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Chams, Nour; Zakriya, Mohammed. «From "who cares" to "what they care about" : the impact of corporate governance on environmental and social performance in China». Corporate governance, Emerald, 2025. DOI 10.1111/corg.12648

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From "who cares" to "what they care about:" The impact of corporate governance on environmental and social performance in China

Abstract:

Manuscript Type: Empirical

Research Question/Issue: This study investigates whether and how corporate governance influences environmental and social performance in Chinese firms. Two mechanisms of corporate governance are examined: external (shareholder-focused) and internal (CSR strategy- and management-focused).

Research Findings/Insights: The findings reveal a significant positive effect of corporate governance on environmental and social performance in China, mainly driven by firms' CSR strategy-focused governance practices. State ownership of enterprises significantly moderates how governance affects both environmental and social performance, with positive and negative moderation observed for external and internal governance mechanisms, respectively. Furthermore, an environmental regulation shock accentuates the positive influence of corporate governance on environmental performance but not on social performance.

Theoretical/Academic Implications: The main theoretical insight reflects a shift in the governance discourse from "conflict of interest" to "differentiation of interest" between shareholders and managers regarding sustainability concerns. The results shed light on the considerable differences between shareholder and manager behaviors toward environmental and/or social practices.

Practitioner/Policy Implications: This study informs firms and regulators on corporate governance's nonfinancial implications in China. Reforming governance characteristics can be a key factor for firms aiming to improve their environmental and social performance, specifically by re-envisioning their internal governance mechanisms that are CSR strategy-oriented. From the government perspective, we provide insights into how, through ownership and regulatory interventions, governance mechanisms tend to balance environmental and social performance in China.

***Keywords**:* Corporate Governance; Environmental Performance; Social Performance; Moderation Effect; ESG; China

INTRODUCTION

Over the last few decades, understanding environmental, social, and governance (ESG), and corporate social responsibility (CSR) performance has become a major challenge for business leaders, regulators, and policymakers (Christensen et al., 2022). ESG actions impact several firm-specific characteristics such as valuation, profitability, and sustainability strategies. Unsurprisingly, there has been an increasing trend in ESG reporting by firms worldwide.[i] A recent study by PricewaterhouseCoopers in September 2021 indicates that "*we are at a tipping point where ESG has gone mainstream. You can't walk into a financial institution without mentioning ESG."* Although ESG practices are well-accepted and widely integrated by firms in Western economies, these strategies remain controversial in non-Western contexts because of legal, economic, and political factors (Nguyen et al., 2021). Moreover, as concerns about environmental and social performance have grown due to increased attention toward issues like climate change, diversity, and inclusion, scholars have implicitly emphasized the decisive role of corporate governance (CG) on corporate sustainability and CSR (Crifo et al., 2019; Zaman et al., 2022). Due to the distinctive nature of the Chinese institutional context (Bian et al., 2022)—more so for environmental and social research (Pandey et al., 2023)—this study examines the role of different CG mechanisms on environmental and social performance and identify some important underlying institutional elements.

A large body of CG studies has shed light on the catalytic or inhibiting effects of governance structures and ESG on corporate financial performance from different perspectives (e.g., Jo and Harjoto, 2012; Ferrell et al., 2016; Christensen et al., 2022; Dumitrescu and Zakriya, 2022). However, the association between CG as an antecedent and CSR as an organizational outcome requires further examination (Lau et al., 2016), especially regarding underlying CG mechanisms (Zaman et al., 2022). Moreover, most studies address sustainability using a holistic approach, without distinguishing between its pillars, that is, social

and environmental practices (Bansal and Gao, 2006), or simply considering them in isolation (Walls et al., 2012; Elmagrhi et al., 2019).[ii] Thus, there is a need to understand the potentially heterogeneous effects of different shareholder- and stakeholder-oriented CG characteristics on social and environmental performance. Specifically, Aguilera et al. (2021) call for future research to examine "the potential of certain CG arrangements to promote environmental sustainability decoupling, the global dimension of environmental sustainability, and the integrated nature of CG in environmental sustainability."

In this study, we respond to this call and address this research gap in the literature by examining CG as an antecedent of environmental and social performance in a considerably large sample of Chinese listed companies using their environmental (ENV), social (SOC), and corporate governance (GOV) pillar scores from Thomson Reuters/ASSET4 (LSEG). Our results show that CG has a significant positive effect on environmental and social practices. Almost 20 years after the UN Global Compact Initiative, we can implicitly affirm that ESG awareness and actions have been established in the corporate discourse and spread broadly among stakeholders (Khan, 2019). From prior literature, we can now identify "who cares" about ESG i.e., investors, directors, managers, government, civil society, etc. Moreover, evidence on ESG–performance relation increasingly shows that "caring about ESG" (i.e., doing good socially) and "winning from ESG" (i.e., doing good financially) can co-exist (Dumitrescu and Zakriya, 2021). In this regard, our findings on *GOV* driving *SOC* and *ENV* performance also indicate that the purpose of the corporate governance function has evolved from managing "agency conflicts" to supporting "agency specialization" regarding sustainability issues.

Our preliminary results lead us to essentially move from "who cares wins" hypothesis (UN, 2004) to "what they care about" hypothesis. Thus, we investigate *whether* and *how* internal and external governance mechanisms drive social and environmental performance differently. Aguilera et al. (2021) and Zaman et al. (2022) call for attention to not consider CG

solely as a whole and independently investigate the effects of specific types of governance mechanisms on nonfinancial performance and sustainability. This is especially important for Chinese firms given their unique institutional context that they operate in (Bruton and Lau, 2008; Jiang and Kim, 2020). We take a step in this direction by examining how various subcomponents of *GOV*, that is, external (shareholder-focused) and internal (CSR strategy- and management-focused) governance structures, mutually or distinctively influence firms' *SOC* and *ENV* engagement in China. We highlight whether convergence or divergence exists in the influence of CG characteristics on social and environmental practices. Our results show that firms' internal governance, driven by their CSR strategy focus, largely influences both *SOC* and *ENV* performance, but external governance characteristics do not. We also find evidence that management-focused CG aspects positively influence only *SOC* performance. This again corroborates the benefits of "agency specialization" for firms to optimize their sustainability orientation. Our results using both the overall *GOV* metric and its subcomponents remain robust to multiple alternative specifications and the use of instrumental variables.

Next, we explored cross-sectional and temporal heterogeneity in the Chinese context to identify the institutional aspects that could potentially explain our results. The bulk of the CG and CSR literature has mainly focused on the Western context (e.g., Aguilera et al., 2006; Ferrell et al., 2016), paying less attention to developing and emerging markets, particularly China (Moon and Shen, 2010). Moreover, the existence of unique "horizontal agency problems" in China, unlike the classic "vertical agency problems" such as those in the U.S., imply that a lot of unique institutional factors are yet to be uncovered (Jiang and Kim, 2020). More importantly, as different institutional factors could have heterogeneous impacts on the effectiveness of different CG attributes (Zaman et al., 2022), identifying the institutional drivers of effective internal and external CG is of first-order importance (Jiang and Kim, 2015).

To shed light on institutional drivers, we empirically examine the moderating effects of 1) state-owned enterprises (*SOE*) and 2) a Chinese environmental regulation shock (*ENVSHOCK*) on the *GOV*'s relationship with *SOC* and *ENV*. The main motivation behind this analysis is to examine features that could potentially increase the effectiveness of CG in China (Mutlu et al., 2018; Jiang and Kim, 2020). With *SOE* as a moderator, we find a significantly negative effect of *GOV* on *ENV* but a positive effect on *SOC*. This is mainly driven by the opposing effects of management-oriented CG issues on *SOE* toward *ENV* (-) and *SOC* (+) performance. Shareholder-oriented CG in *SOE* benefits both *ENV* and *SOC*, whereas CSR strategy-oriented CG in *SOE* is detrimental to both. However, the results for the moderating effects of *ENVSHOCK* are remarkably different. We find that the interaction term for *GOV* using *ENVSHOCK* is only statistically significant for *ENV*, implying that *ENVSHOCK* has no positive spillover effects on *SOC* performance. This effect is propelled only by management-oriented CG and not by shareholder- or CSR strategy-oriented CG mechanisms. Overall, our results from these moderation effects suggest that there are no concretely "bad" or "good" CG practices in China; rather, they are more of a case of socially-oriented and/or environmentally-oriented governance practices.

Our study departs from prior research in the following ways. First, while Liao et al. (2018) and Elmagrhi et al. (2019) examine the internal mechanisms of corporate governance exclusively (i.e., CEOs and the board of directors, respectively), we extend the analysis by including both internal and external features of governance. Second, we examine both pillars of sustainability, i.e., social and environmental performance, whereas the literature has mainly focused on the environmental dimension (Child and Tsai, 2005; Elmagrhi et al., 2019). In addition to showing that CG is an important determinant of environmental and social performance in China, we make several other contributions to the literature. In studying different underlying CG mechanisms, we can make a theoretical contribution to the literature

by building on Hill and Jones (1992) and Tosi et al. (1997) to argue and propose that "incentive alignment" toward firms' environmental and social engagement can lead to agency specialization. Unlike the objective of wealth maximization, we essentially argue that when sustainability performance is concerned, there is no "conflict of interest" (or "agency costs") but rather "differentiation of interest" between principals and agents (i.e., "agency specialization"). In other words, concerning sustainability practices, our contribution highlights and suggests a *hybrid* model of agency theory, i.e., agency specialization. The theoretical inference of our study reveals that the interests of principals and agents may not always conflict when dealing with environmental and social performance. Thus, we contribute to Tosi et al.'s (1997) complementarity model of corporate governance by demonstrating an integrative approach followed by shareholders and managers regarding firms' nonfinancial goals. Indeed, our empirical results confirm the specialization of different CG actors' behaviors and strategies, as they benefit environmental and social performances instead of hurting them.

Alongside the theoretical contributions, this study makes two methodological contributions. First, to test the presence of agency specialization driven by different governance actors, we apply three different proxies for underlying CG mechanisms, allowing us to make comparative inferences on the agency and stakeholder paradigms within a single framework. While CG is typically measured using boards' structure and composition, CEO duality, ownership structure, and executive compensation (Naciti, 2019; Nguyen et al., 2021), our contribution is articulated on the internal and external CG mechanisms classified by their shareholders-, CSR strategy-, and management-orientations. The objective is to segregate distinctive behaviors of shareholder- and management-focused governance actions not only toward environmental performance but also social practices. It is important to recognize that the proxies for CG mechanisms, along with those for social and environmental performance, may encounter issues with construct and discriminant validity. This is due to the fact that the

composite indices created by rating agencies depend on a variety of data sources and assumptions that are not always fully transparent. Second, through our rigorous methodology that relies on multiple estimation models, we contribute to the governance-sustainability debates by testing temporal hypotheses through lag-lead models that ascertain correlations and drawing inferences on causality. This is because, while many studies provide a snapshot or static perspective of the impact of CG on environmental and social practices, our analysis is built on rich panel data that captures ESG metrics of 1,745 Chinese firms over 12 years.

Finally, we make context-relevant contributions by providing additional insights into the Chinese market by exploring two institutional factors. According to Aguilera et al. (2021), the available research on governance and sustainability is "geographically bounded," as most of the current literature is focused on firms in North America and Europe. We fulfill the two recommendations of Aguilera et al. (2021): first, by shedding light on a distinctive Asian governance system, that is, China, and second, by including the moderation effects of the home country governance institutional features: state ownership (i.e., state-owned enterprises or *SOE*) and environmental government regulation (*ENVSHOCK*). Compared with developed economies, China has implemented several CG reforms since 1990, restructuring Chinese state-owned firms (Mutlu et al., 2018). Since *SOE* have lately been perceived as strategic players in the Chinese market (Peng et al., 2016), including their presence as a moderator in our model would enrich our inferences vis-à-vis *ENV* and *SOC* performance (Chang et al., 2015). Most studies focusing on China have explored the direct effects of ownership heterogeneity on financial performance, such as dividend tunneling (Bian et al., 2022) and firms' earnings management practices (Ding et al., 2007). We contribute to the literature by shedding light on the indirect effects of state ownership and examining its impact on the association between corporate governance and sustainability performance. As for the second moderator, *ENVSHOCK*, we exploit the 2016 Nationally Determined Contribution regulation

and assess its effect on the CG-environmental performance and CG-social performance nexus to contribute to the debate surrounding the effectiveness of the Chinese government's environmental policies (e.g., Jia and Chen, 2019).

