THREE ESSAYS ON CORPORATE SOCIAL RESPONSIBILITY

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ABSTRACT

This thesis encompasses three empirical chapters, each focusing on a distinct aspect of corporate social responsibility (CSR) and examining both its drivers and outcomes at organizational and individual levels.

The first empirical chapter investigates the role of gender diversity in top management teams and its relationship with firms' CSR engagement. Drawing on resource dependence theory, the primary findings indicate that female directors significantly enhance firm's CSR performance by contributing to board diversity. Furthermore, the results reveal that social trust bolsters the effectiveness of female directors.

The second empirical chapter explores the environmental issues and their driving factor, specifically institutional investors. The analysis demonstrates that institutional investors contribute to a reduction in greenhouse gas emissions among Chinese listed firms. The mechanism operates through the investors' use of their voice in shareholder proposals.

The final empirical chapter delves into external experiences that influence CEOs' attitudes towards their firms' CSR profiles. The findings suggest that CEOs, motivated by a desire to enhance their reputation, tend to engage more in CSR activities following the receipt of an award. Concurrently, the easing of financial constraints facilitates these decisions. Ultimately, the results support the notion that CSR agency problems can lead to decisions made by awarded CEOs that adversely impact firm value.

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THREE ESSAYS ON CORPORATE SOCIAL RESPONSIBILITY

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DECLARATION

This thesis has not been submitted in any part for any other degree or qualifying examination at this or any other university. Unless the manuscript indicates otherwise, this thesis is entirely my own work.

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CHAPTER ONE: INTRODUCTION

Over the years, the perception that businesses have limited concern for social welfare issues not directly impacting profits has been frequently expressed. Criticisms have centered on claims of employee exploitation, neglect of the deteriorating social order, lack of principled ethical decision-making, and indifference to the challenges faced by minorities and the environment (Carroll and Brown, 2022). The considerable influence wielded by businesses has elicited public concern, leading to calls for increased social responsibility. This thesis aims to investigate the factors that influence firms' Corporate Social Responsibility (CSR) engagement at both the organizational and CEO/director levels.

The conceptualization of CSR has evolved in response to varying societal demands placed on companies across different periods and phenomena. Initially, corporations, as legal entities, were expected to shoulder social responsibilities akin to good citizenship. Thus, CSR was initially conceived as citizenship behavior. Terms like "corporate social responsiveness" and "corporate social performance" have been used to frame CSR within different contexts. The paradigm of sustainability is frequently underscored by corporate leaders within discussions of social responsibilities, predicated on the notion that Corporate Social Responsibility (CSR) augments the firm's prospects for long-term viability and growth. The concept of Creating Shared Value (CSV), widely espoused by industry practitioners, posits that firms should strive to generate economic value in tandem with producing societal value. While the discourse of sustainability initially sprung from environmental debates, its scope has since expanded to not merely include environmental stewardship, but also to incorporate sustainable business development.

Carroll (1991) proposed a pyramid model as a comprehensive representation of CSR, encompassing four distinct tiers: economic responsibility, legal responsibility, ethical responsibility, and philanthropic responsibility. This model cogently illustrates the multifaceted nature of CSR, highlighting the necessity for firms to balance economic goals with legal compliance, ethical considerations, and philanthropic initiatives to achieve true sustainability. This research aims to critically examine these dimensions

within the context of CEO demographics and their potential influence on corporate strategic decisions.

The Chinese market presents a distinctive context for scrutinizing Corporate Social Responsibility (CSR). Throughout the recent decades, China has undergone an accelerated pace of economic evolution coupled with profound societal metamorphoses that have significantly influenced the operational dynamics of firms in this market. This has imbued the Chinese context with a unique blend of characteristics, making it a rich environment for studying the multifarious facets of CSR, particularly in conjunction with CEO demographics and their influence on strategic decision-making. These factors have led to the growing importance of corporate social responsibility reporting (Marquis and Qian, 2014). The distinctive context of the Chinese market is integral to research on various aspects of corporate finance. Moreover, the role of CSR in China has been growing (Wang et al., 2016), as evidenced by the rapid development of CSR databases and increased corporate focus on CSR, thus enabling an examination of this topic within the Chinese market. It is argued that the Chinese capital market provides a unique opportunity to study the interplay between institutional change and firm strategies in an emerging economy.

Additionally, the peculiarities make it meaningful to do research specifically rooted in Chinese market: 1) China is the largest emerging market in the world with a rapid economic growth, the scale and impact making it critical meaningful to take insight into economy behaviours in such a developing market. The results obtained with such data are extrapolatable and help us to understand aspects of CSR in developing countries 2) while the understanding of CSR in western countries has been developed very well, the economic and culture difference in China might influence the way CSR is perceived and implemented. Therefore, investigating the Chinese market can provide insights into how cultural and economic difference affect CSR practices and the implications for multinational corporations operating in China. 3) Academically, the scarcity of research on corporate social responsibilities compared to developed market provide

opportunities to make a significant contribution and comparation to the academic literature related to CSR practices.

As society's understanding of CSR evolves, different evaluation systems have emerged. In China, the HEXUN database provides CSR ratings and scores for listed firms from 2010 to 2021, based on five sub-CSR groups: shareholder responsibilities, employee responsibilities, collaboration and customer responsibilities, environmental responsibilities, and social responsibilities. Besides CSR ratings, Chinese databases also provide environmental, social, and governance (ESG) ratings, which assess the internal responsibilities of firms, among other aspects. The most frequently used ESG indices for listed firms in China are the Sino-Securities Index (SSI), and the Wind and SynTao Green databases. Given the importance of governance as a factor that can influence a range of outcomes or derive from various causes in the field of corporate finance research, this thesis employs the ESG index, along with the CSR index, as a robustness check, encapsulating both the internal and external responsibilities of firms. However, in terms of conceptual background, ESG and CSR address similar constructs, so this thesis uses both ESG and CSR terminology.

Previous literature indicates that numerous factors can influence a firm's CSR performance. These studies can be categorized into three groups, focusing on the institutional, organizational, and individual levels. At the institutional level, scholars posit that a country's economic development, societal harmony, autonomy, law, and culture all affect ESG performance (Cai et al., 2016). At the organizational (firm) level, (Borghesi et al., 2014) find that firms in certain industries, such as the consumption and computer hardware industries, pay greater attention to CSR, as they need to secure market support. Regarding ownership structures, some researchers consider these proxies for external governance, asserting that external governance results in better CSR outcomes (Chen et al., 2020; Dyck et al., 2019). However, another strand of literature contends that investors prioritize short-term returns, which can negatively impact firms' CSR performance (Borghesi et al., 2014). At the individual level, scholars

have documented the personal traits and experiences of top management teams and their influence on CSR/ESG. It has been found that both personal attributes and experiences can shape firm decisions and policies. For instance, female leaders are likely to improve firms' CSR performance (Borghesi et al., 2014); CEOs with daughters tend to invest more in CSR activities (Cronqvist and Yu, 2017); married CEOs are capable of improving aggregate ESG scores (Hegde and Mishra, 2019); and if CEOs and their employees are geographically close, the managers are likely to be more employee-friendly (Landier et al., 2009). Additionally, younger CEOs are more likely to lead firms with higher CSR scores, and overconfident CEOs are less likely to engage in ESG as a hedge against potential risk (McCarthy et al., 2017).

Apart from the drivers of CSR, another research area centres on the outcomes of CSR. A firm's CSR level is perceived as exerting a significant influence on its value, with both negative and positive outcomes observed. Studies suggesting a positive relationship indicate that this stems from the expectation that ESG/CSR engagement i) reduces risk and cost of capital by obtaining stakeholder support (Albuquerque et al., 2019; Ilhan et al., 2021; Oikonomou et al., 2012); ii) enhances operating performance by increasing transparency due to disclosure (Banerjee et al., 2014; Li et al., 2018) or by boosting corporate reputation (Galbreath and Shum, 2012; Lai et al., 2010); iii) demonstrates that managerial skills are transferable, and the market trusts ESG (Frooman, 1997; Schuler and Cording, 2006). Conversely, the literature arguing for the negative impact of CSR suggests that i) CSR can be viewed as 'greenwashing' to conceal poor performance (Brooks and Oikonomou, 2018); ii) ESG sacrifices more profitable activities (Schuler and Cording, 2006), and iii) ESG is a proxy for agency costs because managers engage in ESG practices for their personal interests (Schuler and Cording, 2006). These negative arguments primarily focus on long-term firm value.

The question of whether CSR enhances corporate value remains unresolved. Some scholars posit that the answer depends on motivation and capability. Regarding corporate motivation for socially responsible activities, it necessitates revisiting the

exploration of what drives companies to engage in such activities and discerning "what kinds of CSR can enhance firm value". In terms of capability, a burgeoning area in the CSR and corporate value literature examines the mediating effect, that is, "when CSR can enhance firm value".

Representative studies in this area include discussions at the individual level, such as CEO power (Li et al., 2018), CEO duality (Romano et al., 2020), and CEO tenure (Chen et al., 2019b; Galbreath and Shum, 2012; Triyani et al., 2020). Investigations at the organisational level tackle topics such as disclosure (Servaes and Tamayo, 2013), green innovation (Chouaibi and Chouaibi, 2021), ownership structure (Wu et al., 2022), and board structure (Nekhili et al., 2021), as well as customer awareness (Servaes and Tamayo, 2013). Studies at the institutional level examine social trust (Zolotoy et al., 2019) and periods of financial crisis (Bae et al., 2021; Qiu et al., 2021).

While it is well established that various factors influence a firm's engagement in CSR and determine its outcomes, three issues remain prominent in the CSR discourse. Firstly, a dearth of studies has addressed CSR, especially environmental issues, within the Chinese market, likely due to a lack of mature public data available for research. Secondly, most studies do not elucidate the mechanisms by which the factors impact CSR engagement. For instance, in the literature discussing how female directors or leaders enhance a firm's CSR engagement and performance, the prevailing explanation posits that women are inherently more ethical and considerate of others, or that board diversity contributes to CSR. However, no papers have thus far discerned between these two pathways. Thirdly, a relatively small number of articles synergise the causes and outcomes of CSR. For example, while many scholars assert that CEOs augment CSR engagement to bolster their reputation, they do not explore further whether this type of CSR enhances or diminishes the firm's value.

Given the above, this thesis primarily focuses on the antecedents of firms' CSR engagement at both institutional and individual levels, as well as the resultant outcomes. Specifically, by engaging with literature relating to individual and institutional level

factors, this thesis addresses three types of question. Chapter 1 scrutinises whether female directors enhance firms' CSR engagement, the mechanisms by which female directors influence firms' CSR performance, and the conditions under which this impact is most profound. Chapter 2 responds to the following queries: Do institutional investors correlate with firms' greenhouse gas (GHG) emissions in China? What mechanisms do they employ to impact firms' GHG decisions? Why do they opt to influence firms' GHG decisions? Chapter 3 explores whether accolades awarded to CEOs bolster firms' CSR engagement, why CEOs elect to increase firms' CSR engagement, and whether such CSR engagement augments or undermines firm value.

Specifically, in Chapter 1, to answer the questions based on firm-level factors in Chinese listed firms, the thesis scrutinises the correlation between board-level female representation and firms' CSR performance. CSR performance is evaluated through CSR ratings and scores compiled from the HEXUN database. After mitigating for endogeneity using instrumental variables, fixed effects, and lead-lagged variables, the findings indicate that female directors significantly augment firms' CSR performance. The mechanism tests suggest that women enhance CSR performance by contributing to board diversity rather than applying female risk aversion and ethical personal traits during the decision-making process. Additionally, I also assess the role of gender discrimination in influencing the efficacy of females in fostering board diversity and discover the effectiveness of social trust and education. In summary, Chapter 1 delves into the influence of female directors on firms' CSR performance.

In Chapter 2, the thesis initially investigates the impact of institutional investors on the ESG profile of firms dedicated to environmental issues. To circumvent 'greenwashing' concerns, this thesis employs GHG emissions as the measure of social responsibility assumed by firms in environmental domains. By applying fixed effect OLS regression for panel data, the findings suggest that institutional investors drive firms to diminish GHG emissions, with qualified foreign institutional investors (QFIIs) playing a significant role in this regard. The motivation to reduce GHG emissions is driven by

the potential financial loss to investors due to risks caused by GHG emissions. Moreover, by leveraging the Granger causality test, this chapter identifies that social norms also represent a pivotal factor influencing institutional investors' attitudes towards environmental issues. The results indicate that QFIIs, particularly those from countries with stricter environmental regulations, exert a more substantial impact on Chinese firms' GHG emissions. This chapter also probes into the mechanisms by which investors impact firms' GHG emissions and, through conducting a textual analysis of shareholder proposals, finds that shareholders are highly likely to voice their demands for environmental improvements in firms' decisions via shareholder proposals.

Chapter 3 investigates the relationship between typical members of top management teams and firms' CSR profiles. Initially, it examines the characteristics of CEOs and their influence on firms' ESG performance, under the framework of the upper echelon theory, identifying a research gap in the area of external shocks and CEOs' ESG decisions. Consequently, this chapter selects an external shock - the receipt of a significant award - and scrutinizes its influence on a CEO's propensity towards ESG. To assess the net effect of winning an award, this chapter utilizes propensity score matching for data from Chinese listed firms spanning 2009 to 2020. The findings reveal that winning an award significantly shapes CEOs' attitudes towards ESG. Four potential explanations are proposed for the impact of award-winning on firms' ESG performance - identity control motivation, market pressure, reputation management, and resource constraints. The chapter uncovers that reputation management primarily motivates CEOs to improve firms' ESG performance, achieved through the alleviation of financial constraints. Furthermore, this chapter extensively debates whether ESG yields value for firms by associating the ESG conducted by award-winning CEOs and firm value (measured by both stock returns and operating returns). It concludes that an improvement in ESG also enhance the firm's value.

This thesis enriches the existing literature in three distinct ways. Firstly, it lends a much-needed focus on the Chinese context within the CSR discourse. Business ethics, a vital

informal mechanism, remains underdeveloped in the Chinese market where formal mechanisms such as corporate governance, laws, and regulations are not always effective (Du, 2013; Du et al., 2015; Jiang et al., 2010). Moreover, many scholars argue that the corporate structures in emerging markets often appear similar to those of developed economies in form but not in substance (Backman, 1999; Peng, 2004). Thus, it is important to study the range of non-institutional aspects that play a role in corporate decision-making to understand corporate behaviour in the Chinese market. This thesis demonstrates the effectiveness of female directors, institutional investors, and award-winning CEOs in firms' CSR performance. Secondly, this thesis adds to the CSR literature by considering potential mechanisms. Much of the existing literature has demonstrated the role of several factors in promoting CSR without providing any clear explanation of the underlying mechanisms. In this thesis, it is proven that female directors contribute to board diversity, not ethical or risk-aversion streams, and thus improve firms' CSR. The findings show that institutional investors use their 'voice' through shareholder proposals to influence firms' GHG emission decisions and that award-winning CEOs improve firms' CSR engagement to increase their reputation, and relaxed financial constraints support their decisions. Thirdly, this thesis looks at both drivers and consequences together in its final chapter. As discussed above, the drivers of CSR explain why some forms of CSR enhance firm value while others do not. The main focus of this thesis is an exploration of the factors that motivate companies to be socially responsible but it also discusses whether socially responsible activities enhance firm value. Lastly, considering the three chapters separately, the thesis addresses some issues regarding measurement. In Chapter 1, local dialect diversity and education levels are used to measure gender discrimination. In Chapter 2, to avoid concerns of greenwashing, this thesis manually collects firms' GHG emission data. Chapter 3 manually collects data on CEOs' awards. Detailed specific contributions are displayed in the introductory section of each chapter.

The remainder of this thesis is organized in the following way: Chapter 2 serves as a comprehensive review of the literature pertinent to the three topics explored in this

thesis, which include CEOs' characteristics and corporate finance, ownership structures, and ESG/CSR. It offers a broad overview of the definitions, conceptual background, and previous research outcomes relevant to this thesis. In Chapter 3, the research focuses on female directors and their impact on firms' CSR performance. The exploration of how institutional investors influence corporate GHG emissions in China is detailed in Chapter 4. Chapter 5 studies the influence of CEO awards on firms' ESG performance. This chapter considers the factors that might motivate CEOs to improve their firms' ESG performance and whether these efforts ultimately create or destroy firm value. Finally, Chapter 6 wraps up the thesis, summarizing the primary findings and contributions and suggesting potential avenues for future research.

CHAPTER TWO: LITERATURE REVIEW

This chapter delves into three critical areas of literature pivotal to my thesis. Firstly, it reviews prior studies on the inherent and acquired traits of top management teams (TMT) and their influence on corporate finance, drawing on Upper Echelons Theory. It subsequently examines the role of corporate ownership structures and the typical roles within corporate entities. Finally, it explores the concept of CSR/ESG, which is integral to this thesis, discussing both the motivations for and the relationship with firm value. This comprehensive critique will systematically illuminate lacunae within the prevailing academic discourse, thereby establishing a compelling platform for the novel contributions emerging from my research.

2.1 Upper Echelons Theory and Corporate Finance

Hambrick and Mason's Upper Echelons Theory (1984) posits that the individual characteristics of the Top Management Team (TMT) significantly bear upon the strategic decisions of firms. Despite an abundance of studies examining the repercussions of Chief Executive Officers' (CEOs') personal traits on corporate strategies (evident in Bertrand and Schoar, 2003; Dahl et al., 2012; Roussanov and Savor, 2014), a comprehensive understanding of how these characteristics directly impact various facets of corporate finance remains elusive. This thesis aims to fortify this understanding by zeroing in on the influence of CEO demographic features in the formulation and execution of corporate policies and strategic decisions.

2.1.1 Gender and Corporate Finance

Gender, an integral component of the Upper Echelons Theory, is recognized to considerably sway a firm's decision-making proclivity and internal heterogeneity. Existing literature discusses the role of gender including genders' socialism, genders' contribution to diversity, and genders' familism.

2.1.1.1 Gender Traits and Decision-Making

Risk aversion is one of the salient characteristics frequently linked with female leadership. The prevailing supposition—women exhibiting a greater degree of risk aversion compared to men (Jianakoplos and Bernasek; Pålsson, 1996)—carries substantial repercussions in the domain of corporate finance. Empirical research indicates that firms under the stewardship of female CEOs often display less income volatility and reduced leverage (Faccio et al., 2016), suggesting a predilection for conservative risk management strategies. However, a gap persists in comprehending how this risk aversion influences the firm's capital structure and Corporate Social Responsibility (CSR) decisions, an area this study endeavors to illuminate.

Beyond risk aversion, female protagonists in corporate finance manifest additional distinguishing attributes, which influence the decision-making orientation of a firm. As per the tenets of gender socialisation theory, males and females undergo different social conditioning during their formative years, leading to behavioral divergences. This socialisation process often culminates in females demonstrating heightened pro-social behavior, altruism, and a less pronounced overconfidence, thus making their strategic approach uniquely other-regarding. This leads to a lower propensity for misconduct and a higher inclination towards CSR activities (Byron and Post, 2016; Cumming et al., 2015). Adams et al. (2011) and Matsa and Miller (2013) find that female directors are more stakeholder oriented. Chen et al. (2019a) report that female CEOs are less overconfident, and Levi et al. (2014) find female directors are less likely to pursue personal goals. They use the acquisitions as the measure of empire-building and find that female directors are reluctant to do acquisitions. In terms of stakeholder orientation, some scholars provide evidence to support a positive relationship between the representation of female directors and firms CSR and ethical level (Byron and Post, 2016; McGuinness et al., 2017) and, as regards ethics, Richardson et al. (2016) find that the presence of women on the board reduces tax avoidance, the misreporting of accounts (Lara et al., 2017), the frequency and severity of securities fraud (Cumming et al., 2015), financial reporting mistakes, and sanctions for environmental violations (Liu, 2018). Due to their positive behaviours, female CEOs have better relationships

with the top professionals in the industry (Adams et al., 2009). Despite these findings, the literature lacks a comprehensive examination of how these traits influence CSR engagement and following performance, an area this thesis aims to explore.

2.1.1.2 Board Gender Diversity

The presence of women on the board, often seen as a marker of diversity, has generated debate about its impact on firm performance. One strand of literature posits that if women are appointed due to social pressures, diversity could potentially harm firm value. Conversely, scholars argue that board diversity (gender, ethnic, experience, major, and so on) can bring additional perspectives and ideas to the board, benefiting the decision-making process...

Discussion of board diversity by gender has generated debate about whether gender diversity can generate better firm performance. One strand of literature argues posits that if women are appointed due to social pressures, diversity will harm firm value. Meanwhile, scholars argue that board diversity (gender, ethnic, experience, major, and so on) can bring additional perspectives and ideas to the board and benefit the decision-making process. For example, the presence of women on boards enhances monitoring processes (Dwyer et al., 2003; Krishnan and Parsons, 2008). Moreover, Krishnan and Parsons (2008) find that TMTs' gender diversity results in a higher earning quality. In addition to accounting performance, they also find that the stock returns of firms with higher TMT gender diversity are higher after IPOs. Erhardt et al. (2003) show that higher proportion of female in top management teams leads to higher firms' profitability compared to firms in the same industry.

However, Adams and Ferreira (2009) report that gender diversity on boards sometimes leads to over-governance; it decreases performance in firms with greater shareholder rights and increases market valuation and operating performance in firms with weaker shareholder rights. This suggests that gender diversity resulting from social pressure is counterproductive for well-governed firms. Shoham et al. (2017) find that the females

on board significantly participate in environmental sustainability and are more likely to improve the disclosure of sustainability activities.

The board is an important instrument of internal control (Baysinger and Hoskisson, 1990). Betz et al. (1989) document that females are more willing to help others, in the same vein, Bernardi and Arnold Sr (1997) find that females are more likely to engage in such activities which is consistent with the altruistic trait, while men are more comfortable with money-making activities. In terms of more ethical traits, women normally extract fewer personal benefits from the company than men (Khan and Vieito, 2013) and are less likely to engage in corporate misconduct.

2.1.1.3 Familial Factors and CEO Behavior

Regarding the female effect, the majority of the research focuses either on the Upper Echelons Theory or board diversity, but few prove which matters in practice. The work of Arnaboldi et al. (2021) is one such example, arguing that women's moral and ethical standards are significant by distinguishing between civil and criminal fines. Criminal fines reflect more severe and more unethical offences; thus, a propensity to be given criminal fines is a measure of the effectiveness of female ethical and moral standards. The authors further argue that, if gender contributes to board diversity, the gender effect should be less significant in boards which are already diverse enough (measured by other kinds of board diversity).

It is also important to note that the influence of gender extends beyond the boardroom. In particular, the family structure and the gender of a CEO's children can also influence managerial styles. For instance, research has shown that parents may internalise the preferences of their children (Warner and Steel, 1999), suggesting that CEOs with daughters may start to display female preferences (Cronqvist and Yu, 2017).

The appointment of female CEOs typically garners positive market reactions (Gondhalekar and Dalmia, 2007), signifying an overarching societal acknowledgement

of the unique value women introduce to leadership positions. However, scholarly literature presents a persistent dichotomy in perspective regarding whether gender diversity in boardrooms truly enhances corporate performance or whether it simply serves as a response to social exigencies, potentially undermining firm value (R. B. Adams and Ferreira, 2009). Deeper comprehension of the impact of gender diversity on corporate performance is thus crucial, particularly in environments characterized by distinctive corporate governance frameworks and cultural mores. This dissertation aspires to contribute to this discourse by scrutinizing the influence of gender diversity on corporate performance within the Chinese milieu, an area that has been scantily addressed in scholarly investigations.

2.1.2 Age and Corporate Finance

The age of Chief Executive Officers (CEOs) is frequently associated with their professional career trajectories. Empirical studies suggest that as CEOs advance in age, they are prone to develop a preference for tranquillity, likely reflecting a decrease in their energy levels (Bertrand and Mullainathan, 2003; Harman et al., 1991; Roberts and Rosenberg, 2006). These physiological transitions can potentially impact CEOs' risk-taking propensity.

Psychologically, CEOs' cognitive biases may also undergo modification as they age. A body of research indicates that younger individuals are predisposed to overconfidence (Forbes, 2005; Kovalchik et al., 2005; Taylor, 1975; Wei et al., 2011). Conversely, more mature CEOs might exhibit amplified levels of overconfidence as a result of survival and self-attribution biases (Billett and Qian, 2008; Doukas and Petmezas, 2007). This study endeavours to explore how these age-related shifts in cognitive biases and physiological changes affect corporate strategic decisions and risk-taking behaviours.

Age-related traits can influence corporate decision-making processes. CEOs of different age groups have distinct career plans and focuses. Yim (2013) explains this by highlighting two aspects. First, younger CEOs, incentivized by bonuses, stocks, and

options that come with acquisitions, may actively pursue these opportunities (Bliss and Rosen, 2001; Grinstein and Hribar, 2004; Harford and Li, 2007). Second, these younger CEOs may also be perceived as riskier due to their relative inexperience, potentially resulting in a higher likelihood of being blamed for acquisitions' failures (Chevalier and Ellison, 1999; Hong et al., 2000).

Regarding risk-taking and firm performance, the age of CEOs appears to play a role. Chowdhury and Fink (2017) suggest that older CEOs favor lower-risk long-term projects such as R&D. Younger CEOs, concerned about their careers and reputations, might be more risk-averse, balancing the need to signal their abilities and talents to the market against the potential career risks (Hirshleifer and Thakor; Holmström, 1999; Scharfstein and Stein, 1990; Serfling, 2014; Zwiebel, 1995).

Age also seems to influence other corporate behaviors. For example, Huang et al. (2012) propose that younger CEOs are more likely to meet and exceed analysts' earnings forecasts. In contrast, older CEOs are associated with higher-quality financial reporting. Similarly,Andreou et al. (2017) suggest that CEO age could affect the risk of a stock price crash, with younger CEOs potentially more incentivized to maintain strong stock performance appearances, even if it means obscuring adverse operating outcomes.

In the empirical chapters of this thesis, the literature discussed in this section informs the inclusion of age as a control variable. Given the significant implications of a CEO's age on risk-taking, decision-making, and corporate behaviors, it is essential to account for this variable when analyzing various aspects of corporate finance. By controlling for age, the empirical chapters will seek to isolate more accurately the effects of other variables under investigation. Moreover, any significant effects of age observed in these chapters can be discussed in light of the current literature, providing a contextual understanding of the results. The potential interaction of CEO age with other variables of interest will also be considered, in line with literature suggesting differential effects based on the age of the CEO. Thus, the literature on age and corporate finance is not

only integral to the theoretical grounding of this thesis but also directly relevant to the empirical investigations undertaken in the subsequent chapters.

2.1.3 Education and Corporate Finance

Educational attainment of CEOs significantly influences firm decisions and performance, forming market expectations around the ability of CEOs (King et al., 2016). Education, associated with cognitive ability and intelligence King et al. (2016), affects decision-making capabilities (Jensen, 1998; Lubinski and Humphreys, 1997) and can promote patience and impulse control (Bruine de Bruin et al., 2007; Funder and Block, 1989; Mischel, 1974; Shoda et al., 1990).

Frey and Detterman (2004) argue that CEOs graduating from institutions with higher entrance examination scores demonstrate more intelligence and superior firm management capabilities. This finding is echoed in fund management, where Chevalier and Ellison (1999) establish a positive relationship between a university's entrance score and fund returns.

Market reactions to CEOs' educational backgrounds are significant, with abnormal returns observed after the appointment of CEOs with strong educational credentials (Bhagat et al., 2010). Firms are often willing to pay a premium for such CEOs (Falato et al., 2015), though Becker and Geer (1957) suggest that part of the compensation difference could be associated with differences in education.

