgins (1997) initially proposes the concept of regulatory focus to unveil the different ways that people are motivated to seek pleasure and avoid pain. According to RFT, individuals are with distinct affective, cognitive and behavioral self-regulation processes towards their desired end states (Higgins, 1997, 1998). To decrease the discrepancies between current states and desired end states, one self-regulation with approach orientation is regarded as *promotion focus* (a sensitive to gains and a desire for accomplishment), while the other with avoidance orientation is regarded as *prevention focus* (a sensitive to losses and a desire for safety) (Higgins, 1997). As a result, individuals with promotion focus aim to approach the matches to their desired end states (i.e., accomplishment), so are sensitive to the presence or absence of positive outcomes. In contrast, prevention-focused individuals tend to avoid the mismatches to their desired end states (i.e., safety), thereby caring about negative outcomes. Thus, individuals vary in their tendencies to frame decision situations in positive versus negative terms, resulting in approach-matches and avoid-

mismatches strategic inclination respectively.

RFT has also been applied to some management studies to understand individual behaviors in organizations (Johnson et al., 2015). In particular, a few studies building upon UET have addressed the role of top executives in affecting organizational outcomes through the lens of regulatory focus. For example, as the inner motivational constructs are measurable with the advances in data collection and measurement design (Bilgili et al., 2020), the influences of executive promotion and prevention focus have been investigated to explain managerial motivation behind corporate outcomes including firm acquisitions (Gamache et al., 2015), marketing behavior (Kashmiri et al., 2019), innovation (Bammens et al., 2022; Mount and Baer, 2022), strategic change (Jiang et al., 2020), and stakeholder strategies (Gamache et al., 2020). Similar to other firm outcomes, fraud is relevant to the executives' self-interest and conducted by them in most cases (Gangloff et al., 2016; J. Li et al., 2022). As one of the bad outcomes in corporate governance, fraud can lead to far-reaching consequences for firm development and performance, resulting in a wide range of negative impacts (Schnatterly et al., 2018). Even with those harmful impacts, in emerging markets like China, firms and their managers still actively engage in fraud in their own interests (Hass et al., 2016). As RFT can provide insights into managers' motivations behind firm actions, we expect the impact of executives' regulatory focus to extend to corporate fraudulent activities in China. Thus, this research integrating UET with RFT is considered to enrich the fraud literature by focusing on an unexplored aspect of executive psychological characteristics and explaining the impact of executives' motivation orientation on the fraud occurrence in emerging markets.

4.2.3 Hypothesis development

To propose the motivational effect of managers' regulatory focus on firm behavior, prior literature has discussed the expected gains and losses after taking actions. For example, firm acquisitions or marketing are perceived to bring rewards and achievement, thus motivated by CEO promotion focus (Gamache et al., 2015; Kashmiri

et al., 2019). Similarly, the decision-making on corporate fraud could be partly simplified as a trade-off between the possible gain and loss after committing fraud (Becker, 1968; Dyck et al., 2008). The gains for top managers after fraud can be some short-term benefits like the financial rewards for seemingly satisfactory performance (Firth et al., 2006, 2011), while the losses may be regulatory punishment and reputational damage (Dyck et al., 2008). Given the potential gains and losses of fraud, it could be argued that promotion focus makes executives sensitive with positive outcomes-gains, so engage in financial misconduct to seek the benefits. In contrast, prevention focus intensifies managers' sensitivity to negative outcomes-losses, thus leading them to refuse wrongdoing to avoid the costs.

However, in the context of China with its unique corporate governance mechanism and the relatively weak institutional environment (Allen et al., 2005; Chen et al., 2016; Yiu et al., 2019), the expected 'gain-loss' frame of fraud fails to take effect. The suggested gains of fraud largely depend on the sensitiveness of managers' compensation to firm performance (Burns and Kedia, 2006). Yet, unlike developed markets with a lot of incentive plans in the corporate governance mechanism, most incentive plans for managers' compensation such as stock option pay or performance-based compensation have not been fully implemented in Chinese listed firms (Hass et al., 2016). Thus, the direct financial gains of deceptive performance are limited and fail to drive managers with promotion focus in this context. On the other hand, due to poor investor protection and the prevalence of fraud in the weak institutional environment (Chen et al., 2005; Chen et al., 2016; Firth et al., 2011), the possibility of being detected and the further expected losses of being punished for executives are relatively low, making the fraudulent activities less costly. For example, *Kangmei Pharmaceutical*, a large pharmaceutical company listed in Shanghai Stock Exchange, has been caught by the China Securities Regulatory Commission (CSRC) that the company had overstated its cash holdings by 29.9 billion RMB in the 2017 annual report. However, with such a shocking amount, the executives were only finned from 100,000 to 900,000 RMB by the regulator, "a slap-on-the-wrist fine" described by the media. As such, we propose

that for executives in emerging market companies, the expected rewards or costs after fraud are not their main concerns.

In addition to the financial gains and losses, the most direct and relevant interest of emerging market managers can be personal career concerns (Fu, 2019; Xie, 2015). Especially for Chinese listed firms where state ownership and political connection are common, managers are more or less connected with the government (Cao et al., 2019; You and Du, 2012), and the security of their job positions or future development in the position are sometimes even more important than the short-term benefits for politically connected managers (Chen et al., 2017). When delving deeper into the ex-ante managerial motives of corporate fraud with career concerns, the effect of managers' regulatory focus on fraud occurrence could be distinct as the simplified 'gain-loss' frame. Instead, the 'safety-achievement' frame incorporating managerial career concerns is further proposed to explain how executives' regulatory focus influences their tendency to commit fraud in this context (please see Figure 4.1).