The remainder of this paper is organized as follows. Section 2 discusses the theoretical paradigms related to corporate governance and how they affect environmental and social performances. Section 3 presents the background in the Chinese context and formulates our hypotheses. Section 4 explains the data and empirical strategies. Sections 5 and 6 present the empirical results for the main and moderating effects, respectively. Finally, Section 7 concludes the paper by providing practical implications.

LITERATURE REVIEW

Corporate Governance and CSR

According to Aoki (2000:11), corporate governance is "a structure of rights and responsibilities among parties with a stake in the firm." Therefore, this corporate phenomenon is commonly perceived as the result of interactions between stakeholder networks, including shareholders and management. Our conceptualization of CG combines two definitions: (a) Aguilera and Jackson (2003), which emphasize the shared responsibilities, power, and resources of different corporate actors within the firm (shareholders, boards, and managers), and (b) Aguilera et al. (2021), which add the concept of "corporate governance of sustainability" to this framework.

An endeavoring role of corporate governance has emerged in both developed and developing countries, underpinning the nexus between shareholders and stakeholders. This is because, under the reorganized dual objectives of corporations, the optimization of financial efficiency is combined with the integration of sustainability performance.[iii] Consequently, alongside corporate governance, the trending discourse among scholars from the management,

finance, and sustainability literatures is increasingly focused on firms' CSR, ESG, and sustainability policies (Aguilera et al., 2021; Zaman et al., 2022). Prior research demonstrates that governance characteristics are "crucial" determinants of an organization's decisions and readiness to become socially responsible entities (Aguilera et al., 2006; Barnea and Rubin, 2010). Consequently, a synergistic effect exists between corporate sustainability and performance (Crifo et al., 2019; Mutlu et al., 2018).

Theoretical Framework: Importance of Corporate Governance

The following two theoretical frameworks shape CG practices and norms on a global scale. Since the 1980s, the U.S. and other Anglo-Saxon countries had advocated the dominant school of "shareholder primacy" (Friedman, 1970). The principal emphasis of this theory is the agency cost problem (Jensen and Meckling, 1976) and the separation of ownership from control in corporations (Berle and Means, 1932). In contrast, the European and Asian corporations have been shaped by the "stakeholder primacy." This ideology predominantly allows firms to accommodate the equilibrium of stakeholders' interest (Freeman, 1984).

An alternative theoretical approach considers agency, resource dependence, and legitimacy within a single framework. Through this lens, the influence of CG on environmental and social performance can differ significantly. While the first two theories show the maximization of financial performance as a competitive advantage that can be built because of good CG practices, the legitimacy premise principally emphasizes societal boundaries and the interaction between firm and community. Under this theoretical framework, corporate objectives rely on legal approval by society and gaining a reputation through engagement in non-financial performance (Ntim, 2016).

Despite the obvious theoretical link between CG and sustainability, China is perceived as atypical and idiosyncratic (Lau et al., 2016). Due to the complexity of political systems, legal entities, and the nature of the market, it has been argued that Chinese corporations mainly

adopt sustainability practices for legitimacy purposes rather than maximizing shareholders' wealth (Wei et al., 2017; Marquis and Qian, 2014). Thus, we develop our scope of analysis by relying on the rhetorical metamorphosis of agency and stakeholder theories, as explained below.

Agency theory-driven studies are based on the premise that companies are inhabited by CG mechanisms and actors with conflicting targets and strategies (Fama and Jensen, 1983). More specifically, there is a divergence of interests among shareholders and managers due to differences in their utility functions (Jensen and Meckling, 1976), hence the potential for "agency conflict" in terms of allocation of resources to financial or nonfinancial investments. In the managerial discretion literature of the 1960s (Baumol, 1959; Williamson, 1964), shareholders are known to be "wealth maximizers," whereas managers are known to be "utility function maximizers." Conversely, intrinsically motivated by the close relationship between environmental investment and financial returns (Fernando et al., 2017), "principal" actors prioritize sustainability's economic and environmental pillars as a means of wealth generation. Concerning "agents," generally driven by job security, welfare, and social concerns, they prioritize the social pillar of sustainability as part of their utility function (Porter and Kramer, 2006). Therefore, building on the stakeholder-agency theoretical framework developed by Hill and Jones (1992), our conceptualization implies a *hybrid* model of "agency specialization" rather than "agency conflict." Based on the arguments presented above, driven by half a century of the green and social revolution, we hypothesize that corporate speech is moving from "agency conflict" to rather more "agency specialization." It has been established in the CG literature that both shareholders and managers are interested in "doing well by doing good," and they have already been implementing strategies to achieve financial and non-financial goals together (Amel-Zadeh and Serafeim, 2018; Khan, 2019).

Theoretical Framework: Disaggregation of CG Actors and Strategies

According to Rediker and Seth (1995:87), the performance and efficiency of a company are founded not on a "single dimension" but rather on a "bundle" of governance mechanisms in mitigating the agency problem. Furthermore, scholars distinguish between two archetypes of firm governance: substitution (Dalton et al., 2003; Misangyi and Acharya, 2014) and complementarity (Milgrom and Roberts, 1992; Tosi et al., 1997). The notion of substitution, which postulates that CG entities replace each other, is widely inherited from the market equilibrium premise of agency theory (Jensen and Meckling, 1976). The complementarity approach is an emergent integrative model highlighting a synergetic rather than an additive effect among governance mechanisms (Aguilera et al., 2008; Ennen and Richter, 2010), which is also implicitly supported by stakeholder theory. Thus, our theoretical proposition of "agency specialization" can be framed under the notion of complementarity between shareholders and managers.

To examine whether CG functions as a "bundle" (Rediker and Seth, 1995) or as a "system of interdependent elements" (Aguilera et al., 2008:482), we disaggregate CG characteristics based on actors (shareholders and managers) and strategies (CSR-orientation). From an agency perspective, the rationale behind actors' segregation as principals and agents is to demonstrate the variance in their behavior or attitudes toward environmental and social performance. Walsh and Seward (1990) distinguished three mechanisms for balancing shareholders' and managers' interests: internal, external, and intermediaries. Our research focuses on two of these mechanisms, differentiating between external and internal CG. We propose that while there is a *convergence* between shareholders' and managers' opinions so that there is a consensus on the importance of ESG, there is a *divergence* in priorities toward environmental and/or social performance.

Along with the two main CG actors (shareholders and management), we examine firms' CSR strategy within the purview of corporate governance. This is theoretically justified by Dacin et al. (1999) and Granovetter (1985), who highlight the concept of governance embeddedness in different social frameworks. Weber (1978) defines embeddedness as economic and social actions toward others. Based on the agency paradigm, this framework can partially explain a firm's CSR-oriented strategy (Eisenhardt, 1989). From a theoretical standpoint, combining agency theory with other theories that represent stakeholder interests beyond shareholders reflects a holistic approach to corporate interactions. Accordingly, we follow the models of Kendall (1999) and Ho (2005), in which CSR orientation is conceptualized as an integral mechanism of CG to broaden its concept and to embed nonfinancial risks within the risk-mitigation framework encompassing corporate governance activities (Jamali et al., 2008).

CHINESE CONTEXT AND HYPOTHESES FORMULATION

With the concurrent growth of globalization and industrialization, China has become one of the leading countries through its exemplary economic expansion. However, it is perceived to have a considerable negative impact on the ecosystem, and questions have been raised regarding its public policies (Elmagrhi et al., 2019). In recent years, the Chinese market has become the world's largest emitter of greenhouse gases, accounting for more than 23% of global emissions (Weber, 2014). In response, Chinese authorities have proactively taken action against climate change through ESG initiatives. Regulators and corporate leaders have employed several new policies, such as the *New Ambient* Air Quality Standard and the First *Nationally Determined Contribution*, as part of their promises to the 2015 Paris Agreement (Robinson et al., 2021). Since 2005, business entities in China have been required to disclose and reveal their environmental performance to be rated by local and national administrations

(Liu and Anbumozhi, 2009). In 2006, a company law was issued encouraging companies to become socially responsible organizations (Weber, 2014).

Regarding China, CG and CSR studies were mostly qualitative in the past, relying on case studies, literature reviews, and interviews (Moon and Shen, 2010; Yin and Zhang, 2012; Zu and Song, 2009). However, in recent years, many quantitative studies have focused on the Chinese context (Jiang and Kim, 2015; 2020). The majority of these studies either conducted a single-industry analysis (Child and Tsai, 2005), tackled only one dimension of ESG, mostly the environmental pillar (Branzei et al., 2004; Elmagrhi et al., 2019), or were developed from an institutional rather than governance perspective (Marquis and Qian, 2014; Mutlu et al., 2018). In their recent study, Zhang et al. (2021) explicitly state that the actual "performance of ESG investing is still unknown in China" and show that post-2016 good ESG stocks outperform low ESG ones. *Guidelines for Establishing a Green Financial System* was issued in China in 2016. However, the impact of these guidelines on the effectiveness of CG's actions regarding environmental and social performance remains unclear.

We also examine contextual and institutional elements that are crucial when studying environmental and social performance because of their significant influence on organizational behavior and outcomes, thereby impacting the effectiveness of CG. We highlight how two contextual factors, with their objectives specifically aimed toward promoting either social or environmental performance primacy, may impact CG's relationship with firms' social and environmental performance differently.

Main Effect: Does Corporate Governance Drive Environmental and Social Performance?

Theoretically, through the agency lens, good CG practices should mainly be directed toward financial benefits and competitive advantage (Jensen and Meckling, 1976).

Nevertheless, it may encompass engagement in sustainability practices "as a means to an end." In the Chinese context, companies might commit to environmental and social activities to be socially responsible, fulfill regulatory requirements, and guarantee financial success. These practices are perceived as "channels" for accessing a wider range of resources by fulfilling shareholders' expectations (Nguyen et al., 2021). However, from the perspective of stakeholder theory, CG practices engender sustainability performance for transparency and accountability, which affects firms' ability to balance stakeholders' needs (Welford, 2007). De Villiers et al. (2011) and García-Martín and Herrero (2020) provide evidence of CG's role as a driver of environmental and social performance in the Western context, focusing on the U.S. and the E.U., respectively. Nguyen et al. (2021) demonstrate a positive association between board size, frequency of board meetings, and environmental performance in Vietnam. Similarly, using a global sample of the 500 largest companies, Naciti (2019) reveals the positive impact of the board of directors on sustainability practices. In contrast to prior studies, we aim to test the hypothesis that considers CG in totality (i.e., including governance aspects concerning boards, investors, strategy, and management issues together) as an effective antecedent of environmental and social practices in China. Therefore, we propose the following hypothesis:

H1: Corporate governance is positively associated with environmental and social performance.

To delve deeper into the sustainability commitment of Chinese firms, we consider whether different governance mechanisms influence environmental and social performance differently. Like the main premise of agency theory of the separation of ownership and control, we can also expect a separation of responsibility between environmental and social priorities among different governance actors. Therefore, as an extension of H1, we anticipate that CG's association with environmental and social practices might not be driven by all its mechanisms. We hypothesize that each of the governance mechanisms we study—shareholders-, CSR

strategy-, and management-focused governance attributes—, will influence environmental and social practices. Concerning external mechanisms, we expect shareholder-specific attributes to not impact environmental and social performance. According to agency theory, principals are primarily financially driven and prioritize profitability and capital allocation (Khan, 2019; Nguyen et al., 2021). Despite growing concerns regarding sustainability practices, financial performance remains a leading goal in certain contexts (Kolk et al., 2010).