The literature distinguishes between undergraduate, MBA, and PhD education. Undergraduates receive basic skill-enhancing training, MBAs are prepared for practical managerial roles, and PhDs acquire a high level of technical expertise (Ellul and Yerramilli, 2013; Kaplan et al., 2012; Tetlock, 2007). King et al. (2016) show that CEOs with MBAs, through their riskier and more innovative business models, perform better in banking.

Education also influences risk appetite. Beber and Fabbri (2012) find that CEOs with managerial education are more likely to be overconfident and exhibit higher risk tolerance. The managerial skills acquired through education can enable CEOs to excel in complex areas (Frydman et al., 2007; Murphy and Zabojnik, 2007).

In the empirical chapters of this thesis, I will use education level as one of the control variables to account for its potential influence on firm decisions and performance. The type of education (undergraduate, MBA, PhD) will be considered to capture the nuances in the CEOs' decision-making styles and risk appetites. This nuanced approach will allow us to better understand the impacts of CEO characteristics on the firm's financial outcomes and strategies.

2.1.4 Marriage and Corporate Finance

Marital status is an influential factor in CEO behavior, as documented by a significant body of literature. Scholars argue this influence from two distinct perspectives. The first perspective suggests that marriage instills a sense of commitment and pro-social values in individuals (Booth and Dabbs Jr, 1993; Burnham et al., 2003; Cornwell and Rupert, 1997; Garrison and Vaughan, 2008; Lillard and Waite, 1995; Notare and McCord, 2012; Stack and Eshleman, 1998; Wilcox and Dew, 2016). The second perspective postulates that marriage, similar to parenthood, alters a CEO's risk appetite, thereby influencing the decisions and policies of the firms they lead.

In alignment with the socialization response, the corporate finance literature reports the significant effect of marriage on CEO behaviors. For example, Nicolosi (2013) finds that married CEOs are more likely to maintain high dividend yields, and they often increase dividend payouts. Furthermore, a connection has been established between the pro-social value expectation of marriage and Corporate Social Responsibility (CSR). This strand of literature suggests a positive relationship between a CEO's marital status and a firm's CSR performance.

2.1.5 Experience and Corporate Finance

CEO decisions are shaped not only by personal traits but also by their life and career experiences. Various circumstances and exposures throughout their lifetimes can significantly influence their managerial styles and the way they handle corporate decisions.

For instance, experiences of severe distress, such as surviving a famine, can create a risk-tolerant behavior in CEOs, as found by Bernile et al. (2017). Furthermore, Malmendier et al. (2011) suggest that exposure to a bear market can induce a lower willingness to take financial risks. Applying this to a corporate finance context, Malmendier and Nagel (2011) note that CEOs who grew up during the Great Depression tend to be debt-averse and rely more on internal finance, indicating a lower level of risk-taking. In contrast, CEOs with military experience often pursue more aggressive policies, such as higher leverage.

Political affiliation also has an influence on managerial styles. For example, Francis et al. (2016) observed that CEOs identifying as Republicans tend to engage in higher levels of tax avoidance.

Religion's impact on individual behavior, both organizational and cultural, extends into the corporate finance sphere. Regular participation in religious activities, a requirement particularly in Eastern religions, fosters communication within the community. In terms of cultural influence, religious inclination has been associated with risk aversion (Barsky et al., 1997; Miller, 2000; Miller and Hoffmann, 1995) and more conservative moral standards (Barnett et al., 1996; Mazar et al., 2008; Terpstra and Rozell, 1993). This translates into the corporate world with studies showing that firms led by religious CEOs tend to be risk-averse and have higher standards of honesty and business ethics (Cai et al., 2019).

In the empirical chapters of this thesis, I examine how CEOs' various life and career experiences impact their decision-making processes and the subsequent outcomes for their firms. By controlling for these experiential factors, I aim to provide a more nuanced understanding of the relationship between CEO characteristics and corporate financial decisions.

2.2 Ownership Structure and Corporate Finance

Attracting more investors to achieve a broader investor base can increase firm value (Merton, 1987), so firms have the motivation to align their behaviours with that of their investors. Debates around ownership structure and firm performance predominantly take two forms: up to 1932, Berle (1932) argues that firm performance affects the breadth of shareholdings. Demsetz (1983), however, reports that the ownership structure is an endogenous outcome of shareholder decisions and market trading. As a result, it should be influenced by shareholders interest maximization and not affected by firm performance or adverse influences. Chung, Chung and Zhang (2011) prefer stocks from firms with better governance as this can minimise monitoring and exit costs. The literature has found that different types of shareholders play effective roles in impacting firm decisions through different mechanisms in improving corporate governance and performance (Gillan and Starks, 2000; Karpoff et al., 1996).

2.2.1 Institutional ownership

Institutional ownership, a central aspect of a firm's ownership structure, has been widely investigated in corporate finance literature, with divergent findings on the influence of institutional owners on firm performance and governance. The research can be broadly classified into two categories. One stream argues that firm performance influences institutional investors' decisions. Chen et al. (2007) demonstrate that institutions tend to select well-governed firms as their investment targets. Similarly, Gompers et al.

(2003) find that the corporate governance index does not significantly impact institutional shareholders' decisions.

Contrarily, the second stream of literature pivots on the activist role of institutional investors. The theoretical underpinning lies in the assumption that large shareholders, given the high costs of corporate monitoring, are more inclined to oversee managerial activities actively (Shleifer and Vishny, 1986). Such investors, particularly institutional ones, are often long-term oriented (Maug, 1998), further motivating them to ensure effective management. They have the required capacity and influence to shape corporate decisions through shareholder proposals or executive changes (Del Guercio and Hawkins, 1999; McConnell and Servaes, 1990; Nesbitt, 1944; Smith, 1996).

Institutional ownership has been documented to impact various facets of a firm. Cornett et al. (2007) find a significant relationship between firms' operating cash flow returns and institutional investors. (Hartzell and Starks, 2003) suggest that higher institutional ownership can help regulate CEOs' compensation and enhance pay-performance sensitivity. Other research indicates that institutional ownership can deter earnings management (Chung et al., 2012), stimulate innovation (Aghion et al., 2013), and contribute positively to firm performance (McConnell and Servaes, 1990; Nesbitt, 1944; Smith, 1996).

Notably, not all institutional investors exert the same level of influence. Research differentiates between pressure-sensitive and pressure-resistant institutional investors, arguing that potential business relationships can impact their monitoring effectiveness (Almazan et al.; Brickley et al., 1988; Chen et al., 2005).

However, the potential for liquidity and short-term returns can sometimes hinder effective monitoring (Coffee Jr, 1991). Therefore, this thesis will incorporate both the potential business relationship and the proportion of shareholdings as crucial elements in assessing the role of institutional ownership. Institutional shareholders' primary

mechanisms to influence firms include shareholder proposals and shareholder pressure or "voting with their feet" (Gillan and Starks, 2000).

In the ensuing empirical chapter of this dissertation, a rigorous analysis of the interplay between institutional ownership and corporate financial decisions-the Greenhouse Gas Emissions- will be undertaken. This examination aspires to amplify the understanding of the intricate dynamics at the interface of institutional ownership and its influence on firms decision-making process, thereby enriching the wider scholarly discourse in the corporate finance realm..

2.2.2 Foreign ownership

Foreign Institutional Investors (FIIs) play a significant role in emerging markets. Their influence grew substantially during the 1990s when emerging markets became attractive investment destinations (Frenkel and Menkhoff, 2004). Although FIIs are institutional investors, their unique characteristics and the specific context of foreign investment in China warrants a separate discussion in this thesis.

FIIs could directly invest in the Chinese securities market only from 2003 onwards when the Chinese government permitted such transactions. Prior to this, FIIs could only invest via agents (Greenaway et al., 2014; Zhang, 2001). Over the years, FIIs have had a significant impact on the development of the Chinese economy (Liu et al., 2014a).

In developed markets, research on FIIs has adopted both macro-level and firm-level perspectives. At the macro level, laws and enforcement mechanisms that protect investors and ensure quality accounting disclosures are key determinants of FII investment decisions. Market development also significantly influences FIIs' investment preferences (Chan et al., 2005). Sercu and Vanpee (2007) find that FIIs exhibit a lower home bias in developed countries and a higher one in developing countries due to differences in the quality of information disclosure. Liu et al. (2014a) argue that FIIs suffer from significant information asymmetry due to cultural and

political differences. They also suggest that high standards of information disclosure can significantly mitigate this asymmetry.

At the firm level, foreign investment preferences are influenced by ownership concentration (Aggarwal et al., 2005; Dahlquist and Robertsson, 2001; Kang, 1997). FIIs prefer investing in large firms with strong cash positions and low dividend payouts (Dahlquist and Robertsson, 2001). In China, FIIs favor firms with higher state ownership (Liu et al., 2014a). Furthermore, FIIs consider factors such as accounting transparency, the size of sales, and cross-corporate holdings in their investment decisions (Aggarwal et al., 2005; Covrig et al., 2006; Jiang and Kim, 2004). Corporate governance is a dominant factor in investment decisions in China (Liu et al., 2014a). Leuz et al. (2009) also find that overseas investors invest less in firms with political connections.

Among FIIs, Qualified Foreign Institutional Investors (QFIIs) are those working within a scheme to enhance China’s investment environment. These investors have access to China's stock market. Similar to FIIs, research on QFIIs can be categorized into two strands: one focused on QFIIs' behaviors or preferences, and another examining the impact of QFIIs on stock market and firm performance. For example, Lin and Swanson (2003) find that QFIIs in the Taiwanese market prefer to invest in larger firms, while Choe, Kho, and Stulz (2005) show that QFIIs pay a higher premium in the Korean security market compared to their domestic counterparts. Moreover, QFIIs have been found to trigger short-term negative market reactions when they enter firms (Chan and Yu, 2003).

In the second empirical chapter of this thesis, the spotlight turns to the impact of foreign investors on Greenhouse Gas (GHG) emissions within firms. This area, currently understudied, presents a conspicuous lacuna within academic literature, a gap this dissertation aspires to address.

Existing scholarship on Foreign Institutional Investors (FIIs) and Qualified Foreign Institutional Investors (QFIIs) primarily orbits around their investment conduct and predilections. Yet, there is scant research scrutinizing their influence on the environmental performance of their investment portfolio, particularly with regard to GHG emissions within the Chinese context. While previous research implies that FIIs and QFIIs may exhibit a preference for firms demonstrating higher transparency or superior governance, it remains uncertain if these preferences extend to environmental performance. Further, it remains an open question as to whether the presence of FIIs and QFIIs may act as a catalyst steering firms towards reducing their GHG emissions.

As such, this thesis aims to bridge this gap by empirically investigating the role of foreign investors in influencing GHG emissions of firms.

2.2.3 State ownership

State ownership is defined by the proportion of equity held by the government.When the majority (normally more than 50%) of shares are held by the government, the entity is classified as a State-Owned Enterprise (SOE) (Boisot and Child, 1996; Jefferson et al., 2003). Among the research in Chinese market, scholars oftern use a dummy variable to indicate whether a firm is a SOE or not, instead of using the exact proportion shares controlled by the government.

Traditionally, SOEs have been perceived as being prone to governmental intervention, with the potential for political agendas to encumber their evolution. Shleifer (1998) posits that SOEs function as significant actors within the economy by virtue of their role in executing governmental policies and institutional regulations. Given their politically influenced roles, SOE managers often have connections with the local government and their promotions largely depend on government decisions (Freund, 2001; Ramamurti, 2000). As a result, SOEs might exhibit less innovation and competition in comparison to private firms. This view is empirically supported by studies showing that SOEs perform worse than private firms (Megginson and Netter,

2001), and state ownership negatively impacts new product sales, patent applications, and innovation (Guan et al., 2009; Jefferson et al., 2003; Xu and Zhang, 2008).

However, a counter-narrative suggests that SOEs play a positive role in emerging economies by enhancing economic dynamics (Musacchio et al., 2014; Ralston et al., 2006; Stan et al., 2014). This perspective emphasizes that governments, as controllers of scarce resources, can shape SOE competitiveness by granting them exclusive or rapid access to political and material resources (Chen et al., 2014; Gao et al., 2010; Musacchio et al., 2014; Nee and Opper, 2012).

There are two main perspectives that aim to explain the conflicting effects of SOEs: the institutional view and the conventional economic view. The institutional view considers how a firm's behavior is influenced by its macroenvironment (Scott, 1995). These include formal and informal social norms (North, 1990; Oliver, 1997). From this perspective, SOEs have competitive advantages over private firms through their access to government resources.

The conventional economic view, on the other hand, highlights the existence of an agency problem in SOEs, where government officials may exploit opportunities to maximize their interests and secure political support (Khwaja and Mian, 2005).

As SOEs are instruments of the government, they are under immense political pressure to fulfill government requirements. In China, innovation and environmental protection are top national priorities (Chen et al., 2014; Sun and Liu, 2014). As the primary vehicles for implementing China's national plan and policy, SOEs must adhere to and respond to national decisions, irrespective of economic goals (Zhou et al., 2017).

Given the prominent role of SOEs, this thesis controls for SOE equity when investigating these firms. Specifically, when considering environmental protection goals, Chapter 2 also evaluates the role of SOEs in advancing environmental issues. By controlling for state ownership, this thesis aims to account for the unique characteristics

and influences of SOEs in its empirical analysis. Recognizing the potential impacts of SOEs on GHG emissions is essential to provide a more nuanced understanding of the relationship between corporate ownership structure and environmental performance.

2.3 CSR and ESG

2.3.1 Conceptual background and databases

Corporate Social Responsibility (CSR) and Environmental, Social, and Governance (ESG) are two terms that have emerged to encapsulate the increasing focus on the broader societal impact of corporations. While CSR refers to a company's efforts towards being more socially responsible, also known as corporate citizenship, ESG is a term that was coined in a 2004 United Nations report to describe how corporations incorporate environmental, social, and governance concerns into their operations and investment decisions. Although both terms examine a firm’s social responsibilities, ESG differs slightly from CSR by encompassing internal governance concerns directly.

Multiple financial data companies attempt to measure CSR and ESG by assessing corporations’ activities and their outcomes. This has led to the development of numerous ESG rating systems globally, and an increasing academic interest in ESG indices over CSR. In China, popular ESG rating systems include the SSI ESG Rating, China-Security Index (CSI), CSEC ESG rating, Wind ESG rating, FTSE Russell ESG rating, Harvest ESG rating, SynTao Green Finance ESG rating, and the Social Value Investment Alliance ESG rating.

These rating systems primarily operate on a pyramidal structure, with three primary ESG indicators broken down into over 100 underlying data indicators. They take into account the sectoral differences and combine absolute scores with relative rankings to present comprehensive ESG evaluation results.

The SSI, for example, covers all listed A-share markets from 2009 to 2021 and employs a system with three primary indicators, 14 secondary indicators, 26 tertiary indicators, and over 130 underlying data indicators. Its rating is based on a total score of 100, which corresponds to nine “AAA-C” grades. The CSI, another popular system, covers all A-share listed companies and uses a system comprising three dimensions, 14 themes, 22 modules, and over 180 indicators.

It is important to note that while many databases now provide ESG indexes, few data companies focus specifically on measuring CSR levels in China. An exception is HEXUN, a platform that evaluates five components of responsibility from 2010 to 2020: shareholder, employee, collaboration and customer, environment, and society.

This thesis will primarily rely on data drawn from the HEXUN and SSI databases, with additional databases utilized for robustness checks to ensure the reliability and validity of the research findings. However, while these rating systems furnish invaluable perspectives into the ESG practices of corporations, it's critical to acknowledge the potential limitations and biases intrinsic to these measures. These potential shortcomings will be duly considered in the empirical chapters of this thesis, ensuring a balanced and rigorous analysis.

2.3.2 Ex-ante Motivations

2.3.2.1 Individual level factors and CSR

The foregoing sections of this review have delineated the considerable influence that CEOs' personal attributes and experiences wield over firm decisions and policies. In light of the recognition of Corporate Social Responsibility (CSR) and Environmental, Social, and Governance (ESG) criteria as integral constituents of strategic business planning, an expanding corpus of research probes the relationship between CEO characteristics and a firm's strategy towards, and performance in, CSR and ESG initiatives. This section aims to collate and synthesize the existing literature on the sway

CEOs exert over CSR, with a particular emphasis on the demographics and traits which appear to drive CSR/ESG outcomes.

CEO characteristics frequently highlighted within academic discourse encompass gender, familial status, age, and overconfidence. A robust body of evidence posits that female CEOs, as well as female board members, are more inclined to actively champion CSR initiatives (Borghesi et al., 2014; Cronqvist and Yu, 2017; Dyck et al., 2019; McGuinness et al., 2017). Such findings find resonance in the "daughter effect" study by Cronqvist and Yu (2017), which suggests that CEOs with daughters are more predisposed towards CSR activities, presumably due to the infusion of feminine traits.

Moreover, the marital status of CEOs has also been found to exhibit a correlation with CSR and ESG performance. Firms helmed by married CEOs tend to score higher on CSR/ESG evaluations, with a specific emphasis on employee-related facets (Hegde and Mishra, 2019). This research further illuminates the intricate relationship between CEO personal characteristics and a firm's approach to CSR and ESG.

This aligns with Landier et al. (2009) "home bias" research, which posits that CEOs who share geographical roots with their employees are more likely to adopt employee-centric policies.

The age of the CEO also appears to significantly influence firms' CSR and ESG practices. Younger CEOs tend to promote improved ESG/CSR performance, likely due to a heightened interest in cultivating a positive reputation (Borghesi et al., 2014).

Moreover, the psychological trait of overconfidence in CEOs has been linked to a lesser inclination towards investing in CSR or ESG. As McCarthy et al. (2017) suggest, overconfident CEOs are likely to underestimate risks and overestimate their abilities, reducing their perceived need for risk-hedging methods like CSR or ESG.

The empirical chapters of this thesis delve deeper into these individual-level factors and how they contribute to CSR and ESG efforts. By analyzing the data from Chinese listed firms, I examine how these factors influence the firm's decision-making and overall performance in CSR and ESG. This comprehensive analysis offers insights that can shape the future direction of firms' strategies and policies in the context of CSR and ESG.

2.3.2.2 Firm level factors and CSR

The effects of institutional ownership on CSR profiles have shown to be inconclusive in existing literature. Borghesi et al. (2014) contend that institutional ownership might suppress firms' CSR/ESG levels, presumably because these initiatives could potentially hamper short-term profitability. As institutional investors often grapple with the pressure to yield returns, they might prompt firms to prioritize short-term endeavors over long-term sustainable activities.

Conversely, several studies propose that institutional investors could either proactively instigate alterations in CSR/ESG levels or demonstrate a preference for firms boasting robust CSR/ESG profiles (Buchanan et al., 2018; Chava, 2014; Nofsinger et al., 2019). Such divergent views underscore the complexity and multifaceted nature of the relationship between institutional ownership and CSR/ESG activities. This dissertation, therefore, aims to dissect this relationship further, specifically within the context of the Chinese market, offering nuanced insights into the influence of institutional ownership on CSR/ESG profiles.

Different types of institutional investors may have varying impacts on CSR/ESG performance. Socially responsible institutions like pension funds tend to avoid investments in firms with low CSR/ESG scores (Hong and Kacperczyk, 2009; Ren et al., 2022). In contrast, some researchers propose that institutional investors can

influence a firm’s CSR/ESG choices by actively participating in decision-making processes and disinvesting from firms with poor CSR performance (Dyck et al., 2019; Gollier and Pouget, 2014).

Investors' horizons also affect firms' CSR/ESG profiles. As CSR/ESG is sometimes considered a long-term strategy, long-term institutional investors may positively influence firms' CSR/ESG profiles (Kim et al., 2019). However, Starks et al. (2017) argue that these investors tend to choose firms with already high CSR/ESG scores.

State ownership can also influence firms' CSR/ESG engagement, especially in markets like China where the government is an active participant in social responsibility issues. Hart and Zingales (2017) and McGuinness et al. (2017) find that publicly owned firms tend to have higher CSR/ESG engagement.

Several other organisational factors, including board diversity, political stance of corporate leaders, CEO compensation, and peer effects, can influence firms' CSR/ESG profiles. Diverse boards can improve CSR levels (Galbreath, 2018), while political leanings may influence firms' CSR/ESG scores (Di Giuli and Kostovetsky, 2014) CEO compensation can also motivate investment in CSR/ESG profiles, though the relationship is complex and can depend on governance structures (Gillan et al., 2010; Jian and Lee, 2015). Finally, peer effects may encourage firms to adopt similar CSR/ESG practices (Cao et al., 2019).

2.3.2.3 Institutional factors and CSR

Market characteristics and institutional factors at both national and industry levels have significant influences on firms' CSR/ESG profiles.

The economic development, social harmony, and autonomy of a country all contribute significantly to a firm's ESG performance (Cai et al., 2016). Moreover, the study also indicates that institutional factors are instrumental in shaping the differences in ESG

profiles across firms. Liang and Renneboog (2017) also emphasize that national characteristics are more influential than firm characteristics when it comes to cross-listing companies. Furthermore, institutional investors from societies with higher moral standards show greater concern about the environmental protection behavior of their investees.

Political environments can also impact a firm's ESG performance. For instance, in the USA, the political leanings of the state where a firm's headquarters are located can affect its CSR tendencies. Di Giuli and Kostovetsky (2014) found that firms headquartered in Democrat-leaning states tend to have higher CSR levels, whereas firms in Republican-leaning states tend to have lower CSR levels. Conversely, in China, political influences on CSR arise more from the government's regulatory style and the country's level of economic development.

The industry in which a firm operates can also significantly impact its CSR/ESG behaviors. Borghesi et al. (2014) found that the consumer and computer hardware industries tend to have above-average CSR performance, while industries like aeronautics, petroleum, and natural gas tend to have below-average CSR scores. This finding underscores the importance of considering industry-adjusted CSR scores instead of a firm's raw scores or performance.

2.3.3 Post-ante Outcomes

Empirical research on the relationship between CSR/ESG activities and firm performance has yielded inconsistent results. Early research by Friedman (1970) and more recent studies like Kim and Lyon (2015) suggest that CSR activities beyond legal minimums are costly and reduce firm value. However, a growing body of literature posits a positive link between CSR/ESG activities and firm performance (Branco and Rodrigues, 2006; Fatemi et al., 2015; Jensen, 2002; Malik, 2015; Porter, 1991; Porter and Kramer, 2011).

This section concludes by discussing papers that investigate the positive as well as the negative effects of CSR on firm value.

2.3.3.1 Positive Effects

Managerial Capability: Certain scholars propose that superior ESG/CSR performance signals managerial prowess in other operating decisions. Lai et al. (2010) and Galbreath and Shum (2012) argue that good CSR performance enhances corporate reputation, reflecting managerial competence.

Stakeholder Support and Competitive Advantage: According to stakeholder theory, excellent ESG/CSR performance can elicit stakeholder support and confer a competitive advantage (Frooman, 1997; Schuler and Cording, 2006). High CSR performance can also reduce agency problems, as stakeholders may act as external monitors overseeing management teams (Choi and Wang, 2009; Eccles et al., 2014; Jones, 1995).

Transparency and Investment Appeal: ESG disclosure can supplement firms' financial information and foster transparency, thereby improving investment appeal and stakeholder relationships (Li et al., 2018). This can result in better investment outcomes (Banerjee et al., 2014), improved financial performance (Mathews, 1997), and diminished agency problems (Li et al., 2018).

Risk Reduction and Cost of Capital: Research consistently finds that ESG/CSR activities reduce risk and the cost of capital. Firms engaged in ESG activities are associated with lower systematic risk (Albuquerque et al., 2019; Oikonomou et al., 2012) and demonstrate greater resilience in financial crises (Bénabou and Tirole, 2010; Lins et al., 2017). ESG engagement can also lead to a wider investor base and lower cost of capital (El Ghoul et al., 2016; Hong and Kacperczyk, 2009). ESG/CSR engagement can also improve bond ratings, a measure of default risk (Jiraporn et al., 2014).

Cost of Capital: Research shows that firms with high ESG/CSR engagement have lower capital costs due to investors' preference for "green" investments (El Ghoul et al., 2011; Hong and Kacperczyk, 2009). Empirical studies have indicated that superior environmental and governance ratings, as components of ESG criteria, can lead to a reduction in the cost of capital (Chava, 2014; Ng and Rezaee, 2015). ESG/CSR activities can also reduce the cost of capital and act as a substitute for investor protection (Breuer et al., 2018). Projects related to ESG/CSR, such as green bonds, have been found to have a negative premium, indicating lower capital costs (Zerbib, 2019).

In conclusion, while there are differing views on the impact of CSR/ESG on firm performance, a substantial body of literature suggests that these activities can have positive effects, including signaling managerial capability, garnering stakeholder support, enhancing transparency, reducing risk, and lowering the cost of capital.

2.3.3.2 Negative Effects

Despite the positive effects discussed, some literature posits a negative relationship between CSR/ESG activities and financial performance. This negative association is generally attributed to two main reasons.

Trade-off with Other Investments: One school of thought suggests that firms' engagement in ESG activities comes at the expense of other potentially profitable investment opportunities (Schuler and Cording, 2006). In this view, the opportunity cost of investing in ESG activities leads to poorer financial performance as resources that could have been allocated to other, potentially more profitable endeavors are instead diverted to ESG activities.

Agency Theory and Personal Interests: The second explanation, rooted in agency theory, posits that CSR/ESG activities can be exploited by CEOs and other executives for personal gain. These activities can enhance their personal reputations at the expense of the firm's financial performance (Schuler and Cording, 2006). In support of this

argument, some studies suggest that the obligation to disclose CSR information can lead to "greenwashing" (Brooks and Oikonomou, 2018), where firms provide misleading information about their environmental practices. However, other researchers argue that the relationship may be influenced by other intervening factors (Ullmann, 1985; Wang et al., 2020; Wang et al., 2016).

Increased Risk: There's also evidence suggesting a negative relationship between ESG/CSR and risk. For example, Becchetti et al. (2015) contend that CSR/ESG activities may detract from stakeholders' welfare and increase idiosyncratic risk. Furthermore, Goss and Roberts (2011) argue that from a banking perspective, firms with higher ESG/CSR performance are perceived as riskier and are therefore charged higher interest rates on loans.

In summary, while ESG/CSR activities can have positive effects, they may also negatively affect firm performance due to opportunity costs, potential misuse for personal gain, and increased risk perception.

2.4 Conclusion

This chapter delves into the determinants of corporate decision-making, with a particular emphasis on the Upper Echelons Theory and ownership structure. Additionally, it explores a critical non-financial dimension – ESG engagement – encompassing the associated concepts, motivations preceding engagement (ex-ante), and the subsequent effects on firm performance (post-ante). The review of literature in this chapter uncovers several potential research gaps that warrant further exploration.

Firstly, while existing research acknowledges the positive correlation between female traits and ESG activities, the underlying reasons behind this relationship remain unexplored. Two potential mechanisms could explain how female traits influence ESG engagement: women's tendency to exhibit greater consideration towards others than men (Adams and Funk, 2012; Beutel and Marini, 1995), and the potential for board

diversity to alter group dynamics and enhance corporate governance. Chapter 3 will delve further into the relationship between women and CSR, aiming to shed light on the reasons behind this correlation.

The second research gap pertains to the interplay between institutional investors and ESG in the context of China. While several studies have investigated the relationship between institutional ownership and ESG performance globally, there is a dearth of research focusing on this relationship within China. Moreover, due to limitations in emissions data, no studies have been published addressing institutional ownership and its potential influence on GHG emissions.