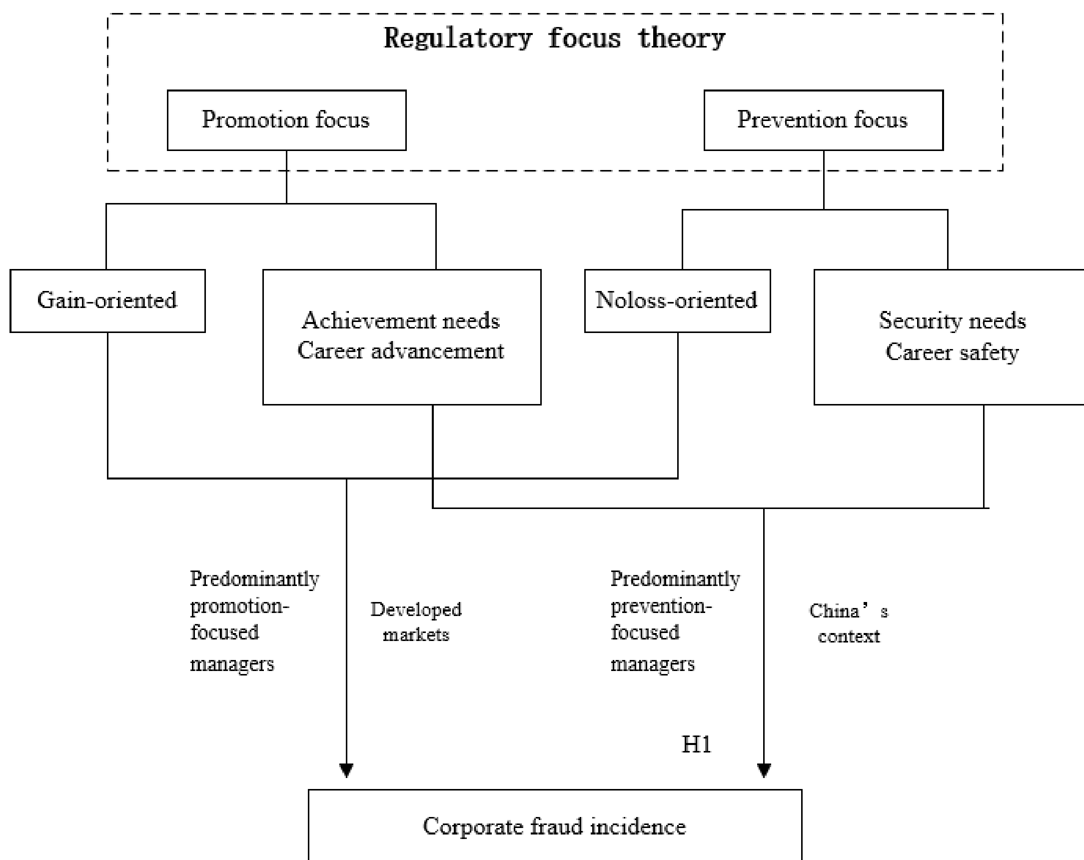

Figure 4.4 Analytic framework

As stated in the original theory (Higgins, 1997), prevention focus is induced from individuals' *security needs* and concerns for responsibilities, making individuals sensitive to negative outcomes such as losses and failure. As the agents of firms' shareholders, the executives' responsibility is to maximize economic performance of the company and increase firm value (Eisenhardt, 1989; Jensen and Meckling, 1976), by which corporate executives can maintain shareholders' trust and keep the job. The executives with strong prevention focus therefore pay close attention to fulfilling these managerial duties. This kind of executives are sensitive to the negative signals in corporate finances, which imply their failure to fulfill the responsibility and might threaten their jobs (Zahra et al., 2005; F. Zhou et al., 2018). To avoid those potential undesired outcomes, fraud is considered as one of the most common ways of creating short-term deceptive firm value to please shareholders (Firth et al., 2011). For example, with the fraudulent reporting (e.g., inflating profits), top managers can signal their shareholders that they have fulfilled the managerial obligation by meeting announced earnings estimates. Therefore, in order to prevent the potential negative outcomes and ensure desired career safety, prevention focus motivates managers to commit fraud to meet shareholders' expectation.

However, for promotion-focused managers who stress their *achievement needs* (Higgins, 1997), they are deemed to be more long-term oriented and with a broad scope of attention in their career (Gamache et al., 2020). For example, promotion-focused managers may approach matches to their desired achievements by allocating their attention to long-term profit-making activities such as firm acquisitions, advertising and R&D (Bammens et al., 2022; Gamache et al., 2015; Kashmiri et al., 2019). Such characteristic of promotion-focused managers is in line with a broader stakeholder view rather than the shareholder primacy view of prevention focus[12]. Accordingly, they are less likely to cheat and may pursue authentic success instead. Although these two foci may independently motivate individuals (Higgins, 1997, 1998), it is the prominent

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[12] The stakeholder theory (Freeman et al., 2004) challenges the traditional agency logic and Gamache et al. (2020) further extend 'stakeholder logic' to regulatory focus. They indicate promotion focus is associated with the stakeholder view, which advocates a broad scope of attention and a wide range of goals of promotion-focused managers.

focus that results in distinct decisions after weighing the pros and cons of behavior (Camacho et al., 2003; Kashmiri et al., 2019)[13]. Since prevention focus incentivizes managers to commit fraud while promotion focus motivates them to take long-term profit-making actions in the 'safety-achievement' frame, we thus propose the following hypothesis:

H1: The greater managers' prevention focus relative to promotion focus, the more likely companies are to commit fraud.

The motivational impact of individuals' regulatory focus on their behavior does not work in a vacuum (Gamache et al., 2015). Higgins (2000, 2006) proposes the phenomenon of regulatory fit to further explain that individuals' motivation can be activated and strengthened when their foci fit situationally specific factors. For example, incentive compensation (e.g., stock options) is designed with the gain-oriented nature which parallels the gain-frame focus, so it is treated as a core situational factor for managers' promotion focus in strategic decisions (Gamache et al., 2015). In our corporate governance context, we expect that one of the most prominent situational characteristics is the external feedback on corporate performance, which gives top managers specific signals from the environment about to what extent have they done their managerial duty. Previous research has also suggested that the pressure related to corporate performance is one of the direct driving factors for the propensity of executives to engage in fraud (Gao et al., 2021; Zhong et al., 2021b). Therefore, the feedback on the company's performance can be seen as the situational stimulus that alters managers' frame of decision-making on fraud.

Corporate executives are motivated to select and process information consistent with their regulatory foci. For example, promotion-focused people favor positive information while prevention-focused individuals pay more attention to negative one (Yoon et al., 2012). Since we posit that prevention focus motivates top managers to commit fraud, the moderating role of negative feedback is further investigated. Two

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[13] For example, individuals may show both high level of promotion and prevention focus, but it is the dominated one that plays a significant role.

types of performance feedback have been discussed in the extant literature-hard and soft feedback (Gamache and McNamara, 2019). The hard feedback on corporate performance is readily quantifiable and could be precisely portrayed as positive or negative signals such as stock market reaction (Devers et al., 2007; Murphy et al., 2009). In contrast, soft feedback is relatively difficult to directly quantify because it simultaneously involves both positive and negative information such as media coverage (Bednar, 2012; Deephouse, 2000).

Specifically, when the hard or soft performance feedback is overall more negative, the firm is evaluated more negatively by the market and society, which suggests a threat and future losses to the executives if no action is taken (Gao et al., 2021; Zhong et al., 2022). For example, poor evaluation in the stock market is a dangerous signal to managers' job, and the negative feedback from the media damages their reputations and career prospects (Deephouse, 2000; F. Zhou et al., 2018). With the negative situation, managers are pressured to change the status quo to avoid the losses and seek safety. The negative performance feedback therefore situates managers in a loss-avoidance and safety-oriented frame which fits their prevention focus. Thus, negative feedback is a reinforcing element for executives with a high prevention focus. For this reason, the negative performance feedback will amplify the impact of prevention focus on fraud occurrence. In other words, the negative external feedback deviates from the safe state desired by prevention focus and activates the security-needs motivation, so the executives with stronger prevention focus are further motivated by the negative performance feedback to emphasize more on non-loss and safety. As such, predominantly prevention-focused managers are more eager to avoid any mismatch to their desired safety as discussed in hypothesis 1. They tend to favor fraudulent activities more, thereby accentuating the effect of prevention focus on inducing fraud. We thus hypothesize:

H2: The relation between managers' level of prevention focus relative to promotion focus and the incidence of corporate fraud is likely to be moderated by negative performance feedback, such that the positive relationship is likely to be stronger when

the feedback on corporate performance is more negative.

4.3 Methods

4.3.1 Sample description

To observe the fraud occurrence of Chinese publicly listed firms, our sample consists of all A-share firms listed in the Shanghai or Shenzhen Stock Exchanges over the period of 2015-2019. After excluding firms in financial industry and with missing information, we construct a panel data set of 14,549 firm-year observations covering 3,510 firms. To identify the fraudulent activities of our observations, we first obtain the annual list of corporate fraud during the five years from the China Stock Market and Accounting Research (CSMAR) dataset. The dataset has recorded each violation of the rules and regulations involving the listed firms, which is detected and announced by the CSRC. However, the CSRS identifies the violations committed not only by the firms and managers, but also by the firms' other related parties such as the major shareholders and auditors. Following prior studies (Armstrong et al., 2013; Hass et al., 2016), we exclude the cases of manipulation of stock trading (e.g., illegal share buybacks and stock price manipulation), unauthorized changes in fund use (e.g., major shareholder embezzlement) and other misconduct not conducted by the listed firms and managers. Our final sample includes 1,380 corporate fraud cases where the object of punishment is firm management, such as inflating profits, fabricating assets, omitting major information, using misleading statements, postponing disclosure, and other financial misconduct.

Table 16 presents the sample description. The growing numbers of listed firms in Column 2 show a rapid development of the capital market in China. Column 3 records the numbers of fraud firms, and the last column presents the percentage of fraud firms every year. There was a slight decrease of the annual incidence of fraud before 2017, but the incidence increased dramatically to 13.08% at the most recent year in our sample.

Overall, the average incidence of corporate fraud committed by Chinese listed firms is 9.49% for the period of 2015-2019, significantly higher than that in the past, for example 4.5% between 2003 and 2008 (Chen et al., 2016).

Table 16 Sample description

Year	Number of firms	Number of fraud firms	Percentage of fraud firms
2015	2,411	225	9.33%
2016	2,586	215	8.31%
2017	2,840	216	7.61%
2018	3,248	271	8.34%
2019	3,464	453	13.08%
Total	14,549	1,380	9.49%

4.3.2 Variables

Dependent variable

Fraud. The dependent variable is a dummy variable, equaling 1 if the listed company and managers violate the rules and regulations of the CSRC within the observation year, and 0 otherwise. There are five observation years (2015-2019) in our panel data set.