As for internal mechanisms, we conjecture that governance issues related to firms' CSR-oriented strategy should be positively associated with environmental and social performance, whereas governance aspects related to management should only be associated with the social pillar (particularly in China due to the ruling political regime). As mentioned previously, from an embeddedness perspective, firms' CSR strategy mainly reflects boards' decision-making to capture their strategic positioning toward their CSR-oriented responsibilities. These strategies are portrayed as a company's dedication, communication, and dissemination to create and integrate overarching policies to improve its sustainability (Shaukat et al., 2016). Hence, its positive association with both environmental and social pillars can be expected through design. About management-oriented mechanisms that include board-related characteristics (board structure, size, and compensation), we expected to find a significant positive association with social performance. Generally, the management aspects of governance represent the internal actors or stakeholders who play an intermediary role between the shareholders and employees of the firm. In addition to ensuring organizational performance (Greve, 2008), they accommodate solutions and strategies to overcome social issues (Alonso-Almeida et al., 2015; Muller and Whiteman, 2016). Correspondingly, prior studies have shown a catalytic effect between management-oriented governance characteristics and CSR performance (Johnson and Greening, 1999), social legitimacy, and reputation (Hillman and Dalziel, 2003). Considering these arguments for the different CG mechanisms, we hypothesize the following:

H1a: Shareholders-focused (External) corporate governance has no effect on environmental and social performance.

H1b: CSR strategy-focused (Internal) corporate governance is positively associated with environmental and social performance.

H1c: Management-focused (Internal) corporate governance is positively associated with social performance.

Moderation Effect: Do State-owned Enterprises Moderate the Effect of Corporate Governance on Environmental and Social Performances?

From a political perspective, state-owned enterprises (*SOE*) are particularly important in China, with the government playing a pivotal role in driving corporate performance to boost the Chinese economy (Peng et al., 2016; Zhou et al., 2017). Since the 1980s, they have been "westernizing" their corporate governance codes to improve organizational performance (Mutlu et al., 2018). Following Lin and Germain (2003), we consider state-owned enterprises a contextual factor representing the propensity of the Chinese government to control strategically important enterprises.[iv] Essentially, we use this particular form of organization to reflect their "privileged access to government support and valuable resources, such as cheap loans from state banks" (Hu et al., 2023), which highlights the influence and power that the government can wield over state-owned enterprises compared to their private counterparts in China. More specifically, as stated by Hu et al. (2023), "state-owned enterprises are governed by administrative rather than economic imperatives, so the government intervention is unavoidable." Hence, they are representative of politically motivated firm objectives that go beyond the traditional shareholder wealth maximization objective of firm. In this regard, we employed *SOE* to study whether state control and potential external pressures influenced the effectiveness of CG toward social and environmental performance differently (Whelan and Muthuri, 2017).

State-owned enterprises, predominantly governed by the Chinese Communist Party, focus on sustaining political legitimacy rather than being profit-oriented (Ghosh and Whalley, 2008). As Kong et al. (2021) and Peng et al. (2016) highlight, further research is required to understand the interconnection between firm governance and CSR in this politically embedded context. While previous studies have investigated the direct effect of state-owned enterprises on sustainability performance in China (Kong et al., 2021; Maung et al., 2016; Shi et al., 2020), we examined its moderating effect on governance-environmental and governance-social relationships. This analysis postulates that the "one size fits all" metaphor is not always applicable. In other words, we expect that the corporate governance systems in stated-owned and non-stated-owned enterprises vary vis-à-vis environmental and social performance.

Based on prior literature, foreign-owned listed firms and community-owned enterprises outperform state-owned enterprises in terms of environmental practices (Jiang et al., 2014; Wang and Jin, 2007). Regarding social performance, directors and managers in state-owned enterprises tend to form part of the Chinese Communist Party and are apt to prioritize the interests of the party and the people (Shi et al., 2020). Unlike private firms, whose business objectives resonate with value maximization, they are inclined toward social targets, such as delivering services to the civil community and protecting employment and welfare (Maung et al., 2016). Moreover, in this type of enterprise, female CEOs outperform their male counterparts (Li et al., 2023). We anticipate a catalytic effect of state-owned enterprises on societal activities for three reasons: as a form of a "role model" in the Chinese market, "socially responsible" fame, and "political duty" to serve society (Lau et al., 2016). With much attention being focused on social deliverables, we expect that the environmental objectives of the state-owned enterprises will be compromised. In other words, the presence of state ownership implies that the benefits of good CG are largely seen in social performance but are detrimental to environmental performance. Therefore, we formulated the following hypotheses:

H2a: State ownership negatively moderates the association between corporate governance and environmental performance.

H2b: State ownership positively moderates the association between corporate governance and social performance.

Moderation Effect: Does an Environmental Regulation Shock Moderate the Effect of Corporate Governance on Environmental and Social Performances?

The years 2012 and 2016 are considered two decisive moments in China for the emblematic intervention of policies and regulations on sustainability performance: the *New Ambient* air quality standard (Wang et al., 2019) and the first *Nationally Determined Contribution* (Robinson et al., 2021), respectively. With the climate crisis and global warming, China has ratified new standards for monitoring to monitor and controlling greenhouse gas emissions from corporate activities. One prospective target is to reduce carbon dioxide thresholds by 60% by 2030 compared to 2005 figures (Fang et al., 2019).

In 2012, the Ministry of Environmental Protection of China issued the *New Ambient* Air Quality Standard, which was considered the first Chinese environmental action toward sustainable development. Wang et al. (2019) investigated the impact of the 2012 regulation based on three proxies: monitoring effect, ownership structure, and pollution control efforts. This study's inference indicates that the 2012 policy did not positively influence environmental performance. In 2016, in conjunction with the Paris Agreement of 2015, Chinese ministries and financial institutions enacted *Guidelines for Establishing a Green Financial System* and their first *Nationally Determined Contribution.* The governance system has been sequentially reshaped for *ESG* initiatives and strategies. Zhang et al. (2021) revealed that green regulation positively affects *ESG*, profitability, and market signaling.

Our analysis examines the moderating effect of environmental regulation, i.e., the 2016 *Nationally Determined Contribution*, on the CG's association with environmental and social

performance. We argue that despite the nature of China's political regime, which is driven by communist and socialist ideologies, the outcome of the 2016 policy was a shift in focus from social to environmental practices. Comparing firms' performance before and after 2016, we anticipate that the *Nationally Determined Contribution* as an environmental shock has a positive effect on the governance-environmental nexus but a negative effect on the governance-social relationship. Therefore, we develop the following hypotheses:

H3a: Environmental shock positively moderates the association between corporate governance and environmental performance.

H3b: Environmental shock negatively moderates the association between corporate and social performance.

DATA AND EMPIRICAL STRATEGY

Data and Variables

We begin by constructing our sample using the ESG data of all Chinese companies in the Thomson Reuters Refinitiv/ASSET4 (now LSEG) database. ASSET4 initially compiled CSR data only for U.S. companies but has since started maintaining a large dataset of companies globally. This data is curated by LSEG using publicly available sources. For this sample of Chinese companies, we also collected the annual financial fundamentals to compute all our firm-specific control variables. Following Kong et al. (2021), we started our sample after 2009, when a new CSR disclosure policy regulation was implemented in China. Our full ESG data sample comprised 6,284 firm-year observations, including information on 1,745 companies.

Prior scholars have used either dummy variables (Jia and Zhang, 2011) or the Rakins database (Liao et al., 2018; Shahab et al., 2020) to measure environmental performance in China. However, Elmagrhi et al. (2019) claim that these measures might have some limitations

as they may not accurately reflect their actual proxy, which can implicitly affect the generalizability of the results. Similarly, previous studies on Chinese companies' governance and social performance have been restricted to smaller sample sizes (Lau et al., 2016). Therefore, by looking at the ASSET4 ESG data, we aim to have a broader perspective on how both environmental and social performances are driven by CG. We also provide finer insights into specific CG characteristics that matter in the Chinese context.

Dependent Variables. Our two main dependent variables are the environmental and social performance proxies obtained from Thomson Reuters/ASSET4, i.e., the environmental pillar score (*ENV*) and the social pillar score (*SOC*), respectively. *ENV* measures firms' ability to coexist with the natural environment and ecosystems, essentially reflecting their commitment to best practices that alleviate environmental risks and promote positive environmental impacts. *SOC* measures a firm's engagement with employees, customers, suppliers, and society at large through best management practices that help maintain a firm's reputation. While *ENV* is constructed as a weighted average of three distinct sub-elements: emission reduction score, resource use score, and environmental innovation score; *SOC* is an aggregation of four sub-scores, i.e., workforce score, human rights score, community score, and product responsibility score. We use the emission reduction score (*ERS*) and human rights score (*HRS*) as alternative dependent variables to proxy for the environmental and social performance, respectively.

Independent Variables. To capture corporate governance corresponding to our theoretical framework, we measured it using Thomson Reuters/ASSET4's governance pillar score *(GOV*). This measure captures the degree to which firms' internal governance characteristics are designed to align managerial interests with those of shareholders and stakeholders, effectively encapsulating board members' and CEOs' roles in minimizing agency costs without compromising stakeholders. We further employ the three sub-scores of *GOV*–the

shareholder score ($GOV1$), CSR strategy score ($GOV2$), and management score ($GOV3$), as each offers insights into the different aspects of a firm's governance practices concerning the main CG actors ($GOV1$ and $GOV3$) and the firm's strategic orientation ($GOV2$).

The shareholder score ($GOV1$) focuses on the relationship between a firm and its shareholders by assessing its policies and practices related to shareholder rights, engagement, and value creation. This component typically evaluates factors such as the fairness and transparency of voting rights, the accessibility and clarity of corporate disclosures, responsiveness to shareholder concerns, and the alignment of corporate decisions with shareholder interests. A high shareholder score suggests that the firm prioritizes shareholder rights, fosters shareholder engagement, and seeks to maximize shareholder value through sound governance practices and effective communication.

The *CSR* strategy score ($GOV2$) assesses a firm's decision-making in CSR planning and communication strategies. Note that the variable *GOV2* captures elements that are theoretically distinct from a firm's environmental and social performance (i.e., the dependent variables *ENV* and *SOC,* respectively). It merely reflects the extent to which CG actors communicate and disseminate firms' CSR-focused strategies and policies. It includes an evaluation of the governance aspects affecting CSR-related decisions, such as the presence of separate CSR committees, compliance with GRI guidelines, the disclosure system of CSR activities, and the external auditing approach of CSR reporting (Shaukat et al., 2016). A high CSR strategy score indicates high proactiveness and comprehensiveness of the board and management toward CSR communication but doesn't necessarily guarantee superior environmental/social performance.[v]

Meanwhile, the management score ($GOV3$) evaluates the effectiveness and quality of the firm's management team and its leadership practices. This component typically assesses factors such as the experience and expertise of key executives, the transparency of their

communication with stakeholders, the alignment of executive compensation with performance, succession-planning processes in place, and board characteristics.

Control Variables. Following the prior literature that studies CSR as an outcome variable (e.g., Jo and Harjoto, 2012; Davidson et al., 2019), we include some important firm characteristics as controls using the data from Thomson Reuters Refinitiv, including firm size ($SIZE$), profitability (ROA), and leverage (LEV). We proxy for firm size using the log of total assets, profitability using return on assets, and leverage using the debt-to-equity ratio. We additionally control for firms' growth, investments, and innovation capacities using revenue growth over the previous year (RG), capital expenditure to total assets ratio ($CAPEX$), and research and development to sales ratio (RD). In addition to being important determinants of overall CSR performance, these variables have also been influential toward *ENV* and *SOC* performance when studied separately (for e.g., Fernando et al., 2017). In the supplementary robustness check, additional controls for firm age and market-to-book ratio are employed, as they have been commonly used in CSR-related studies (Davidson et al., 2019). Owing to the considerable number of missing values for these two variables, they were excluded from the baseline model.

Sample Summary

Table 1 summarizes all the variables. Among the three *ESG* pillar scores, GOV had the highest mean of 47.37, with the scores normally distributed on either side of the mean. In contrast, the *SOC* and *ENV* scores were positively skewed, with similar means. Among the sub-scores of the governance pillar, $GOV1$ and $GOV3$ had similar summary statistics, as indicated by the mean, median, and standard deviation. The $GOV2$ score has a comparatively lower mean of 40.08 and a standard deviation of 33.22. This shows that, on average, Chinese companies fare worse regarding their CSR strategy-oriented policies than their shareholder- or

management-oriented governance initiatives. The correlation coefficients for the main variables are listed in Table 2.