The third research gap relates to the external experiences of CEOs, specifically those who have received awards. There is ample discussion on the global stage regarding the impact of award-winning CEOs on firms' decision-making processes and potential misconduct. However, the relationship between CEO awards and firms' ESG engagement remains largely unexplored. Given the relevance of CEO awards to multiple facets of the motivation for ESG activities, and the ongoing controversies surrounding them, Chapter 5 will delve into the relationship between CEO awards and the subsequent ESG performance.

In conclusion, this chapter's review of the literature reveals promising avenues for further research, particularly in understanding the reasons behind gender influences on CSR, the role of institutional investors in ESG within China, and the impact of CEO awards on ESG engagement. These unexplored areas present opportunities to deepen the understanding of the complex interplay between corporate governance, ESG engagement, and firm performance.

Chapter Three: Female Directors And Firms' CSR Performance

In this chapter, I explore the relationship between female board representation and the corporate social responsibility (CSR) performance of listed Chinese firms from 2010 to 2020. The findings affirm the theory that female directors affect CSR performance through promoting board diversity, rather than due to risk aversion or a distinct ethical perspective. Moreover, the results lend support to the critical mass theory, suggesting that a certain proportion of female directors is necessary to effect change. Lastly, I discover that social trust can augment this relationship, further enhancing CSR performance.

3.1 Introduction

Regarding the positive economic and social effects of female board representation in terms of legal board gender quotas, between 2008 and 2015, 32 countries implemented 42 gender diversity policies (Adams, 2016). Although the percentage of women on boards has increased over the past 10 years, discrimination against women in China is pervasive and explicit (Gao et al., 2016; Kuhn and Shen, 2013; Zhang et al., 2021).

Cumming et al. (2015) noted a scarce presence of women on Chinese boards; however, as Chen et al. (2006) found, China has a relatively underdeveloped legal system, to the detriment of business performance and corporate governance, a view shared by (La Porta and Lopez-de-Silanes, 1998); La Porta et al. (2002)) and Roe (2005). Syverson (2011) point out the importance of internal governance, such as board compositions, in markets where the weak corporate governance and poor managements exist. An understanding of whether corporate outcomes can be expected to change with greater female board representation is important in highlighting increasing board gender diversity to Chinese regulators (Liu et al., 2014b). To investigate the role of female directors, this chapter focuses on the links between female directors and firms' CSR performance.

The role of women on boards can be categorised into two parts. The first strand of literature focuses on the Upper Echelons Theory, with scholars arguing that a manager's most important function is decision-making, as the success or failure of any organisation depends on this (Portugal and Yukl, 1994), and that the individual traits of TMTs affect the decision-making process. According to the female socialisation hypothesis, women and men are treated differently. Women are more altruistic, more considerate of others and more pro-social (Adams and Funk, 2012; Beutel and Marini, 1995), have higher moral standards and are more ethical (Cohen et al., 1998, 2001; Stedham et al., 2007). Some studies show women to be more risk-averse (Adams, 2016; Barber and Odean, 2001; Byrnes et al., 1999; Faccio et al.,

2016; Huang and Kisgen, 2013; Sunden and Surette, 1998). The second strand of literature focuses on board diversity, arguing that women on the board can bring more resources, including networks with external organisations (Beckman and Haunschild, 2002) which will facilitate and drive the concerns regarding to those organisations(Bear et al., 2010).

CSR refers to the positive actions towards consumers, stockholders and employees (Liao et al., 2018). Barnett (2007) provide a definition for CSR as "a discretionary allocation of corporate resources toward improving social welfare that serves as a means of enhancing relationships with key stakeholders". The ethical approach of women means they are more pro-social and considerate of others and, thus, care more about the firm's CSR performance. In addition, female directors are risk averse. CSR is a method of risk-hedging by gaining support from different stakeholder groups (McCarthy et al., 2017). Female directors, therefore, are likely to engage more in CSR activities. In addition, the networks and connections made by female directors contribute to board diversity, resulting in a greater board awareness of external organisations and increased capability to manage CSR issues. Based on three traits of female directors and their hypothesised relationship with CSR, I propose three possible mechanisms for the relationship: ethics, risk-aversion and board diversity.

To empirically examine the relationship, this thesis collects data on female directors of Chinese listed firms from 2010 to 2020, combined with HEXUN CSR ratings. After mitigating for omitted variables and reverse causality endogeneity, the results show that female board representation is positively related to firms' CSR performance. In addition, I try to distinguish which mechanism is most important for the relationship. First, I categorised the overall CSR ratings into five subgroups: 1) shareholder responsibility, 2) employee responsibility, 3) collaboration and customer responsibility, 4) environment responsibility and 5) social responsibility. The results show that the presence of female directors is not related to environmental or social responsibility. However, these two responsibilities are related to ethicality because

they measure other-regarding preferences. Secondly, I use R&D expenditure, dividend payments, cash holding, mergers and acquisitions (M&A) tendency and M&A expenditure to measure the risk appetite of female directors. The results reject the notion of risk aversion in the female directors in the sample. Lastly, I argue that, if board diversity matters in improving CSR performance, the effectiveness of female directors should decline when the board is already sufficiently diverse. As such, I introduce four measures of board diversity: age, experience, education and major diversity. The results show that these four types of diversity also contribute to CSR performance and that the effectiveness of gender diversity declined when other types of diversity were introduced. In sum, the results show that female representation contributes to board diversity, and then improves CSR performance.

I then discuss critical mass theory and the role of social trust moderators. The results show that the presence of three or more women on the board is most effective in affecting firms' CSR, supporting critical mass theory. Discussions about social trust show that, when the level of trust is high at the firm's headquarters, the role of female directors is more significant. This is because social trust mitigates the effect of gender discrimination, supports board discussion and enables female directors to be heard. In such circumstances, female representation is less likely to be merely "token".

By examining the impact of gender diversity on ESG performance, this study complements other studies in two respects. Firstly, the results contribute to the existing literature on the relationship between female directors and CSR by testing the results in China. Gender equality is an important topic not only in the society and also need to be discussed in business ethics (Campbell and Minguez Vera, 2010; Gao et al., 2016; Wang and Kelan, 2013) and I also consider levels of corporate social trust among the public. Secondly, the results complement studies that show that the presence of female directors is associated with higher ESG performance (Bear et al., 2010; Liao et al., 2018; McGuinness et al., 2017). Previous studies focus mainly on the impact of board diversity on CSR performance but do not identify the factors underlying the relationship.

This study, however, extends the existing literature by documenting the mechanisms through which gender diversity may impact ESG activities.

The remainder of this chapter is structured as follows: Section 2 provides a review of the literature on female directors and board diversity and Section 3 develops the hypothesis. Section 4 then describes the data sources and methodology, while Section 5 presents the empirical results and Section 6 provides further discussion. Section 7 concludes the chapter.

3.2 Literature Review

3.2.1 Female board representation

Based on the female socialisation hypothesis (Glynn and Sen, 2015; Washington, 2008), women are considered to be more altruistic, other-regarding or pro-social (Adams and Funk, 2012; Beutel and Marini, 1995). "Other-regarding" means that women internalise the utility of others in society (Cronqvist and Yu, 2017). Gender socialisation theory (Dawson, 1997) argues that women hold higher ethical standards than men (Stedham et al., 2007); men focus more on chasing personal achievement while women are comfortable with activities helping others and building relationships with others (Carlson, 1972).

Based on the Upper Echelons Theory, female traits will affect TMTs' decision-making process. Their higher ethical and pro-social traits mean that female board members can add ethicality and pro-social preferences to the board and affect boards' decision-making processes. Research shows that a higher number of women on the board is positively related to charitable giving (Wang and Kelan, 2013; Williams, 2003) and better environmental protection (Bernardi et al., 2009; Johnson and Greening, 1999). Bear et al. (2010), more generally, argue that more female directors may motivate boards to CSR engagement.

For the working attitude, it is documented that females are more risk-averse than males (Barber and Odean, 2001) and less likely to be overconfident (Adams, 2016; Barber and Odean, 2001; Byrnes et al., 1999; Faccio et al., 2016; Huang and Kisgen, 2013; Sunden and Surette, 1998); they are likely to increase monitoring intensity and have greater concerns about personal reputational risk and organisational litigation risk (Krishnan and Parsons, 2008).

Moreover, Eagly and Carli (2003) document that female directors are more participative, Eagly and Johnson (1990) show that female directors are more likely to absorb and hear the voice of others, and Rudman and Glick (2001) record that female directors are easy and willing to communicate. These traits can stimulate greater participative communication among board members, enabling the group to result in better decisions related to the needs of diverse stakeholders (Arnaboldi et al., 2021). From this perspective, female representation can bring an open communication environment which may contribute to concern for others.

3.2.2 Board diversity

An effective board provides resources to the business, including links to other organisations (Hillman and Dalziel, 2003) which may support the communication with, and access to external organisations, thus get the support from them (Pfeffer and Salancik, 1978). Thus, a diverse board can enable diverse and effective communication with other organisations (Pfeffer, 1972) creating a better understanding of different organisations. The networks with external organizations are enhanced by the board resource diversity (Beckman and Haunschild, 2002) and help the firm to understand and respond to its environment (Bear et al., 2010). Such ties and networks can foster collaboration and cooperation with stakeholders via connections (Beckman and Haunschild, 2002). Women have also been shown to be better listeners. Taking the above literature as a whole, female representation on the board can contribute to board

diversity and may result in a more productive environment for communication with external organisations.

In addition to organisational resources, the human capital resources of the board are based on the collective experience and expertise of its members. Thus, a diverse board can bring a diversity of experience, generating alternative solutions and bringing innovation to the decision-making process (Bantel and Jackson, 1989; Joshi and Roh, 2009). Women can bring resources such as knowledge, skills, legitimacy, prestige and connections to the board (Peterson and Philpot, 2007), which contribute to board diversity. Hillman et al. (2002) show that female board members are more than twice as likely as their male counterparts to hold a doctoral degree, and women are more likely to have expert backgrounds outside the business and bring different perspectives.

A diverse board is generally believed to be more effective in monitoring (Liao et al., 2018). Hillman and Dalziel (2003) argue that effective monitoring of management depends on the skills, experience, expertise and knowledge of board members. Diverse boards can bring these resources. More specifically, in terms of gender diversity, women have been shown to be more active and effective in monitoring management (Adams and Funk, 2012). Agency theory (Jensen and Meckling, 2019) argues that, in the case of weak governance, managers take over the role of decision-making from the principal, and act in their own interests rather than those of the principal (Agrawal and Knoeber, 1996; Eisenhardt, 1989; Fama and Jensen, 1983; La Porta et al., 2000). Thus, female representation on the board can support more effective monitoring, reducing the effect of agency theory.

In summary, female representation on boards can contribute to communication with external organisations and an understanding of the environment, as well as the monitoring role of the board.

3.3 Hypothesis Development

The first mechanism through which female representation on boards may affect firms' CSR performance is through the *ethical channel*. Based on the literature, women are more ethical and may exhibit stronger other-regarding preferences than men (Adams and Funk, 2012; Beutel and Marini, 1995). The social role theory of leadership (Carli and Eagly, 2007; Eagly and Johnson, 1990; Eagly et al., 1995) show that female leaders perform with familism traits, including showing concerns for others. CSR is a way in which firms make decisions with regard to wider society and stakeholders other than their shareholders (Adams and Funk, 2012). Thus, pro-social women may attach more importance to firms' CSR engagement with others in society than their male counterparts. Some studies identify board ethnicity diversity and its significant impact on firm social performance via the board diversity channel (Gupta et al., 2015; Hafsi and Turgut, 2013; Harjoto et al., 2015). Borghesi et al. (2014) report that altruistic managers may choose to make socially responsible investments.

The second mechanism through which female representation on boards may affect firms' CSR performance is the risk-aversion channel. In the literature review, I also argued that women are risk-averse and less overconfident than their male counterparts. McCarthy et al. (2017) argue that CSR is an effective way for firms to hedge future risk. Overconfident managers tend to hold more risky portfolios and engage in less risk management; thus, risk-averse women who are less overconfident may engage in more CSR activities to hedge risks in the future.

Regardless of the effectiveness of ethicality or risk aversion, if the women on the board can exercise an influence on the firm's decision-making process, their representation should be positively related to a firm's CSR performance.

Hypothesis 1: *(Socialiasm Channel)* Female representation is positively related to firms' CSR performance.

The third mechanism through which female representation on boards may affect firms' CSR performance is through the board diversity channel. I have learned from the literature that female board members can provide external resources to the board. Resource dependency theory (Pfeffer and Salancik, 1978) regards the company as an open system dependent on the external environment and resources. The board has the task of reducing environmental uncertainty and managing external dependency (Davis and Cobb, 2010). Board diversity can bring external resources and help the board understand and respond to external organizations (Boyd, 1990). This capability can help the board better manage CSR issues (Bear et al., 2010).

Secondly, board gender diversity can contribute to effective monitoring by the board. Agency theory suggests the need for an appropriate mix of experience and capabilities on boards to exercise this role (Hillman and Dalziel, 2003). The reduction of the agency problem will mitigate the expropriation of managers and allow the board to manage the CSR decision-making process.

Thus, the greater the diversity of board resources, the greater the quality of problem-solving abilities. The capability of board will enable the board to address CSR obstacles and have better CSR performance (Bear et al., 2010).

In this case, regardless of resource dependence theory or agency theory, gender diversity can promote communication with different stakeholders, improve the board monitoring role and improve the board's ability to manage CSR issues.

Hypothesis 2: *(Board diversity channel).* Female representation is positively related to firms' CSR performance.

Regardless of the channel that affects firms' CSR performance, the hypothesised relationship is positive.

3.4 Data and Methodology

3.4.1 Data sources

I retrieved firm governance and financial characteristics data from China Stock Market and Accounting Research (CSMAR) from 2010 to 2020 as CSR data is only available for this period. I then collected HEXUN CSR data, which provides CSR ratings ranging from A to D, as well as CSR scores ranging from 0 to 100. I merged the CSR data with the firms' governance and financial data and obtained 26,242 firm-year observations for 4,020 firms for the period 2010–2020. I then excluded firms in the financial industry (656 observations), firms with missing financial variables (113 observations) and firms with CSR scores lower than zero (3523), leaving us with a sample of 21,950 firm-year observations for 3,656 firms. To check robustness, I also collected other measures of CSR levels from the Wind and SynTao Green databases. The trend of female representation at the board level over the decade, based on these observations, is shown in Figure 1, showing that from 2010 to 2020 the presence of female directors increases significantly.

[Insert Figure 1 Here]

3.4.2 Variables

Dependent variable: The dependent variable is the level of CSR. First, I used the CSR ratings ranging from A to D to measure this level and encoded the four levels as 1, 2, 3 or 4 (from lowest to highest). To check robustness, I also used the CSR scores directly. In addition, I used the SynTao ESG ratings (with values of C-, C, C+, B-, B, B+, A-, A, A+) to examine effectiveness. Syntao provides ESG ratings only from 2015, so provided fewer observations than the sample from the HEXUN CSR ratings. Finally, I also retrieved the ESG ratings from the Wind database. Wind provides both ratings and

ESG scores, but only from 2018 to 2020, again providing fewer observations than the HEXUN CSR sample.

Independent variable: The independent variable is female representation on the board. Firstly, I use the percentage of female directors on firm *i*'s board in year *t* (Afzali et al., 2022; Brodmann et al., 2022; Du, 2016; Grosvold and Brammer, 2011; Harrison and Klein, 2007; Thomas, 2018). Harrison and Klein (2007) provide a new gender diversity measure –the Blau index, ranging from 0 to 0.5. The calculation process is available in the Appendix.

Control variables: I control for firm financial status, governance status and firm basic information. Corporate size and financial resources are influential factors in promoting social engagement (Adams and Hardwick, 1998; Cormier et al., 2005; Gallo and Christensen, 2011; Reverte, 2009). Larger firms demonstrate higher levels of CSR (Borghesi et al., 2014) and firm size also affects female board representation (Hyland and Marcellino, 2002; Saeed et al., 2016). Therefore, I control for firm size by including the logarithm of total book assets and, in addition, I control for firm age. As well as female board representation, board governance characteristics will also affect firms' decision-making (Geiger and Marlin, 2012; Torchia et al., 2018). Jo and Harjoto (2011) and Cuadrado - Ballesteros et al. (2017) also document a positive link between independence level and socially responsible investment. I therefore include board size, measured by the logarithm of the number of board members, and board independence ratio, calculated by the number of independent directors divided by the total number of directors. I control for SOEs and non-SOEs because ownership concentration improves social ratings in SOEs while weakening them in non-SOEs (Li and Zhang, 2010). Regarding financial controls, financial performance has been shown to affect CSR in China (Farag et al., 2015; Li et al., 2013; Li and Zhang, 2010; Rutledge et al., 2014). Therefore, I control for return on assets (ROA), Tobin's Q (the ratio of market value to book value) to control for financial performance. I also control for leverage (total debt

to total asset ratio) due to the resource constraint that debt imposes on CSR expenditure (Barnea and Rubin, 2010).

The details of the variables are listed in the Appendix. The summary statistics of the sample are shown in Table 3.1. CSR_rating is the grade of CSR performance given by the HEXUN database. The mean CSR rating for firms in the sample is 1.18. CSR_score is the score, ranging from 0 to 100. The mean CSR score is 26.41 with a standard deviation of 14.32, indicating that most firms receive very low CSR scores. Female percent is the ratio of female directors to the total number of directors on the board. I have an average of 15% female directors, while Liao et al. (2018) found that 10.7% of board members were female and Arnaboldi et al. (2021) reported that 16.4% of board members were female. The mean ROA is 0.05 and the mean Tobin's Q value is 2.01, indicating the over-valuation of Chinese listed firms. Leverage is total debt to total assets; firms in the sample have an average leverage of 0.41. Firm size is the total book value of the assets; firms in the sample have assets worth between 26,927 and one million yuan. Duality is a dummy variable taking the value of 1 if the CEO and chairperson are the same person and 0 otherwise; 30% of observations have this status. State is a dummy variable with a value of 1 if the firm is state-owned and 0 otherwise; 33% of the observations in the sample are from state-owned firms. Independence is the independence ratio of the board; the average independence level is 37%.

[Insert Table 3.1 Here]

3.4.3 Methodology

3.4.3.1 Univariate Test

To examine differences in CSR performance in different gender groups, I first applied a univariate *t*-test. I generated the industry average level of female representation, and designated firms with a female percentage over the average level as high female

representation firms, and those with a female percentage below the average level as low-female-representation firms. I then compared the means of the two groups. The results are listed in Table 3.2.

The table shows that firms with high female representation on the board have higher levels of CSR performance measured both by grade and scores. In terms of financial performance, firms with higher female representation have higher ROA and lower Tobin's Q as well as higher leverage and larger firm size. In terms of governance, firms with higher female representation are less likely to combine the roles of CEO and chairperson are the same person and tend to have lower independence levels. Lastly, state-owned firms are likely to have a greater female presence.

[Insert Table 3.2 Here]

3.4.3.2 Multivariate Test

To eliminate influences from other variables, I then applied multivariate panel regression to examine the link between female percentage and CSR performance.

$$CSR_{i,t} = \beta_1 FP_{i,t} + \beta_2 ROA_{i,t} + \beta_3 Tobin\ Q_{i,t} + \beta_4 Leverage_{i,t} + \beta_5 Firm\ Size_{i,t} + \beta_6 Firm\ Age_{i,t} + \beta_7 Independence_{i,t} + \beta_8 Board\ Size_{i,t} + \beta_9 Duality_{i,t} + \beta_{10} State_{i,t} + \varepsilon_{i,t}$$

Eq.(3.1)

$CSR_{i,t}$ is the CSR rating of firm *i* in year *t*; $FP_{i,t}$ is the variable measuring female representation on the board, in the main regression I use the female percentage on the board; $ROA_{i,t}$ is the ROA of firm *i* in year *t*; $Tobin\ Q_{i,t}$ is the ratio of market value to book value of firm *i* in year *t*; $Leverage_{i,t}$ is the leverage ratio of firm *i* calculated as total debt scaled by total assets in year *t*; $Firm\ Size_{i,t}$ is the natural logarithm of

firm *i*'s total assets in year *t*; $Firm\ Age_{i,t}$ is the natural logarithm of the listing age of firm *i* in year *t*; $Independence_{i,t}$ is the ratio of independent directors on the board of firm *i* in year *t*; $Board\ Size_{i,t}$ is the natural logarithm of the number of board directors; $Duality_{i,t}$ is a dummy equal to 1 for cases where the CEO and board Chair are the same person; $State_{i,t}$ is a dummy for state-owned firms and 0 for non-state-owned firms.

3.5 Empirical Results

3.5.1 Main regression

Table 3.3 reports the regression results of Eq. (3.1). The major variables of interest are the percentage of females on the board. The coefficients are positively significant concerning CSR ratings. In Column (1), I see a positive coefficient of 0.0781, indicating that 1% of female representation equates to an increase of 0.0781 in CSR rating. The result also holds when I control for additional industry-fixed effects in Column (2). In Columns (3) and (4), I use an alternative measurement of CSR performance from the same database. The coefficients of FP are still positive and significant. In summary, the main results support the hypothesis that female representation contribute to firms' CSR performance.

[Insert Table 3.3 Here]

3.5.2 Robustness check

Firstly, I performed robustness tests using alternative measures of female representation on boards. To replace the female percentage, I used the Blau index to measure gender diversity. The results are listed in Column (1) of Table 3.4. Secondly, I used alternative firm CSR measures. I initially used the ESG ratings from the Syntao Database, which only provides ESG ratings for CSI 300 Index-listed firms from 2015 to 2020, so there

are just 2773 observations in Column (2). In Column (3), I replaced the measurement with the ESG ratings provided by the Wind database. Wind provides ESG ratings for all listed firms in the Chinese market, but covers only 2018 to 2020, as a result providing only 6434 observations. Wind also provides ESG scores, as does HEXUN, so I also used the ESG scores to check for robustness. In all regressions, I still have a positive and significant coefficient for the female percentage on ESG performance.

[Insert Table 3.4 Here]

3.5.3 Endogeneity

In this chapter, endogeneity could exit as two kinds of format when modelling the relationship between female board representation and firms' CSR performance.

First, it is possible that the results are subject to the reverse causality, where firms with higher CSR performance attract women to join the board. In other words, endogeneity may arise from the potentially non-random selection of women on board. There is a consensus that women may choose firms that already have a high level of CSR (Adams and Ferreira, 2007; Coles et al., 2008; Sila et al., 2016).

The second endogeneity may arise from the omitted variable because it is challenging to identify and account for every factor that influences firms' performance due to the complex and multifaceted nature of the business environment. Some factors may be omitted not only because I don't forget it, also may because some factors cannot be observed. For example, an unobservable variable such as firm culture could affect both female representation and CSR performance because firms with an inclusive culture may potentially attract more female candidates, and inclusive cultural firms may also prioritise social responsibility. Therefore, firms' culture can drive both board gender diversity and CSR performance, potentially resulting in endogeneity.

To address at least partial endogeneity concerns, three approaches are applied in this chapter. Firstly, I reran the main regressions using lagged independent and control variables (Dittmann et al., 2010; Liu et al., 2018; Zaefarian et al., 2017). Secondly, to address the causality, I then use the instrumental variable regression. Following previous literature, I use the industry average female board ratio as the instrumental variable because scholars persist that firms' geographical location can somehow explain the board composition (Becker et al., 2011; Wahid, 2019). Thirdly, I addressed the endogeneity caused by omitted variable bias by using industry and year-fixed effect to capture unobserved firm characteristics that may drive the gender–CSR relationship. The third method has been used in the main regression.

Table 3.5 presents the endogeneity results. In Columns (1) and (2), I present the results of instrumental regression. In Column (1), the results show the industry average female percentage is significantly related to the firms' female percentage. In Column (2), I use the industry average female percentage as the instrumental variable to female percentage. The coefficient of FP is significantly positive with CSR performance in the instrumental regression. The standard (Staiger et al., 1997) is that the F-test should have a result over 10 for instruments to be relevant (not weak). Similarly, the test also rejects the null hypothesis of over-identification and weak instrument. The Anderson canon statistics, Wald F statistics, and Sargen test results are attached to the instrumental regression. The statistics reject the weak instrument hypothesis and the over-identification hypothesis, indicating the effectiveness of the instrumental variable used. In Column (3), I replace the variables using one-year-lagged terms. The positive relationship also holds when I control the lagged terms.

[Insert Table 3.5 Here]

3.6 Further Discussion

3.6.1 Critical mass: The number of female directors and CSR performance

The literature discusses whether female representation on boards is merely tokenistic. Liu et al. (2014b) argue that, given the token status and sex-role stereotypes of female directors, only one woman on the board is considered token, as her influence on board decisions is limited. Research suggests that minority suggestions are not easily accepted by others (Nemeth, 1986) because social pressures encourage the group to make decisions that align with the majority opinion (Asch, 1955).

However, Asch (1995) argues that if a consistent and multiple expression by minority is achieved, groups are more likely to hear the minority's opinions. Thus, a critical mass of women on the board will be effective in affecting firm decisions (Bear et al., 2010; Konrad et al., 2008; Kramer et al., 2006). More specifically, the number of women is considered: "One is a token, two is a presence, and three is a voice" (Kristie, 2011). Evidence of groups failing to take token opinions or contributions into account is supported by Brewer and Kramer (1985); Kanter (1977); Lord and Saenz (1985).

Based on critical mass theory, I test the impact of the number of female directors on firm CSR performance to check whether the number should at least reach to three and then take action. I construct three variables following the critical mass theory. The variable CM_1 takes the value of 1 if the board has one female director and 0 otherwise. The variable CM_2 takes the value of 1 if the board has two female directors and 0 otherwise. The dummy variable CM_3 takes the value of 1 if the board has three women and 0 otherwise. I replaced the percentage of female director's variable with these dummy variables in the regression. The descriptive statistics and the multivariate regression results are presented in Table 3.6.

From the summary statistics in Table 3.6, I see that 72% of the observations have at least one female director on the board. Among these, only 37% have one female on the

board; 22% have two female directors, and 13% have more than three female directors. This sharp decline in female representation indicates that a critical mass probably exists in Chinese firms. In the second table of Table 6, I show the main regression results by replacing the independent variable FP with three dummy variables assigned a value of 1 depending on the number of female directors on the board. CM_1 is a dummy variable taking the value of 1 if there is only one female on the board. CM_2 is a dummy variable taking the value of 1 if there are two women on the board. CM_3 is a dummy variable assigned a value of 1 if there are 3 or more women on the board.

[Insert Table 3.6 Here]

The first column shows the regression results when I replace FP with CM_1. The coefficient of CM_1 is positive but insignificant. In Column (2), the coefficient of CM_2 is positive and significant at the 10% level. In Column (3), the coefficient of CM_3 is positive and significant at the 1% level. In Column (4), I add CM_1, CM_2, and CM_3 together in the regression. The results show that only CM_3 contributes to the firm's CSR rating. In summary, there is evidence that only three or more women on the board can affect the CSR rating, which is consistent with critical mass theory.

3.6.2 Mechanisms: How can female directors contribute to CSR?

In the hypothesis development, I argue that irrespective of whether ethicality or diversity is more important, the relationship between female directors and firms' CSR performance should be positive. However, little has distinguished which mechanism is more significant in firms' CSR activities. Ethicality, risk aversion and board diversity have been widely discussed in the literature on female roles in the corporate decision-making process. Wahid (2019) is the first, if not the only, scholar to examine the mechanism of board gender and how it affects financial manipulation. He argues that if female characteristics matter, there should be no inflection point after which an increase in the number of female directors fails to make an impact because any additional female directors will lead to an increase in female characteristics. Thus, even if the increase is

not linear (the marginal effect will be less when maximum utility is reached), it should never not result in worse outcomes. In contrast to the contribution of female characteristics, board diversity itself may have a curvilinear effect. The side-effects of board diversity are also recorded in some literature: it is linked to conflict, lack of consensus and fault lines (Simons and Peterson, 2000; Van den Steen, 2010; Wall Jr and Nolan, 1986) which may lead to further conflict (Forbes and Milliken, 1999). Thus, there may be a curvilinear relationship between board diversity and decision-making outcomes.