Explanatory variables

Managers' regulatory focus. Following Kashmiri et al. (2019), the explanatory variable is measured by the percentage of prevention-related words subtracting that of promotion-related words in the 'Management Discussion and Analysis' (MD&A) section of annual reports in the year before the fraud observation year. The higher this variable, the more prevention-focused and less promotion-focused the management team is, and vice versa. The regulatory focus-related words are sourced on a basis of

the content analysis of MD&A, which shows managerial evaluation of the company's past performance, current status and future development. Previous studies have proved the validity of the linguistic approach to measure CEO's psychological traits via the content analysis of letters to shareholders in developed markets (Fanelli et al., 2009; Gamache and McNamara, 2019; McClelland et al., 2010). However, the letter to shareholders is not a mandatory part to be included in annual reports of Chinese listed companies. Instead, the content and quality of MD&A are strictly required by the CSRC in the *Guidelines for The Content and Format of Information Disclosure in Annual Reports by Publicly Traded Companies.* The CSRC explicitly requires firms to organize clear language and forbids hollow statements and stereotyped patterns in the MD&A section. Thus, MD&A could be embedded with specific values and beliefs of each firm's management team, making it a reasonable material for the analysis text. The process of content analysis includes word segmentation[14], counting regulatory focus related words and proportion calculation, which are processed by JAVA software.

The regulatory focus words are defined by a manually collected regulatory focus dictionary. The original regulatory focus dictionary was constructed by Gamache et al. (2015) and then validated by Kashmiri et al. (2019), and Mount and Baer (2022) to cater for the content analysis of the letters to shareholders in an English context[15]. To ensure the accuracy and validity of the translation into Chinese version, we followed the translating process of back-translation model from Brislin (1970, 1976), which is widely used in cross-cultural studies. First, one translator conducted the forward-translation from English to Chinese. Then the other translator, who had no access to the original text, back translated the Chinese dictionary to English, and the translated English version was compared to the original dictionary. If there was any word in the original dictionary not included in the back translated English version, for the omitted words, the first two steps were repeated by other two translators until all the words in

[14] Chinese word segmentation is the necessary step for natural language processing (NLP), because the words are structured continuously without spacing in Chinese sentences.

[15] The original dictionary is built on a summary of survey measures of regulatory focus, with suggestions from 25 subject matter experts in the field of regulatory focus. The detailed procedure has been explained by Gamache et al. (2015).

the original dictionary were covered by the back-translation version. Following the steps, we constructed a bilingual regulatory focus dictionary shown in Appendix 1. We also give an example about how we source the regulatory focus words based on a short paragraph from the MD&A of a random listed firm in our sample, which is presented in Appendix 2.

Moderators

The external feedback on corporate performance in the previous studies has been measured by hard elements (Devers et al., 2007) and soft elements (Gamache and McNamara, 2019) respectively. Accordingly, we measure the hard external feedback by the market evaluation of the company's economic performance (*Hard feedback*)-the Tobin's Q of the last year before the observation year, which equals to the firm market value divided by the book value of total asset. When Tobin's Q is lower, the hard feedback on firm performance is more negative. Following Gamache and McNamara (2019), we analyze media coverage of the firm on financial media to measure *Soft feedback* by calculating the ratio of relatively negative media coverage over positive coverage to the firm's total coverage during the last year before the observation year. The higher this moderator is, the more negative the feedback from the media is. The media coverage data is collected from the Financial News Database of Chinese Listed Companies (CFND)[16].

Control variables

Variables that could potentially be related to the commission of corporate fraud are controlled for, including firm financial and governance variables. *Ln(Size)* is measured by the log of total asset to control for firm size. *ROE* (Return on Equity) measures the firm profitability. *Liquidity* is measured by the ratio of cash and

[16] CFND uses artificial intelligence algorithms to analyze the news of listed companies. The database covers media coverage from over 400 influential online media and more than 600 professional newspapers in China. The method of content analysis of media coverage this database employs is the statistical approach based on Support Vector Machine, which is valid and reliable for judging the sentiment of news texts.

marketable securities to total assets, as Beasley (1996) finds financial distress could affect the likelihood of corporate financial statement fraud. *Growth* is the annual growth in total sales, and higher growth associated with more information asymmetry may lead to higher likelihood of fraud (Chen et al., 2016). Meanwhile, the effects of the internal and external governance have also been controlled for. *Ln(BoardSize)* is the log of numbers of board members plus one, and similarly *Ln(BoardMeeting)* measures the frequency of the meetings held by the board. *Female executive* is a dummy variable, equaling to 1 if there is any female director of the board or CEO in the firm. We include the gender related variable because Cumming (2015) finds gender diversity of the board has an effect on securities fraud. The ownership held by managers may affect their risk-taking ability (Kim and Lu, 2011) so *Executives' shareholdings* is controlled for. *Institutional ownership,* the sum of percentage of stock holdings by institutions, is included as institutional investors could be the efficient monitors and may prevent fraud (Chen et al., 2006). *Ownership concentration* is the percentage of shares held by the ten largest shareholders. All control variables are measured at the previous fiscal year. The detailed measurement of variables and data source are shown in Table 17.

Table 17 Description of variables and data source

Variable category	Variable name	Definition	Source
Dependent variable	*Fraud*	A dummy variable equaling to 1 if the listed firm violates the rules of CSRC within the observation year, and 0 otherwise	CSMAR
Explanatory variable	*Managers' regulatory focus*	The percentage of prevention focus words subtracting that of promotion focus words found in MD&A of annual report	Content analysis of MD&A with dictionary-regulatory focus words identified in Appendix 1

Moderator	*Hard feedback*	Tobin's Q, equaling to the firm market value divided by the book value of total asset of the year before the observation year	CSMAR
	Soft feedback	(Amount of negative media coverage – amount of positive media coverage) ÷ amount of total media coverage * 100, during the year before the observation year	CFND
Control Variables	*Ln(Size)*	The natural log of total assets	CSMAR
	ROE	Net income/equity	CSMAR
	Growth	Annual growth in total sales	CSMAR
	Liquidity	Cash and marketable securities/ total assets	CSMAR
	Ln(BoardSize)	The log of numbers of board members plus one	CSMAR
	Ln(BoardMeeting)	The log of numbers of board meetings plus one	CSMAR
	Female executive	A dummy variable equaling to 1 if there is any female director of the board or CEO in the firm, and 0 otherwise	CSMAR
	Executive's shareholdings	The sum of percentage of stock holdings by the executives	CSMAR
	Institutional ownership	The sum of percentage of stock holdings by institutional investors	CSMAR
	Ownership concentration	The percentage of shares held by the largest ten shareholders	CSMAR

Table 18 presents the descriptive statistics and correlation coefficients of all the variables. The results show that managers' regulatory focus has a negative mean value of -0.02, suggesting that managers show promotion focus more than prevention focus on average based on the content analysis of MD&As. None of the correlation coefficients is greater than 0.5, which means the correlations between the independent

variables are not high.

Table 18 Descriptive statistics and correlation matrix (Study 3)

	Variables	M	SD	1	2	3	4	5	6	7	8
1	*Fraud*	0.09	0.29								
2	*Managers' regulatory focus*	-0.02	0.01	0.11***							
3	*Hard feedback*	2.50	9.16	0.02**	0.02**						
4	*Soft feedback*	-0.20	0.30	0.17***	0.15***	0.04***					
5	*Ln(Size)*	22.18	1.34	-0.03***	-0.01*	-0.19***	-0.13***				
6	*ROE*	-0.12	249.41	-0.03***	-0.04***	-0.01	-0.06***	0.01*			
7	*Growth*	0.51	16.58	-0.003	-0.03***	-0.003	0.002	0.04***	0.001		
8	*Liquidity*	0.82	1.63	-0.04***	-0.02***	0.12***	0.003	-0.23***	0.01	-0.01	
9	*Ln(BoardSize)*	2.23	0.18	-0.03***	-0.04***	-0.06***	-0.06***	0.27***	-0.004	0.02***	-0.08***
10	*Ln(BoardMeeting)*	2.35	0.37	0.06***	0.01	-0.01*	0.002	0.25***	-0.02***	0.02**	-0.13***
11	*Female executive*	0.10	0.30	0.02**	0.02*	0.03***	0.05***	-0.06***	-0.02***	0.004	0.02***
12	*Executive's shareholdings*	0.07	0.14	-0.05***	-0.03***	-0.01	-0.04***	-0.28***	0.02*	-0.003	0.13***
13	*Institutional ownership*	0.43	0.25	-0.05***	-0.03***	-0.03***	-0.03***	0.44***	0.01	0.02***	-0.09***
14	*Ownership concentration*	0.59	0.15	-0.11***	-0.06***	-0.07***	-0.07***	0.13***	0.03***	0.03***	0.07***
	Variables			9	10	11	12	13			