Insert Table 1 about here

Insert Table 2 about here

Empirical Models

To study the association between CG and environmental and social performance, we use the following empirical specifications:

$$SOC_{i,t} = A_1 + B_1 GOV_{i,t-1} + C_1 X_{i,t-1} + \Delta_i + \Lambda_t + \Sigma_{i,t} \quad (1)$$

$$ENV_{i,t} = A_2 + B_2 GOV_{i,t-1} + C_2 X_{i,t-1} + \Delta_i + \Lambda_t + \Sigma_{i,t} \quad (2)$$

where $SOC_{i.t}$ and $ENV_{i,t}$ are the social and environmental pillar scores of firm *i* in year *t*. The main independent variable is GOV_{t-1} that captures governance performance of firm *i* in previous year $t-1$. In the array of firm-specific control variables, X_{t-1}, we include size, profitability, leverage, revenue growth, *CAPEX*, and *R&D* expenses. Additionally, to control for time-invariant firm-specific characteristics and year-specific heterogeneity, we include firm fixed effects Δ_i and year fixed effects Λ_t. As an alternative model, we employ industry fixed effects instead of firm fixed effects.

Next, we model the impact of GOV by segregating the external (shareholder-focused CG)—i.e., $GOV1$—and internal (*CSR* strategy- and management-focused CG)—i.e., $GOV2$ and $GOV3$—mechanisms. We do so by replacing the governance score GOV_{t-1} in Equations (1) and (2) with its three subparts.

$$SOC_{i,t} = A_3 + B_{3,1}GOV1_{i,t-1} + B_{3,2}GOV2_{i,t-1} + B_{3,3}GOV3_{i,t-1} + C_3X_{i,t-1} + \Delta_i + \Lambda_t + \Sigma_{i,t} \quad (3)$$

$$ENV_{i.t} = A_4 + B_{4,1}GOV1_{i,t-1} + B_{4,2}GOV2_{i,t-1} + B_{4,3}GOV3_{i,t-1} + C_4X_{i,t-1} + \Delta_i + \Lambda_t + \Sigma_{i,t} \quad (4)$$

In all the model specifications, we cluster the standard errors at the firm level to account for potential heteroscedasticity and serial correlations.

To test the moderation effects (hypothesis sets 2 and 3), we run the same baseline estimations as above by introducing the moderating variables and their interactions with the corporate governance measure GOV or its three subparts. The moderating variables are dummy variables indicating whether the firm had a majority state ownership (SOE) or a change in Chinese environmental policy after 2016 ($ENVSHOCK$).

Finally, we conducted two sets of robustness checks. In the first set of tests, we replicate the main results of Equations (1)–(4) by including additional control variables for firm age (*AGE)* and market-to-book ratio (*MTB*). In the second set of tests, we address any further endogeneity concerns in our baseline using instrumental variables in a two-stage least square (2SLS) framework.

EMPIRICAL RESULTS: MAIN EFFECTS

The Role of CG in Environmental and Social Performances

We begin by exploring how GOV is related to *ENV* and *SOC* performance. Table 3 presents the results obtained using the models specified in Equations (1) and (2). We show the results for each *ENV* and *SOC* pillar score by including a) only year fixed effects (Model 1), b) year and industry fixed effects (Model 2), and c) year and firm fixed effects (Model 3). Model (1) employs a simple ordinary least squares (OLS) that only accounts for firm-specific observable characteristics and controls for time-specific factors to establish a baseline estimate of the effect of GOV on *ENV* and *SOC*. Next, Model (2) considers industry-specific

heterogeneity to ensure that our results are not industry-driven. Moreover, *ENV* and *SOC* can be affected by other firm-specific unobservable heterogeneities. Therefore, to control for this, Model (3) estimates the results by including firm fixed effects.

Across all models, we observe a consistent positive effect of GOV on *ENV* and *SOC,* which was statistically significant at the 1% level. However, the impact of GOV was stronger on *ENV* performance than on *SOC* performance, as indicated by the magnitude of the coefficients. Including industry or firm fixed effects partially reduces the magnitude of the coefficients but does not affect their statistical significance. The R-squared values for our estimated models show that we captured considerable variation in *ENV* and *SOC* in our specifications.

Insert Table 3 about here

Next, we disaggregate GOV performance and examine how internal and external governance mechanisms relate to *ENV* and *SOC* using the model specifications in Equations (3) and (4), respectively. The results are summarized in Table 4. As in Table 3, we show the results using a) year fixed effects only (Model 1), b) year and industry fixed effects together (Model 2), and c) year and firm fixed effects together (Model 3). Among the three sub-scores—shareholder score ($GOV1$), CSR strategy score ($GOV2$), and management score ($GOV3$)—of governance performance, we only find positive and statistically significant associations of $GOV2$ with *ENV* and *SOC* ($p \leq 0.01$). Once again, the magnitude of the coefficient implies stronger influence CSR strategy (or, $GOV2$) on *ENV* performance than on *SOC* performance. The baseline results of Model (1) are unaffected by the inclusion of industry- and firm-fixed effects in Models (2) and (3). The shareholder score ($GOV1$) does not have a statistically significant association with either *ENV* or *SOC*, whereas we find weak

evidence for a relationship between the management score ($GOV3$) and *SOC*, with the coefficient from the firm fixed effects model statistically significant at the 1% level.

Overall, the results in Tables 3 and 4 provide confirmatory evidence for H1, H1a, and H1b, while showing weak support for H1c.

Insert Table 4 about here

Robustness Checks

We test the validity of our main results by conducting two main sets of robustness checks. These tests help assess the reliability of our model specifications, and allow us to tackle some of the endogeneity concerns and shed light on the direction of causality.

First, we repeat our analyses shown in Tables 3 and 4 by including additional control variables to assess whether our results are biased by important omitted variables. Specifically, we include firm-age proxy and market-to-book ratios. The results are presented in Appendix Tables B.1 and B.2. Despite only 40% of the observations and 50% of the sample firms being retained in these estimations due to missing values for these additional controls, the coefficients for GOV performance measures remain largely unaffected. The magnitude and statistical significance of the effect of GOV on *ENV* and *SOC* in Table B.1 are comparable with those in Table 3. For the GOV sub-scores, Table B.2 corroborates the findings in Table 4, with only the coefficient of $GOV2$ showing consistently positive and statistically significant relationships with *ENV* and *SOC* across all three models.

Second, we check the robustness of our baselines results in Tables 3 and 4 using alternative dependent variables to proxy for environmental and social performance. To do so, we employ one sub-score each of *ENV* and *SOC* that captures distinct aspects of environmental and social performance that ideally should not overlap with governance characteristics—i.e.,

emission reduction score (*ERS*) and human rights score (*HRS*). We show these results in Appendix Tables B.3 and B.4 for GOV and its three sub-scores, respectively. With these alternative dependent variables, we once again find that the coefficients for GOV are comparable in statistical significance and magnitudes to those in Table 3. Similar trends are visible for the GOV sub-scores as well in Table B.4.

Third, we use instrumental variables and examine the relationship of GOV and its subcomponents with *ENV* and *SOC*. Multiple instrumental variables (IV) have been employed in CSR literature, including firm age (Jo and Harjoto, 2012), industry-average CSR scores (Cheng et al., 2014), and past negative earnings (Jiao, 2010). Given that the results of our first set of robustness checks in Tables B.1 and B.2 show that *SOC* potentially declines when firms mature, we do not include firm age as an instrument. Using a dummy variable that indicates whether the firm made losses last year (or its reported earnings were negative) as an instrument for GOV in our estimation is again out of the question because past negative earnings cannot be an exogenous instrument unrelated to *ENV* and *SOC*. In the following year, a loss-making firm is likely to be constrained in its ability to invest in and improve its governance structures as well as its environmental and social engagement initiatives. Thus, we introduce only the industry-average GOV score (and its subcomponents) as IV. To do so, we apply the Thomson Reuters industry sector classification. Using scores and measures based on close industry peers as IV is intuitive. While a firm's governance performance is affected by same-industry peers, there is no reason to expect industry governance standards to directly influence each firm's *ENV* and *SOC* scores unless through the firm's GOV score. Appendix Table B.5 shows that our results from the IV estimations are again consistent with our main results in Tables 3 and 4, with the overall governance performance proxy GOV and its CSR strategy subcomponent $GOV2$ being significantly associated with *ENV* and *SOC*.

EMPRIRICAL RESULTS: MODERATION EFFECTS

The Moderating Role of State Ownership Enterprises *(SOE)*

We examine whether the relationship between GOV with *ENV* and *SOC* performance is affected by *SOE,* given the dominant role played by the government in Chinese markets. Thus, we re-estimate Equations (1) and (2) by including an interaction term between a dummy variable representing majority state ownership (*SOE*) and GOV. Since *SOE* is a variable that remains fixed for each firm in most cases, firm-fixed effects cannot be employed in these estimations. Specifically, *SOE* captures cross-sectional variations and does not include firm variations. Thus, we employ a) year effects only (Model 1) and year effects together with industry effects (Model 2).

The results are summarized in Table 5. For *ENV*, we see that the interaction term shows a statistically significant negative impact of GOV for state-owned enterprises. In sharp contrast, the interaction term indicates a positive effect of GOV on *SOC* for the state-owned enterprises. The coefficients of the interaction terms in the baseline Model (1) are significant at the 1% level. Even with the inclusion of industry-fixed effects in Model (2), the results remain largely unaffected.

Insert Table 5 about here

In Table 6, we repeat the same analysis for *SOE* moderation using the three subcomponents of the GOV performance in Equations (3) and (4). The results show that the contrasting effects of *ENV* and *SOC* reported in Table 5 are driven mainly by the management score ($GOV3$). The *SOE* interaction term for *ENV* and *SOC* is significantly positive for the shareholder score ($GOV3$) and significantly negative for the CSR strategy score ($GOV2$).

Insert Table 6 about here

The Moderating Role of Environmental Regulation (*ENVSHOCK*)

As mentioned previously, Chinese authorities have taken action to enforce environmental regulations in recent years as the frequency of climate change-induced natural calamities has increased. Thus, we investigate whether the environmental policy change (*ENVSHOCK*) introduced in 2016 affected how GOV drive *ENV* and *SOC* performance in China. To do so, we re-estimate Equations (1) and (2) by including an interaction term between a dummy variable representing post-2016 years (i.e., the period when the new environmental policy was applicable) and GOV. Similar to the previous *SOE* moderation, we aim to capture cross-sectional variations, not the within-firm ones. Thus, we employ a) only the year fixed effects in Model (1) and year and industry-fixed effects together in Model (2).

Table 7 shows the moderating effect of the environmental policy shock (*ENVSHOCK*) for both *ENV* and *SOC*. For *ENV*, the interaction term has a statistically significant positive effect on GOV in the post-2016 policy era. For *SOC*, meanwhile, the interaction term of *ENVSHOCK* with GOV was expected to be irrelevant because the coefficient was statistically indistinguishable from zero. The importance of the 2016 environmental regulation is also emphasized by the fact that the unconditional coefficient of GOV is statistically insignificant for *ENV*. The interaction term coefficients in both the baseline model (1) and industry fixed effects model (2) are statistically significant at the 1% level.

Insert Table 7 about here

In Table 8, we report the results when the moderation of *ENVSHOCK* is modelled using the three subcomponents of GOV, showing that the significant moderation effect for *ENV* observed in Table 7 is mainly explained by the management score ($GOV3$). Meanwhile, the interaction terms using *ENVSHOCK* for both *ENV* and *SOC* are statistically insignificant regarding the shareholder score ($GOV1$) and CSR strategy score ($GOV2$).