Van den Steen (2010) also investigates the difference between the effectiveness of female traits and board diversity when examining female representation on boards and firms' misconduct, using different degrees of misconduct to measure whether ethicality is effective in mitigating misconduct. In addition, to examine the effect of board diversity, van den Steen argues that, if board diversity matters, its effectiveness should be less significant in firms with other types of diversity, because these other types will also contribute to resource dependence theory and agency theory. The results show that the effect of gender diversity is still significant when considering other types of diversity and reject the effectiveness of the board diversity hypothesis. As such, in this thesis, it is practical and meaningful to examine which mechanism is significant in explaining the effect of female directors on firms' CSR activity.

To investigate which mechanism female directors use to affect firms' CSR performance, I followed the method of (Arnaboldi et al., 2021). Firstly, I collect the lawsuit data which measures the probability of the company being subject to litigation. Arnaboldi et al. (2021) argue that if female directors apply their ethicality into firms behavior, there should be less misconduct and severe misconduct of a firm. Therefore, I argue that if the ethicality channel matters, firms with more female directors on board should be witnessed by less lawsuit. The regression results are listed in Table 3.7. Results indicate that the female proportion on board is irrelevant to lawsuit, to a certain degree reflect that female directors do not influence firm decisions in a more ethical perspective.

[Insert Table 3.7 Here]

To examine whether female directors in the sample are risk-averse, and following Bernile et al. (2017), I used R&D expenditure, whether the firm paid dividends, cash holding and the tendency to make M&As. I then examined the relationship between female representation on the board and these risk-taking measures. The results are presented in Table 3.8 and show that female representation is negatively related to firms' R&D expenditure. If I regard R&D expenditure as a risk-taking measure, the results show that the female directors in the sample are risk-averse. Column (3) also provides evidence that female directors possibly hold more cash, but the results are not significant. However, for the robustness check, I see that female directors are more likely to pay dividends (Column (2)), more likely to announce M&A deals (not significant) and more likely to invest more in M&A. In summary, I do not have sufficient evidence to prove that female directors in the sample are risk averse, so this mechanism does not hold.

[Insert Table 3.8 Here]

The last mechanism is board diversity. Diverse directors bring more resources including communications with external organisations, increasing the firm's interest in external organisations as well as its ability to manage CSR issues. A positive relationship between general board diversity has been proved in various countries, for example, Beji et al. (2021) in France market, Harjoto et al. (2015) in US market, Liao et al. (2018) in Chinese market, Rao and Tilt (2016) in Australian market, Ibrahim and Hanefah (2016) in Jordan, they all argue that diversity could bring more resources and capital to the group thus improve firms decision-making process. Therefore, if board gender diversity matters through the diversity channel, it should be less effective when the board is already diverse in other ways Arnaboldi et al. (2021). To test the board diversity mechanism, I introduced five kinds of diversity measure: 1) diversity of age, measured by directors' age, standard deviation; 2) diversity of experience, measured by directors' work experience on the Herfindahl-Hirschman Index; 3)

diversity of education, measured by the diversity of directors' degree institutions; 4) major diversity, measured by directors' majors; 5) overall diversity measured by the sum of the four diversity measures. I then used these different measures of diversity to re-regress the main equation. The results are shown in Table 3.9.

Column (1) is shown for comparison purposes. In Column (2), when I add age diversity to the main regression, I find that the coefficient of FP declines from 0.0781 to 0.0682, with the significance level also falling. In Column (3), I find that while the coefficient of FP has declined, experience diversity is not significantly linked to CSR performance. In Column (4), educational diversity is positively and significantly related to CSR ratings while the significance of FP has fallen.

[Insert Table 3.9 Here]

I see similar results in Column (5) where diversity of major significantly contributes to CSR performance, and the FP significantly decline. In the last column, the overall diversity measure significantly improves CSR performance. In summary, when I introduce other measures of board diversity, the role of female directors declines, indicating the effectiveness of board diversity.

In conclusion, I tested the female ethical, risk aversion and diversity mechanisms. The results do not show any contribution to CSR performance from the ethicality or risk-aversion of women but do find a contribution from the diversity mechanism.

3.6.3 Gender Discrimination: Social trust and female effectiveness

This analysis is inspired by the work of Liu et al. (2014b) and Qiu et al. (2022). As the results show, board gender diversity can benefit CSR performance. Westphal and Bednar (2005) and Jackson et al. (1992) hold that if members of the group contribute diverse ideas, this diversity can benefit the whole group. Liu et al. (2014) argue that the effectiveness of female board members is highly related to gendered role stereotypes.

Meanwhile, Qiu et al. (2022) posit that such stereotypes are a form of gender discrimination, and that discrimination affects the acceptability of female ideas.

Gender discrimination is an important topic in Chinese market (Campbell and Minguez Vera, 2010; Gao et al., 2016; Wang and Kelan, 2013). Where gender discrimination is lower or social ethics are higher, it should be easier for minority voices to be heard. In addition, Giannetti and Zhao (2019) argue that the effectiveness of board diversity also depends on the interaction between board members, as social trust can also facilitate interaction and communication. In this case, I analyse variations in the effectiveness of female board representation in affecting firms' CSR performance in different locations.

Qiu et al. (2022) argue that social trust can be a measure of social ethics, as it can encourage people to share with others and comply with moral standards (Chen et al., 2021a; Chen et al., 2021b; Cladis, 1992; Stanley et al., 2011), and communication and interaction with others can lead to higher moral and ethical standards (Chen et al., 2021a; Chen et al., 2021b; Pevzner et al., 2015).

Based on this argument, I use dialect diversity and educational level to measure the social trust levels at the locations of firms' headquarters. Dialects are used to measure the trustworthy of business partners (Huang and Liu, 2017). Intuitively, dialect sharing can lead to smoother communication; Thus, a low diversity of dialects in a region can facilitate communication and trust between people. I developed the dialect differentiation index following Xu et al. (2015) to construct the diversity measurement. Cassidy and Warren (1996) suggest that education can help promote equality and reduce discrimination. Following Qiu et al. (2022), I use the ratio of those with higher education to the total population of the province as a proxy of educational level. I then split the sample by level of social trust and re-regress the main model in samples with different levels of social trust.

The regression results are presented in Table 3.10. Columns (1) and (2) show the results in firms with high levels of social trust, while Columns (3) and (4) show those in firms

with low levels of social trust. The results indicate a positive and significant effect in firms with high social trust, which supports the argument that high social trust can mitigate gender discrimination and promote female effectiveness. In contrast, in areas with low levels of social trust, female directors cannot influence CSR performance.

[Insert Table 3.10 Here]

3.7 Conclusion

A key notion of the board diversity perspective developed in this chapter, and strongly corroborated by the findings, is that the gender board diversity is positively related to firms' other-regarding decisions. The implication of this finding is that the mechanism that female representation on board responses to firms' CSR engagement should be investigated separately by empirical results. By using the female director's data in Chinese listed companies, the main results in this chapter show a positive relationship to firms' CSR engagement. The results still hold after considering omitted variables and causality endogeneity issues, as well as robustness check by alternative measures. To examine which mechanisms female directors use to exert influence on firms' CSR engagement, this chapter propose three potential channels: female ethical channel, risk-aversion channel, and board diversity channel. Empirical results show that female directors in this sample do not behave more ethical and risk averse than their male counterparts, while results support the effectiveness of board diversity channel by investigating the effectiveness of other kinds of board diversity.

Inspired by other female theory and gender discrimination social status quo in China, this chapter also considers the Critical Mass and social trust in explaining the effective of female representation. Results support the Critical Mass theory that only three or more female directors can generate significant impact on firms' CSR engagement. For social trust test, this chapter uses regional dialect diversity and regional education level to measure the social trust level. Findings show that social trust, which can mitigate the

gender discrimination, can enhance the female directors' impact on CSR performance.

Overall, this chapter provides the evidence to prove the effectiveness of female directors by demonstrating that female directors can improve firms' CSR engagement by contributing to board diversity. This chapter helps to distinguish the most commonly discussed mechanisms of female: board diversity and Upper echelon.

Figures and Tables

Figure1 Female board directors 2010–2020

This figure shows the trend in annual average female representation on company boards in Chinese listed firms.

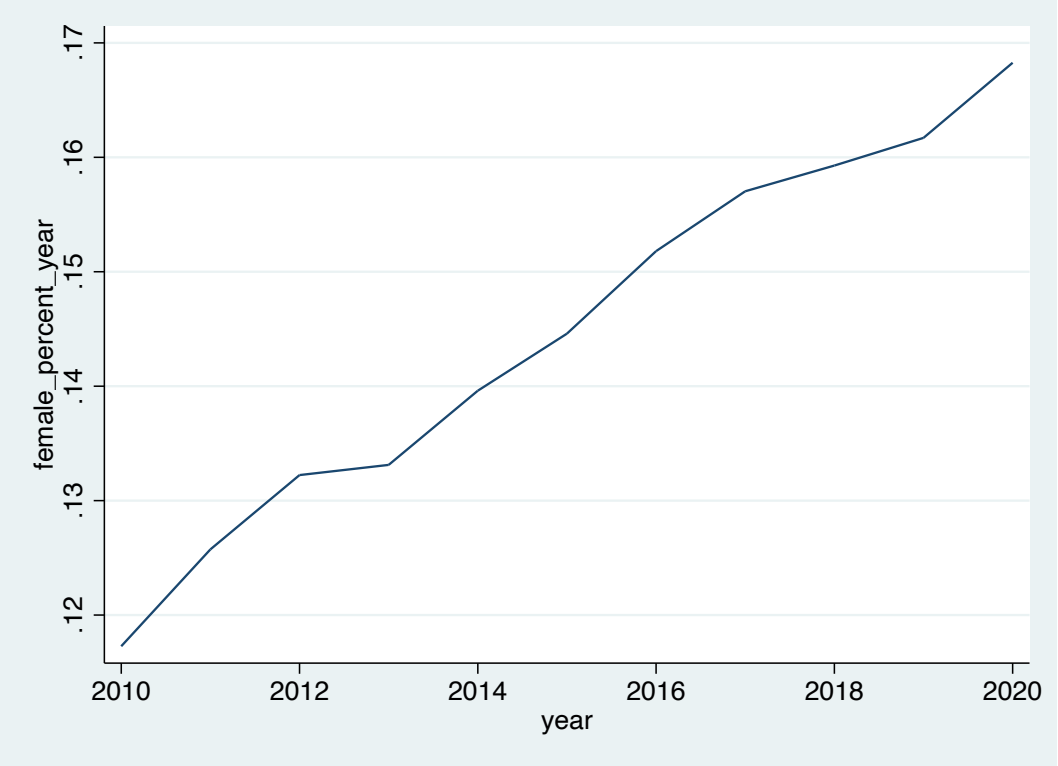

Table3. 1 Summary Statistics

Table 3.1 shows the summary statistics for the sample. CSR_rating is a counted number from 1 to 4, while CSR_score numbers from 0 to 100. Female_percent is the ratio of female representation on the board, in terms of the number of female directors to the total number of board directors. ROA is the ratio of return on assets. Tobin Q is the market value to book value ratio of total assets. Leverage is the ratio of total debts to total assets. Firm size is the value of total assets. Duality is a dummy variable taking the value of 1 if the CEO and chairperson are the same person, and 0 otherwise. State is a dummy variable with a value of 1 if the firm is state-owned and 0 otherwise. Independence is the ratio of independent directors to total board members.

Variables	Observations	Mean	SD	Min	Median	Max
CSR_rating	21950	1.17	0.53	1	1	4
CSR_score	21950	25.97	14.03	6.2	22.79	74.35
Female_percent	21950	0.15	0.13	0	0.11	0.54
CEO Gender	21950	0.07	0.253	0	0	1
ROA	21950	0.05	0.04	-0.04	0.04	0.20
Tobin Q	21950	2.04	1.34	0.87	1.61	8.89
Leverage	21950	0.41	0.21	0.05	0.40	0.88
Firm Size	21950	12268.87	31188.03	366.67	3372.10	231099.7
Duality	21950	0.29	0.45	0	0	1
State	21950	0.38	0.49	0	0	1
Independence	21950	0.37	0.05	0.33	0.33	0.57

Table3. 2 Univariate Test

Table 3.2 shows the univariate test results. The difference in significance level is based on a *t*-test. Columns (1) and (2) show the mean values of the variables. Column (3) shows the difference with significance level.

Variables	High Female	Low Female	Difference (High-Low)
CSR_rating	1.19	1.14	0.05***
CSR_score	26.43	25.33	1.11***
ROA	0.05	0.05	-0.003*
Tobin Q	2.02	2.09	-0.07***
Leverage	0.43	0.39	0.034**
Firm Size	15000	9105	5439.40*
Duality	0.25	0.33	-0.08**
State	0.43	0.31	0.12***
Independence	0.37	0.378	-0.005***

Table3. 3 Main Regression: Female Representation and Firm CSR Performance

This table shows the regression results of Equation (1). CSR_rating is the firm's CSR rating grade; CSR_score is the firm's CSR score. FP is the percentage of female board members; ROA is the return on assets of firm *i* in year *t*; Tobin Q is the ratio of market value to book value of firm *i* in year *t*; Leverage is the leverage ratio of firm *i* calculated as total debt scaled by total assets in year *t*; Firm Size is the natural logarithm of firm *i*'s total assets in year *t*; Firm Age is the natural logarithm of the listing age of firm *i* in year *t*; Independence is the ratio of independent directors on the board of firm *i* in year *t*; Board Size is the natural logarithm of the number of board directors; Duality is a dummy equal to 1 for cases where the CEO and the Chair of the board Chair are the same person; State is a dummy for state-owned firms with a value of 0 for non-state-owned firms. Columns (1) and (3) control for firm and year-fixed effects; Columns (2) and Column (4) control for industry, firm and year-fixed effects. *T*-statistics are presented in parentheses; *, **, and *** represent significance levels at 10%, 5% and 1% respectively.

Variables	CSR_rating		CSR_score	
	(1)	(2)	(3)	(4)
FP	0.0749*	0.0781**	1.854***	1.818*
	(1.79)	(1.98)	(2.60)	(1.94)
CEO Gender	0.00135	0.00245	-0.240	-0.205
	(0.07)	(0.12)	(-0.52)	(-0.45)
ROA	0.465***	0.547***	79.31***	78.47***
	(3.85)	(4.72)	(28.13)	(27.83)
Tobin Q	0.0131***	0.0183***	0.0600	0.0799
	(3.61)	(4.94)	(0.70)	(0.93)
Leverage	0.115***	0.106***	-1.052	-0.976
	(3.13)	(3.32)	(-1.31)	(-1.21)
Firm Size	0.0946***	0.0997***	4.188***	4.015***
	(10.23)	(11.31)	(20.02)	(18.67)
Firm Age	-0.0602***	0.0418	-0.169	-0.0948
	(-35.33)	(0.89)	(-0.35)	(-0.20)
Independence	0.180	0.0792	2.427	2.401
	(1.49)	(0.59)	(0.80)	(0.79)
Board Size	0.0451	0.0135	0.305	0.337
	(1.15)	(0.31)	(0.31)	(0.34)
Duality	-0.0246**	-0.0233**	-0.477*	-0.469*
	(-2.09)	(-2.20)	(-1.91)	(-1.87)
State	0.0677	0.0511	-0.00793	0.355
	(1.12)	(0.88)	(-0.01)	(0.23)
Industry	NO	YES	NO	YES
Firm	YES	YES	YES	YES
Year	NO	YES	NO	YES
N	21520	21520	21520	21520
R^2	0.095	0.0115	0.154	0.0657

Table3. 4 Robustness check: Alternative dependent and independent variables

This table shows the results of the robustness check. In Column (1), the independent variable FP is replaced by the Blau gender index (0–0.5). In Columns (2) to (4), the dependent variables are replaced by the SynTao ESG rating, Wind ESG rating and Wind ESG score respectively. All regressions are with industry, firm and year-fixed effects. FP is the percentage of female board members; ROA is the return on assets of firm *i* in year *t*; Tobin Q is the market value to book value ratio of firm *i* in year *t*; Leverage is the leverage ratio of firm *i* calculated as total debt scaled by total assets in year *t*; Firm Size is the natural logarithm of firm *i*'s total assets in year *t*; Firm Age is the natural logarithm of the listing age of firm *i* in year t; Independence is the ratio of independent directors on the board of firm *i* in year *t*; Board Size is the natural logarithm of the number of board directors; Duality is a dummy equal to 1 where the CEO and Chair of the board are the same person; State is a dummy for state-owned firms with a value of 0 for non-state-owned firms. Columns (1) and (3) control for the firm and year fixed effects; Columns (2) and (4) control for industry, firm and year fixed effect. *T*-statistics are presented in parentheses; *, ** and *** represent significance levels at 10%, 5% and 1% respectively.

	(1)	(2)	(3)	(4)
	CSR_Rating	Syntao ESG	Wind ESG Rating	Wind ESG Score
FP		0.615***	0.239*	0.313***
		(2.88)	(1.89)	(3.20)
Blau Index	0.0753*			
	(1.86)			
CEO Gender	0.00254	0.0262	0.0506	0.0881*
	(0.12)	(0.26)	(0.79)	(1.78)
ROA	0.547***	-0.396	-0.119	-0.164
	(4.59)	(-0.73)	(-0.39)	(-0.69)
Tobin Q	0.0183***	0.0452**	0.0518***	0.0314***
	(4.58)	(2.46)	(4.79)	(3.75)
Leverage	0.106***	-0.208	0.133	0.0740
	(2.93)	(-0.77)	(0.95)	(0.68)
Firm Size	0.0997***	0.0208	0.131***	0.127***
	(10.64)	(0.26)	(3.04)	(3.79)
Firm Age	0.0419**	-0.0493	0.0427	0.0517*
	(2.09)	(-0.92)	(1.10)	(1.72)
Independence	0.0789	0.149	0.827**	0.654**
	(0.67)	(0.30)	(2.25)	(2.30)
Board Size	0.0135	-0.240	0.188	0.127
	(0.36)	(-1.39)	(1.46)	(1.27)
Duality	-0.0232**	-0.171***	-0.0633*	-0.0841***
	(-2.04)	(-2.99)	(-1.90)	(-3.26)
State	0.0511	-0.00454	0.407	0.0191
	(0.87)	(-0.02)	(1.13)	(0.07)
Industry	YES	YES	YES	YES
Firm	YES	YES	YES	YES
Year	YES	YES	YES	YES
N	21520	2774	6434	6434

R^2	0.0115	0.0139	0.0130	0.0158

Table3. 5 Endogeneity

This table addresses endogeneity. Columns (1) and (2) show the results of the 2SLS instrumental regression. Column (3) shows the lead-lagged regression. IAFP is the industry average financial percentage. All regressions are with industry, firm and year-fixed effect. FP is the percentage of female board members; ROA is the return on assets of firm *i* in year *t*; Tobin Q is the market value to book value ratio of firm *i* in year *t*; Leverage is the leverage ratio of firm *i*, calculated as total debt scaled by total assets in year *t*; Firm Size is the natural logarithm of firm *i*'s total assets in year *t*; Firm Age is the natural logarithm of the listing age of firm *i* in year *t*; Independence is the ratio of independent directors on the board of firm *i* in year *t*; Board Size is the natural logarithm of the number of board directors; Duality is a dummy equal to 1 where the CEO and Chair of the board are the same person; State is a dummy for state-owned firms with a value of 0 for non-state-owned firms. Columns (1) and (3) control for firm and year fixed effects; Columns (2) and (4) control for industry, firm and year fixed effect. *T*-statistics are presented in parentheses; *, ** and *** represent significance levels at 10%, 5% and 1% respectively.

	Instrumental Regression		Lead-Lagged Regression
	(1)	(2)	(3)
	Female Percent	CSR_rating	CSR_rating
IA FP	0.533***		
	(8.18)		
FP		2.941***	0.0522**
		(3.86)	(1.97)
CEO Gender	0.0572***	-0.162***	0.0167
	(15.41)	(-3.27)	(0.74)
ROA	-0.00831	0.581***	0.374***
	(-0.38)	(4.34)	(3.92)
Tobin Q	0.0000501	0.0182***	0.00573***
	(0.07)	(4.07)	(3.33)
Leverage	0.00503	0.0874**	0.151***
	(0.77)	(2.14)	(3.82)
Firm Size	-0.00584***	0.115***	0.0827***
	(-3.44)	(10.25)	(8.16)
Firm Age	-0.00544	0.0529**	0.0350
	(-1.49)	(2.33)	(1.00)
Board Size	-0.0138**	0.0522	0.0463
	(-1.99)	(1.19)	(0.36)
Independence	0.0272	-0.0177	0.0181
	(1.50)	(-0.15)	(0.43)
Duality	0.00321	-0.0325**	-0.0239*
	(1.55)	(-2.49)	(-1.88)
State	0.0217**	-0.0113	0.00822
	(2.03)	(-0.17)	(0.12)
Industry-Fixed Effect	YES	YES	YES
Firm Fixed Effect	YES	YES	YES
Year Fixed Effect	YES	YES	YES

Anderson canon statistics	Chi-sq(1)=80.58		
Cragg-Donald Wald F statistics	F=68.49		
Sargan Statistics	P<001		
N	21520	21520	19103

Table3. 6 Further Discussion: Critical Mass

This table shows the summary statistics for critical mass variables. CM_1 is a dummy variable taking a value of 1 if there is only one female board member. CM_2 is a dummy variable taking a value of 1 if there are two female board members. CM_3 is a dummy variable assigned a value of 1 if there are more than 3 women on the board.

Variables	Observations	Mean	SD	Min	Median	Max
CM_1	21950	0.37	0.482	0	0	1
CM_2	21950	0.22	0.416	0	0	1
CM_3	21950	0.13	0.339	0	0	1

The table below shows the regression results of critical mass. I replaced the independent variable FP in the main regression with three dummy variables representing different numbers of female board members. The control variables are the same as in the main regression. All regressions are with industry, firm and year-fixed effect. *T*-statistics are presented in parentheses; *, ** and *** represent significance levels at 10%, 5% and 1% respectively.

	(1) CSR_Rating	(2) CSR_Rating	(3) CSR_Rating	(4) CSR_Rating
CM_1	-0.0211***			-0.0179*
	(-2.63)			(-1.72)
CM_2		-0.00244		-0.00231
		(-0.26)		(-0.18)
CM_3			0.0405***	0.0332**
			(3.08)	(2.00)
CEO Gender	0.00723	0.00708	0.00349	0.00453
	(0.35)	(0.34)	(0.17)	(0.22)
ROA	0.544***	0.545***	0.546***	0.545***
	(4.57)	(4.58)	(4.59)	(4.58)
Tobin Q	0.0182***	0.0183***	0.0183***	0.0182***
	(4.55)	(4.58)	(4.59)	(4.57)
Leverage	0.106***	0.106***	0.106***	0.105***
	(2.93)	(2.94)	(2.93)	(2.92)
Firm Size	0.0995***	0.0993***	0.0998***	0.0999***
	(10.63)	(10.60)	(10.66)	(10.67)
Firm Age	0.0410**	0.0416**	0.0421**	0.0415**
	(2.04)	(2.07)	(2.10)	(2.07)
Independence	0.0823	0.0787	0.0777	0.0805
	(0.70)	(0.67)	(0.66)	(0.68)
Board Size	0.0101	0.0128	0.00162	0.00181
	(0.27)	(0.34)	(0.04)	(0.05)
Duality	-0.0231**	-0.0229**	-0.0234**	-0.0234**
	(-2.02)	(-2.01)	(-2.05)	(-2.05)
State	0.0521	0.0530	0.0514	0.0512
	(0.88)	(0.90)	(0.87)	(0.87)
Industry	YES	YES	YES	YES

Firm	YES	YES	YES	YES
Year	YES	YES	YES	YES
N	21520	21520	21520	21520
R^2	0.0117	0.0113	0.0118	0.0120

Table3. 7 Female Ethical Mechanism: lawsuit and female proportion

This table shows the link between female proportion and the tendency of being lawsuit. Column (1) is with the lawsuit quantity in a given year. The column (2) is with the value related to lawsuit. Column (3) is with the dummy variable assigned with the value of 1 if any lawsuit is considered as 'major lawsuit'. The control variables are the same as in the main regression. All regressions are with industry, firm and year-fixed effect. *T*-statistics are presented in parentheses; *, ** and *** represent significance levels at 10%, 5% and 1% respectively.

Dependent Variable	(1) Lawsuit Quantity	(2) Lawsuit Value	(3) Major Lawsuit
FP	-43.33	-4054.3	-0.0423
	(-0.23)	(-0.65)	(-1.22)
CEO Gender	-15.00	1017.0	0.00974
	(-0.15)	(0.33)	(0.56)
ROA	568.6	438.1	-0.0942
	(1.07)	(0.03)	(-0.92)
Tobin Q	-41.91**	-237.8	-0.00631*
	(-2.13)	(-0.38)	(-1.87)
Leverage	42.68	1650.2	0.0845***
	(0.25)	(0.31)	(2.71)
Firm Size	-136.2***	-905.2	-0.00212
	(-3.12)	(-0.64)	(-0.25)
Firm Age	29.98	28.07	0.0620*
	(0.24)	(0.01)	(1.94)
Independence	379.8	58259.0***	-0.252**
	(0.73)	(3.58)	(-2.52)
Board Size	-54.15	4574.0	-0.103***
	(-0.32)	(0.87)	(-3.17)
Duality	-3.638	-2406.3	-0.0165*
	(-0.06)	(-1.34)	(-1.71)
State	60.86	2519.2	-0.0176
	(0.25)	(0.33)	(-0.37)
Industry	YES	YES	YES
Firm	YES	YES	YES
Year	YES	YES	YES
N	2576	2252	15381
R^2	0.0080	0.0108	0.0028

Table3. 8 Female Risk Aversion Mechanism

This table shows the results for testing female risk aversion. In Column (1), the dependent variable is R&D, calculated as R&D expense to income. In Column (2), the dependent variable is a dummy variable taking the value of 1 if the firm pays dividends and 0 otherwise. In Column (3), I use the logarithm of delta cash holding. In Column (4), I use the natural logarithm of the number of M&A deals. In Column (5), I use the natural logarithm of the expense of M&A deals. The control variables are the same as in the main regression. All regressions are with industry, firm and year-fixed effects. *T*-statistics are presented in parentheses; *, ** and *** represent significance levels at 10%, 5% and 1% respectively.