10	*Ln(BoardMeeting)*	-0.02***				
11	*Female executive*	-0.07***	0.02*			
12	*Executive's shareholdings*	-0.15***	-0.04***	-0.01		
13	*Institutional ownership*	0.22***	0.02*	-0.03***	-0.05***	
14	*Ownership concentration*	0.01	-0.05***	0.01	0.19***	0.45***

Note: n = 14549. * p<0.10, ** p<0.05, *** p<0.01

4.3.3 Regression models

As the dependent variable is a dummy one, a binary logit regression model is applied to examine how managers' regulatory focus affects the probability of committing fraud:

$$\text{Fraud}_{i,t} = \ln\left(\frac{p}{1-p}\right) = \alpha + \beta_0 \text{ Managers' regulatory focus}_{i,t-1} + \beta_1 \text{Control variable}_{i,t-1} + \varepsilon_{i,t} \quad \text{Equation 1}$$

where *p* represents the probability that the company commits fraud. $Control_variable$ is a set of control variables including *Ln(Size), ROE, Growth, Liquidity, Ln(BoardSize), Ln(BoardMeeting), Female executive, Executive's shareholdings, Institutional ownership, Ownership concentration*. The year and industry fixed effects are also controlled for.

The following binary logit regression model is designed to test how the external feedback affects the relation between regulatory focus and the probability of committing fraud:

$$Fraud_{i,t} = ln\left(\frac{p}{1-p}\right) = \alpha + \beta_0\, Managers'\, regulatory\, focus_{i,t-1} + \beta_1 Inter\, variable_{i,t-1} + \beta_2 Control\, variables_{i,t-1} + \varepsilon_{i,t} \quad \text{Equation 2}$$

where $Inter_variable$ represents a set of interaction terms including *Managers' regulatory focus* × *Hard feedback* and *Managers' regulatory focus* × *Soft feedback*. We have also controlled for year and industry fixed effects in Equation 2.

4.4 Results

Table 19 demonstrates the binary logit estimation results, and the marginal effects of variables are reported. To test Hypothesis 1, Model 1 includes *Managers' regulatory focus* only as the explanatory variable, while Model 2 further introduces the control variables. Hypothesis 1 predicts that managers' prevention focus predominance is positively associated with the likelihood of fraud incidence. The results of both models

show that the coefficient for *Managers' regulatory focus* is positive and significant at the 1% level (β= 56.543 and 48.000 respectively). It implies that when managers' prevention focus relative to promotion focus is greater, firms are more likely to commit fraud. These results support our hypothesis 1, indicating that for security needs, predominantly prevention-focused managers are more likely to make improper managerial effort by creating short-term deceptive firm value to please shareholders (Firth et al., 2011). Meanwhile, for companies which are smaller in size; with a lower degree of liquidity; holding more board meetings; with less executives' shareholdings; with less concentrated ownership, they are more likely to commit fraud.

To test our Hypothesis 2 predicting the moderating effect of performance feedback, the interaction terms are included and the results are shown in Model 3 and 4. As shown in Model 3, the coefficient for *Managers' regulatory focus* × *Hard feedback* term is negative (β= -2.399) and significant at the 1% level, indicating for companies facing more negative feedback on their performance from the market, the positive effect of prevention focus predominance on fraud will be stronger. Model 4 examines the moderating effect of soft feedback-media coverage. The coefficient for *Managers' regulatory focus* × *Soft feedback* is 29.949 ($p < 0.05$), which means when the feedback from the media is more negative, the positive relationship between prevention focus predominance and fraud incidence is stronger. Thus, the moderating effect of performance feedback is supported.

Table 19 The relation between regulatory focus and fraud occurrence

Variables	Model 1	Model 2	Model 3	Model 4
Managers' regulatory focus	56.543***	48.000***	55.206***	35.402***
	(10.653)	(8.929)	(9.364)	(6.318)
Managers' regulatory focus × Hard feedback			-2.399***	
			(-3.090)	
Hard feedback			-0.029***	
			(-2.731)	
Managers' regulatory focus × Soft feedback				29.949**
				(2.116)
Soft feedback				2.009***

				(7.717)
Ln(size)		-0.143***	-0.125***	-0.065**
		(-5.201)	(-4.386)	(-2.359)
ROE		-0.0001	-0.0001	-0.0001
		(-1.150)	(-1.215)	(-0.180)
Growth		-0.001	-0.001	-0.001
		(-0.100)	(-0.102)	(-0.228)
Liquidity		-0.149***	-0.149***	-0.124***
		(-4.463)	(-4.448)	(-3.931)
Ln(BoardSize)		-0.200	-0.207	-0.105
		(-1.183)	(-1.220)	(-0.614)
Ln(BoardMeeting)		0.620***	0.609***	0.572***
		(7.261)	(7.129)	(6.673)
Female executive		0.097	0.093	0.054
		(1.054)	(1.017)	(0.574)
Executive's shareholdings		-1.677***	-1.676***	-1.368***
		(-4.996)	(-4.992)	(-4.045)
Institutional ownership		-0.267	-0.3123	-0.275
		(-1.361)	(-1.585)	(-1.364)
Ownership concentration		-1.476***	-1.416***	-1.393***
		(-5.786)	(-5.529)	(-5.359)
Year	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Constant	-0.726***	2.273***	2.007***	0.315
	(-3.217)	(3.449)	(2.969)	(0.470)
Observations	14549	14549	14549	14549

Note: *z-value* in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.5 Supplemental and robustness analyses

4.5.1 Assessing potential partial observability problem

Although standard logit (or probit) model is widely applied in the corporate fraud literature to predict the misconduct of companies (Chen et al., 2016; Cumming, 2015; Dechow et al., 2011; Zhang, 2018), researchers have also suggested the bivariate probit model to take account of the partial observability issue in fraud (Khanna et al., 2015; Yiu et al., 2019). Partial observability indicates that only fraud detected by the regulatory bodies (e.g., the CSRC in our case) can be observed in the sample, and the

undiscovered fraud may lead to potential estimation biases. Thus, a bivariate probit model is introduced as an alternative estimation technique to address this potential issue (Poirier, 1980). Following Chen et al. (2006) and Yiu et al. (2019), we further utilize the bivariate probit model to test our hypotheses by designing two steps/equations defined below:

$$Fraud_{i,t} = \alpha_F + \beta_F F_Variables_{i,t-1} + \mu_{i,t} \quad \text{Equation 3}$$

$$Detect_{i,t} = \alpha_D + \beta_D D_Variables_{i,t-1} + \nu_{i,t} \quad \text{Equation 4}$$

where $F_Variables_{i,t-1}$ contains a set of variables explaining the likelihood of Firm i committing fraud in year t, and $D_Variables_{i,t-1}$ is the set of variables predicting the likelihood of being detected. To emphasize, the two sets of variables should not be the same (Poirier, 1980). Thus, in addition to the variables affecting the likelihood of fraud in the previous analysis, other variables related to the monitoring and governance effect are included in Equation 4, such as *Leverage* measured by the ratio of total debts to total assets, *Independent director ratio* measured by the ratio of independent directors divided by the board size, *Foreign auditor* measured by a dummy variable equaling to 1 if a firm employs a foreign auditor, and *Big4* measured by a binary variable indicating whether a firm employs the auditor of Big Four.

Table 20 presents the results of bivariate probit regression. The results of each model show the main effects of the independent variables on the probability of a firm committing fraud-P(F) and the probability of being detected-P(D|F) respectively. Model 1 examines the relationship between managers' regulatory focus and the likelihood of fraud with partial observability. The coefficient of *Managers' regulatory focus* is positive and statistically significant at the 1% level (β=18.979), which is consistent with our previous results found in Table 19. Likewise, Model 2 and Model 3 add the moderators and interaction terms to predict the probability of corporate fraud using the bivariate probit model, and the estimation results of moderating effect are quantitatively unchanged. Therefore, our findings are robust after addressing the potential issue of partial observability.