Insert Table 8 about here

DISCUSSION AND CONCLUSION

This study investigates the relationship between corporate governance and environmental and social performance in China. The inference of this analysis sheds light on the hypothetical shift of the CG-sustainability nexus moving from "who cares wins" (UN, 2004) to "what they care about" dictum. The main takeaway is that there are no "bad" or "good" CG practices in China; instead, due to "agency specialization," there tends to be "socially-oriented" and/or "environmentally-oriented" governance practices. In this regard, our results also highlight the "corporate governance of sustainability" concept of Aguilera et al. (2021). To unveil the CG premise of *whether* and *how* it functions as a "bundle" (Rediker and Seth, 1995) or as a "system of interdependent elements" (Aguilera et al., 2008: 482), this study segregates CG characteristics based on actors (shareholders and management) and strategies (i.e., firms' CSR-orientation). In doing so, we broadly contribute to the literature by highlighting the following elements: 1) showing CG as an antecedent of sustainability performance and providing a granular understanding of the underlying CG mechanisms; 2) evidence of potential heterogeneity in how CG mechanisms affect environmental and social performance in the

Chinese institutional context; and 3) building on these findings to shed light on the differences between Western and non-Western institutional contexts.

Our findings reveal a significant positive effect of GOV on *ENV* and *SOC* performance during the sample period. Moreover, we show that only internal governance mechanisms—specifically, firms' CSR strategy-focused governance attributes—are the main drivers of *ENV* and *SOC* performance. Internal CG mechanisms represent "specialized" tools that work in tandem with external or shareholder-specific mechanisms. Accordingly, CSR strategy-related to corporate governance can be perceived as a *tool or process* for communicating shareholders' CSR-specific strategies, decisions, and targets, whereas management-related CG can be perceived as *facilitators* of these processes, depending on the firms' goals, that is, being socially and/or environmentally focused. Thus, our results indicate that governance practices can play a supportive role in helping firms achieve their sustainability objectives and highlight the importance of strong CSR strategy-focused CG mechanisms in achieving nonfinancial practices. Using instrumental variables, we shed light on environmental and social engagement initiatives and industry governance standards. The findings reveal a causal effect of GOV on both *ENV* and *SOC*, largely driven by firms' governance aspects reflected in their superior CSR strategies.

Despite the increasing insights on the specific governance characteristics of Chinese companies (Elmarghi et al., 2019; Shahab et al., 2020), the consequences of effective governance in China are still not fully understood. While many context-relevant factors have been explored and understood in terms of CG structures and CSR activities in Western economies, the same cannot be said of non-Western economies (Jamali and Mirshak, 2007; Pandey et al., 2023). In the Chinese context, state ownership can change how firms behave and react to environmental and social opportunities/threats (Lau et al., 2016). Our results on the moderating effect of *SOE* on GOV*'s* relation with *ENV* and *SOC* reflect the primacy of social

goals for state-owned enterprises. While GOV has a positive incremental effect on *SOC* performance in *SOE*, it has an opposite effect on *ENV* performance. We also provide insights into how different governance mechanisms are affected by the institutional features of *SOE* concerning firms' environmental and social engagements. While better shareholder-oriented governance practices ($GOV1$) benefit both *ENV* and *SOC* in *SOE*, *CSR* strategy-oriented governance mechanisms ($GOV2$) are detrimental. Management-oriented governance aspects ($GOV3$) in *SOE* drive the contrasting effects of GOV on *ENV* (negative) and *SOC* (positive) performance.

Finally, we shed light on how environmental regulation policy change shapes the benefits/costs of GOV in terms of *ENV* and *SOC* performance. Our results show that the *Nationally Determined Contribution* regulation accentuates the positive influence of GOV on *ENV*, whereas these benefits do not spill over to *SOC*. This effect appears to be driven primarily by management-oriented governance characteristics ($GOV3$).

Taken together, these results provide insight into the important role of CG as an antecedent of both environmental and social performance. They also highlight contextual factors that affect the prominence of this role in China. Our study, thus, has important theoretical and practical implications for firms and regulators. Our primary theoretical insight builds on Tosi et al.'s (1997) model, offering evidence for the "complementarity" approach where CG mechanisms, i.e., "actors" and "strategies," operate in synergy. Following Hill and Jones's (1992) reasoning, we postulate a shift in the governance discourse from "conflict of interest" (or "agency costs") to "differentiation of interest" between principals and agents (i.e., "agency specialization") regarding sustainability issues. Indeed, our empirical results confirm the specialization of different CG actors' behaviors and strategies, as they benefit environmental and social performances instead of hurting them.

Principals and agents tend to address ESG issues simultaneously. However, we document a considerable difference in shareholder and manager behaviors toward environmental and/or social practices, as indicated by how they relate to corresponding internal and external CG characteristics. Regarding the practical implications for firms, we show that for firms aiming to increase environmental and/or social performance, reforming governance characteristics can be a key factor. Specifically, by re-envisioning internal governance mechanisms that are CSR strategy-oriented, firms can perform better on sustainability pillars. From the government perspective, we provide insights into how, through ownership and regulatory interventions, governance mechanisms tend to balance environmental and social performance in China.

As in any other empirical study, there are always some caveats to be acknowledged. First, although the inclusion of internal and external corporate governance mechanisms provides a comprehensive analysis, there is room for improvement by integrating different process-driven governance mechanisms. Future research can apply stratified instruments of CG systems oriented toward the product, capital, managerial, and labor markets. Second, this study employs lagged regression modeling, which provides statistical evidence of a robust correlation between CG and environmental and social performance, while providing some evidence of causality using an instrumental variable approach. However, future studies are well placed to investigate the causal relationship between CG and environmental and social performance further by exploiting natural experiments or conducting Granger causality analysis to confirm our inferences. Regarding the moderators that we propose and study, we recognize that our proxies for state ownership and environmental regulation are binary variables, which might be a limitation as they only provide a snapshot and not the dynamism or intensity of the aspects seen in practice. Therefore, to enhance the validity of our results, future research could replicate the analysis using continuous or categorical variables instead of dummy variables.

Moreover, it is highly recommended that different institutional proxies be applied as moderators in future research, such as the Chinese environmental regulations of 2012 and the effects of laws and political parties or institutional cultures in China. Finally, we acknowledge potential issues with the LSEG (formerly Thomson Reuters ASSET4) ESG database, particularly regarding the reliability of CG sub-scores and environmental/social measures. This could affect the assertions in our inferences due to concerns regarding discriminant validity. Accordingly, to mitigate this limitation, future studies should replicate the analysis by integrating different indices of ESG and/or, ideally, by collecting primary data to enhance the construct validity of the main variables assessed, that is, the environmental, social, and governance pillars.

ENDNOTES

[i] For instance, Amel-Zadeh and Serafeim (2018) report a noticeable increase in ESG disclosures from 20 companies in 1990 to approximately 9000 companies in 2016.

[ii] Even when ESG researchers study environmental and social practices, they largely focus on available metrics, ratings, and their outcomes instead of their antecedents (e.g., Dumitrescu and Zakriya, 2021; Garcia-Blandon et al., 2020).

[iii] In concurrence with this reorientation, the Business Roundtable, which comprises the CEOs of major U.S. companies, issued a revamped "Statement on the Purpose of a Corporation" in 2019, wherein it was stated that the CEOs would "commit to lead their companies for the benefit of all stakeholders – customers, employees, suppliers, communities, and shareholders," and not only the shareholders.

[iv] While it is true that *SOE* has also been used to proxy for external governance mechanisms (e.g., Ding et al., 2007), the GOV scores provided by Thomson Reuters do not include *SOE* as one of the indicators of corporate governance. Thus, from an empirical viewpoint, the *SOE* variable captures a very different contextual element than that covered by the GOV score and its three sub-components.

[v] Note that while it is true that a firm with a higher value of $GOV2$ might be likely to have higher *SOC* and *ENV* performance (as is also confirmed by the correlations presented in Table 2) driven by the clear CSR-oriented strategic direction embedded in its governance mechanisms, it is not essentially endogenous. Nevertheless, our results in Appendix Table B.5. support the causal relationship for $GOV2$ even when we use instrumental variables to account for potential endogeneity concerns.

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TABLE 1
Summary Statistics

		Mean	Median	Std. Dev.	p5	p95	N
Dependent Variables:							
Environmental Score	*ENV*	26.32	21.69	22.53	0.00	69.31	6,284
Social Score	*SOC*	26.80	23.22	18.06	4.18	61.13	6,284
Main Independent Variable:							
Governance Score	*GOV*	47.37	47.72	21.67	10.83	81.23	6,284
Shareholder Score	*GOV*1	48.64	48.17	29.00	4.74	95.00	6,284
CSR Strategy Score	*GOV*2	40.08	33.43	33.22	0.00	94.33	6,284
Management Score	*GOV*3	48.45	47.45	28.65	4.87	94.33	6,284
Main Control Variables:							
Size	*SIZE*	17.85	17.60	1.86	15.34	21.59	5,667
Profitability	*ROA*	0.05	0.04	0.09	-0.01	0.18	5,649
Leverage (Debt/Equity)	*LEV*	1.14	0.60	2.10	0.00	4.32	5,667
Revenue Growth	*RG*	0.33	0.12	5.73	-0.21	0.64	5,654
CAPEX / Assets	*CAPEX*	0.04	0.03	0.04	0.00	0.12	5,663
R & D/ Sales	*RD*	0.03	0.00	0.42	0.00	0.10	6,284
Additional Control Variables:							
Firm Age	*AGE*	1.82	1.79	0.89	0.00	3.14	4,419
Market-to-Book	*MTB*	3.52	2.03	28.52	0.78	7.78	2,466
Alternative Dependent Variables:							
Emissions Reduction Score	*ERS*	28.59	24.84	26.33	0.00	76.79	6,284
Human Rights Score	*HRS*	8.51	0.00	16.79	0.00	44.44	6,284

This table shows some key summary statistics for all the main variables used in the empirical analyses. Along with mean, median, number of observations (N) and standard deviation, the 5th and 95th percentile values for each variable are also shown. For variable definitions, see Appendix A.

TABLE 2
Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ENV	1.000							
(2) SOC	0.630***	1.000						
(3) GOV	0.299***	0.246***	1.000					
(4) GOV1	0.038***	0.029**	0.358***	1.000				
(5) GOV2	0.678***	0.610***	0.364***	0.039***	1.000			
(6) GOV3	0.170***	0.128***	0.941***	0.094***	0.169***	1.000		
(7) SIZE	0.459***	0.352***	0.204***	0.003	0.430***	0.131***	1.000	
(8) ROA	-0.024*	-0.099***	0.017	0.031**	-0.019	0.014	-0.167***	1.000
(9) LEV	0.096***	0.097***	0.010	0.013	0.124***	-0.021*	0.380***	-0.173***
(10) RG	-0.035***	-0.031**	-0.053***	-0.020	-0.040***	-0.045***	-0.035***	-0.131***
(11) CAPEX	0.005	-0.096***	-0.022*	0.022*	0.051***	-0.043***	-0.212***	0.049***
(12) RD	-0.023*	0.012	-0.023*	0.034***	-0.008	-0.034***	-0.072***	-0.079***
(13) AGE	0.133***	-0.006	0.113***	0.021	0.124***	0.092***	0.075***	0.027*
(14) MTB	-0.006	-0.007	0.011	0.017	-0.014	0.010	-0.034*	0.001
(15) ERS	0.773***	0.557***	0.293***	0.177***	0.583***	0.022	0.296***	0.069***
(16) HRS	0.489***	0.607***	0.220***	0.133***	0.446***	0.044***	0.266***	-0.004

Variables	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(9) LEV	1.000							
(10) RG	-0.020	1.000						
(11) CAPEX	-0.096***	0.020	1.000					
(12) RD	-0.034**	0.354***	-0.004	1.000				
(13) AGE	0.020	-0.045***	-0.008	-0.046***	1.000			
(14) MTB	0.083***	0.005	0.011	0.027	-0.034*	1.000		
(15) ERS	0.007	-0.003	0.033***	-0.034***	0.144***	0.002	1.000	
(16) HRS	0.046***	0.014	0.006	-0.006	0.047***	-0.009	0.468***	1.000

Variable Abbreviations: Environmental performance (ENV); Social performance (SOC); Corporate Governance (GOV); Shareholder score ($GOV1$); CSR Strategy score ($GOV2$); Management score ($GOV3$); return on asset (ROA); revenue growth over previous year (RG); capital expenditure to total assets ratio (CAPEX); research and development to sales ratio (RD); market to book ratio (MTB), Emissions Reduction score (ERS), Human Rights score (HRS).