	(1) R&D	(2) Dividend	(3) Cash holding	(4) M&A Deals	(5) M&A Expense
FP	-0.391*	0.0450	0.0108	0.0444	0.840*
	(-1.95)	(1.57)	(0.06)	(0.45)	(1.86)
CEO Gender	-0.0676	0.00904	0.141	-0.0840*	-0.0305
	(-0.62)	(0.62)	(1.62)	(-1.69)	(-0.13)
ROA	-12.03***	1.984***	3.222***	0.283	0.555
	(-20.58)	(23.25)	(6.50)	(0.96)	(0.42)
Tobin Q	0.0953***	-0.0168***	-0.126***	0.0300***	0.207***
	(5.00)	(-5.99)	(-7.81)	(3.10)	(4.71)
Leverage	-3.288***	-0.423***	-2.656***	0.219***	0.791**
	(-17.49)	(-16.59)	(-17.89)	(2.67)	(2.09)
Firm Size	0.0517	0.110***	1.124***	0.0271	0.345***
	(1.05)	(16.72)	(29.77)	(1.21)	(3.33)
Firm Age	-0.383***	-0.0615***	-0.120	0.0220	0.0695
	(-3.19)	(-4.23)	(-1.51)	(0.40)	(0.27)
Independence	-0.0567	-0.182**	-0.828*	-0.152	0.367
	(-0.10)	(-2.21)	(-1.68)	(-0.53)	(0.28)
Board Size	0.479**	-0.0161	0.0934	0.0877	0.181
	(2.51)	(-0.60)	(0.60)	(0.95)	(0.43)
Duality	0.215***	0.0173**	0.109**	-0.000282	0.108
	(3.94)	(2.17)	(2.29)	(-0.01)	(0.88)
State	0.642*	-0.0243	-0.259	0.125	-0.243
	(1.67)	(-0.58)	(-1.11)	(0.95)	(-0.42)
Industry	YES	YES	YES	YES	YES
Firm	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES
N	16435	21243	11706	6718	6087
R^2	0.048	0.0633	0.128	0.005	0.0107

Table3. 9 Board Diversity Mechanism

This table shows the results of the board diversity mechanism. Column (1) shows the main regression results. Column (2) adds board age diversity. Column (3) adds experience diversity. Column (4) adds educational diversity. Column (5) adds diversity of degree subjects. Column (6) adds the overall diversity measure. The control variables are the same as in the main regression. All regressions are with industry, firm and year-fixed effect. *T*-statistics are presented in parentheses; *, ** and *** represent significance levels at 10%, 5% and 1% respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	CSR_Rating					
FP	0.0781***	0.0682*	0.0782*	0.0782*	0.0787*	0.0789*
	(2.78)	(1.92)	(1.92)	(1.93)	(1.94)	(1.94)
Age Diversity		0.0694*				
		(1.78)				
Experience Diversity			0.0182			
			(1.13)			
Education Diversity				0.130***		
				(5.82)		
Major Diversity					0.0685***	
					(2.91)	
Overall Diversity						0.0495***
						(4.97)
Tobin Q	0.0183***	0.0184***	0.0182***	0.0179***	0.0182***	0.0181***
	(4.58)	(4.61)	(4.57)	(4.48)	(4.57)	(4.54)
Leverage	0.106***	0.106***	0.106***	0.110***	0.106***	0.106***
	(2.94)	(2.94)	(2.93)	(3.05)	(2.93)	(2.95)
Firm Size	0.0997***	0.0997***	0.0994***	0.0979***	0.0992***	0.0980***
	(10.64)	(10.65)	(10.61)	(10.45)	(10.59)	(10.46)
Firm Age	0.0418**	0.0414**	0.0417**	0.0421**	0.0427**	0.0419**
	(2.09)	(2.06)	(2.08)	(2.10)	(2.13)	(2.09)
Independence	0.0792	0.0706	0.0907	0.0543	0.0718	0.0894
	(0.67)	(0.60)	(0.77)	(0.46)	(0.61)	(0.76)
Board Size	0.0135	0.00996	0.0135	0.00656	0.0121	0.00707
	(0.36)	(0.26)	(0.35)	(0.17)	(0.32)	(0.19)
Duality	-0.0233**	-0.0230**	-0.0230**	-0.0241**	-0.0235**	-0.0228**
	(-2.04)	(-2.02)	(-2.02)	(-2.12)	(-2.07)	(-2.00)
State	0.0511	0.0512	0.0504	0.0498	0.0506	0.0483
	(0.87)	(0.87)	(0.85)	(0.84)	(0.86)	(0.82)
Industry	YES	YES	YES	YES	YES	YES
Firm	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
N	21520	21520	21520	21520	21520	21520
R^2	0.0115	0.0117	0.0116	0.0133	0.012	0.0128

Table3. 10 Gender Discrimination and Social Trust

This table shows the relationship between the number of female directors and CSR level in social trust subsamples. I measure the level of social trust by dialect diversity and educational level separately. Columns (1) and (2) show the results in samples with high levels of social trust. Columns (3) and (4) show the results in samples with low levels of social trust. The control variables are as in the main regression. All regressions are with industry, firm and year-fixed effects. *T*-statistics are presented in parentheses; *, ** and *** represent significance levels at 10%, 5% and 1% respectively.

	High Social Trust		Low Social Trust	
	(1)	(2)	(3)	(4)
	Low Dialect Diversity	High Education Level	High Dialect Diversity	High Education Level
FP	0.146**	0.248*	-0.00501	0.0529
	(2.58)	(1.65)	(-0.08)	(1.20)
CEO Gender	0.0421	0.0139	-0.0484	-0.0118
	(1.46)	(0.20)	(-1.63)	(-0.51)
ROA	0.600***	0.984**	0.458***	0.428***
	(3.71)	(2.43)	(2.58)	(3.39)
Tobin Q	0.0234***	0.0697***	0.0119**	0.00673
	(4.26)	(5.92)	(2.05)	(1.56)
Leverage	0.101**	-0.00380	0.102**	0.177***
	(2.00)	(-0.03)	(1.98)	(4.46)
Firm Size	0.114***	0.218***	0.0824***	0.0737***
	(8.73)	(5.49)	(6.05)	(7.03)
Firm Age	0.0687**	0	0.0129	0.0343*
	(2.40)	(.)	(0.46)	(1.76)
Independence	0.144	0.525	-0.0329	0.0654
	(0.87)	(1.44)	(-0.20)	(0.51)
Board Size	0.0429	0.0962	-0.0357	-0.00609
	(0.83)	(0.81)	(-0.63)	(-0.15)
Duality	0.000421	-0.0425	-0.0496***	-0.0250**
	(0.03)	(-1.05)	(-3.08)	(-2.05)
State	-0.0211	-0.188	0.121	0.118
	(-0.25)	(-1.00)	(1.46)	(1.64)
Industry	YES	YES	YES	YES
Firm	YES	YES	YES	YES
Year	YES	YES	YES	YES
N	11615	3457	9905	17400
R^2	0.0147	0.0302	0.089	0.009

Appendix. Definitions of Variables

Variable	Explanation
Main Variables	
CSR_rating	Counted Number from 1 to 4
CSR_score	Score from 0 to 100
Female_percent	Ratio of female representation on board, equal to the number of female directors as a proportion of total number of board directors
CEO Gender	Dummy variable with the value of 1 if the CEO is female and 0 for male
ROA	Ratio of return on assets
Tobin Q	Ratio of market value to book value of total assets.
Leverage	Ratio of total debt to total assets.
Firm Size	Value of total assets.
Duality	Dummy variable taking the value of 1 if the CEO and chairperson are the same person and 0 otherwise.
State	Dummy variable with the value of 1 if the firm is state-owned and 0 otherwise.
Independence	Ratio of independent directors to total board members.
Robustness Check and Further Discussion	
Blau Index	Normalisation of board gender diversity
CM_1	Dummy variable taking a value of 1 if there is only one female board member
CM_2	Dummy variable taking a value of 1 if there are two female board members
CM_3	Dummy variable is assigned a value of 1 if there are 3 or more female board members
CSR_1	Shareholder responsibility
CSR_2	Employee responsibility
CSR_3	Collaboration and customer responsibility
CSR_4	Environmental responsibility
CSR_5	Social responsibility
R&D	Expense of Research and Development to income
Dividend	Dummy variable taking the value of 1 if the firm pays dividend and 0 otherwise
Cash Holding	Logarithm of delta cash holding
M&A Deal	Natural logarithm of the number of M&A deals
M&A Expense	Natural logarithm of the cost of M&A deals
Age Diversity	Standard deviation of directors' age. The higher the standard deviation, the higher the age diversity.
Experience Diversity	Board experience diversity: HHI Index calculated by: $(\frac{IsCocurPsum}{N})^2 + (\frac{N-IsCocurPsum}{N})^2$, where IsCocurPsum is a dummy variable with the value of 1 if the director is concurrently a shareholder; N is the number of directors. A higher HHI means a lower diversity level.
Education Diversity	Board Education diversity: HHI Index calculated by: $\sum_{N=1}^{n}(\frac{Nuniversity}{N})^2$ where *N*university is the number of directors graduated from the same university. A higher HHI means a lower diversity level.

Major Diversity	Dividing all majors into five areas: economics/finance, management, accounting and law. Assign the values 1 2 3 4 5 in turn; if the major is a missing value, assign the value 6, and then calculate the HHI as: $\sum_{N=1}^{n}(\frac{NMajor}{N})^2$, where *N*Major is the number of directors with the same major. A higher HHI means a lower diversity level.
Overall Diversity	Board diversity was calculated by: $Age\ Diversity + Gender\ Diversity - Experience\ Diversity - Education\ Diversity - Major\ Diversity$. All diversity measures are normalised by: $(X - \min(x))/(\max(x) - \min(x))$
Dialect Diversity	Based on the *Chinese Language Atlas* and *Chinese Dialect Dictionary*, dialect diversity is calculated by the number of dialects used in a given area.
Education Level	The proportion of the total population with a bachelor's degree or above

CHAPTER FOUR: INSTITUTIONAL OWNERSHIP AND CORPORATE GREENHOUSE GAS EMISSIONS: THE EVIDENCE FROM CHINA

This chapter investigates the influence of corporate ownership structure on greenhouse gas (GHG) emissions in China, particularly highlighting the role of institutional investors. Upon analysing data from Chinese listed companies, I establish that institutional ownership significantly reduces corporate GHG emissions. I further note that both pressure-resistant institutional investors and qualified foreign institutional investors exert a more pronounced impact on emission reduction. The findings propose that institutional investors act as active overseers, shaping corporate behavior via both "exit and selection" and "voice" strategies. Additionally, I discern that institutional investors display greater concern towards policy uncertainty risk compared to physical risk. These insights carry implications for policymakers and investors aiming to encourage sustainable development and tackle climate change.

4.1 Introduction

Climate change, driven by greenhouse gas (GHG) emissions, has emerged as one of the most severe environmental challenges the world has ever confronted (Bekun et al., 2019). The escalation of GHG emissions has resulted in global warming, a calamitous phenomenon that humanity must confront and resolve. China has been the largest global carbon emitter since 2006 (Meng et al., 2017). In 2020, the country emitted 10.67 billion metric tonnes of carbon dioxide (CO2), the primary greenhouse gas contributing to climate change, which accounted for 30.64% of global emissions (UNEP, 2021). Over the past decade, both the Chinese government and the general public have increasingly focused on climate and environmental issues. China recently committed to reaching its peak carbon emissions by 2030 and achieving net-zero emissions by 2060. To accomplish this "dual carbon" national objective, the government has implemented a series of energy and environmental policies and regulations aimed at reducing carbon emissions (Stern and Xie, 2022). Prior research indicates that these policies positively impact energy conservation and emissions reduction (Hu et al., 2020; Xuan et al., 2020; Yu et al., 2021). In addition to complying with policies, firms face mounting pressure from market participants, particularly institutional investors, to diminish their carbon footprint and operate more sustainably (Azar et al., 2021). Unlike individual investors, institutional investors possess a larger share of listed companies, and their monitoring and disciplining of high-emission firms can help mitigate climate change. Consequently, understanding the role of institutional investors in reducing GHG emissions is vital for transitioning to a low-carbon economy. However, research exploring whether institutional investors drive corporate GHG emissions reductions remains limited. Thus, this paper aims to address this knowledge gap and offer insights for policy and practice.

Existing literature primarily concentrates on the influence of climate change or sustainability risks on institutional investment decisions, examining aspects such as market reactions, policy uncertainty, investment sentiment, and the repurchase effect in derivatives markets. The primary objective of these studies is to offer guidance to

investors in evaluating corporate climate risk within investment decisions. Bolton and Kacperczyk (2021) investigate the impact of carbon emissions on US stock returns, demonstrating that institutional investors devise portfolio strategies based on direct emissions intensity. Their research also suggests that carbon risks are already incorporated into asset prices. Krueger et al. (2020) utilize survey data to reveal that institutional investors perceive climate risk as an investment risk that has begun to materialize. Pedersen et al. (2021) argue that environmental, social responsibility, and governance performance (ESG) significantly influence the required return for specific portfolios. Likewise, Pástor et al. (2021) discover that holding green assets effectively hedges against uncertainty related to climate risk.

While the previous studies have discussed the relationship between climate risk and institutional investors in terms of how the former affects the latter, however, less attention has been paid to whether and how institutional investors influence corporate GHG emissions. As one of the most influential participants in the market, institutional investors can affect corporate emissions by exiting and selecting investment strategies. In addition, Kelly (2021) finds that institutional investors, as block holders, can significantly influence emissions through their voting power and dialogue with investee companies. More specifically, institutional investors can express their views on climate change mitigation via voting on shareholder proposals and directly communicating with management teams. To align with their long-term investment strategy and improve their social image, institutional investors have a strong incentive to monitor and discipline investee firms to curb their GHG emissions and increase the value of the portfolio.

I, therefore, endeavor to examine the influence of institutional investor holdings on the reduction of corporate GHG emissions in China. To empirically investigate this issue, I obtain corporate emissions, financial and institutional ownership data from the China Stock Market and Accounting Research (CSMAR) database for all Chinese listed firms from 2011 to 2020. To the best knowledge, this paper is the first to examine the GHG

emissions of Chinese firms by manually calculating the firm-level GHG emissions among corporate emissions data.1

In this study, I initially investigate the association between overall institutional ownership and corporate GHG emissions. The findings reveal a negative correlation between institutional shareholding and GHG emissions, with both statistically and economically significant effects. Specifically, a one-standard-deviation increase in institutional shareholding results in an approximate 0.26% reduction in corporate GHG emissions. I employ fixed effects and instrumental variable (IV) approaches to mitigate potential endogeneity concerns, and the results corroborate the primary finding that institutional ownership facilitates emission reduction in firms. Subsequently, I delve into the influence of institutional investors on emission reduction in state-owned enterprises (SOEs) and non-SOEs, respectively. The results indicate that the negative association is predominantly concentrated in SOEs, suggesting that institutional investors play a more active role in reducing GHG emissions in SOEs compared to non-SOEs. Moreover, I assess the impact of various types of institutional investors on GHG emissions. In line with the monitor theory, the evidence implies that pressure-resistant institutional investors (PRIIs) have a more pronounced effect on GHG emissions reduction than pressure-sensitive institutional investors (PSIIs). Lastly, the empirical findings also support the social norm motive, indicating that qualified foreign institutional investors (QFIIs) from countries with superior compliance exert a more significant impact on GHG emission reductions than domestic institutional investors.

Subsequently, I expand the analysis to explore the mechanisms through which institutional investors may affect corporate GHG emissions. Drawing on Dyck et al. (2019), I examine the potential roles of "exit and selection" and "voice" mechanisms. On one hand, institutional investors may proactively select low-emitting firms while

[1] Previous literature on China's greenhouse gas emissions have mainly focused on studying carbon emissions at the regional or provinial level (Du et al., 2012; Wang et al., 2012; Zhang and Cheng, 2009; Zheng et al., 2019)

exiting high-emitting ones. On the other hand, they can influence corporate emissions through environmentally relevant shareholder proposals. The Granger causality test and regression analyses indicate that both mechanisms serve as means for institutional investors to influence corporate emissions behaviour. Lastly, I investigate the incentives for institutional investors to reduce corporate GHG emissions from a risk perspective. Physical risk, policy uncertainty risk, and market risk constitute the three primary risks associated with corporate GHG emissions that may affect the underlying assets of institutional investors. I employ a difference-in-differences (diff-in-diff) model to examine the impact of these distinct risks in relation to the establishment of the carbon market and the Beijing haze event, respectively. The findings imply that institutional investors display greater concern for policy uncertainty risk than physical risk.

This study makes several contributions to the existing literature. Firstly, I enrich the understanding of determinants of corporate GHG reductions. The current literature has examined various factors influencing GHG emissions, including green investments (Hao et al., 2021), natural resources (Ahmad et al., 2020; Bekun et al., 2019), effective government policies (Du et al., 2018), institutional innovations (Jia, 2022), urbanization (Murshed, 2020), foreign direct investment (Murshed and Dao, 2020), financial development (Charfeddine and Khediri, 2016), and gender diversity (Fan et al., 2023). Recent studies by Azar et al. (2021) and Benlemlih et al. (2022) have investigated the role of institutional ownership in reducing corporate carbon emissions in the USA and UK, respectively. The research complements their work by offering novel evidence that institutional investors can also drive GHG emissions reductions in the world's largest GHG emitter. I underscore the significance and effectiveness of institutional investors, particularly PRIIs and QFIIs, as pivotal agents in the reduction of GHG emissions from firms listed in China.

Secondly, this paper contributes to the extensive literature on shareholder activism, specifically enriching the ongoing discourse surrounding the long-term versus short-term roles of institutional investors. Some literature contends that institutions with

substantial shareholdings tend to monitor management teams to maximize long-term value (Callen and Fang, 2013; Monks and Minow, 2011; Shleifer and Vishny, 1986). Conversely, others argue that institutions are passive shareholders due to high monitoring costs and diversified investment strategies (Coffee Jr, 1991; Manconi et al., 2012). Under such conditions, institutions, acting as traders, place greater emphasis on short-term performance, thereby compelling managers to prioritize near-term outcomes to prevent the exit of institutional investors (Bushee, 1998, 2001; Graves and Waddock, 1990). In the study, I discover that institutional investors select firms with more robust social responsibilities or divest from those with weaker social responsibilities. Additionally, I demonstrate the effectiveness of shareholder proposals in influencing corporate GHG emissions. By examining two mechanisms through which institutional investors can affect GHG emissions, the findings suggest that institutional investors adopt active roles, consequently promoting long-term corporate sustainability, which lends support to the long-term theory.

Furthermore, this paper contributes to the literature examining the role of foreign institutional investors. Existing research has established that foreign institutional investors are more actively involved in firms' operations, leading to improved corporate governance and performance (Huang and Shiu, 2009; Huang and Zhu, 2015; Li et al., 2021b). The study demonstrates that QFIIs significantly reduce firms' GHG emissions, thereby supplementing the literature by providing evidence that foreign institutional investors actively influence sustainability. These findings hold substantial implications not only for academic research but also for policymakers. While foreign investors face numerous restrictions in the Chinese capital market, their positive role is increasingly acknowledged. The paper offers compelling support for liberalising investment restrictions on foreign investors in terms of their impact on GHG emissions, as they have the potential to substantially reduce such emissions.

The structure of this paper is as follows. Section 2 develops the hypotheses and offers an overview of the pertinent literature. Section 3 outlines the data and methodologies

employed in the research. Section 4 presents the empirical results. Section 5 delves into further discussions regarding mechanisms and motivations, and Section 6 concludes the study.

4.2 Literature and Hypothesis development

Prior literature establishes a positive relationship between the proportions of shareholder ownership and monitoring benefits. [2] As large and professional shareholders, institutional investors possess both strong incentives and capabilities to enhance the monitoring of managers' activities and improve corporate governance through their monitoring role (Gillan and Starks, 2003). The effectiveness of such monitors has been well-documented in the literature.[3] Furthermore, some studies have demonstrated that the monitoring role of institutional investors can potentially enhance a company's long-term value, thereby realizing synergies for stakeholders and other agents.[4] Consequently, institutional investors have the capacity to influence corporate decisions and performance.

Institutional investors generally maintain a long-term investment horizon and are concerned with the long-term value and sustainability of the companies in which they invest. Recent studies have extensively documented the significant impacts of a firm's environmental performance and concerns on its value. Li et al. (2020), Albuquerque et al. (2019), and Karpoff (2012) demonstrate that firms can reduce long-term risk exposure by assuming environmental responsibility. Other studies, such as Brinkman

[2] Demsetz (1983) argues that owners of large blocks of shares have greater incentives to monitor managers. Shleifer and Vishny (1986) point out that only large shareholders have sufficient incentives to monitor because those shareholders benefit from the monitoring actions without incurring the costs.

[3] Jarrell and Poulsen (1987) document that institutional holdings help to avoid harmful amendments. Agrawal and Mandelker (1990) show that large shareholders monitor managers when they propose antitakeover amendments. McConnell and Servaes (1990) document a positive relation between Tobin's Q and institutional ownership. Holderness and Sheehan (1988) document that insititutions can be involved in setting corporate policies.

[4] It is well documented that to achieve long-term benefits, management incentives from institutional investors influence managerial behaviors by taking a monitoring role (Cornett et al., 2007; Duggal and Millar, 1999; McGuinness et al., 2017; Woidtke, 2002).

et al. (2008) and Wang et al. (2022), confirm a negative effect of carbon risk on firm performance and value. Furthermore, indifference towards GHG emissions can result in regulatory penalties and an increased risk of financial losses and reputational damage (Dyck et al., 2019). Moreover, Krueger et al. (2020) suggest that institutional investors perceive climate risk as a significant factor in determining a firm's underlying value. Bolton and Kacperczyk (2021) also document that institutional investors are concerned about carbon risk and tend to adopt a proactive approach by divesting from industries with high CO2 emissions. Consequently, institutional investors have financial motives to encourage companies to reduce their carbon emissions, through which they can decrease a company's long-term risk exposure and protect their investments.

Evidence from some studies suggests that investors value sustainability beyond mere financial motives (Hartzmark and Sussman, 2019; Riedl and Smeets, 2017). As significant stakeholders, institutional investors can leverage their influence to encourage companies to adopt more sustainable and environmentally friendly practices that reduce corporate carbon emissions while also enhancing firms' long-term financial performance. In addition to exerting pressure, institutional investors may also be willing to provide funding and other resources to support companies in implementing energy-efficient technologies to diminish their carbon footprint and develop effective strategies for achieving their sustainability objectives, even if the benefits may not realized immediately (Kaminker and Stewart, 2012).

Empirical evidence also indicates a positive association between institutional ownership and corporate disclosure (e.g. Bird and Karolyi, 2016; Cheng et al., 2020; Tsang et al., 2019). Institutional investors may demand companies to disclose information about their greenhouse gas emissions and other environmental performance indicators, fostering greater accountability and transparency. This requirement can generate a market-based incentive for companies to reduce their GHG emissions to evade reputational damage and adverse market reactions.

Building upon the aforementioned discussion, I posit that institutional ownership can foster heightened environmental responsibility and inspire companies to reduce

corporate greenhouse gas emissions. Consequently, I formulate the following testable hypothesis:

H1*: Institutional ownership is negatively related to corporate GHG emissions, implying that higher institutional ownership leads to greater GHG emissions reductions.*

The literature demonstrates that the efficacy of monitoring varies across different types of institutional investors (Aggarwal et al., 2011; Brickley et al., 1988; Gillan and Starks, 2003). In comparison to domestic investors, research indicates that foreign institutional investors often exhibit greater involvement in shaping corporate governance for the firms in which they invest (Aggarwal et al., 2011; Ferreira and Matos, 2008). Concurrently, social norms concerning environmental protection may impact investor behaviour. QFIIs originating from countries with more stringent environmental regulations and elevated ethical standards could integrate these norms into their investment strategies (Dyck et al., 2019; Li et al., 2020). Li et al. (2021a) reveal that, in China, over 90% of QFIIs hail from well-governed economies where social awareness of environmental issues has been established for an extended period. Their findings suggest that QFIIs provide a potent channel for enhancing the socially responsible practices of Chinese firms. Consequently, I also posit that QFIIs in China can effectively influence corporate GHG emissions and possess the motivation to do so.

Furthermore, Brickley et al. (1988) contend that investors with potential business relationships tend to avoid conflicts with the management teams of invested firms. As a result, these investors (defined as PSIIs), in comparison to those without potential business relationships with the invested firms (i.e., PRIIs), do not assume active monitoring roles in corporate governance and exert substantial influence on firms' decisions and policies (e.g., Almazan et al., 2005; Chen et al., 2009; Cornett et al., 2007; David et al., 1998). Cao et al. (2020) discover that PSIIs and PRIIs play distinct roles in Chinese firms' investment and innovation decisions. Similarly, Jiang and Bai (2022) also demonstrate that PRIIs promote invested firms to undertake more significant green innovation compared to PSIIs.

Given the research questions, actively monitoring and influencing managerial behaviour regarding sustainable practices can create conflicts with management teams and result in lost business opportunities. Therefore, unlike PRIIs, PSIIs may lack the incentive to assume monitoring roles that can affect corporate GHG emissions. Based on the aforementioned discussion, I hypothesize:

H2a: *Pressure-resistant institutional investors (PRIIs) have a stronger negative relationship with corporate GHG emissions than pressure-sensitive institutional investors (PSIIs).*

H2b: *Qualified foreign institutional investors (QFIIs) have a stronger negative relationship with corporate GHG emissions than domestic institutional investors.*

4.3 Data and Methodology

4.3.1 Sample construction

This study collects data on GHG emissions from the CSMAR database for listed companies in the Chinese stock market from 2011 to 2020. Institutional ownership and financial data are obtained from the CSMAR database, which provides information on institutional investor ownership for all listed firms in China. During the sample period, 1,063 companies disclosed 2,900 emissions data. I obtain 2152 firm-year level GHG observations by filtering these data against the Intergovernmental Panel on Climate Change (IPCC) greenhouse gas standards, including direct greenhouse gases, indirect greenhouse gases, and volatile organic compounds. The manually processed GHG data is cross-checked with the latest publicly available CSMAR GHG database (which includes only 416 observations) to ensure the accuracy of the results.

I then merge the institutional investor data with the firms' financial data. I exclude 704 observations 1) with missing financial information; 2) with ST*/PT* indicator;[5] 3) in

[5] The Shanghai and Shenzhen Stock Exchanges announced that a special treatment (ST*) for listed companies with unusual financial or other conditions on 22 April 1998. This mainly refers to two situations: first, the net profit of a listed company for two audited fiscal years is negative, and second,

financial sectors; 4) with total institutional ownership less than 1%. And I require firms in the sample with more than two years of continuous observations (resulting in the deletion of 170 observations). After these processes, I arrive at a sample of 1,278 firm-year observations for 653 firms.

4.3.2 Empirical model

To investigate whether institutional shareholding is a driving force behind firm GHG emissions reductions, I estimate the following equation:

$$GHG_{i,t} = \alpha + \beta TIOwn_{i,t-1} + \gamma Controls_{i,t-1} + \theta_t + \tau_t + \delta_t + \varepsilon_{i,t}$$

Eq. (4.1)

where the dependent variable is the logarithm of GHG emissions or industry-adjusted GHG emissions (IA GHG) of firm *i* in year *t*, and $TIOwn_{i,t-1}$ is the total institutional ownership of firm *i* in year *t*−1. In this paper, I define total institutional ownership as the aggregate percentage of outstanding shares held by all institutional investors at the end of a given year (Lin and Fu, 2017).[6]

To control for firm-level variations, I include *Firm Size*, *PPE* (property, plant, & equipment) ratio, *Leverage*, *ROA* (return on assets), and *Revenue* as main control variables. *Firm Size* is measured by the logarithm value of total asset. Previous literature shows that larger firms are subject to more external pressures than smaller firms (Azar et al., 2021; Dyck et al., 2019). As environmental issues in China have become widespread external pressures, large firms are likely to be under higher level of public scrutiny regarding their environmental impact than small firms. *Revenue* is the logarithm value of total revenue. I include those two variables to control for the volume

the audited net asset per share of a listed company for the latest fiscal year is below the nominal value of the shares. Listed companies with a particular transfer (PT*) indicator are those suffering losses for three consecutive years.