Table 20 Results of Bivariate Probit Regression with partial observability

Dependent variable: Fraud	Model 1 P(F)	P(D|F)	Model 2 P(F)	P(D|F)	Model 3 P(F)	P(D|F)
Managers' regulatory focus	18.979***		21.059***		16.885***	
	(4.641)		(4.689)		(4.930)	
Managers' regulatory focus × Hard feedback			-1.645***			
			(-2.926)			
Hard feedback			-0.007***			
			(-3.051)			
Managers' regulatory focus × Soft feedback					22.939***	
					(3.033)	
Soft feedback					1.043***	
					(5.457)	
Ln(size)	-0.146*	0.057	-0.166	0.106	-0.198***	0.159**
	(-1.912)	(0.733)	(-1.539)	(0.838)	(-3.165)	(2.029)
ROE	-0.000		-0.000		-0.000	
	(-1.410)		(-1.375)		(-0.776)	
Leverage		0.695***		0.642***		0.551***
		(4.632)		(5.079)		(4.871)
Growth	-0.022***	0.052***	-0.022***	0.050***	-0.019***	0.063***
	(-3.130)	(4.202)	(-2.672)	(4.301)	(-2.805)	(3.914)
Liquidity	-0.002		-0.003		-0.009	
	(-0.203)		(-0.281)		(-0.766)	
Ln(BoardSize)	1.327***	-1.316***	1.236	-1.255**	1.361**	-1.467***
	(2.702)	(-3.568)	(1.588)	(-2.215)	(2.420)	(-3.110)
Ln(BoardMeeting)	-0.066	0.265**	-0.053	0.236	0.004	0.212
	(-0.460)	(1.987)	(-0.342)	(1.627)	(0.031)	(1.471)
Female executive	0.066		0.060		0.041	
	(1.507)		(1.448)		(0.976)	
Executive's shareholdings	-0.667***		-0.616***		-0.557***	
	(-4.009)		(-3.890)		(-3.828)	
Institutional ownership	-0.134		-0.168*		-0.107	
	(-1.449)		(-1.950)		(-1.246)	
Ownership concentration	-0.499***		-0.391***		-0.498***	
	(-3.301)		(-2.615)		(-3.616)	
Independent director ratio		0.016		-0.041		0.014
		(0.057)		(-0.149)		(0.046)
Foreign auditor		-0.378**		-0.363**		-0.471***

		(-2.392)		(-2.465)		(-3.064)
Big4		-0.023		-0.030		-0.050
		(-0.344)		(-0.478)		(-0.706)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.630	0.579	2.158	-0.450	2.295	-0.908
	(0.824)	(0.305)	(0.686)	(-0.137)	(1.183)	(-0.413)
Observations	14549		14549		14549	
Wald χ2	397.18^{***}		364.60^{***}		569.05^{***}	

Note: *z-value* in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.5.2 The alternative measures

A single measurement of executives' regulatory focus is used in our main analyses. Some may argue promotion focus and prevention focus are working independently (Gamache et al., 2015, 2020), and should thus be treated as two independent variables. To address this concern, we include *Managers' promotion focus* and *Managers' prevention focus* to replace the explanatory variable in our main tests. The results are presented in Model 1 of Table 21. In line with our previous prediction, the coefficients of *Managers' prevention focus* (β = 51.749, p < 0.01) and *Managers' promotion focus* (β = -47.115, p < 0.01) indicate the more prevention- or less promotion-focused the management team is, the more likely the firm is to commit fraud.

4.5.3 The alternative sample construction

The sample for our main analysis consists of all Chinese A-share publicly listed firms. In addition to utilizing the full sample for analysis, some studies conduct the analysis of predicting fraud with a control firm approach (also known as match sample design) (Cumming et al., 2015; Yiu et al., 2019). The sample includes two groups of firms (a group of firms committing fraud, and a group of control firms not committing fraud). As such, we construct an alternative sample with 2434 firms (1217 matched pairs) by matching every fraud firm with a non-fraud firm between 2015 and 2019[17]. The matching criteria are: 1) the non-fraud firm is in the same industry as the fraud firm

[17] A few fraud firms fail to match any non-fraud firm so were excluded from the matching-pair sample.

is; 2) the non-fraud firm's size is similar to fraud firm's size (the difference of the two firms' total asset value is no more than 30% of the fraud firm's value in the year before the observation year); 3) for each pair, the two firms are observed in the same year and all the financial data are available during the observation period. Model 2 of Table 21 shows the estimation results of the alternative sample with the matching-pair design. The coefficient for *Managers' regulatory focus* is also positive and significant at the 1% level, which is consistent with our previous results using the full sample.

Table 21 Results of alternative measures and samples

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Managers' regulatory focus		30.108***	40.145***	44.744***	31.189***
		(3.910)	(6.286)	(6.752)	(4.602)
Managers' regulatory focus × Hard feedback				-1.771***	
				(-3.102)	
Hard feedback				-0.003	
				(-0.498)	
Managers' regulatory focus × Soft feedback					46.267***
					(2.665)
Soft feedback					2.304***
					(7.102)
Managers' prevention focus	51.749***				
	(4.261)				
Managers' promotion focus	-47.115***				
	(-7.909)				
Ln(size)	-0.143***	0.038	-0.107***	-0.063*	-0.034
	(-5.204)	(0.849)	(-3.244)	(-1.806)	(-1.033)
ROE	-0.000	-0.001*	-0.000	-0.000	0.000
	(-1.154)	(-1.831)	(-0.014)	(-0.051)	(0.595)
Growth	-0.001	-0.004	0.014	0.014	0.015
	(-0.101)	(-0.268)	(0.893)	(0.866)	(0.978)
Liquidity	-0.149***	-0.114***	-0.129***	-0.132***	-0.110***
	(-4.453)	(-2.906)	(-3.518)	(-3.580)	(-3.170)
Ln(BoardSize)	-0.202	-0.019	-0.270	-0.276	-0.223
	(-1.192)	(-0.078)	(-1.353)	(-1.383)	(-1.108)
Ln(BoardMeeting)	0.622***	0.688***	0.524***	0.496***	0.521***

	(7.266)	(5.540)	(5.188)	(4.915)	(5.142)
Female executive	0.097	0.039	0.171	0.155	0.119
	(1.057)	(0.290)	(1.538)	(1.391)	(1.052)
Executive's shareholdings	-1.675***	-1.208**	-1.646***	-1.643***	-1.391***
	(-4.988)	(-2.376)	(-4.427)	(-4.424)	(-3.716)
Institutional ownership	-0.269	-1.606***	-0.329	-0.432*	-0.326
	(-1.372)	(-5.053)	(-1.461)	(-1.901)	(-1.413)
Ownership concentration	-1.475***	1.366***	-1.395***	-1.243***	-1.353***
	(-5.779)	(3.414)	(-4.669)	(-4.125)	(-4.451)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
Constant	2.235***	-1.714	1.726**	0.818	-0.040
	(3.346)	(-1.616)	(2.204)	(1.006)	(-0.051)
Observations	14549	2434	11449	11449	11449

Note: *z-value* in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.5.4 Supplemental analysis concerning top managers' turnover

Some research investigating CEO regulatory focus raises the issue of CEO turnover and restricts the analyses to firms without CEO turnover (e.g. Kashmiri et al., 2019). In our research context, the turnover of top managers especially firm leaders during the observation year may influence the overall managerial regulatory focus. Therefore, we conduct a supplemental analysis based on a sub-sample of firms without the turnover of CEO and the board chair in the observation year (N = 11,449). Model 3-5 of Table 21 tests our hypotheses using the sub-sample. In Model 3, the coefficient of *Managers' regulatory focus* is still positive and significant (p < 0.01). Meanwhile, the results for the tests of the moderating effects of performance feedback using the sub-sample are shown in Model 4 and 5, which are also in line with the previous findings.