*** p<0.01

** p<0.05

* p<0.1

TABLE 3
Effect of CG on Environmental and Social Performance

DV=	ENV			SOC		
	(1)	(2)	(3)	(1)	(2)	(3)
GOV	**0.1632*** **	**0.1136*** **	**0.1197*** **	**0.1072*** **	**0.0944*** **	**0.0848*** **
	(7.23)	**(5.45)**	**(4.33)**	**(5.48)**	**(5.41)**	**(5.05)**
SIZE	6.5889***	8.6306***	1.5621	3.7109***	4.5195***	3.6736**
	(15.38)	(14.81)	(0.56)	(11.25)	(10.10)	(2.57)
ROA	17.3501***	11.9642***	1.8831	2.6527	2.4327	9.9957*
	(3.90)	(2.63)	(0.26)	(0.63)	(0.57)	(1.90)
LEV	-0.2367	-0.0830	0.2347**	-0.3369	-0.2450	0.0422
	(-0.41)	(-0.16)	(2.34)	(-1.27)	(-0.99)	(0.84)
RG	0.1868***	0.1815***	2.5304**	0.0918***	0.1415***	1.6825**
	(13.48)	(10.75)	(2.07)	(5.22)	(10.11)	(2.32)
CAPEX	61.5225***	16.6976	14.3087	17.2759	8.2176	29.2891***
	(4.61)	(1.25)	(0.94)	(1.57)	(0.75)	(2.84)
RD	-0.7460	-0.8999	-30.2099	3.7739	1.3913	-31.0785
	(-0.64)	(-0.54)	(-0.88)	(1.06)	(0.61)	(-1.32)
MissingRD	-3.2706**	1.0178	-5.5972**	5.2465***	2.8602**	-1.4922
	(-2.07)	(0.63)	(-2.05)	(4.14)	(2.19)	(-0.97)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry/Firm FE	--	Industry	Firm	--	Industry	Firm
# Observations	4,004	4,004	4,004	4,004	4,004	4,004
Adj. R-squared	0.277	0.377	0.414	0.245	0.336	0.492
p-value (F-test)	0.000	0.000	0.000	0.000	0.000	0.000
# Firms	1,386	1,386	1,386	1,386	1,386	1,386

This table reports the effects of corporate governance (*GOV*) on environmental (*ENV*) and social (*SOC*) performance. Our main sample comprises of Chinese publicly listed firms for which Refinitiv/ASSET4 ESG data is available from 2010 to 2021. For variable definitions, see Appendix A. When computing the *RD* variables, missing *R&D* expenses are assumed as zero. Hence, to account for missing observations for *R&D* expenses, we include an additional control (*MissingRD*) that indicates those missing values. We present results using three variations of Equations (1) and (2): by including only year fixed effects (Model 1), by including industry and year fixed effects (Model 2), and by introducing firm and year fixed effects (Model 3). For the standard errors clustered at the firm level, we show their corresponding t-statistics in parentheses.

*** p<0.01

** p<0.05

* p<0.1

TABLE 4
Effect of CG Subcomponents on Environmental and Social Performance

DV=	ENV			SOC		
	(1)	(2)	(3)	(1)	(2)	(3)
$GOV1$	**0.0248**	**0.0178**	**0.0292**	**0.0134**	**0.0010**	**0.0094**
	(1.59)	**(1.24)**	**(1.49)**	**(1.13)**	**(0.08)**	**(0.72)**
$GOV2$	**0.3484*** **	**0.3350*** **	**0.1879*** **	**0.2758*** **	**0.2941*** **	**0.1100*** **
	(19.77)	**(20.61)**	**(8.60)**	**(17.94)**	**(21.20)**	**(7.77)**
$GOV3$	**0.0176**	**0.0027**	**0.0325**	**-0.0007**	**0.0044**	**0.0337*** **
	(1.11)	**(0.19)**	**(1.64)**	**(-0.06)**	**(0.39)**	**(2.80)**
SIZE	3.3334***	4.8117***	1.1531	1.1033***	1.1227***	3.4262***
	(8.11)	(9.25)	(0.47)	(3.32)	(2.76)	(2.73)
ROA	12.3035***	10.3360***	0.0762	-1.3896	0.9849	8.8835*
	(3.35)	(2.82)	(0.01)	(-0.35)	(0.25)	(1.84)
LEV	-0.1836	-0.0558	0.2255**	-0.2934	-0.2193	0.0352
	(-0.37)	(-0.14)	(2.47)	(-1.47)	(-1.30)	(0.81)
RG	0.2102***	0.2020***	2.2678**	0.1103***	0.1580***	1.5410**
	(20.26)	(14.54)	(2.07)	(7.48)	(13.00)	(2.31)
CAPEX	11.0544	-3.1067	7.4889	-23.0697**	-8.5499	25.5759***
	(1.01)	(-0.28)	(0.55)	(-2.54)	(-0.99)	(2.70)
RD	-1.2460	-1.1406	-19.7515	3.3917	1.2799	-25.0408
	(-1.37)	(-1.09)	(-0.59)	(1.01)	(0.74)	(-1.09)
MissingRD	-1.8081	-0.5080	-6.1149**	6.4237***	1.5491	-1.7356
	(-1.34)	(-0.35)	(-2.37)	(6.01)	(1.40)	(-1.17)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry/Firm FE	--	Industry	Firm	--	Industry	Firm
# Observations	4,004	4,004	4,004	4,004	4,004	4,004
Adj. R-squared	0.437	0.507	0.449	0.406	0.494	0.513
p-value (F-test)	0.000	0.000	0.000	0.000	0.000	0.000
# Firms	1,386	1,386	1,386	1,386	1,386	1,386

This table reports the effects of the three corporate governance (GOV) subcomponents, i.e., shareholder score ($GOV1$), CSR Strategy score ($GOV2$), and management score ($GOV3$) on environmental (*ENV*) and social (*SOC*) performance. Our sample of Chinese publicly listed firms covers ESG data from 2010 to 2021. For variable definitions, see Appendix A. When computing the *RD* variables, missing R&D expenses are assumed as zero. Hence, to account for missing observations for *R&D* expenses, we include an additional control (*MissingRD*) that indicates those missing values. We employ three variations of Equations (3) and (4): with only year fixed effects (Model 1), with industry and year fixed effects (Model 2), and with firm and year fixed effects (Model 3). In these regressions, standard errors are clustered at the firm level and their corresponding t-statistics are shown in the parentheses.

*** p<0.01

** p<0.05

* p<0.1

TABLE 5
Moderating Effect of SOE: CG on Environmental and Social Performance

DV=	ENV		SOC	
	(1)	(2)	(1)	(2)
GOV	0.1926***	0.1297***	0.0788***	0.0680***
	(7.65)	(5.52)	(3.43)	(3.38)
SOE	6.4896**	3.9009*	-6.6980***	-6.9417***
	(2.57)	(1.80)	(-3.58)	(-3.92)
$\boldsymbol{GOV * SOE}$	**-0.1449*** **	**-0.1038** **	**0.0862** **	**0.0764** **
	(-2.81)	**(-2.48)**	**(2.11)**	**(1.96)**
SIZE	6.7336***	8.7886***	3.7866***	4.7049***
	(15.06)	(14.82)	(10.75)	(10.34)
ROA	17.3492***	11.6880**	1.4221	1.1373
	(3.89)	(2.57)	(0.35)	(0.27)
LEV	-0.3019	-0.1367	-0.3260	-0.2277
	(-0.51)	(-0.26)	(-1.12)	(-0.83)
RG	0.1901***	0.1833***	0.0824***	0.1311***
	(13.21)	(10.86)	(4.79)	(9.28)
CAPEX	63.4091***	16.5569	16.2259	3.8863
	(4.72)	(1.22)	(1.44)	(0.35)
RD	-0.5780	-0.8792	3.5023	1.2545
	(-0.45)	(-0.52)	(1.04)	(0.58)
MissingRD	-3.5435**	0.8859	5.1718***	2.7016**
	(-2.25)	(0.55)	(4.06)	(2.07)
Year FE	Yes	Yes	Yes	Yes
Industry/Firm FE	--	Industry	--	Industry
# Observations	3,974	3,974	3,974	3,974
Adj. R-squared	0.279	0.380	0.253	0.348
p-value (F-test)	0.000	0.000	0.000	0.000
# Firms	1,372	1,372	1,372	1,372

This table shows the moderating effects of state-owned enterprises (*SOE*) for the relationship of corporate governance (*GOV*) with environmental (*ENV*) and social (*SOC*) performance reported in Table 3. For the definitions of all other regressors, see Appendix A. When computing the *RD* variables, missing R&D expenses are assumed as zero. Hence, to account for missing observations for R&D expenses, we include an additional control (*MissingRD*) that indicates those missing values. We report results using models that include year fixed effects only (Model 1) and models that include both industry and year fixed effects (Model 2). For the standard errors clustered at the firm level, we show their corresponding t-statistics in parentheses.

*** p<0.01

** p<0.05

* p<0.1

TABLE 6
Moderating Effect of SOE:
CG Subcomponents on Environmental and Social Performance

DV=	ENV		SOC	
	(1)	(2)	(1)	(2)
$GOV1$	-0.0145	-0.0218	-0.0420***	-0.0538***
	(-0.74)	(-1.25)	(-2.61)	(-3.69)
$GOV2$	0.3718***	0.3522***	0.2911***	0.2995***
	(18.07)	(18.95)	(16.70)	(19.15)
$GOV3$	0.0384**	0.0215	-0.0148	-0.0001
	(2.03)	(1.27)	(-0.98)	(-0.01)
SOE	2.7297	1.2065	-9.4437***	-9.3626***
	(1.20)	(0.60)	(-5.16)	(-5.20)
$\boldsymbol{GOV1 * SOE}$	**0.1092*** **	**0.1173*** **	**0.0986*** **	**0.1022*** **
	(2.66)	**(3.14)**	**(3.18)**	**(4.01)**
$\boldsymbol{GOV2 * SOE}$	**-0.0946*** **	**-0.0699** **	**-0.0583** **	**-0.0361***
	(-3.33)	**(-2.57)**	**(-2.29)**	**(-1.78)**
$\boldsymbol{GOV3 * SOE}$	**-0.0811** **	**-0.0756*** **	**0.0787** **	**0.0465***
	(-2.24)	**(-2.58)**	**(2.46)**	**(1.66)**
SIZE	3.6238***	5.0114***	1.2863***	1.3798***
	(8.72)	(9.70)	(3.79)	(3.51)
ROA	13.0662***	10.9392***	-2.3897	0.0732
	(3.60)	(3.01)	(-0.62)	(0.02)
LEV	-0.2289	-0.0985	-0.2603	-0.1947
	(-0.46)	(-0.23)	(-1.23)	(-1.02)
RG	0.2084***	0.2005***	0.0941***	0.1420***
	(19.60)	(14.80)	(6.67)	(11.59)
CAPEX	10.2685	-6.0740	-25.4189***	-14.9324*
	(0.93)	(-0.54)	(-2.80)	(-1.79)
RD	-0.8439	-0.8007	3.4128	1.4838
	(-0.88)	(-0.74)	(1.10)	(0.90)
MissingRD	-2.3655*	-0.9689	6.1355***	1.1464
	(-1.74)	(-0.67)	(5.74)	(1.07)
Year FE	Yes	Yes	Yes	Yes
Industry/Firm FE	--	Industry	--	Industry
# Observations	3,974	3,974	3,974	3,974
Adj. R-squared	0.443	0.514	0.420	0.509
p-value (F-test)	0.000	0.000	0.000	0.000
# Firms	1,372	1,372	1,372	1,372

This table shows the moderating effects of state-owned enterprises (*SOE*) for the relationship of the corporate governance subcomponents ($GOV1$, $GOV2$, and $GOV3$) with environmental (*ENV*) and social (*SOC*) performance presented in Table 4. For the definitions of all other regressors, see Appendix A. To account for missing observations for R&D expenses, we include an additional control (*MissingRD*) that indicates its missing values. We report results using only the year fixed effects (Model 1) and using both industry and year fixed effects (Model 2). For the standard errors clustered at the firm level, we show their corresponding t-statistics in the parentheses.