[6] *Following Brickley et al. (1988) and Chen and Li (2007), I define trusts and insurance institutions as PSIIs, while funds and security funds are PRIIs for additional analysis.*

of the firm's business activities, and I expect GHG emissions are positively related to firms' business activities. *ROA* is defined as net income as a proportion of total assets. I include it to control for the impact of the past performance. *Leverage* is the ratio of total debt to total assets. *PPE* is the ratio of property, plant, and equipment to total assets. Baber et al. (2012) suggest that financial constraints also predicts whether a firm is environmentally responsible. Firms with lower leverage and higher PPE are less subject to credit constraints in attracting more investment. In comparison, highly leveraged firms need to cope with regular cash outflows and are precluded from financing environmentally beneficial investments (Azar et al., 2021). Therefore, I expect a positive relationship between leverage and GHG emissions but a negative relationship between PPE and GHG emissions. To control the governance, I control four governance indicators (board size, board independence, board gender diversity, and CEO duality), as firms with better governance mechanisms are likely to have better GHG performance (Nadeem et al., 2020; Peters and Romi, 2015). All independent variables are lagged by one year to eliminate the simultaneous causality problem.

The arguments presuppose that institutional ownership influences firms' GHG emissions. However, it is possible that institutional ownership and GHG emissions are simultaneously determined by other exogenous variables associated with industry, location, and year. For example, areas with better environment conditions and special investment environments attract more institutional investors while also requiring firms to maintain lower levels of GHG emissions. Additionally, industries with high revenue are attractive to institutional investors but may also include high GHG emission firms due to the volume of business. During times surrounding major national events, some areas may temporarily require firms to control their emissions. To tackle potential endogeneity issues, time, industry, and location fixed effects are used in the main regressions to eliminate omitted variable effects. $\theta_t, \tau_t,$ and δ_t represent the industry, location, and year fixed effects.

Table 1 presents the descriptive statistics. Panel A shows dependent variables used in this paper. The mean (median) of the logarithm of GHG emissions (Log (GHG)) is 5.07

(4.07), with a standard deviation of 5.27. Industry-adjusted GHG emissions have a mean (median) value of 0.57 (0.01) and a standard deviation of 2.30, indicating that more than half of the firms in the sample have lower than average GHG emissions. As shown in Panel B, the average institutional ownership in the sample is 7.41%, with a standard deviation of 6.09% and a median value of 5.78%. This is in line with prior studies on institutional ownership in China (Cao et al., 2020; Wen et al., 2020). However, the level of institutional ownership is much lower than the global level of 21.4% as shown in Dyck et al. (2019)[7].

Subdividing institutions, the mean value for the QFIIs dummy variable is 0.15, indicating that around 15% of the observations have QFIIs during the sample period. Shares owned by PRIIs (PRII Own) have a mean (median) value of 4.94% (2.97%). The mean (median) value of PSIIs (PSII Own) is 2.44% (1.37%), which is lower than that for PRII ownership.

[Insert Table 4.1 Here]

Figure 4.1 illustrates the marginal increase in institutional ownership over the sample period. Among all types of institutional ownership, domestic institutional investors constitute a significant proportion. Moreover, QFIIs represent only a small part of institutional investors, peaking in 2014.[8] The degree of PRIIs' and PSIIs' ownership converged around 2015; since then, PRII ownership has continued to increase.

[Insert Figure4.1 Here]

Figure 4.2 displays corporate GHG emissions from the sample from 2011 to 2020. It is worth noting that China's GHG emissions have decreased significantly throughout the sample period, aligning with the central government's policy expectations and the

[7] The large difference between China and other developed countries may arise from low quality of market regulation and weak market investors proctection.

[8] Before May 2020, the State Administration of Foreign Exchange had strict limits on the number of investments that could be made by QFIIs. The increase in QFII investments may be explained by the corporate tax exemption policy claimed by the China Securities Regulatory Commission in 2014.

improvement in energy efficiency.[9] Additionally, I observe a substantial increase in carbon emissions in 2020. One possible explanation is that China has undertaken more manufacturing to sustain the global supply chain. Benefitting from its rapid recovery from the pandemic, China has undertaken more manufacturing than ever, leading to increased GHG emissions in 2020.[10]

[Insert Figure 4.2 Here]

4.3.3 Univariate analysis

In this section, I perform univariate tests on the impact of different institutional ownership on GHG emissions in the sample to gain an overall picture of the impact of different ownership structures. I divide the sample into subgroups based on the amount of institutional ownership and on the state-owned status. Table 4.2 presents a comparison of GHG emissions and key control variables between subsamples. Column (4) reports the results of the two-sample t-tests.

Panel A shows the difference between firms with high institutional ownership and low institutional ownership. The results indicate that firms with high institutional ownership have fewer GHG emissions than firms with low institutional ownership. In addition, firms with high institutional ownership are significantly different from their counterparts in that they have a higher ROA ratio and a lower PPE ratio.

Panel B reports the comparison between SOEs and non-SOEs. The results in Panel B show that SOEs have much higher GHG emissions than non-SOEs. This difference inspires us to investigate the role of institutional investors in SOEs. Furthermore, SOEs have larger firm sizes, higher leverage, and higher PPE ratios.

[9] According to the Ministry of Ecology and Environment, China's carbon emissions intensity in 2020 was 18.8% lower than in 2015, consistent with the trend of our sample.

[10] The increased emissions level can also be supported by the only positive global GDP growth rate (for China) in 2020 (2.3% compared to −3.5% for the US).

[Insert Table 4.2 Here]

4.4 Empirical Results

4.4.1 Institutional investors and GHG emissions

The baseline model examines the relationship between total institutional ownership and firm GHG emissions and the results of the regression are presented in Table 3. The coefficient estimates on $TIOwn_{i,t-1}$ in all regressions suggest that institutional ownership is negatively related to corporate GHG emissions. These results are economically meaningful. For example, in Column (3), a one-standard-deviation increase in total institutional ownership is associated with a 0.26% decrease in GHG emissions (6.09% × (−0.042)). The result is robust after controlling for a combination of industry, location, and year fixed effects, suggesting that time-invariant unobserved industry and location characteristics do not have an impact on the findings. Besides, the results are robust when the dependent variable is replaced by industry-adjusted GHG emissions. The findings are consistent with Dyck et al. (2019), in that institutional investors improve firm environmental performance. The control variables generally exhibit signs consistent with the predictions. Specifically, *Firm Size*, *Leverage*, *ROA*, and *Revenue* are positively associated with GHG emissions. the *PPE* is positively related to GHG emissions, which is the same as the finding of Azar et al. (2021).

[Insert Table 4.3 Here]

4.4.2 Endogeneity

I have considered the simultaneous causality and omitted variables issues in the main regression. In this section, I consider using the instrumental variables to make the results more robust. I conduct a two-stage least square (2SLS) approach (Wooldridge, 2015) to deal with the potential endogeneity of institutional ownership. As the higher

the risk of a stock, the higher the uncertainty of institutional investors' returns, institutions base their investments on the risk appetite of their clients and therefore the risk of the stock affects the holdings of institutional investors. Referring to Callen and Fang (2013), I then employ two risk measures — the market exposure and unsystematic risk — as instrumental variables. Market exposure measures the risk of firms to the market risk factors. Unsystematic risk is caused by specific factors, such as managerial and labour issues of listed companies. It is a risk specific to a particular company or industry and only affects the returns of certain stocks.

$First\ stage$:

$$TIOwn_{i,t} = \alpha + Market\ Beta_{i,t} + Unsystematic\ risk_{i,t} + Controls_{i,t} + \theta + \varepsilon$$

$Second\ Stage$:

$$GHG_{i,t+1} = \alpha + \beta \widehat{TIOwn}_{\iota,t} + Controls_{i,t} + \theta + \varepsilon$$

Eq. (4.2)

where $Market\ Beta_{i,t}$ is estimated by the capital asset pricing model (CAPM), and $unsystematic\ risk_{i,t}$ is the standard deviation of the error term of CAPM. $Controls_{i,t}$ are defined in Section 4.3.2. Table 4.4 reports the results of the 2SLS estimations. Column (1) presents the first stage of Equation (2). Consistent with the prediction that market beta and unsystematic risk are significantly negatively related to institutional ownership, Columns (2) and (3) report the results of IV regressions. $TIOwn_{i,t}$ is loaded with negative and significant coefficients, including in the logarithm of GHG emissions and industry-adjusted GHG emissions, which is consistent with the results of the main regressions.

[Insert Table 4.4 Here]

4.4.3 Institutional investor categories and GHG emissions

The univariate test in Table 4.2 shows that SOEs' GHG emissions account for a substantial proportion of overall emissions. SOEs are naturally connected to the government through their government ownership (Chen et al., 2011). This natural relationship between SOEs and the government tends to shape their behavior in favor of policy orientation (Wu et al., 2020). To further discuss the effectiveness of institutional investors, I divide the sample into state-owned and non-state-owned enterprises. Wang et al. (2014) report that SOEs in China are significantly affected by policy uncertainty as they rely mainly on government lending policies. Thus, I expect to find that institutional investors, in order to mitigate policy uncertainty risk, would be more effective in SOEs than non-SOEs.

Table 4.5 presents the role of institutional ownership in SOEs and non-SOEs subsamples. The negative and significant coefficient in the SOEs subsample indicates the effectiveness of institutional investors, which is consistent with the prediction.

[Insert Table 4.5 Here]

To test the second hypothesis regarding foreign institutional investors in China, I use Eq (3) to investigate whether there is a difference in the impact of QFIIs and domestic institutional investors (DIIs) on firms' GHG emissions:

$$GHG_{i,t} = \alpha + \beta_1 QFII\ Own_{i,t-1} + \beta_2 DII\ Own_{i,t-1} + \gamma Controls_{i,t-1} + \theta_t + \tau_t + \delta_t + \varepsilon_{i,t}$$

Eq.(4.3)

Where $QFII\ Own_{i,t-1}$ is the percentage of shares owned by QFIIs for firm i in year t-1. $DII\ Own_{i,t-1}$ is the percentage of shares owned by DIIs for firm i in year t-1. Column (1) of Table 6 reports negative and significant coefficients for the QFIIs and DIIs on GHG emissions, indicating that both types of institutional investors are

effective in affecting GHG emissions. The results suggest that foreign institutional investors play an active role in corporate governance, improving long-term sustainability (Aggarwal et al., 2011; Dyck et al., 2019; Ferreira and Matos, 2008). To ensure the robustness of the results, I include only QFII ownership or DII ownership in Columns (2) and (3) and the results are consistent with the prediction. These outcomes are not affected when the dependent variable is replaced by industry-adjusted GHG emissions, as shown in Columns (4)–(6).

[Insert Table 4.6 Here]

In addition, I distinguish institutional investors by their potential business relationship with the investee companies:

$$GHG_{i,t} = \alpha + \beta_1 PRII\ Own_{i,t-1} + \beta_2 PSII\ Own_{i,t-1} + \gamma Controls_{i,t-1} + \theta_t + \tau_t + \delta_t + \varepsilon_{i,t} \quad \text{Eq.(4.4)}$$

Table 4.7 shows the regression results for Equation (4.4), with negative coefficients on PRII ownership (*PRII Own*) to the row and industry-adjusted GHG emissions after I control for industry, year and location fixed effect. These results are consistent with previous findings that PRIIs focus on long-term development and, therefore, actively exert an influence on firms' behaviours (Boone and White, 2015; Chen et al., 2007; Cornett et al., 2007; Ferreira and Matos, 2008). In contrast, I do not find that PSIIs have a significant impact on GHG emissions. According to Brickley et al. (1988) and Chen et al. (2007), PSIIs have business relationships with firms they invest in, and this dependence leads them to adopt a moderating or supporting attitude when participating in corporate decision-making.

[Insert Table 4.7 Here]

4.5 Further Discussion

4.5.1 What mechanisms do institutional investors use to push for GHG changes?

Following Dyck et al. (2019), I attempt to examine what mechanisms institutional investors use to affect corporate GHG emissions. From the viewpoint of investors, large investors can exert influence over managers without explicit engagement by simply presenting their investment preferences. Firms try to attract institutional investors and therefore have incentives to align to institutions' investment expectations. Dyck et al. (2019) argue that to attract institutional investments and reduce the cost of capital, firms care about the exit and selection process of institutional investors. Therefore, institutional investors can affect firms' behavior by exiting and selection. Parrino et al. (2003) find that the exit of institutions influences the decision of the board. Azar et al. (2021) document that the "Big Three" institutions affect firm behavior by proposing their investment strategies. The corporate social responsibility (CSR) rating considers the performance of firms' socially responsible investment, in which the environment responsible investment accounts for over 20%. To examine the exit and selection view, I use the CSR rating as a proxy for firms' capacity and incentives to support environmentally friendly behavior and apply a granger causality test. The data on CSR rating is collected from the HEXUN database.[11]

$$TIOwn_{i,t} = \alpha_{i,t} + CSR_{i,t-1} + +TIOwn_{i,t-1} + Controls_{i,t-1} + \varepsilon_{i,t}$$

$$CSR_{i,t} = \alpha_{i,t} + TIOwn_{i,t-1} + CSR_{i,t-1} + Controls_{i,t-1} + \varepsilon_{i,t}$$

Eq.(4.5)

[11] I use CSR instead of GHG emissions because GHG emissions data are unbalanced in our sample. Applying the granger causality test on GHG emissions reduces our sample size by almost 40% and thus cannot be a convincing measure of the mechanism.

Table 4.8 shows that institutional ownership also drives firms to improve CSR. Column (1) shows that after controlling the existing institutional ownership, firms' CSR ratings have an impact on institutional ownership in the future, indicating that institutional investors may select firms with higher CSR performance. Column (2) shows that after controlling existing CSR performance, institutional ownership improves firms' CSR rating in the future. As a result, n alignment with the exit and selection mechanism, institutional ownership is positively related to firms' past CSR levels.

[Insert Table 4.8 Here]

From the shareholder perspective, institutional investors can engage with management and influence firm decisions using the voice that comes from their shareholdings (Dyck et al., 2019; Edmans, 2009; Edmans and Holderness, 2017; Edmans and Manso, 2011; Gillan and Starks, 2003; Hirschman, 1970). To explore the voice mechanism, I collect all shareholder proposals and use textual analysis to examine whether GHG-related proposals have an impact on GHG emissions. If institutional investors affect firms' GHG emissions by voice mechanism, I expect that GHG-related proposals are negatively related to GHG emissions.

$$GHG_{i,t} = \alpha_{i,t} + Proposals_{i,t} + TIOwn_{i,t-1} + Controls_{i,t-1} + \varepsilon_{i,t}$$

Eq.(4.6)

Where$Proposals_{i,t}$ is a dummy variable equal to 1 if a company has submitted an environmentally relevant shareholder proposal within 2 years, otherwise, it is equal to 0. Table 9 presents the results of Eq. (6). Column (1) shows a negative relationship between environment-related shareholder proposals and firms' GHG emissions, indicating the effectiveness of shareholder proposals. Column (2) is the robust check with industry-adjusted GHG emissions. In sum, the significant and negative coefficient proves the mechanism of shareholder's voice on GHG emissions.

[Insert Table 4.9 Here]

4.5.2 What risks concern institutional investors?

Previous literature summarizes climate change risks associated with GHG emissions into three categories: physical effects, regulatory effects, and market risks (Busch et al., 2012; Elijido-Ten, 2017; Sakhel, 2017). Market risk has been proven in many studies to influence the behavior of institutional investors.[12] Nevertheless, the literature examining the other two risks has focused on how they affect firm value, but few studies have shown the attitudes of institutional investors towards either risk. Stroebel and Wurgler (2021) assert that market participants identify regulatory risk as the top climate risk for firms and investors over the next five years. In this section, I investigate whether institutional investors believe that these two risks associated with corporate emissions affect their investments.

I use the establishment of China's carbon trading rights market and the Beijing haze event that occurred in 2015 to test institutional investors' reactions to regulatory risks and physical risks, respectively. Shenzhen, Shanghai, Beijing, Guangdong, and Tianjin became pilot regions for the carbon trading market in 2013, and in 2014, the carbon trading markets in Hubei and Chongqing were launched. After the implementation of the carbon trading market policy, the carbon emissions of enterprises have been based on quotas. If a company's carbon emissions exceed its quota, it needs to purchase more emission rights in the carbon trading market. Therefore, excessive carbon emissions increase the operating costs and revenue of the company. Consequently, after the implementation of this policy, institutional investors who value economic benefits will encourage companies to reduce their carbon emissions. For this test, I employ a time-varying DID approach (Eq. (7)), using data from 2011 to 2016. $GHG_{i,t}$ is the logarithm of GHG emissions or industry-adjusted GHG emissions; $Post\ Event_{i,t}$ is a dummy

[12] A sizable literature has documented that equity, bond, real estate, and derivatives markets appear to incorporate climate risk in asset prices (Baldauf et al., 2020; Bernstein et al., 2019; Bolton and Kacperczyk, 2021; Engle et al., 2020).

variable indicating whether the observation is after the carbon market pilot event or not. If the observation is located in one of the seven locations of Shenzhen, Beijing, Shanghai, Guangdong, Tianjin, Hubei, or Chongqing, then $Treated_{i,t}$ equals 1, and 0 otherwise. Therefore, β_2 represents the effect of the carbon market on corporate GHG emissions, and β_3 shows the reaction of institutional investors to the carbon market on corporate GHG emissions. Equation (4. 7) is as follows:

$$GHG_{i,t} = \alpha + \beta_1 TI\ Own_{i,t} + \beta_2 Post\ Event_{i,t} * Treated_{i,t} + \beta_3 TI\ Own_{i,t} * Post\ Event_{i,t} * Treated_{i,t} + \gamma Controls_{i,t} + \theta + \varepsilon_{i,t} \quad \text{Eq.(4.7)}$$

Similarly, a severe environmental haze issue that occurred in December 2015 led to the activation of a red alert for air pollution in Beijing, affecting local production and livelihoods.[13] This event serves as an exogenous shock, highlighting the importance that institutional investors assign to physical risks. If institutional investors possess a high level of awareness of physical risks, they would have been motivated to push companies to reduce carbon emissions following the Beijing haze event.

Table 4. 10 reports the results of Eq. (4.7) for the carbon market event (Columns (1) and (2)) and the haze event (Columns (3) and (4)). The negative and significant coefficient, β_3, for the carbon market event indicates that institutional investors took action to reduce GHG emissions due to the carbon exchange market policy. The finding is consistent with the prediction that institutional investors are concerned about the regulatory effects. In addition, the negative but nonsignificant coefficient, β_3, for the Beijing haze event suggests that institutional investors do not react to physical risk.

[Insert Table 4.10 Here]

To summarize, the findings confirm the negative effect of the carbon market on institutional ownership and GHG emissions (β_1). However, it appears that institutional investors are more concerned about regulatory effects rather than physical risk.

[13] Beijing's air pollution warning system began in 2013 and, since then, the city has experienced several severe hazes, but the red alert was not activated until 8 December 2015.

4.6 Conclusion

This paper examines the relationship between institutional investors and firms' greenhouse gas (GHG) emissions. Utilizing data from 653 listed companies in China, I discover that institutional investors significantly contribute to the reduction of GHG emissions. The impact of institutional ownership is particularly pronounced among State-Owned Enterprises (SOEs), which are responsible for a large proportion of high-GHG emissions.

The results reveal that Qualified Foreign Institutional Investors (QFIIs) play a more significant role in GHG emissions reduction compared to domestic institutional investors. This finding aligns with existing literature on foreign investors who actively engage in corporate governance and adhere to higher social norms concerning environmental issues. Furthermore, pressure-resistant institutional investors have a greater impact on GHG emissions reduction than their pressure-sensitive counterparts.

Contrary to research conducted in developed countries, I find that institutional investors in China do not prioritize physical risks. I reach this conclusion by applying the Difference-in-Differences (DID) model for carbon exchange market events and haze events. Consequently, there is still much progress to be made in raising the environmental and social responsibility awareness of institutional investors in China to encourage proactive GHG emissions reduction.

In conclusion, the research highlights the substantial role financial market participants play in achieving China's carbon-neutral target. While I identify the need to raise environmental awareness among institutional investors in China, the study demonstrates the effectiveness of national policies in reducing corporate GHG emissions. The impact of institutional investors, particularly QFIIs and pressure-resistant institutional investors, on GHG emissions reduction provides valuable evidence for policymakers. Encouraging institutional investors to engage in corporate governance and reduce GHG emissions is crucial. Moreover, the growing influence of

QFIIs in corporate emissions supports the relaxation of QFII investment in securities markets implemented in May 2020.

Figures and Tables

Figure 2 Institutional Ownership: Different Measures over Time

This figure shows the average total institutional ownership, average QFII ownership, average DII ownership, average PRII ownership and average PSII ownership. Data are collected from CSMAR and Wind for the period 2011–2020.

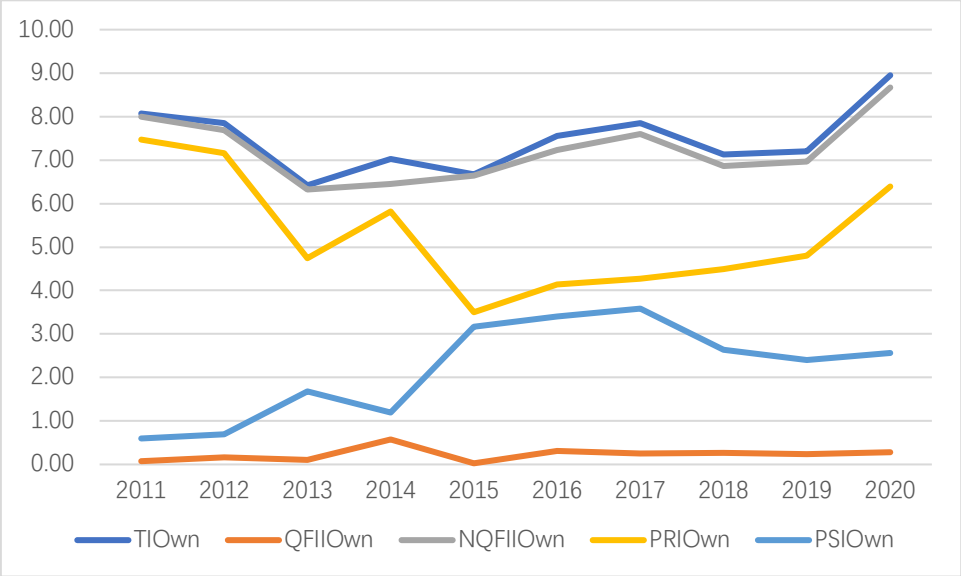

Figure3 GHG Emissions

This figure presents the average GHG emissions for 649 public firms from 2011 to 2020.

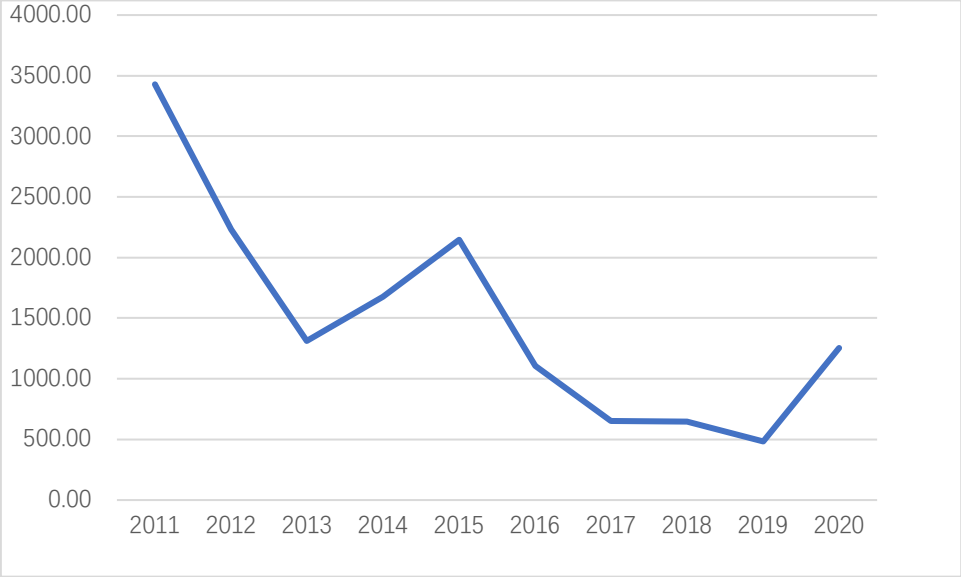

Table4. 1 Summary Statistics

This table reports descriptive statistics for the variables used in the study. The sample spans from 2011 to 2020 and includes 1,278 firm-year observations. Panel A presents the following dependent variables: the logarithm of GHG emissions (Log(GHG)) and industry-adjusted GHG emissions (IA GHG). TI Own is total institutional ownership calculated as the sum of the fund, securities fund, broker, insurance, trust and qualified foreign institutional ownership. PRII Own is the sum of fund and security ownership. PSII Own is a combination of insurance and trust ownership. Panel C shows firm-level characteristics, including firm size, leverage ratio, return on assets (ROA), property, plant, and equipment ratio (PPE/Total Assets), revenue and state-owned dummy. All continuous variables are winsorised at the 1st and 99th percentiles.

Variables	Obs.	Mean	Median	SD
Panel A. Dependent Variables				
Log (GHG)	1,278	5.07	4.07	5.27
IA GHG	1,278	0.57	0.01	2.30
Panel B. Institutional Ownership				
TI Own (%)	1,278	7.41	5.78	6.09
Dummy QFII	1,278	0.15	0	0.35
PSII Own (%)	1,278	2.44	1.37	3.30
PRII Own (%)	1,278	4.94	2.97	5.28
Panel C. Firm Characteristics				
Firm Size (Millions, RMB)	1,278	60352	11247.53	149461
Leverage	1,278	0.46	0.46	0.18
ROA	1,278	0.05	0.04	0.05
PPE	1,278	0.29	0.27	0.16
Revenue (Thousands, RMB)	1,278	35.77	7.01	90.52
State-owned	1,278	0.51	1	0.50

Table4. 2 Univariate Test

This table shows GHG emissions and firm characteristics by group. Panel A presents the means of GHG emissions, firm size, leverage ratio (total debt/total assets), return on assets (ROA), property, plant, and equipment ratio (PPE/Total Assets) and revenue for firms with low and high institutional ownership. Panel B compares SOEs and non-SOEs.

Panel A: High Ownership vs Low Ownership				
Variables	Low	High	High−Low	T-value
GHG emissions (tonnes)	1776764	1058885	-717878.8*	-1.66
Firm Size	52380.62	68423.69	16043.06**	1.92
Leverage	0.46	0.46	-0.002	-0.18
ROA	0.04	0.06	0.02***	7.82
PPE	0.31	0.26	-0.05***	-5.53
Revenue	29.43	42.18	12.75**	2.52
Panel B: SOEs vs Non-SOEs				
Variables	Non-SOEs	SOEs	SOEs-Non-SOEs	T-value
GHG Emissions (tonnes)	379.21	2425.7	2046.49***	4.77
Firm Size	16552.61	102668.8	86116.23 ***	10.75
Leverage	0.399	0.515	0.116***	11.85
ROA	0.0510	0.0450	-0.006*	-1.85
PPE	0.270	0.306	0.036***	4.02
Revenue	10.32	60.36	50.036***	10.28

Table4. 3 Institutional Investors and Firm GHG Emissions

This table reports regression estimates of GHG emissions on total institutional ownership and control variables (Equation 1). The dependent variable is the natural logarithm of GHG emissions (see Columns 1–3); this is replaced by industry-adjusted GHG emissions (IA GHG) in Columns 4–6. TI Own is the percentage of shares owned by institutional investors. Firm size is the logarithm of total firm assets. Revenue is the logarithm of book revenue. ROA is the return on assets. PPE is the ratio of property, plant and equipment to total assets. Leverage is the ratio of total debt to total assets. All independent variables are lagged by one year. Standard errors are clustered at the firm level, and *t*-values are reported in parentheses. Columns 1–6 present regression results with different levels of fixed effects; ***, ** and * indicate significance at the 1%, 5%, and 10% levels respectively.