4.5.5 Exploring the relationship between managers' promotion focus predominance and corporate governance

Above we have discussed the influence of predominantly prevention-focused managers on the unethical behavior in corporate governance. Here, we attempt to

further explore the governance role of managers' regulatory focus in another aspect of corporate governance-corporate social responsibility (CSR). CSR refers to "context-specific organizational actions and policies that take into account stakeholders' expectations and the triple bottom line of economic, social and environmental performance" (Aguinis and Glavas, 2012), thus including the interests of a wide range of stakeholders (Carroll and Shabana, 2010). In addition to the basic economic responsibility, the legal, ethical, environmental and other responsibilities are also reflected in CSR in line with the stakeholder theory (Freeman et al., 2004). Resulting from these wide objectives of CSR, the desired outcomes and accomplishments for firms and managers tend to be achieved in the long run relatively (Eccles et al., 2014). Since predominantly promotion-focused managers hold a broader stakeholder perspective and are long-term achievement-oriented (Gamache et al., 2020), they are perceived to actively participate in CSR activities and thereby result in better CSR outcomes.

To explore this relationship, we construct a new dependent variable-*CSR score*, which is measured by the annual score of the firms' CSR performance. The CSR data are obtained from the Hexun.com, providing a comprehensive CSR evaluation of all listed firms[18]. *CSR score* is treated as the dependent variable which is explained by *Managers' regulatory focus* and other control variables. Table 22 shows that the coefficient of *Managers' regulatory focus* is negative and significant at the 1% level, indicating when managers are more predominantly promotion-focused, firms perform better at CSR. This enriches our finding about the governance role of managers' regulatory focus, suggesting that the greater managers' promotion focus relative to prevention focus, the better corporate governance practice is regarding the fulfillment of social responsibility, while the greater managers' prevention focus relative to promotion focus, the worse corporate governance practice is regarding corporate financial misconduct.

[18] Based on the annual reports and CSR reports of listed companies, Hexun.com annually rates each firm after systematically assessing the firm's fulfillment of responsibility to shareholders, employees, suppliers, the environment, and the local community.

Table 22 Results of OLS fixed effects with CSR score as the dependent variable

Dependent variable: CSR score	
Managers' regulatory focus	-304.704*** (-16.381)
Ln(size)	2.449*** (25.393)
ROE	0.003*** (6.180)
Growth	-0.008 (-1.246)
Liquidity	0.754*** (11.413)
Ln(BoardSize)	1.045* (1.704)
Ln(BoardMeeting)	-2.409*** (-8.006)
Female executive	0.564 (1.630)
Executive's shareholdings	5.745*** (5.656)
Institutional ownership	1.007 (1.460)
Ownership concentration	11.055*** (11.932)
Year	Yes
Industry	Yes
Constant	-47.394*** (-19.595)
Observations	14549

Note: *t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.6 Discussion and conclusions

To unpack the psychological mechanism that drives executives to take fraudulent activities, this study integrates UET with RFT to examine whether managers' regulatory focus can predict the propensity for committing fraud, and if so, how this motivation-behavior relationship is moderated by external feedback on corporate performance, a crucial situational stimulus for managers in the finance context. Using a large sample of Chinese listed firms, we find strong evidence suggesting that for ensuring safety needs, predominantly prevention-focused managers are more inclined to engage in fraudulent activities than principally promotion-focused managers. Such a positive relationship is strengthened when firms undergo overall more negative external feedback from the capital market or the media. It is mainly because this negative situation tends to deviate from safety end states desired by predominantly prevention-focused managers, and thus persuade them to commit fraud more to ensure safety.

4.6.1 Theoretical implications

As one of the first empirical studies to integrate UET and RFT in corporate governance issues, this study contributes to the fraud literature by drawing attention to the role of an under-explored attribute of top managers. The existing fraud research building upon UET has largely focused on the observable characteristics of top managers especially their demographical characteristics and experiences as the proxies of executives' cognitive frame (Cumming et al., 2015; Koch-Bayram and Wernicke, 2018; Li et al., 2022; Wahid, 2019; Xu et al., 2018). This leaves us at a loss as to 'the real psychological and social processes that are driving executive behavior' (Hambrick, 2007, p. 335), also known as the 'black box problem'. Accordingly, a few studies have moved forward by investigating some psychological characteristics such as personalities (e.g., overconfidence) (Rijsenbilt and Commandeur, 2013; Schrand and Zechman, 2012), but their effects on behavior are still not direct but mediated by motivational processes (Gamache et al., 2015; Lanaj et al., 2012). To further open the 'black box' of executives' decision making in fraudulent activities, we examine the impact of a key motivational attribute-regulatory focus and unpack the executives' psychological mechanism of their misbehavior (i.e., seeking safety and avoiding undesirable outcomes).

Second, we also advance fraud research in China and other emerging markets sharing similar institutional background by suggesting the 'safety-achievement' frame to explain the executives' motivations for fraud. In western economies, the reasons for top managers to commit fraud have been researched extensively by exploring the fraud gains and losses for managers-the "gain-loss" frame of fraud (Becker, 1968; Dyck et al., 2010; Johnson et al., 2009; Zahra et al., 2005). However, the different institutional setting and corporate governance structure can influence "how corporate executives feel pressure, create or are provided opportunity, and rationalize wrongdoing" (Schnatterly et al., 2018, p. 2424). China has experienced the rapid growth of the financial market, while its underdeveloped institutional environment leads to weak investor protection and severe principle-agent problems (Allen et al., 2005), as shown

in the prevalence of fraud. In such an institutional context, the pressure and rationalization regarding fraudulent behavior for corporate executives could differ from those in developed markets, thus implying distinct motivations behind fraud instead of simple gain-seeking. By contextualizing UET and RFT in fraud issues of the emerging market, we provide a more nuanced understanding of managers' motivation for fraud in China with its unique institutional environment and corporate governance structure.

Third, when discussing the influence of executive regulatory focus on organizational-level outcomes, the phenomenon of regulatory fit has been suggested to indicate the boundary conditions (Gamache et al., 2015; Higgins, 2000; Spiegel et al., 2004). Our study also enriches this body of work by exploring the fit factors in corporate governance context. The previous work shows the factors at the individual level or intra-organizational level can serve as the situational stimuli and fit individuals' regulatory focus so moderate its impact, such as the managers-related factors (e.g., CEO power and executive compensation) (Gamache et al., 2015; Kashmiri et al., 2019). While executive regulatory focus can impact the organizational-level outcomes, regulatory fit with the organizational-level factors, especially related to the environmental conditions, remains relatively untested (Johnson et al., 2015). To answer the call for the further discussion of organizational-level factors, we highlight how external feedback as the situational stimuli interacts with managers' motivational attribute in shaping corporate misbehavior. More specifically, if the negative situation threatens the safety needs of prevention focus, the fraudulent efforts to avoid the mismatches by predominantly prevention-focused managers can be enhanced. This study is therefore believed to provide some new insights into the understanding of the phenomenon of regulatory fit.

4.6.2 Practical implications

Although we have indicated the dark side of managers' prevention focus, our finding does not necessarily imply that managers' prevention focus is bad for corporate

governance overall. It has potential advantages and benefits. For example, the duty and safety concern may drive prevention-focused managers to fulfill their agent responsibilities by actively following and answering shareholders' voices. Managers themselves could also benefit from understanding how their inner traits influence their behavior and think carefully before they act. We also suggest that firms could consider the impact of managers' prospective regulatory focus while making hiring decisions and personnel arrangement. Meanwhile, investors may take account of managers' regulatory focus together with the external feedback to evaluate the firm and make investment decisions. Regulators could pay heed to the management level factors to help detecting and preventing the potential firm wrongdoing.

4.6.3 Limitations and future research directions

We recognize that our empirical data are from publicly listed firms in one country and the measures of regulatory focus are based on MD&A texts. Thus, we encourage new work in other contexts like non-listed companies, other markets or using direct measures (e.g., questionnaires and interviews) to explore the generalizability of our work. Also, we hope our insights inspire future research to investigate the effects of other psychological traits or cognitive constructs of managers on a broader range of corporate governance outcomes.