*** p<0.01

** p<0.05

* p<0.1

TABLE 7
Moderating Effect of ENVSHOCK: CG on Environmental and Social Performance

DV=	ENV		SOC	
	(1)	(2)	(1)	(2)
GOV	0.0036	-0.0421	0.1431***	0.0939***
	(0.07)	(-0.90)	(4.94)	(3.67)
ENVSHOCK	5.7783*	6.4951**	21.1556***	16.1036***
	(1.89)	(2.12)	(11.41)	(8.29)
GOV * ENVSHOCK	**0.2070*** **	**0.2000*** **	**-0.0465**	**0.0007**
	(3.94)	**(3.86)**	**(-1.50)**	**(0.02)**
SIZE	6.6973***	8.6971***	3.6866***	4.5197***
	(16.08)	(15.48)	(11.11)	(10.07)
ROA	16.6295***	11.2990**	2.8144	2.4305
	(3.72)	(2.48)	(0.67)	(0.56)
LEV	-0.2881	-0.1302	-0.3254	-0.2452
	(-0.50)	(-0.26)	(-1.22)	(-0.99)
RG	0.1932***	0.1880***	0.0904***	0.1415***
	(13.57)	(10.98)	(5.18)	(10.08)
CAPEX	60.8948***	14.7141	17.4168	8.2111
	(4.59)	(1.12)	(1.58)	(0.74)
RD	-0.5864	-0.8417	3.7381	1.3914
	(-0.44)	(-0.47)	(1.06)	(0.61)
MissingRD	-3.5266**	0.8049	5.3039***	2.8595**
	(-2.28)	(0.51)	(4.18)	(2.19)
Year FE	Yes	Yes	Yes	Yes
Industry/Firm FE	--	Industry	--	Industry
# Observations	4,004	4,004	4,004	4,004
Adj. R-squared	0.283	0.383	0.245	0.335
p-value (F-test)	0.000	0.000	0.000	0.000
# Firms	1,386	1,386	1,386	1,386

This table shows the moderating effects of an environmental regulation shock (*ENVSHOCK*) for the relationship of corporate governance (*GOV*) with environmental (*ENV*) and social (*SOC*) performance presented in Table 3. For the definitions of all other main regressors, see Appendix A. To account for missing observations for R&D expenses, we include an additional control (*MissingRD*) that indicates its missing values. We report results using models that include year fixed effects only (Model 1) and models that include both industry and year fixed effects (Model 2). For the standard errors clustered at the firm level, we show their corresponding t-statistics in the parentheses.

*** p<0.01

** p<0.05

* p<0.1

TABLE 8
Moderating Effect of *ENVSHOCK*:
***CG* Subcomponents on Environmental and Social Performance**

DV=	ENV		SOC	
	(1)	(2)	(1)	(2)
$GOV1$	0.0625*	0.0534*	0.0150	-0.0011
	(1.91)	(1.77)	(0.75)	(-0.06)
$GOV2$	0.3134***	0.3318***	0.2518***	0.2580***
	(8.55)	(10.49)	(10.70)	(12.94)
$GOV3$	-0.1035***	-0.1265***	0.0460**	0.0315*
	(-3.13)	(-4.15)	(2.15)	(1.73)
$ENVSHOCK$	0.8632	1.7495	14.7241***	8.8207***
	(0.29)	(0.64)	(7.93)	(4.22)
$\boldsymbol{GOV1 * ENVSHOCK}$	**-0.0473**	**-0.0478**	**-0.0016**	**0.0041**
	(-1.32)	**(-1.40)**	**(-0.07)**	**(0.18)**
$\boldsymbol{GOV2 * ENVSHOCK}$	**0.0441**	**0.0032**	**0.0324**	**0.0475**
	(1.27)	**(0.10)**	**(1.53)**	**(1.43)**
$\boldsymbol{GOV3 * ENVSHOCK}$	**0.1572*** **	**0.1672*** **	**-0.0607*** **	**-0.0345**
	(4.36)	**(4.88)**	**(-2.71)**	**(-1.62)**
SIZE	3.4143***	4.8431***	1.0674***	1.0938***
	(8.55)	(9.75)	(3.23)	(2.66)
ROA	11.7122***	9.8207***	-1.1349	1.0562
	(3.15)	(2.67)	(-0.28)	(0.27)
LEV	-0.2182	-0.0808	-0.2806	-0.2201
	(-0.45)	(-0.20)	(-1.41)	(-1.30)
RG	0.2134***	0.2052***	0.1093***	0.1592***
	(19.92)	(14.57)	(7.45)	(12.98)
CAPEX	10.8954	-5.1354	-21.6660**	-7.3275
	(0.99)	(-0.47)	(-2.38)	(-0.85)
RD	-0.8739	-0.9277	3.3871	1.3016
	(-0.77)	(-0.79)	(1.02)	(0.75)
MissingRD	-2.1788*	-0.7781	6.5302***	1.5635
	(-1.69)	(-0.56)	(6.07)	(1.39)
Year FE	Yes	Yes	Yes	Yes
Industry/Firm FE	--	Industry	--	Industry
# Observations	4,004	4,004	4,004	4,004
Adj. R-squared	0.444	0.514	0.407	0.495
p-value (F-test)	0.000	0.000	0.000	0.000
# Firms	1,386	1,386	1,386	1,386

This table shows the moderating effects of an environmental regulation shock (*ENVSHOCK*) for the relationship of the corporate governance subcomponents ($GOV1$, $GOV2$, and $GOV3$) with environmental (*ENV*) and social (*SOC*) performance presented in Table 4. For the definitions of all other main regressors, see Appendix A. To account for missing observations for R&D expenses, we include an additional control (*MissingRD*) that indicates its missing values. We show results using only the year fixed effects (Model 1) and using both industry and year fixed effects (Model 2). For the standard errors clustered at the firm level, we show their corresponding t-statistics in the parentheses.

*** p<0.01

** p<0.05

* p<0.1

APPENDIX A. VARIABLE DEFINITIONS

Variable	Definition
Dependent Variables:	
Environmental Score (*ENV*)	The Environmental Pillar Score from ASSET4/Refinitiv measures the ability of firms to co-exist with natural environment and ecosystems, essentially reflecting their commitment to best practices that alleviate environmental risks and promote positive environmental impact. It broadly covers firms' performance on environmental innovation, resource use, and emissions and waste reduction.
Social Score (*SOC*)	The Social Pillar Score from ASSET4/Refinitiv reflects the firms' engagement with their employees, customers, suppliers, and society at large through best management practices that help maintain firms' reputation. It includes subcategories under community, human rights, workforce, and product responsibility.
Main Independent Variables:	
Governance Score (*GOV*)	The Thomson Reuters ASSET4/Refinitiv Governance Pillar Score captures the degree to which firms' governance characteristics are designed to align managerial interests with those of the shareholders. It covers three subcategories, i.e., Shareholder Score, CSR Strategy Score, and Management Score.
Shareholder Score (*GOV1*)	Provided by ASSET4/Refinitiv, it measures the effectiveness of mechanisms used by the firms for ensuring equal treatment of shareholder and includes an assessment of anti-takeover provisions.
CSR Strategy Score (*GOV2*)	ASSET4/Refinitiv's CSR strategy score is indicative of how well firms can communicate that the triple bottom line objectives of people, planet, and profits are integrated into its day-to-day operations and decision-making processes.
Management Score (*GOV3*)	Taken from ASSET4/Refinitiv, the management score reflects how committed are the firms' top management (executive and board) toward effective governance using exemplary practices.
Main Control Variables:	
Firm Size (*SIZE*)	It is measured as the logarithm of firms' total assets.
Profitability (*ROA*)	Profitability is measured using return on assets (ROA) as the ratio of Net Income and Total Assets, as obtained from Refinitiv.
Leverage (*LEV*)	Leverage is measured as the ratio of Total Debt to Total Equity.
Revenue Growth (*RG*)	Revenue growth over previous year captures the rate of growth of Total Revenues.
CAPEX / Assets (*CAPEX*)	The ratio of Capital Expenditure to Total Assets
R & D/ Sales (*RD*)	The ratio of Research and Development Expenses to Total Sales
Missing R & D (*MissingRD*)	An indicator representing firm-year observations with missing Research and Development Expenses
Additional Control Variables:	
Firm Age (*AGE*)	The number of years since the firms' incorporation.
Market-to-Book (*MTB*)	The ratio of Market Value of Equity to Book Value of Equity.
Alternative Dependent Variables:	
Emissions Reduction Score (ERS)	The Emissions Score from ASSET4/Refinitiv that captures a firm's commitment and effectiveness towards reducing environmental emissions in its production and operational processes.
Human Rights Score (HRS)	The Human Rights Score measured by ASSET4/Refinitiv that reflects a firm's effective conformance when it comes fundamental human rights conventions.

APPENDIX B. SUPPLEMENTARY RESULTS

TABLE B.1.
Effect of CG on Environmental and Social Performance (with Additional Controls)

DV=	ENV			SOC		
	(1)	(2)	(3)	(1)	(2)	(3)
GOV	**0.1649*** **	**0.1277*** **	**0.1119*** **	**0.1103*** **	**0.0992*** **	**0.0791*** **
	(4.85)	**(3.97)**	**(2.80)**	**(3.99)**	**(3.86)**	**(3.23)**
SIZE	6.6597***	9.1069***	-0.2352	4.7993***	6.1764***	2.7515
	(11.40)	(9.46)	(-0.06)	(9.72)	(8.89)	(1.49)
ROA	15.0574	15.4560	7.7765	10.9308	14.8673	12.6356
	(1.27)	(1.34)	(0.65)	(1.14)	(1.47)	(1.52)
LEV	0.0937	0.2467	0.2746***	-0.0796	0.0572	0.0611
	(0.26)	(0.87)	(3.58)	(-0.56)	(0.47)	(1.60)
RG	1.6638	0.1335	2.9965*	2.1773	0.9057	1.6446
	(0.72)	(0.06)	(1.74)	(1.25)	(0.53)	(1.46)
CAPEX	52.1942***	15.0977	12.4864	29.6312*	13.8524	24.1934
	(2.68)	(0.73)	(0.51)	(1.79)	(0.85)	(1.52)
RD	29.5834	60.0948***	-10.3024	77.6176***	71.3506***	-18.8783
	(1.34)	(2.66)	(-0.22)	(3.97)	(3.40)	(-0.64)
MissingRD	-4.5006*	1.8839	-8.4537***	5.7948***	4.0471**	-3.2800
	(-1.90)	(0.78)	(-2.71)	(3.06)	(1.98)	(-1.57)
AGE	0.9820	0.0657	5.2928	-1.6232*	-1.9946**	4.7762*
	(0.95)	(0.06)	(1.09)	(-1.92)	(-2.41)	(1.69)
MTB	0.0093*	0.0014	-0.0004	0.0100***	0.0050	0.0044***
	(1.74)	(0.25)	(-0.23)	(3.12)	(1.51)	(4.43)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry/Firm FE	--	Industry	Firm	--	Industry	Firm
# Observations	1,735	1,735	1,735	1,735	1,735	1,735
Adj. R-squared	0.266	0.359	0.419	0.298	0.381	0.488
p-value (F-test)	0.000	0.000	0.000	0.000	0.000	0.000
# Firms	609	609	609	609	609	609

This table replicates the results in Table 3 for the effects of corporate governance (GOV) on environmental (*ENV*) and social (*SOC*) performance. Along with all the main control variables, we include additional variables representing firm age (*AGE*) and market-to-book ratio (*MTB*). For variable definitions, see Table 1. All other variables are the same as those in Table 3. For the standard errors clustered at the firm level, we show their corresponding t-statistics in the parentheses.