Dependent	Log(GHG)			IA GHG		
Variable:	(1)	(2)	(3)	(4)	(5)	(6)
TI Own	-0.0387**	-0.0432**	-0.0363*	-0.0300***	-0.0299***	-0.0285***
	(-1.98)	(-2.18)	(-1.83)	(-3.32)	(-3.35)	(-3.26)
Firm Size	0.406	0.372	0.0741	0.103	0.0785	0.0160
	(1.28)	(1.19)	(0.23)	(0.60)	(0.46)	(0.09)
Revenue	1.203***	1.209***	1.475***	0.366**	0.391**	0.430***
	(4.14)	(4.23)	(4.81)	(2.30)	(2.40)	(2.61)
ROA	1.502	2.823	1.484	1.348	1.674	1.276
	(0.55)	(1.02)	(0.52)	(0.73)	(0.91)	(0.76)
PPE	4.762***	4.602***	4.177***	0.506	0.468	0.592
	(6.17)	(6.08)	(5.35)	(1.29)	(1.17)	(1.42)
Leverage	1.107	1.007	0.969	-0.110	-0.112	0.104
	(1.30)	(1.20)	(1.15)	(-0.23)	(-0.24)	(0.23)
Duality	-0.688**	-0.652**	-0.552*	-0.160	-0.155	-0.124
	(-2.43)	(-2.30)	(-1.91)	(-1.35)	(-1.29)	(-1.00)
Board Size	-0.731	-0.831	-0.836	-0.934**	-0.955**	-1.112**
	(-1.02)	(-1.18)	(-1.13)	(-2.11)	(-2.16)	(-2.49)
Board	2.549	2.147	2.924	0.644	0.751	0.486
Independence	(1.07)	(0.93)	(1.22)	(0.59)	(0.69)	(0.44)
Female	-0.644	-0.518	-0.274	0.291	0.330	0.378
Percent	(-0.67)	(-0.55)	(-0.28)	(0.71)	(0.79)	(0.88)
Industry	NO	YES	YES	NO	NO	NO
Location	NO	NO	YES	NO	NO	YES
Year	NO	YES	YES	NO	YES	YES
N	1,278	1,278	1,278	1,278	1,278	1,278
adj. R^2	0.450	0.462	0.472	0.085	0.083	0.110

Table4. 4 Institutional Ownership and GHG Emissions: Instrumental Variable Regression

This table presents an instrumental variable two-stage, least-squares analysis of the association between institutional ownership and firm GHG emissions. The analysis exploits market beta and unsystematic risk calculated by the market model. Column (1) presents the first stage with the dependent variable of TI Own (institutional ownership). Columns (2) and (3) are the results of the second stage. The dependent variable is the natural logarithm of GHG emissions (see Column 2); this is replaced by the industry-adjusted GHG emissions (IA GHG) in Column (3). TI Own is the percentage of shares owned by institutional investors. Firm size is the logarithm of total firm assets. Revenue is the logarithm of book revenue. ROA is the return on assets. PPE is the ratio of property, plant and equipment to total assets. Leverage is the ratio of total debt to total assets. All independent variables are lagged by one year. Standard errors are clustered at the firm level, and *t*-values are reported in parentheses; ***, ** and * indicate significance at the 1%, 5%, and 10% levels respectively.

	First Stage	Second Stage	
Dependent Variable	(1)	(2)	(3)
	TI Own	Log(GHG)	IA GHG
TI Own		-0.0982***	-0.0373***
		(-3.42)	(-2.83)
Market Beta	-2.323***		
	(-8.43)		
Systematic Risk	-5.176**		
	(-2.82)		
Firm Size	1.280***	0.218	0.0790
	(3.20)	(0.68)	(0.40)
Revenue	-0.900**	1.382***	0.354*
	(-2.67)	(4.62)	(1.87)
ROA	19.69***	3.333	1.926
	(8.17)	(1.22)	(1.19)
PPE	-1.611	4.280***	0.650
	(-1.43)	(5.50)	(1.53)
Leverage	2.451***	1.010	0.234
	(6.32)	(1.25)	(0.50)
Weak instrument	P value<0.001		
Over-identification		P value=0.0248	P value=0.0728
Industry	YES	YES	NO
Location	YES	YES	YES
Year	YES	YES	YES
N	1241	1241	1241
R^2	0.173	0.488	0.141
adj. R^2	0.134	0.464	0.100

Table4. 5 Institutional Ownership and GHG Emissions: SOEs and Non-SOEs

This table presents the regression estimates of GHG emissions on institutional ownership and control variables for SOEs and non-SOEs. The dependent variable is the natural logarithm of GHG emissions (see Columns 1–2), which is replaced by industry-adjusted GHG emissions (IA GHG) in Columns 3–4. TI Own is the percentage of shares owned by institutional investors. Firm size is the logarithm of total firm assets. Revenue is the logarithm of book revenue. ROA is the return on assets. PPE is the ratio of property, plant and equipment to total assets. Leverage is the ratio of total debt to total assets. All independent variables are lagged by one year. Standard errors are clustered at the firm level, and *t*-values are reported in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Dependent Variable	Log(GHG)		IAGHG	
	(1)	(2)	(3)	(4)
	SOES	Non-SOEs	SOES	Non-SOEs
TI Own	-0.103***	-0.0189	-0.0262*	-0.0402
	(-3.22)	(-0.74)	(-1.85)	(-0.65)
Firm Size	-0.921*	1.263***	-0.762**	0.829***
	(-1.86)	(3.17)	(-2.36)	(3.18)
Revenue	2.155***	0.515	1.198***	-0.295
	(4.38)	(1.44)	(3.80)	(-1.65)
ROA	3.892	2.211	3.650	-0.939
	(0.99)	(0.54)	(1.45)	(-0.43)
PPE	2.294**	6.630***	0.954	-0.472
	(2.14)	(5.16)	(1.48)	(-1.13)
Leverage	0.681	2.137*	-0.252	1.110***
	(0.55)	(1.79)	(-0.31)	(2.60)
Industry	YES	YES	NO	NO
Location	YES	YES	YES	YES
Year	YES	YES	YES	YES
N	650	628	650	628
R^2	0.499	0.467	0.191	0.231
adj. R^2	0.458	0.422	0.125	0.165

Table4. 6 Institutional Ownership and GHG Emissions: Qualified Foreign Institutional Investors

This table presents regression estimates of GHG emissions on QFII ownership, DII ownership and control variables. The dependent variable is the natural logarithm of GHG emissions (Columns 1–3) or industry-adjusted GHG emissions (IA GHG) (Columns 4–6). QFII Own is the percentage of shares owned by qualified foreign institutional investors. DII Own is the percentage of shares owned by domestic institutional investors. Firm size is the logarithm of total firm assets. Revenue is the logarithm of book revenue. ROA is the return on assets. PPE is the ratio of property, plant and equipment to total assets. Leverage is the ratio of total debt to total assets. All independent variables are lagged by one year. Standard errors are clustered at the firm level, and *t*-values are reported in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

	Log (GHG)			IA GHG		
	(1)	(2)	(3)	(4)	(5)	(6)
QFII Own	-0.561**	-0.565**		-0.244**	-0.246**	
	(-2.18)	(-2.19)		(-2.50)	(-2.52)	
DII Own	-0.0365*		-0.0370*	-0.0287***		-0.0289***
	(-1.91)		(-1.93)	(-3.22)		(-3.26)
Firm Size	0.157	0.108	0.130	0.0607	0.0223	0.0490
	(0.49)	(0.34)	(0.41)	(0.31)	(0.11)	(0.24)
Revenue	1.415***	1.446***	1.416***	0.367*	0.391**	0.368*
	(4.75)	(4.87)	(4.76)	(1.93)	(2.05)	(1.93)
ROA	2.874	2.225	1.975	2.069	1.559	1.678
	(1.03)	(0.79)	(0.72)	(1.27)	(0.98)	(1.05)
PPE	4.301***	4.365***	4.347***	0.561	0.611	0.581
	(5.58)	(5.64)	(5.61)	(1.35)	(1.46)	(1.41)
Leverage	0.994	0.935	1.048	0.190	0.143	0.213
	(1.21)	(1.14)	(1.28)	(0.42)	(0.32)	(0.47)
Industry	YES	YES	YES	NO	NO	NO
Location	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
N	1,278	1,278	1,278	1,278	1,278	1,278
R^2	0.498	0.497	0.496	0.142	0.138	0.139
adj. R^2	0.475	0.474	0.473	0.102	0.099	0.101

Table4. 7 Institutional Ownership and GHG Emissions: Pressure-Resistant and Pressure-Sensitive Institutional Investors

This table presents regression estimates of GHG emissions on PRII ownership (PRII Own), PSII ownership (PSII Own), and control variables. The dependent variable is the natural logarithm of GHG emissions (see Columns 1–3) or industry-adjusted GHG emissions (IA GHG; see Columns 4–6). PRII Own is the percentage of shares in funds and securities. PSII Own is the percentage of shares in insurance and trusts. Firm size is the logarithm of total firm assets. Revenue is the logarithm of book revenue. ROA is the return on assets. PPE is the ratio of property, plant and equipment to total assets. Leverage is the ratio of total debt to total assets. All independent variables are lagged by one year. Standard errors are clustered at the firm level, and *t*-values are reported in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Dependent Variable	Log (GHG)			IA GHG		
	(1)	(2)	(3)	(4)	(5)	(6)
PRII Own	-0.0678***	-0.0685***		-0.0383***	-0.0372***	
	(-2.87)	(-2.92)		(-3.83)	(-3.81)	
PSII Own	0.0128		0.0208	-0.0174		-0.0129
	(0.44)		(0.71)	(-1.28)		(-0.97)
Firm Size	0.117	0.126	0.0664	0.0474	0.0350	0.0189
	(0.37)	(0.40)	(0.21)	(0.24)	(0.18)	(0.09)
Revenue	1.401***	1.399***	1.449***	0.364*	0.366*	0.391**
	(4.70)	(4.70)	(4.89)	(1.91)	(1.93)	(2.04)
ROA	3.097	3.044	1.431	2.029	2.101	1.087
	(1.10)	(1.08)	(0.51)	(1.25)	(1.29)	(0.70)
PPE	4.325***	4.319***	4.420***	0.573	0.581	0.627
	(5.58)	(5.58)	(5.67)	(1.39)	(1.41)	(1.51)
Leverage	1.175	1.164	1.009	0.248	0.262	0.154
	(1.43)	(1.41)	(1.24)	(0.55)	(0.58)	(0.34)
Industry	YES	YES	YES	NO	NO	NO
Location	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
N	1278	1,278	1,278	1278	1,278	1,278
R2	0.498	0.498	0.494	0.141	0.140	0.135
adj. R2	0.474	0.475	0.472	0.101	0.101	0.096

Table4. 8 Mechanism of institutional investors to GHG emissions: Exit and Selection

This table presents the results of the Granger causality test of the exit and selection mechanism. Column (1) shows the results of the first part of Equation 6. Column (2) represents the second part of Equation 6. The dependent variable is institutional ownership or firms' CSR performance. CSR is the performance score for corporate social responsibility. Firm size is the logarithm of total firm assets. Revenue is the logarithm of book revenue. ROA is the return on assets. PPE is the ratio of property, plant and equipment to total assets. Leverage is the ratio of total debt to total assets. All independent variables are lagged by one year. Standard errors are clustered at the firm level, and *t*-values are reported in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)
	TI Own	CSR
CSR (Lag 1 year)	0.244***	0.409***
	(5.83)	(34.50)
TI Own (Lag 1 year)	0.704***	0.00651***
	(87.50)	(12.22)
Firm Size	0.0185	-0.0195**
	(0.35)	(-2.19)
Revenue	0.129***	0.0649***
	(2.82)	(7.98)
ROA	0.0282**	-0.00261
	(2.43)	(-0.47)
PPE	-0.173	-0.138***
	(-0.85)	(-4.37)
Leverage	0.109**	-0.0594***
	(2.24)	(-2.68)
Industry	YES	YES
Year	YES	YES
Location	YES	YES
N	25340	25340
adj. R^2	0.548	0.258

Table4. 9 Mechanism of institutional investors to GHG emissions: Voice

This table presents the results of the voice mechanism (Equation 7). The dependent variable is the natural logarithm of GHG emissions (see Column 1) or industry-adjusted GHG emissions (IA GHG; see Column 2). Proposals is a dummy variable equal to 1 for the two years following the submission of a shareholder proposal, and 0 otherwise. Firm size is the logarithm of total firm assets. Revenue is the logarithm of book revenue. ROA is the return on assets. PPE is the ratio of property, plant and equipment to total assets. Leverage is the ratio of total debt to total assets. All independent variables are lagged by one year. Standard errors are clustered at the firm level, and *t*-values are reported in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Dependent Variables	(1)	(2)
	Log(GHG)	IAGHG
TI Own	-0.0421**	-0.0305***
	(-2.22)	(-3.50)
Proposals	-0.510*	-0.414*
	(1.65)	(-1.91)
Firm Size	0.126	0.0568
	(0.40)	(0.28)
Revenue	1.418***	0.364*
	(4.75)	(1.90)
ROA	1.958	1.841
	(0.71)	(1.13)
PPE	4.284***	0.598
	(5.52)	(1.44)
Leverage	1.031	0.226
	(1.26)	(0.49)
Industry	YES	NO
Year	YES	YES
Location	YES	YES
N	1,278	1,278
R^2	0.497	0.141
adj. R^2	0.474	0.101

Table4. 10 Policy Uncertainty Risk and Physical Risk: Carbon Market and Beijing Haze

This table reports institutional investors' reactions to state policy (the carbon exchange market) and environmental pollution (the Beijing haze event). Columns (1) and (2) are time-varying DID processes for the carbon market state policy. Columns (3) and (4) are DID regressions for a quasi-natural experiment: Beijing haze. The dependent variable is the logarithm of GHG emissions or industry-adjusted GHG emissions. The coefficient estimates of TI Own x Post Event x Treated firm show the differential effects of institutional ownership on GHG emissions for treated firms compared to the rest of the sample. Firm size is the logarithm of total firm assets. Revenue is the logarithm of book revenue. ROA is the return on assets. PPE is the ratio of property, plant and equipment to total assets. Leverage is the ratio of total debt to total assets. All independent variables are lagged by one year. Standard errors are clustered at the firm level, and *t*-values are reported in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

	Policy: Carbon Market		Quasi-natural Experiment: Beijing Haze	
Dependent Variable	Log(GHG)	IA GHG	Log(GHG)	IA GHG
	(1)	(2)	(3)	(4)
TI Own	-0.0568	-0.0243*	-0.0385*	-0.0412***
	(-1.02)	(-2.23)	(-1.84)	(-3.41)
Post*Treat	1.169*	0.334	-0.0682	0.810
	(2.17)	(1.84)	(-0.04)	(0.75)
TI Own*Post*Treat	-0.256***	-0.103***	0.186	0.0508
	(-3.74)	(-4.54)	(1.15)	(0.78)
Firm Size	0.841*	0.363*	0.0317	-0.133
	(1.88)	(2.27)	(0.08)	(-0.54)
Revenue	0.322	0.141	1.473***	0.578**
	(0.82)	(0.94)	(4.12)	(2.37)
ROA	12.78***	4.266***	4.011	2.873*
	(3.50)	(4.26)	(1.32)	(1.78)
PPE	1.842	-1.288**	5.080***	0.676
	(1.00)	(-3.18)	(5.47)	(1.28)
Leverage	7.307***	0.843**	0.577	0.322
	(4.79)	(2.34)	(0.64)	(0.60)
Industry	YES	YES	YES	YES
N	218	218	909	909
R^2	0.549	0.096	0.506	0.146
adj. R^2	0.513	0.024	0.475	0.093

Appendix. Definition of Variables

Variables	Explanation
Log (GHG)	The logarithm of total greenhouse gas emissions
IAGHG	Firm's GHG emissions divided by the industry average
TI Own	Percentage of shares owned by institutional investors
QFII Own	Percentage of shares owned by qualified foreign institutional investors
DII Own	Percentage of shares owned by domestic institutional investors
PSII Own	Percentage of shares owned by insurance and trust
PRII Own	Percentage of shares owned by funds and security
Market Beta	Market beta estimated by capital asset pricing model
Systematic Risk	Standard deviation of error term of the capital asset pricing model
CSR	CSR score by HEXUN dataset
Proposals	Dummy variable is equal to 1 for the two years following the submission of a shareholder proposal and 0 otherwise.
Firm Size	The logarithmic value of the total asset
PPE	The ratio of property, plant, and equipment to total assets
Leverage	The ratio of total debt to total assets
ROA	Net income as a proportion of total assets
Revenue	The logarithmic value of total revenue

Chapter Five: Ceo Awards And Firm Esg Performance

In this chapter, I examine a sample of award-winning CEOs from publicly listed Chinese companies, uncovering that these CEOs enhance their firms' ESG performance following their receipt of a prestigious media award. The findings support the hypothesis that such CEOs tend to bolster their reputation as a means to manage public perception. Further, I demonstrate that the key mechanism driving this effect is the alleviation of financial resource constraints. By considering alternative explanations, I present evidence indicating that the observed effect is not a net result of offsetting the economic mechanism.

5.1 Introduction

Organized by major media outlets, CEO awards identify high-performance CEOs (Wade et al.). Award winners usually experience an increase in social recognition, market share, and income, and gain celebrity status as superstar CEOs (Hayward et al.; Malmendier and Tate; Rosen). The benefit gap between award winners and other players in the competition provides sufficient incentives to motivate tournament participants to exert effort and attracts talent (Conyon et al.; Malmendier and Tate, 2009). However, the value consequences of CEO award winning are unclear as it is designed by an external social institution, rather than shareholders, as an incentive device.

Previous literature shows that such media-conducted "tournaments" strongly influences CEO decision making (Cho et al., 2016; Gallus and Frey, 2016)and has a significant impact on firm's financial performance in post-award period (Graffin et al., 2008; Malmendier and Tate, 2009; Wade et al., 2006). Notably, despite that from an ex-ante view, award winners are the best talents (Malmendier and Tate, 2009), many research fail to find a superior ex-post financial performance of firms with award winning CEOs (Khurana; Malmendier and Tate, 2009; Wade et al.). While these studies offer important insights into the value consequences of CEO award winning, I depart from firm's post-award financial performance to argue that such social mechanism may have an impact on another aspect of firm's performance – performance with regard to environment, society, and governance (ESG).

Examining how award-winning affects firm's ex-post ESG profile is important because firm's major investors are increasingly concerned about ESG (Dyck et al., 2021) and ESG performance is related to firm's sustainability. Previous literature shows that ESG commitment lowers firm risk (Dorfleitner et al., 2015; Sassen et al., 2016) and is related to long-term growth (Giese et al., 2021). Thus, to extend the insights into the

consequence and effectiveness of CEO awards, this study examines how award-winning CEO affect firm's ESG profiles.

Winning a media-conducted award may enhance a firm's ESG performance. Awards serve as a form of positive social recognition for CEOs who demonstrate exceptional performance that distinguishes them from their peers and exceeds expectations (Zinko et al., 2007). When viewed from a post-ante perspective, award-winning CEOs often achieve celebrity status and garner increased public attention, which presents a valuable opportunity to "increase access to resources and…exploit opportunities that may enhance a firm's competitive advantage" (Ranft et al., 2006, p. 284). However, such celebrity status is temporary and can be short-lived (Graffin et al., 2008; Hayward et al., 2004; Meindl et al., 1985; Wade et al., 2006), especially if these CEOs fail to sustain exceptional performance. Recognizing this, CEOs may seek to capitalize on this opportunity to achieve a competitive advantage and avoid losing the numerous benefits associated with their award-winning status. As a result, award-winning CEOs often strive to bolster their reputation among stakeholders, which is crucial for establishing a long-term competitive advantage that is more enduring than their temporary celebrity status (Treadway et al., 2009).

Award-winning CEOs may view ESG engagement as an effective strategy to enhance their reputation (Hu et al., 2020) and secure a competitive advantage. According to stakeholder theory, a firm's ESG activities can increase credibility (Deegan, 2002) and elicit praise from stakeholders (Petrenko et al., 2016), thereby improving the company's reputation among these stakeholders. In line with this perspective, numerous CEOs have expressed their belief that engaging in ESG initiatives can positively impact their reputation. For instance, in his annual letter to CEOs, BlackRock's Larry Fink has consistently emphasized the importance of ESG factors and long-term value creation, asserting that companies must focus on their social and environmental impacts to succeed in today's business environment.

Consequently, I propose an "award-triggering" hypothesis: award-winning CEOs are more likely to engage in ESG activities compared to other CEOs.

To identify the causal relationships between CEO award and firm ESG performance, I perform difference in difference analysis with nearest-neighbor propensity score matched sample (PSM-DID). I adopt DID as it's an ideal way to identify the award winning as a specific intervention and get the causal relationships (Meyer, 1995); and allow to compare the difference in outcomes after and before the intervention for groups affected by the award to the same difference for non-award groups. I construct a nearest-neighbor matching estimator to alleviate concerns about endogeneity. As discussed by (Malmendier and Tate, 2009), endogeneity occurs if I compare the average ex post firm performance of award winners to the average among all non-winning CEOs because the assignment to treatment group (winning an award) is not random. Those awarded CEOs are chosen based on past financial outperformance, which will significantly affect the ESG engagement. As such, using the full set of non-winning CEOs as the control sample would result in mix ESG performance effects resulting from the treatment with predictable ESG performance based on selection to the treatment group. Therefore, to isolate the real effect of CEO awards on ESG performance from selection effects and draw causal inferences, I use PSM-DID analysis.

The investigation in the sample of Chinese-listed firms supports the hypothesis that winning an award makes CEOs more willing to do ESG activities thus improving firms ESG performance. I further provide evidence that CEOs improve ESG performance because of the impression management motivation and benefit from the extra capital access mechanism. In addition, I show the strategic implications of the moderation effect of CEOs' winning an award on the relationship between ESG and firm performance. The results show that the increase of ESG after CEO wins an award negatively impacts firm value by reducing the value of ESG for firm, reflecting an agency problem between CEO and shareholders.

The study contributes to two strands of literature. First, I add to the literature on the real effects of the award granted to CEO. According to Rosen (1981), the superstar CEO system plays an important role in firm performance. For example, previous literature suggests that the award win's negative role in firm performance. It triggers CEO's deviant behavior to firm's value creation (Malmendier and Tate, 2009), motivates CEO's misconduct to meet market-pressure (Li et al., 2022), and intensifies the competition among peers (Ammann et al., 2016; Shi et al., 2017). Yet, previous literature fails to provide evidence of the positive side of award. By linking CEO award and firm ESG profile, the paper is among the first to show the positive effects of CEO award on firms' ESG performance.

Second, I add to the body of research on the determinants of ESG performance by taking CEO award winning experience into account. Prior literature emphasizes the impact of managers characteristics on firm ESG/CSR activity. For example, CEO genders (Borghesi et al., 2014), genders of CEO's children (Cronqvist and Yu, 2017), CEO marriage (Hegde and Mishra, 2019), CEO age (Borghesi et al., 2014), overconfidence level (McCarthy et al., 2017), political stance (Di Giuli and Kostovetsky, 2014), and compensation (Gillan et al., 2010). I extend this line of literature by showing that external event (i.e., receiving an award) for CEOs can affect firms' ESG profiles.

The remainder of the paper proceeds as follows. I give conceptual background and develop the hypotheses in Section 2. Section 3 describes the data sources and variable construction. I present the main findings in Section 4 and the results of further discussion in Section 5. Section 6 concludes the paper.

5.2 Conceptual Background

Research on award-giving in an organisational setting provides a range of fundamental insights. Awards, which take forms of orders, medals, decorations, and prizes, are non-financial, extrinsic motivators (Frey and Gallus, 2017). The purpose of awards is to provide a recognition for those individuals or groups who best represent the values and

goals of the awarding agent (Frey and Gallus, 2016, 2017). Internal or external awarding agents distinguish award recipients from those who, in their opinion, have performed less well (Frey and Gallus, 2017). Winners are viewed as more competent than losers (Weiner et al., 1979).

Though organizational awards are a retrospective response to past behaviour, they also have a significant impact on subsequent behaviour (Frey and Gallus, 2016). The following aspects are of primary importance.

First, winners may have a stronger desire to or be under greater pressure to maintain superior performance. Winners may become overconfident in their ability to make effective strategic decisions after winning award (Hayward et al., 2004). Alternatively, they experience excessively high internal aspirations and external expectations for consistent superior performance (Cho et al., 2016).

In addition, winning award means celebrity status upgrade (Frey and Gallus, 2017; Lee et al., 2020). Winners of awards experience a sense of public celebration and joy, setting them apart from others. This sentiment also holds true for other forms of recognition, such as receiving a bonus that surpasses those received by colleagues. However, bonuses are typically provided privately. In many instances, recipients are forbidden from disclosing the amount received, particularly to coworkers. On the other hand, awards are consistently presented during public ceremonies, often by superiors or even the CEO in person. Consequently, awards offer the additional advantage of making this distinction conspicuous to one's peer group and potentially even beyond.

In the corporation sector, prestigious award always refers to superstar system, which is characterized by a highly skewed distribution of income, market share, and public attention (Malmendier and Tate, 2009; Rosen, 1981). Superstar managers ranking is the “tournament” for CEO status and public attention and is not designed by shareholders as an incentive device but is largely conducted by the media.

The achievement of a prestigious award (i.e., ranking on the superstar CEO lists) is a significant milestone in the life of a CEO. Morgeson et al. (2015) define significant

events as those that embody novelty, disruption, and criticality. The achievement of a distinguished CEO award exemplifies this definition. Such an award is novel in its nature due to its scarcity—only a fraction of CEOs will ever experience this honor. Furthermore, it is disruptive in the sense that it bestows upon the recipient an enhanced level of public acknowledgment and elevated social stature. Winning CEO award signifies membership in an extremely exclusive group of corporate executives, sends a strong signal of quality, and elevates the status of the awarded CEO (Frey and Gallus, 2017; Malmendier and Tate, 2009). It is crucial because it is a signal of the CEO's quality that can enhance career opportunities (Connelly et al., 2011). In conclusion, CEO awards are extremely consequential for award recipients (Gallus and Frey, 2016; Hayward et al., 2004)

5.3 Hypothesis Development

Winning an award may positively related to firm ESG as it incentivizes CEO to conduct impression management.

Winning an award motivates CEOs to increase their firm's ESG investment as it provides an opportunity to convert their post-award celebrity into a sustainable reputation through impression management strategies.

This view is based on the strand of CEO reputation management literature, which suggests that CEO tend to actively manage their reputation and theories of celebrity leadership effectiveness, which distinguish between the temporary nature of celebrity and the enduring nature of reputation (Rindova et al.; Treadway et al.; Zinko et al.). According to reputation management literature, CEOs play in actively shaping their reputation as good reputation help CEO maintain their power and influence in the boardroom, receive investors, and leads to CEO success in the job market (Finkelstein and Hambrick; Wade et al.; Westphal and Bednar).