Appendix 1 Bilingual regulatory focus dictionary

Promotion-related words		Prevention-related words	
Accomplish	完成；实现	Accuracy	精确
Achieve	取得；成功	Afraid	担心；恐怕；畏惧
Advancement	进步；前进	Careful	仔细(的)；小心(的)；精心(的)；慎重(的)；注意(的)
Aspiration；Aspire	渴望；志向；追求	Anxious	忧虑(的)；焦急(的)
Attain	获得；达到	Avoid	避免；摆脱；规避
Desire	愿；愿望；想要	Conservative	保守(的)
Earn	赚得；赢得；赚取	Defend	防护
Expand	扩大；扩张；展开；扩展；	Duty	责任；任务
Gain	获益；好处；利润；利益；收益	Escape; Escaping; Evade	逃脱；避开；躲避；逃避
Grow	成长；增加；增强；升值；	Fail	失败；辜负；未能
Hope; Hoping; Wish	希望；但愿；盼望；期待；期望；企求；指望	Fear	害怕；担忧
Ideal	理想(的)；完美(的)	Loss	损失；亏损；丧失；失去
Improve	改善；改进；推动；推广	Obligation	职责；义务
Increase	增长；提高；增大；增多；增进；增添；增值	Ought	应当；本应；应该
Momentum	势头；冲力；动力	Pain	痛苦
Obtain	得到	Prevent	防止；妨碍；以免；预防；阻碍；阻止
Optimistic	乐观(的)；看好	Protect	保护；保卫
Progress	发展；进程；进展；升级	Responsible	负责(的)；尽责(的)；可靠(的)
Promoting; Promotion	促进；提升	Risk	风险；冒险；危险
Speed; Velocity	速度；进度	Safety	安全
Swift	快(的)；快速(的)；迅速(的)	Security	保证；担保
Toward	朝；向；朝向；接近；靠近；趋向	Threat	威胁
		Vigilance	警惕；谨慎；警觉；警戒

Note: Since certain English word could be translated to more than one single Chinese words and likewise a Chinese word may match with the meaning of several English words, this table does not list repeated Chinese words once they have been included in one place.

Appendix 2 Example of test analysis on MD&A

To give an example, the source text is cited as below:

“在大宗商品市场持续低迷，价格*风险*、履约*风险*陡增的背景下，公司及时调整主营业务结构，…，逐步淘汰低质量及高风险业务，有效*规避*了重大业务*风险*。”

The above Chinese text could be translated into English:

“In the context of the continued downturn of the bulk commodity market with increasing risks of price change and contract fulfillment, the company adjusted its main business structure in time, ……, and the low-quality and high-risk projects are phased out, thus effectively avoiding significant business risks.”

First, the Chinese sentences are segmented into words. For instance, the last clause with underline in the example text could be divided into “有效; *规避;* 了; 重大; 业务； *风险*” (“*thus effectively avoiding significant business risks*”). Next, the regulatory focus-related words would be counted, like *规避 (avoiding)* and *风险 (risk)* in the clause. Then the percentage of regulatory focus-related words is further calculated. For example, 2/6=33.33% of this clause are recorded as prevention focus-related words.

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Chapter 5: Conclusions

This chapter summarizes the main findings of this thesis, followed by an explanation of theoretical contributions and practical implications. The limitations are also discussed to provide future research opportunities.

5.1 Summary of the main findings

Corporate social (ir)responsibility has received increasing attention with its great impact on business and society. Although CSR/CSiR are principally associated with policies and actions by firms, "such policies and actions are influenced and implemented by actors at all levels of analysis" (Aguinis & Glavas, 2012, p. 933). Thus, a sizeable literature has discussed the predictors of CSR/CSiR at different levels, but some important determinants still remain under-explored. In particular, scholars have called for the attention to the emergence of informal institutional factors, and meanwhile the importance of micro-level variables (e.g., at the individual and team levels) (Aguinis & Glavas, 2012; El Ghoul et al., 2016; Hambrick, 2007; Schnatterly et al., 2018). This thesis answers these calls and fills the knowledge gaps by introducing three unstudied but potentially influential determinants with various theoretical perspectives, and especially exploring the underlying mechanisms linking them with firm social behavior. A summary of Chapters 2, 3 and 4 including three empirical studies is shown in Table 23, which illustrates their respective research focus, theoretical perspectives, hypotheses, empirical methods, and findings. Overall, the main findings of this thesis indicate three important determinants of CSR/CSiR, which are public influence on social media, CEO sociability and managers' regulatory focus. In line with the literature suggesting that there are determinants of CSR at different levels (Aguinis & Glavas, 2012), our findings demonstrate both the role of informal institutional influence at the institutional level and managers' effect at the firm or individual level. The boundary conditions have also been identified for each

determinant to deepen the understanding of their impact on firm social outcomes.

Table 23 A summary of the three empirical studies

Research focus	Theoretical perspective	Analytical framework and hypotheses	Empirical methods (All quantitative)	Results and findings (✓: supported, ✗ not supported)
Chapter 2: The informal institutional influence of social media on CSR performance	Institutional theory & Resource dependence theory	Social media attention & sentiment → H1a & H1b (+) → CSR performance H2a & H2b (-): State ownership H3a & H3b (-): Firm efficiency	Sample: 3,362 Chinese firm-year observations (2014-2018) Regression models: firm fixed-effect OLS models	H1a&b (✓) H2a (✓) H3a&b (✓) * H2b (✗) because of institutional complexity of the government
Chapter 3: The implications of CEO sociability for CSR performance	Upper echelon theory & A needs-affordances-consequences approach	CEO sociability → H1 (+) → CSR performance H2(+): CEO status H3 (+): CEO reputation	Sample: 7,421 Chinese firm-year observations (2009-2020) Regression models: firm fixed-effect OLS models	H1 (✓) H2 (✓) H3 (✓)
Chapter 4: The relationship between managers' regulatory focus and fraud incidence	Upper echelon theory & Regulatory focus theory	Predominantly prevention-focused managers → H1 (+) → Corporate fraud incidence H2(+): Negative performance feedback	Sample: 14,549 Chinese firm-year observations (2015-2019) Regression models: binary logit regression models	H1 (✓) H2 (✓)

As summarized in this table, Chapter 2 conducts an empirical study that aims to address the first question raised in the introduction chapter: *could public attention and sentiment from social media to firms exert any informal institutional influence on CSR performance*? To theorize the institutional role of social media in CSR and also identify the boundary conditions, this chapter adopts an integrated theoretical perspective by combing institutional theory (IT) and resource dependence theory (RDT). According to their compatible arguments about environmental influence, the public attention and sentiment on social media are theorized to have a positive effect on corporate social performance. Further, based on their divergent foci suggesting heterogeneous organizational responses (Oliver, 1991), this positive effect is expected to be weakened by governmental influence (e.g., corporate state ownership) and firm efficiency, because they are shaping institutional complexity and firms' dependence on the public in social media. The analytical framework and hypotheses are basically supported by the empirical evidence based on 3,362 Chinese firm-year observations between 2014 and 2018. As one of the moderating hypotheses regarding state ownership is not supported, this chapter also conducts some further analyses considering internal institutional complexity of the government. The supplemental findings indicate that governmental influence as a formal institutional pressure can shape the institutional role of social media in CSR when there are multiple, and more importantly, incompatible pressures from the public and the government.

Chapter 3 sheds lights on CEO sociability as a powerful determinant of CSR at the individual level of firms. CEOs are key individuals who are representing their firms, and their characteristics could be reflected in firm outcomes as suggested by upper echelons theory (UET) (Bertrand et al., 2021; Hambrick, 2007). CSR as a firm social outcome involves a lot of interactions with stakeholders and society. To identify the prominent CEO characteristic which can provide great explanations to this firm outcome, this chapter draws attention to CEO sociability showing CEOs' social participation and interaction tendency. Accordingly, this chapter attempts to answer the second question: *could CEO sociability predict corporate social performance*?

Building on insights from the social media and leadership literature, a needs-affordances-consequences approach to social CEOs is developed to suggest their stronger motives and ability of social contribution, which lead to better CSR performance. Keeping the focus on the individual/CEO level, the analytical framework further proposes that higher social evaluation of CEOs (higher status or reputation) can amplify these motives and ability so strengthen the positive relationship. Those hypotheses are supported by the empirical results using a sample of 7,421 Chinese firm-year observations from 2009 to 2020. Thus, the findings not only demonstrate the positive implications of CEO sociability for firm social contribution, but also indicate the moderating effects of CEO status and reputation.