*** p<0.01

** p<0.05

* p<0.1

TABLE B.2.
Effect of Governance Subcomponents on Environmental and Social Performance (with Additional Controls)

DV=	ENV			SOC		
	(1)	(2)	(3)	(1)	(2)	(3)
GOV1	**0.0188**	**0.0085**	**0.0353**	**0.0182**	**0.0140**	**0.0115**
	(0.81)	**(0.38)**	**(1.20)**	**(1.11)**	**(0.85)**	**(0.59)**
GOV2	**0.3487*** **	**0.3385*** **	**0.1809*** **	**0.2837*** **	**0.2915*** **	**0.1013*** **
	(13.59)	**(14.98)**	**(6.03)**	**(13.23)**	**(15.34)**	**(4.51)**
GOV3	**0.0307**	**0.0225**	**0.0321**	**0.0048**	**0.0079**	**0.0340***
	(1.32)	**(1.08)**	**(1.10)**	**(0.27)**	**(0.50)**	**(1.95)**
SIZE	3.2207***	4.8129***	-0.6380	1.9796***	2.4880***	2.5143
	(5.70)	(5.85)	(-0.19)	(4.16)	(4.25)	(1.54)
ROA	9.2134	14.4530	6.2921	6.2436	14.0376*	11.8609
	(0.92)	(1.52)	(0.55)	(0.76)	(1.78)	(1.57)
LEV	0.0925	0.2018	0.2605***	-0.0802	0.0207	0.0526
	(0.31)	(0.85)	(3.51)	(-0.75)	(0.24)	(1.49)
RG	2.8762	1.2871	2.7385*	3.1448**	1.8925	1.5282
	(1.41)	(0.67)	(1.67)	(2.06)	(1.22)	(1.39)
CAPEX	2.8103	-2.1731	6.9693	-11.3373	-1.5852	21.4583
	(0.18)	(-0.13)	(0.32)	(-0.89)	(-0.13)	(1.44)
RD	18.0488	32.5110*	-5.3026	67.5149***	47.0980***	-15.5783
	(1.00)	(1.83)	(-0.11)	(4.85)	(3.30)	(-0.50)
MissingRD	-2.6395	-0.2401	-8.8956***	7.2584***	2.1249	-3.4773*
	(-1.28)	(-0.12)	(-3.00)	(4.56)	(1.26)	(-1.70)
AGE	0.8049	0.6447	4.0087	-1.7572***	-1.4824**	3.9972
	(0.90)	(0.69)	(0.92)	(-2.59)	(-2.21)	(1.53)
MTB	0.0078	0.0005	0.0004	0.0086***	0.0041**	0.0048***
	(1.65)	(0.12)	(0.20)	(3.23)	(2.06)	(5.05)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry/Firm FE	--	Industry	Firm	--	Industry	Firm
# Observations	1,735	1,735	1,735	1,735	1,735	1,735
Adj. R-squared	0.429	0.493	0.451	0.470	0.537	0.506
p-value (F-test)	0.000	0.000	0.000	0.000	0.000	0.000
# Firms	609	609	609	609	609	609

This table replicates the results in Table 4 for the effects of the three corporate governance subcomponents ($GOV1$, $GOV2$, *and* $GOV3$) on environmental (*ENV*) and social (*SOC*) performance. Along with all the main control variables, we include additional variables representing firm age (*AGE*) and market-to-book ratio (*MTB*). All other variables are the same as those in Tables 3 and 4. For variable definitions, see Table 1. In these regressions, standard errors are clustered at the firm level and their corresponding t-statistics are shown in the parentheses.

*** p<0.01

** p<0.05

* p<0.1

TABLE B.3.
Effect of CG on Alternative Measures of Environmental and Social Performance

DV=	EMISSION			HUMAN RIGHTS		
	(1)	(2)	(3)	(1)	(2)	(3)
GOV	**0.2114*** **	**0.1408*** **	**0.1279*** **	**0.1251*** **	**0.1019*** **	**0.0277*** **
	(8.14)	**(5.88)**	**(3.69)**	**(6.67)**	**(5.56)**	**(2.97)**
SIZE	5.8082***	8.6130***	3.9759	2.8333***	4.1520***	0.4793
	(12.01)	(15.83)	(1.49)	(7.23)	(10.22)	(0.77)
ROA	27.9597***	18.5233***	10.4519	6.7986*	4.4896	4.6347**
	(5.36)	(3.56)	(1.39)	(1.87)	(1.26)	(1.97)
LEV	-0.7570	-0.4289	0.1193***	-0.3548	-0.1756	-0.3924
	(-1.21)	(-0.98)	(2.60)	(-1.05)	(-0.67)	(-1.31)
RG	0.2147***	0.2188***	-0.5371	0.0382***	0.0605***	0.0327
	(14.49)	(14.79)	(-0.45)	(3.81)	(5.61)	(1.42)
CAPEX	69.9241***	20.7281	65.6320***	39.2438***	3.6324	-8.9524
	(4.77)	(1.54)	(3.29)	(3.59)	(0.38)	(-1.55)
RD	-1.7824	-1.3642*	-59.2265	1.0621	0.3906	-5.2442
	(-0.95)	(-1.69)	(-1.23)	(0.88)	(0.42)	(-0.56)
MissingRD	-5.6786***	2.5244	-3.2499	0.8821	3.3387**	-1.4509
	(-3.61)	(1.51)	(-1.26)	(0.70)	(2.54)	(-1.61)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry/Firm FE	--	Industry	Firm	--	Industry	Firm
# Observations	4,003	4,003	4,003	4,003	4,003	4,003
Adj. R-squared	0.234	0.391	0.478	0.143	0.216	0.258
p-value (F-test)	0.000	0.000	0.000	0.000	0.000	0.000
# Firms	1,385	1,385	1,385	1,385	1,385	1,385

This table replicates the results in Table 3 for the effects of corporate governance (GOV) on alternative measures of environmental and social performance proxies using the Emission Reduction Scores (*ERS*) and Human Rights Scores (*HRS*), respectively. All the control variables remain the same as the baseline specification in Table 3. For variable definitions, see Table 1. For the standard errors clustered at the firm level, we show their corresponding t-statistics in parentheses.

*** p<0.01

** p<0.05

* p<0.1

TABLE B.4.
Effect of Governance Subcomponents on Alternative Measures of Environmental and Social Performance

DV=	ERS			HRS		
	(1)	(2)	(3)	(1)	(2)	(3)
$GOV1$	**0.0165**	**0.0247**	**0.0274**	**0.0253****	**0.0303*****	**-0.0067**
	(0.87)	**(1.55)**	**(1.28)**	**(2.05)**	**(2.62)**	**(-0.46)**
$GOV2$	**0.3939*****	**0.3442*****	**0.2382*****	**0.1860*****	**0.1768*****	**0.0596*****
	(20.91)	**(20.37)**	**(10.55)**	**(9.09)**	**(10.22)**	**(2.89)**
$GOV3$	**0.0458****	**0.0186**	**0.0266**	**0.0342*****	**0.0252****	**-0.0060**
	(2.46)	**(1.18)**	**(1.13)**	**(2.76)**	**(2.03)**	**(-0.43)**
SIZE	2.1464***	4.7353***	3.4440	1.1517**	2.2377***	2.6678
	(4.96)	(10.00)	(1.57)	(2.53)	(5.68)	(1.19)
ROA	22.2991***	16.8989***	8.0930	4.1993	3.6876	0.3227
	(5.17)	(3.77)	(1.18)	(1.23)	(1.14)	(0.06)
LEV	-0.6883	-0.4012	0.1067**	-0.3295	-0.1633	-0.0078
	(-1.34)	(-1.16)	(2.09)	(-1.10)	(-0.73)	(-0.14)
RG	0.2385***	0.2399***	-0.8704	0.0510***	0.0724***	1.9441**
	(17.12)	(19.71)	(-0.82)	(5.78)	(6.80)	(1.96)
CAPEX	13.6607	0.2990	56.9581***	12.8617	-7.1857	6.0743
	(1.15)	(0.03)	(3.13)	(1.41)	(-0.82)	(0.54)
RD	-2.1753	-1.6194***	-45.7615	0.7582	0.1762	-26.3779
	(-1.06)	(-2.82)	(-0.99)	(0.72)	(0.28)	(-1.10)
MissingRD	-3.9822***	0.9705	-3.8902	1.6225	2.5317**	0.1906
	(-2.90)	(0.67)	(-1.55)	(1.38)	(2.10)	(0.13)
AGE	Yes	Yes	Yes	Yes	Yes	Yes
	--	Industry	Firm	--	Industry	Firm
MTB	4,003	4,003	4,003	4,003	4,003	4,003
	0.385	0.493	0.512	0.217	0.274	0.264
Year FE	0.000	0.000	0.000	0.000	0.000	0.000
Industry/Firm FE	1,385	1,385	1,385	1,385	1,385	1,385
# Observations	0.0165	0.0247	0.0274	0.0253**	0.0303***	-0.0067
Adj. R-squared	(0.87)	(1.55)	(1.28)	(2.05)	(2.62)	(-0.46)
p-value (F-test)	0.3939***	0.3442***	0.2382***	0.1860***	0.1768***	0.0596***
# Firms	(20.91)	(20.37)	(10.55)	(9.09)	(10.22)	(2.89)

This table replicates the results in Table 4 for the effects of the three corporate governance subcomponents ($GOV1$, $GOV2$, *and* $GOV3$) on alternative measures of environmental and social performance: i.e., the Emission Reduction Scores (*ERS*) and Human Rights Scores (*HRS*), respectively. All other variables are the same as those in Tables 3 and 4. For variable definitions, see Table 1. In these regressions, standard errors are clustered at the firm level and their corresponding t-statistics are shown in parentheses.

*** p<0.01

** p<0.05

* p<0.1

TABLE B.5.
Causal Effect of CG on Environmental and Social Performance
(using Instrumental Variables)

DV=	ENV		SOC	
	(1)	(2)	(1)	(2)
GOV	**0.1739*** **		**0.2066*** **	
	(2.75)		**(5.45)**	
GOV1		**0.0264**		**0.1196*** **
		(0.60)		**(4.02)**
GOV2		**0.2596*** **		**0.3235*** **
		(3.44)		**(9.81)**
GOV3		**0.0685**		**0.0257**
		(1.62)		**(0.92)**
SIZE	8.3604***	5.5062***	4.0168***	0.7370
	(13.91)	(5.18)	(8.40)	(1.31)
ROA	11.8185***	10.5982***	2.1615	0.7654
	(2.63)	(2.76)	(0.49)	(0.18)
LEV	-0.0559	-0.0325	-0.1946	-0.1860
	(-0.11)	(-0.08)	(-0.82)	(-1.01)
RG	0.1908***	0.2062***	0.1589***	0.1857***
	(10.13)	(11.93)	(10.17)	(13.02)
CAPEX	18.6368	4.5263	11.8261	-11.1528
	(1.37)	(0.34)	(1.06)	(-1.17)
RD	-0.8831	-1.0145	1.4227	0.5653
	(-0.50)	(-0.75)	(0.58)	(0.33)
MissingRD	0.7002	-0.4406	2.2692*	0.7103
	(0.42)	(-0.28)	(1.74)	(0.59)
Year FE	Yes	Yes	Yes	Yes
Industry/Firm FE	Industry	Industry	Industry	Industry
# Observations	4,004	4,004	4,004	4,004
Adj. R-squared	0.374	0.494	0.320	0.457
First Stage F-stat>10	Yes	Yes	Yes	Yes
Cragg-Donald Wald F-Stat	374.8	97.5	374.8	97.5
p-value (F-test)	0.000	0.000	0.000	0.000
# Firms	1,386	1,386	1,386	1,386

This table replicates the results in Tables 3 and 4 for the effects of corporate governance (GOV) and its three subcomponents ($GOV1$, $GOV2$, *and* $GOV3$) on environmental (*ENV*) and social (*SOC*) performance to show the causal estimates using instrumental variables. For each of the GOV variables, their corresponding instruments are the average GOV values of their respective industry peers as identified by the Thomson Reuters' industry sector classifications. For variable definitions, see Table 1. For both *ENV* and *SOC*, we show results using the overall governance score (Model 1) and it's three subcomponents (Model 2). For the sake of brevity, we only present the results from the second stage of the two-stage least square (2SLS) estimations. Standard errors are clustered at the firm level and their corresponding t-statistics are reported in parentheses.

*** p<0.01

** p<0.05

* p<0.1