Chapter 4 discusses a psychological attribute of top managers to understand their underlying motivations behind corporate accounting fraud, a corporate irresponsible behavior frequently observed in emerging markets. This chapter shifts the focus to CSiR, and similar to Chapter 3, builds on UET and investigates top managers' characteristics to explore the explanations for financial misconduct. Inspired by regulatory focus theory, the psychological attribute this chapter investigates is regulatory focus that might trigger managers' different emphases on individual achievement or safety (promotion focus vs prevention focus). The main research question is: *What is the relationship between managers' regulatory focus and the occurrence of accounting fraud*? The research context is set in China with relatively weak investor protection and severe principle-agent problems, where managers' prevention focus is expected to increase the likelihood of committing fraud to ensure safety needs. This relationship is empirically supported by a large sample of 14,549 firm-year observations, which is found to be further strengthened by negative feedback from the market and media coverage.

5.2 Theoretical contributions

By conducting three empirical studies to discuss the relationships between social media, top managers' characteristics, and corporate social (ir)responsibility, this thesis

makes contributions to a wide range of literature as presented in Table 24.

Table 24 The summary of contributions

Chapter	Theoretical contributions	The relevant literature that are contributed to
Chapter 2	Contribution 1: The demonstration of social media influence as an informal institutional force	Research on the institutional determinants of CSR
	Contribution 2: The emphasis of social media's institutional role rather than its communication role	The social media and firm outcomes literature
	Contribution 3: The discussion of interaction between social media influence and governmental impact	The institutional complexity and organizational responses literature
Chapter 3	Contribution 4: The investigation of a previously overlooked but important CEO social trait - sociability	The upper echelons and CSR literature
	Contribution 5: A new conceptual understanding of CEO social media engagement - CEO sociability	The CEO social media use and firm outcomes literature
	Contribution 6: The adoption of an integrative needs-affordances-consequences approach to social CEOs	The social media and leadership literature
Chapter 4	Contribution 7: The application of managers' regulatory focus to explain managerial motivation behind misconduct	Research on the antecedents of fraud
	Contribution 8: The building of 'safety-achievement' frame for understanding fraud in the Chinese context	Fraud research in China and similar emerging markets

Taking a holistic view, the three chapters are exploring the determinants of CSR/CSiR, and the similar research themes make them closely connected. Meanwhile, the three chapters have different research focuses and adopt distinct theoretical lens, thus making independent contributions to the literature and theories. More specifically,

Chapters 2 and 3 are discussing the predictors of corporate social performance and involve the same object, i.e., social media. However, the focused social media-related factors and levels of analysis are very different (social media attention/sentiment vs CEO social media presence), as social media plays dissimilar roles in the two chapters. Chapter 2 regards social media as a platform for aggregating informal public pressures, thus investigating online engagement of the public and its external influence on CSR. By comparison, Chapter 3 views social media as a channel to captures CEO sociability, thereby observing online engagement of firm CEOs and the implications of this internal managers' trait for CSR. With the divergent focus, the institutional- and CEO-levels factors are constructed respectively. Moreover, they theoretically differently shape CSR so that their effects are explained by the different theoretical perspectives, i.e., IT and RDT for understanding the environmental influence vs UET for explaining top managers' impact. As a result, Chapter 2 contributes to CSR research as well as IT and RDT by suggesting an emerging informal force in the institutional environment with the development of Internet, while Chapter 3 extends CSR literature and UET by demonstrating an influential and observable trait of firm CEOs at the social media age.

Similarly, based on UET, the determinants in Chapters 3 and 4 are both analyzed at the management level to examine the impact of top managers' characteristics on firm social outcomes. However, Chapter 3 focuses on socially responsible outcomes to explore the role of CEO social attributes, whereas Chapter 4 pays attention to a specific irresponsible firm outcome (i.e., fraud) by looking into managers' motivational attributes. In addition to the divergent focus on CSR vs CSiR outcomes, the discussion of these two characteristics also contributes to UET in different ways. The former chapter makes contributions by shifting the UET focus from core self-evaluation personalities such as overconfidence showing CEOs' perception towards themselves, to a social-aspect trait indicating their tendency towards interactions with society. The latter moves the UET and fraud research forward by introducing a key motivational attribute originating in the field of psychology to unpack executives' psychological mechanism of misbehavior.

To summarize, this thesis enriches research on the determinants of corporate social (ir)responsibility, and also makes specific theoretical contributions to institutional theory, resource dependence theory and upper echelons theory while exploring the relationships and mechanisms.

5.3 Managerial and societal implications

The findings of this thesis also provide practical implications for firms and stakeholders. For firms and managers, this thesis has shown the importance of external power in the environment as well as internal influence of top managers. The attention to social pressures emerging on online platforms will help firms to obtain and maintain their legitimacy so ensure continued survival. On the other hand, a clear understanding of the impact of managers' characteristics such as sociability and regulatory focus could make firms better achieve strategic goals like sustainable development by making appropriate hiring decisions and personnel arrangement.

Firm stakeholders and the general public could also benefit from the realization of how our individual power and managers' characteristics are shaping firm actions and outcomes. In terms of the power of firm stakeholders such as consumers, the Internet affords efficient platforms to exert individual influence on firms, and for example, the stakeholders themselves can utilize social media to shape corporate behaviors involving their interests. As for managers' characteristics discussed in this thesis, they are giving some informative clues for firm outsiders to make decisions. For example, firm stakeholders can observe the social interaction of executives or the texts they create to infer their motives and ability behind, and then get an idea of how the related firm outcomes are affected. The government and regulators could also join to improve corporate governance by cooperating with people's online influence or having closer investigations on firm leaders and managers.

5.4 Limitations and future research

The overall limitations of this thesis are discussed as follows for offering directions to future research. First, in order to give a comprehensive understanding of the respective social media-related determinants in Chapters 2 and 3, two independent studies are designed to conduct different levels of analysis (each chapter mainly at one level of analysis). Since "social media" can connect these two studies, a multilevel integration of the determinants may give interesting insights into "the exploration of potential effects across levels" (Aguinis & Glavas, 2012, p. 954). For example, how social media attention affects social media engagement of firms and managers, thus leading to further consequences for CSR (e.g., if higher social media attention could make social CEOs more socially responsible – a moderating mechanism)? Alternatively, how CEO social media engagement affects the public attention or attitude on social media (e.g., whether CEO social media engagement results in higher social media attention, which then positively affects corporate social performance – a mediating mechanism)? Hence, there could be multiple research topics and potentially interesting findings. Future research can delve deep into these topics through theoretical discussion and empirical tests accordingly.

Second, CSR as the main research objective, especially in Chapters 2 and 3, is treated as a relatively entire construct. However, as suggested by previous scholars, CSR research might benefit from the deconstruction of CSR and the detailed discussion of its different dimensions so that more comprehensive understandings could be obtained (Orlitzky et al., 2017; O'Sullivan et al., 2021; Tang et al., 2015b). In this thesis, as the public influence of social media and CEO sociability have been demonstrated to improve the overall corporate social performance, some additional empirical analyses are included to look at different CSR areas such as firm donation, CSR strengths and CSR concerns. Even with those empirical tests, the sub-dimensions of CSR or more specific social behaviors have not been fully and systematically explored, especially from the theoretical perspective. Future research is encouraged to go further by providing a more complete theoretical or analytical framework, with which different CSR areas or dimensions could be analyzed comparably and coherently. For instance,

stakeholder theory accounts for different groups of firm stakeholders and also explains various corporate social behaviors from the perspectives of diverse stakeholders (Dmytriyev et al., 2021). In particular, the stakeholder prioritization argument based on this theory (Hall et al., 2015) may provide valuable insights for explaining the potentially heterogeneous effects of social media influence (or CEO sociability) on different CSR dimensions.

Lastly, social media data and top managers' text data have not been fully explored in this thesis. Due to the research focus, particular attention is paid to the number and sentiment of social media posts in Chapter 2, the account and posting frequency of CEOs' social media usage data in Chapter 3, and regulatory-focus words identified in MD&A texts of Chapter 5. Although some basic content analysis methods have been used such as word counting of specific words, there are still a lot of opportunities for method innovation. Social media provides big and rich data "that can be utilized to answer a wide range of research questions from various disciplines" (Zachlod et al., 2022, p. 1064), and managers' texts are also embedded with plenty of meanings and values which deserve more exploitation. For example, some advanced computer approaches with artificial intelligence algorithms are applicable to analyze people's texts from social media and firm annual reports. For research questions concerning social media or top managers' values, future research could employ those innovative text analysis methods for more accurate and deeper interpretation.

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