Celebrity leadership effectiveness theories suggests that while celebrity is a product of media creation and represents a temporary distinction (Ranft et al., 2006), reputation is

a more enduring trait. Celebrity, which is one consequence of deviant behavior (i.e., behavior that deviates from norms or expectations), does not ensure the long-term success, whereas reputation transformed from celebrity can produce a sustainable competitive advantage (Barney, 1991). At the same time, celebrity could be transformed into reputation through impression management. The attention of celebrity presents an opportunity for individuals to enhance their image through selecting and presenting information consistent with the positive aspects of their celebrity (Treadway et al., 2009). Celebrities can engage in impression management behaviors to capitalize on such opportunities (Liden and Mitchell, 1988). Thus, these theories suggest that celebrity could be transformed to reputation via impression management strategies and thus produces a long-term competitive advantage.

The attention garnered by an award-winning CEO's public recognition provides opportunities to engage in impression management strategies to transform their celebrity into a reputation. Award-winning CEOs are likely to perceive CSR/ESG as an effective image management tactic (Lee et al., 2020). First, according to legitimacy theory, CSR can enhance firm legitimacy and reputation (Deegan, 2002). An extensive body of research affirms the positive impact of Corporate Social Responsibility (CSR) on a company's reputation (Brammer & Pavelin, 2006; Fombrun & Shanley, 1990; Turban & Greening, 1997; Verschoor, 1998). Orlitzky et al. (2003), for instance, posit that a firm's robust involvement in CSR initiatives can contribute substantially to cultivating a favorable perception among external stakeholders. Besides, CSR offers an opportunity for attracting observers' attention, gaining praise from internal and external stakeholders, and avoiding notoriety (Petrenko et al., 2016). Hence, CEOs who have garnered awards may view engagement in CSR as a credible, legitimate, and effective strategy for managing their public image. This approach offers a potent conduit to transmute their fame into a solid, positive reputation.

In sum, I develop the award-triggering hypothesis and make the following prediction:

H1: CEO winning an award positively related to firms' ESG performance.

Alternatively, winning an award may negatively affect firm's ESG performance as it can shift CEO's focus to short-term financial performance.

First, winning an award can compel managers to forgo long-term investments in favour of short-term financial performance (Stein, 1988). Research in psychology has demonstrated that individuals reorganized for their competence want to maintain that image (Frey, 2006).As such, award winners could be more motivated to keep the awarded title than non-winners. Given that the status is updated annually, CEOs may shift their focus towards short-term (within-one-year) financial performance (Kerr and Slocum Jr, 2005). In addition, winning an award increases market expectations for a company's short-term earnings (Cho et al., 2016; Malmendier and Tate, 2009; Rosen, 1981).Top U.S. executives admit that they are willing to sacrifice long-term firm value when they are under pressure to meet or exceed earnings targets (Graham et al., 2005 2005), particularly when there is a lack of commitment to long-term contracts of managerial compensation (Manso, 2011). As a result, award winners may engage in greater risk-taking or even misconduct to meet the elevated expectation on short-term financial performance (Cho et al., 2016; Li et al., 2022) rather than investing in ESG for long-term development[14].

Considering the above discussion, I the award-discouraging hypothesis as follows:

H2: CEO winning an award negatively related to firms' ESG performance.

5.4 Research Design

5.4.1 Data sources

The initial CEO award sample consists of award-winning CEOs of listed firms in China

[14] Anecdotally, practitioners believe that responsible investing pays off over a long run (Dimson et al., 2013). In addition, Larry Fink, the CEO of Blackrock, the world's largest asset manager, has written a number of letters over the years to the CEOs of Blackrock's portfolio firms regarding the relationship between long-term value and ESG or sustainability. See, for example, https://www.blackrock.com/corporate/investor-relations/2016-larry-fink-ceo-letter.

between 2012 and 2018. I choose to test the hypotheses using a sample of Chinese rather than U.S. firms for several reasons. I opted to test the hypotheses using Chinese firms rather than U.S. firms for several reasons. Firstly, China's rapid economic growth has led to significant environmental and social challenges, making the study of ESG performance in this context particularly relevant and timely (Marquis and Qian; Moon and Shen). Examining awarded CEOs' roles can provide insights into leadership's impact on sustainable development in emerging markets. Secondly, as the world's second-largest economy, China has an increasing impact on global financial markets, international trade, and sustainability practices. Understanding its leadership and ESG performance is relevant to the global business landscape. Thirdly, while much existing research on CEO awards, ESG performance, and their interrelationships has been conducted in developed markets like the US (Flammer and Bansal, 2017), there is relatively less focus on emerging markets like China. By investigating the Chinese market, the paper can help fill this research gap and provide fresh insights into the role of leadership in promoting ESG performance in different institutional settings. As 2009 is the first year that the list of CEO award enrollees is first published[15], the starting year of the sample allows for a three-year lead period to match the ESG rating. I manually identify 484 CEOs winning an award granted by Fortune ("Most 50 Influential Business Leaders in China"), CCTV ("China Economic Personality of the Year"), Forbes ("Best CEOs of Chinese Listed Companies"), Harvard Business Review ("Best Chinese 100 CEOs")[16] from the year of 2009 to 2021. Then, I apply the following selection criteria. First, I eliminate 268 award-winning CEOs from non-listed firms due to the lack of financial information. Second, I require that all awards included in the sample be the first award granted to CEOs as the first award would provide the greatest boost to self-esteem (Li et al., 2022). To ensure that the first award a CEO wins in the sample is the

[15] I consider only the public awards granted to CEOs instead of public awards granted to rich people.

[16] These four awards, at least as explained on the competition website, are all based on the CEO's past financial performance and are not related to their level of social responsibility. Among them, while Fortune did not specify the criteria for judging the impact of CEOs, when introducing the winners, Fortune focused on their excellent financial performance, such as capital expansion and operating income.

actual first public award granted to CEO, I drop CEOs who won an award between 2009 and 2011, 2019 to 2021.This strategy yields 126 CEOs of Chinese publicly listed firms who have won an award for the first time.

I measure corporate ESG based on the valuation from Sino-Securities Index (SSI) ESG Rating Database. SSI conducts the ESG rating database by creating an AI-driven big data engine that tracks both traditional indicators and Chinese-market-specific indicators[17], to systematically measure ESG level of all listed companies in China. Starting from 2009, the SSI ESG rating database provides nine-tier evaluation system, ranking from C to AAA, across the three dimensions of Environment(E), Society(S) and Governance(G).

The accounting and financial information of all listed firms in China is collected from the China Stock Market and Accounting Research (CSMAR) database.

5.4.2 Sample construction

I use the propensity score matching (PSM) approach to construct a control group of firms led by CEOs who have not won awards. Specifically, by using a 1:1 nearest-neighbor logistic PSM method (Li et al., 2022; Rosenbaum and Rubin, 1983), each firm with award-winning CEO is matched to one firm without award-winning CEOs.

To get the propensity score, I employ the logistics regression with dependent variable having value of 1 if the firm has an award-winning CEO in a given year and 0 otherwise. Following Li et al. (2022), I include both firm- and CEO-level variables in the logistic regression. For firm-level variables, I include firm size measured as the natural logarithm of total assets and firm age. I also include firm performance measured by return on asset (ROA), because CEOs of large firms and firms that perform well are

[17] The SSI ESG rating database includes 3 primary indicators, 14 secondary indicators, 26 tertiary indicators and more than 130 underlying data indicators. Except for traditional indicators, the SSI ESG rating database incorporates more indicators that are relevant to the current stage of development in China, such as the quality of information disclosure, violation of laws and regulations, precise poverty alleviation, etc.

more likely to win awards (Hayward et al., 2004). For CEO-level variables, I use CEO duality and tenure. I also include CEO gender indicator (1 for female) because female CEOs are less likely to win awards than their male counterparts (Eagly and Carli, 2003). In addition, each pair of control and treatment firm is required to be from the same industry and share the same ownership structure (state owned firms vs. non-state-owned firms). On the basis of these predictors, I calculate an award-winning propensity score. Finally, I merge the matched treat-and-control sample with firms' financial and accounting data and ESG rating data from 3 years before to 3 years after the CEO's first award. This strategy yields 2021 firm-year observations in the final sample. In Table 1, I show descriptive statistics of treatment and control firms for the matching variables with the T-value and P-value between them. I have 1050 observations in treatment group and 971 observations in the control group. The p-values are all below 10%, indicating the validation of the PSM process.

[Insert Table 5.1 Here]

5.4.3 Methodology

I examined the effect of the award on firm ESG performance using a DID estimation. The basic DID regression estimated is

$$ESG_{i,f,t} = \alpha_i + \delta_t + \beta \times Treat \times Post_t + CEOControls_{i,t-1} + FirmControls_{f,t-1} + \varepsilon_{i,f,t}$$

Eq.(5.1)

where *f* denotes firm, *i* denotes CEO, *t* denotes year, α_i denotes CEO-fixed effects, δ_t denotes year fixed effect, and $\varepsilon_{i,t}$ is an error term clustered at the CEO level to account for potential serial correlations. The dependent variable $ESG_{f,t}$ is the firm's ESG rating score which ranks from 1 (worst ESG performance) to 9 (best ESG performance)

according to the ESG rating level. $Treat \times Post_t$ is a dummy variable indicating the post-award-winning period. CEO $Controls_{i,t-1}$ is a vector of CEO-level control variables, including CEO duality, CEO education and CEO age.[18] $FirmControls_{f,t-1}$ is a vector of firm-level control variables, including firm size (the natural logarithm of the number of employees), leverage (total debt to total assets), ROA, Tobin's Q, State[19] (a dummy variable indicating state-owned firms), board size (the natural logarithm of the number of board members) and board independence (the ratio of independent members on the board). Detailed definitions of the control variables are shown in the Appendix. The dummy indicators of treatment and post-award-period dummy are not included in the regression following the argument by (Li et al., 2022; Low, 2009).

The estimate of the effect of CEO award is β, which measures the change in the level of a firm's ESG rating after a CEO award event for firms with award-winning CEOs, relative to a control group of firms without award-winning CEOs. In Table 5.2, I report the descriptive statistics of all the variables discussed in this section.

[Insert Table 5.2 Here]

The premise of conducting this DID analysis is a parallel trend between control and treatment firms before the CEO wins an award. Before empirically investigating the relationship between ESG performance and the CEO winning an award, I conducted a parallel trend test of the sample. The results are displayed in Fig. (4). Before the CEOs

[18] Control variables are selected for the following reasons. Li et al. (2018) document that CEO power affects the influence of ESG on firm value. Furthermore, CEO power affects ESG disclosure (Li et al., 2018) and the CEO duality is considered a measure of CEO power. Education is claimed to be an important personal trait affecting sustainable firm performance. Miller and Xu (2019) report that an elite educational background improves CEO long-term orientation to sustainable management. Thus, I expect that education level will be positively related to firm ESG performance. CEO age impacts investment behaviour. Younger CEOs are less likely to have reputations as high-quality managers (Hirshleifer and Thakor, 1992; Holmström, 1999; Scharfstein and Stein, 1990; Zwiebel, 1995). Based on our impression management theory, CEO age impacts firms' ESG investment as a means to build reputation. Borghesi et al. (2014) document a negative relationship between CEO age and ESG performance/scores.

[19] State-owned firms tend to have more incentives to engage in environmental and social issues than other firms (Hart and Zingales, 2017).

win an award ("current" in the x-axis), the ESG ratings do not differ between the treatment and control groups (the significant level includes the value of 0). However, after the CEO wins an award, the ESG ratings of the firms differ significantly between the control and treatment groups, with the treatment firms' ESG activities showing a greater increase than the controlled firms.

[Insert Figure 4 Here]

5.5 Empirical Results

5.5.1 Baseline findings

Table 5.3 presents the estimation results of analysis with Eq. (1). Column (1) shows that, on average, firms with award-winning CEOs increase ESG rating averagely by 0.177 after the award granting event. Column (2) shows that this significantly positive relationship (β=0.127, t=1.98) remains after I add control variables. Consistent with the award-triggering hypothesis, winning an award is positively associated with firms' ESG performance.

[Insert Table 5.3 Here]

5.5.2 Robustness check

To check the robustness of the results, I conducted several additional tests, the results of which are briefly summarised below.

Additional fixed effects To alleviate concerns of ESG performance clustering by industry, province and firm, I gradually added the province fixed effect, industry-fixed effect, firm fixed effect, and province and year fixed effects to the basic specification (1). The results are shown in Table 5.4. I find that the results in Table 5.3 do not change when I add additional fixed effects.

[Insert Table 5.4 Here]

Alternative ESG measurement To reflect that the difference between categories (Leader vs. Average, and Laggard) may be greater than within-group gaps, I reassigned the ESG-level measurements. Specifically, I first classified firms' ESG performance by higher levels; for example, firms with AAA, AA, A and BBB ESG levels were classified as the "leader" group and assigned a value of 3; firms with BB, B and CCC ESG levels were classified as the "average" group and assigned a value of 2; firms with CC and C ESG levels are the "laggard" group and given a value of 1. I additionally used span assignment methods to measure ESG performance: ESG ratings at the same level are assigned as continuous variables but span when they jump to the next level. For example, firms with a C rating are assigned a value of 1, CC are assigned 2 and CCC are assigned 3, but those with B are assigned 5, BB 6 and BBB 7, with A levels ranging from 9 to 12. The coefficients are all still positive and significant when I use alternative ESG measurements (results listed in Column (1) of Table 5.5).

[Insert Table 5.5 Here]

In addition, I use the ESG index from the international database, SynTao, which gives companies listed in China an ESG rating from 2015 to 2021. I, therefore, only consider the award-winning CEOs in 2017, 2018 and 2019 to obtain observations for two years before and afterward. SynTao evaluates the environmental, social and governance aspects of CSI 300 listed firms in the Shenzhen and Shanghai Security markets and provides ten levels of ESG performance, including A+, A, A-; B+, B, B-; C+, C, C-; and D. There is, thus, a sharp drop in the observations. The results are still robust when using the SynTao ESG ratings. Detailed descriptions of the Syntao Database are given in Column (2) of Table 5.6.

[Insert Table 5.6 Here]

5.5.3 CEO awards, ESG and firm performance

Previous literature shows that, ESG can contribute to firm financial performance by reducing the cost of resources and capital (Hillman and Keim, 2001; Jones, 1995; Turban and Greening, 1997), reduces risk premiums((Cornell and Shapiro, 1987), provides insurance protection against litigation and regulation costs (Kacperczyk, 2009), and enhances corporate reputation (Schnietz and Epstein, 2005). However, it's also posited that Environmental, Social, and Governance (ESG)/CSR activities could be indicative of managerial agency conflicts. Corporate managers might participate in these activities to increase their personal benefits at the expense of shareholder welfare, thereby potentially damaging the value of the firm (Bénabou & Tirole, 2010). Barnea and Rubin (2010) similarly highlight the potential agency problem that arises when managers over-invest in CSR to enhance their own private reputations. Therefore, the debating discussion on ESG and firm value attract the interest to investigate whether this change in ESG performance after CEO winning an award is beneficial to shareholders.

According to the impression management channel, the improvement of ESG performance after winning an award is triggered probably by reputation management as well as the celebrity status, that is to say, firms with celebrity CEOs are exposed more to the market attention. Additionally, previous literature documents that the difference in transparency and visibility can explain why some firms can benefit from ESG while some others can not (Li et al., 2018). In other words, ESG can enhance firm performance when the market can recognize it. For example, Chatterji et al. (2009) argue that more visible firms face greater scrutiny from stakeholders and thus more likely to invest in ESG initiatives to protect and enhance their reputation. Lourenço et al. (2014) find that more visible firms are likely to be rewarded by the market for the sustainability.

As such, it is possible that ESG done by those awarded CEOs enhance the firm value by an improved firm visibility. To test this conjecture, I apply a triple DID specification

(5.2) to firm performance with the interaction term between treat, post, and the change ESG rating. The estimation model is:

$$Firm\ Value_{i,f,t+1} = \alpha_i + \delta_t + \beta_2 \times Treat \times Post_t \times \Delta ESG_{i,f,t} + Treat \times Post_t + \Delta ESG_{i,f,t} + CEOControls_{i,t} + FirmControls_{f,t} + \varepsilon_{i,f,t} \quad (5.2)$$

The regression results are presented in Table 5.7 where I measure firm financial performance by ROA and industry adjusted ROA. The coefficient of the interest is the β_2 of the triple DID term. The results show that increase in ESG ($\Delta ESG_{i,f,t}$) is negatively and significantly related to ROA but insignificantly related to industry adjusted ROA. β_2 are positive and significant in both Column (1) and Column (2), indicating that ESG improved after CEO winning an award will contribute to the following performance.

[Insert Table 5.7 Here]

5.6 Further Discussion: Channel Test

Although the findings so far show a positive effect of CEO awards on firm ESG performance, I cannot exclude the possibility that this positive effect is a net outcome, in that the award-triggering hypothesis offsets the award-impeding hypothesis. To further investigate the two hypotheses, this section examines, one by one, the economic channels through which winning an award affects ESG.

5.6.1 Test for impression management motivation

I first tested the impression management motivation channel, which states that award-winning CEOs are motivated to transform their celebrity into a reputation for long-term

competence. It is difficult to test this channel empirically because the motivation of managers cannot directly be observed. To address this issue, I conducted two analyses.

First, I examined the firm's advertising activity and philanthropic expenditure following the award to detect managers' impression management motivation. Since advertising is one of the most important reputation management strategies (Meenaghan, 1995; Reynolds and Gutman, 1984; Winn et al., 2008), an increase in advertising expenditure may be an indication that CEOs are concerned about their image. Moreover, the previous literature suggests that high-profile philanthropic actions attract both praise and attention to the CEO, which relates to the CEO's public image (Petrenko et al., 2016). As such, I expect a positive relationship between CEO awards and high-profile corporate philanthropy, supporting the impression management motivation channel. In this analysis, I replicate the DID analysis and apply the basic specification to firms' advertising expenditure and philanthropy. Advertising expenditure is measured by expenditure scaled by sales expenses in a given year. Philanthropy expenditure is the logarithmic value of total philanthropy in a given year.

The estimation results are presented in Table 5.8. Model (1) tests the link between the CEO winning an award and the firm's advertising expenditure. The interaction term is estimated with a positive and significant coefficient (0.017, t=2.992), indicating that a firm tends to increase its advertising expenditure after its CEO wins an award. Model (2) examines philanthropy and the CEO winning an award. The results also show a significant and positive relationship between philanthropy expenditure and CEO awards (9.187, t=3.616). The coefficients of both advertising and philanthropy expenditure indicate that CEOs have a propensity to manage their image after winning an award, supporting the impression management motivation channel.

[Insert Table 5.8 Here]

5.6.2 Test for the financial constraint channel

In the financial constraint channel, I posit that winning an award can boost ESG by alleviating financial constraints. To test this channel, I apply the mediation effect model of Baron and Kenny (1986) by supplementing the baseline specification with the following regressions:

$$Financial\ constraint_{i,f,t} = \alpha_i + \delta_t + \beta_1 \times Treat \times Post_t + CEOControls_{i,t-1} + FirmControls_{f,t-1} + \varepsilon_{i,f,t} \quad (5.3)$$

$$ESG_{i,f,t} = \alpha_i + \delta_t + \beta_2 \times Treat \times Post_t + \partial \times Financial\ constraint_{i,f,t} + CEOControls_{i,t-1} + FirmControls_{f,t-1} + \varepsilon_{i,f,t} \quad (5.4)$$

where I include the same set of control variables as in Equation (5.1).

Financial constraint is proxied by the WW index (Whited and Wu, 2006). This index is calculated as:

$$WW\ Index_{f,t} = -0.091 \times \mathrm{CF}_{f,t} - 0.062 \times \mathrm{DIVPOS}_{f,t} + 0.021 \times \mathrm{TLTD}_{f,t} - 0.044 \times \mathrm{LNTA}_{f,t} + 0.102 \times \mathrm{ISG}_{f,t} - 0.035 \times \mathrm{SG}_{f,t} \quad (5.5)$$

where *f* represents the firm and *t* represents the year. $\mathrm{CF}_{f,t}$ is cash flows scaled by total assets; $\mathrm{DIVPOS}_{f,t}$ is an indicator equal to 1 if cash dividends are paid and 0 otherwise; $\mathrm{TLTD}_{f,t}$ is long-term debt scaled by total assets; $\mathrm{LNTA}_{f,t}$ is the natural log of total assets; $\mathrm{ISG}_{f,t}$ is industry sales growth based on the 2-digit SEC code, and $\mathrm{SG}_{f,t}$ is firm sales growth. A higher WW index value suggests that the firm faces greater financial constraints.

If $Financial\ constraint_{i,f,t}$ mediates the association between $ESG_{i,f,t}$ and $Treat \times Post_t$, the estimated coefficient of $Financial\ constraint_{i,f,t}$ should be significant, and the significance of the coefficient of $Treat \times Post_t$ should be reduced after $Financial\ constraint_{i,f,t}$ is added to the regression.

Table 5.9 reports the results of the mediation effect of financial constraint. Column (1) repeats the findings of Column (3) of Table 5.3 for the comparison to the initial results. Column (2) reports the results of the second stage mediation analysis. The coefficient of $Treat \times Post_t$ is negative and significant when I employ the WW index, suggesting that firms access greater financial resources after the CEO wins an award. In Column (3) of Table 5.8, I include both $Treat \times Post_t$ and the WW index as independent variables when I use ESG as the dependent variable. I find that the WW index is negatively and significantly correlated with ESG, consistent with the notion that a reduction in financial constraints serves as a source of firm ESG investment. Importantly, I find that the coefficient of the interaction term reduces to 0.162 from 0.154 in Column (1), while the significance is also reduced. This result indicates a partial intermediation effect of financial constraints. Overall, the results shown in Table 5.8 support the financial constraint channel.

[Insert Table 5.9 Here]

Although the main findings suggest that firm ESG performance improves overall after the CEO wins an award, this observed positive effect may be a net outcome arising from offsetting the two controversial mechanisms. In other words, the award-triggering hypothesis may dominate the award-impeding hypothesis. To disentangle the two hypotheses, I performed additional tests to examine post-award financial market pressure and CEO overconfidence, through which awards may negatively affect firm ESG ratings.

5.6.3 Test for financial market pressure

I further tested the channels used to construct the award-impeding hypothesis. Firstly, according to the market pressure channel, award-winning CEOs may forgo long-term investments (i.e. ESG) in an effort to boost short-term firm performance to meet market expectations. To test the validity of this channel, I examined three variables related to short-term performance management: the manipulation of accrued profits (MAP), real earning management (REM) and firm investment duration. The literature demonstrates that real transactions management, which could be captured by MAP and REM, temporarily improves short-term performance (Chan et al., 2015; Yu, 2008) and reflects the short-termism of CEOs (Marinovic and Varas, 2019). A decrease in the duration of a company's investments is also viewed as an indicator of short-term management (Lettau and Wachter, 2007; Shleifer and Vishny, 1990). Therefore, if award-winning CEOs are affected by market pressure, MAP and REM are expected to be positively related to awards, while asset duration is expected to be negatively related. In this analysis, I replicated the DID analysis and applied the basic specification to each item[20] separately.

The results are presented in Table 5.10. Columns (1) and (2) indicate that CEOs do not prefer to boost short-term performance through earning management. Column (3) shows that CEOs have a tendency to reduce investment duration, but the results are not statistically significant. Taken together, these results imply that CEOs do not focus on boosting short-term performance after they win an award. Overall, the results, shown in Table 5.10, suggest that the market pressure channel does not hold.

[Insert Table 5.10 Here]

[20] Detailed calculation methods for these three variables are shown in Appendix B.

5.6.3 Test for the overconfident risk-taking channel

The other channel used to construct the award-impeding hypothesis is the overconfident risk-taking channel, which suggests that winning awards fosters CEO hubris (Malmendier and Tate, 2009), which discourages the hedging motivation of ESG investment. If this channel holds, therefore, high-risk investment will increase after the CEO wins an award. To test this conjecture, I applied the DID analysis with firms' high-risk investments. As proxies for firm risk-taking, prior studies have adopted R&D expenditure (Hoskisson et al., 1993; Li et al., 2010), acquisitions and divestitures (Bernile et al., 2017; Graves and Thomas, 2006) because the outcomes of the decisions are associated with high levels of uncertainty. Others use cash holdings (Froot et al., 1993; Holmström and Tirole, 2000; Li et al., 2021) and whether dividends are paid or not (Bernile et al., 2017) as measures of risk-taking because cash and reserves are typically insurance mechanisms against the risk of liquidity and offer a buffer against future risks; therefore, reducing cash holdings and paying dividends are relative high-risk decisions.

The results are shown in Table 5.11. I show an insignificant relationship between CEO awards and risk-taking measures (tendency towards M&A, paying dividends and cash holding), and even present a negative relationship between CEO awards and R&D investment, somehow indicating a risk reduction. Thus, the results suggest that firms do not make high-risk investments after their CEO wins an award. Overall, the results in Table 5.11 provide evidence to reject the overconfident risk-taking channel.

[Insert Table 5.11 Here]

In summary, the results provide evidence to support the underlying economic channels through which CEO awards positively affect ESG and alleviate the concern that this positive effect is the net outcome of the award-impeding hypothesis and award-triggering hypothesis.

5.7 Conclusion

Based on the discussion of Upper echelons theory that the observable experience is among the major dimensions of personal characteristics that influence firms' decision making. This chapter focuses on one of the examples of CEO experience-the awarded status. This chapter examines the effect of CEO award event on firms' ESG performance. By applying the PSM-DID analysis, I find that awarded CEOs are more likely to improve firms' ESG performance.

To analysis the mechanism of the relationship, this chapter propose four potential channels: financial market pressure, overconfident risk-taking, impression management, and financial constraint channel. Among the four channels, the first two channels predict a negative link between awarded CEOs and firms ESG engagement, while the last two channels predict a positive link. Although the main regression result shows a positive relationship between awarded CEOs and ESG engagement, this chapter still considers testing each of the four explanations to alleviate the concern that this positive effect is a net outcome in that the award-triggering hypothesis offsets the award-impeding hypothesis. Findings show that awarded CEOs tend to manage their image after winning an award and the access to more resources are the mechanisms supporting the ESG improvement. Results also reject the market pressure channel and overconfident manager channel by proving that awarded CEOs in this sample are less likely to manipulate earnings and invest in risky investment. This study shifts the attention more squarely to executive experience as an explanation for ESG, showing that ESG initiatives may result from leaders' personal needs for reputation reinforcement and excessive financial resources.

The findings provide important insights for both academia and industry. The findings highlight that the leadership of awarded CEOs not only drives improved environmental, social, and governance (ESG) outcomes but also increases firm value. This substantiates the growing body of research suggesting that high-quality,

recognized leadership can successfully integrate corporate responsibility with financial performance, affirming the business case for sustainability.

These findings reinforce the pivotal role of CEOs in steering firms towards sustainable practices while simultaneously enhancing firm value. They attest to the potential of leadership awards as signals of high-calibre leaders capable of successfully balancing ESG initiatives with business performance objectives.

From a practical standpoint, these results argue for the importance of leadership development and succession planning. Firms should strive to cultivate and reward leadership that is capable of advancing ESG goals while maintaining or improving financial performance.

For policy-makers and regulators, these findings may suggest that mechanisms for recognizing and rewarding exemplary leadership in ESG could have far-reaching positive implications for corporate sustainability and profitability. Furthermore, for academia, these findings offer a fruitful avenue for future research. Scholars could explore the mechanisms that awarded CEOs use to successfully integrate ESG initiatives with financial performance. This could lead to the development of more refined theories of leadership and corporate sustainability, contributing to more effective corporate governance practices and leadership development programs.

Figures and Tables

Figure 4 Parallel Trend Assumption Test

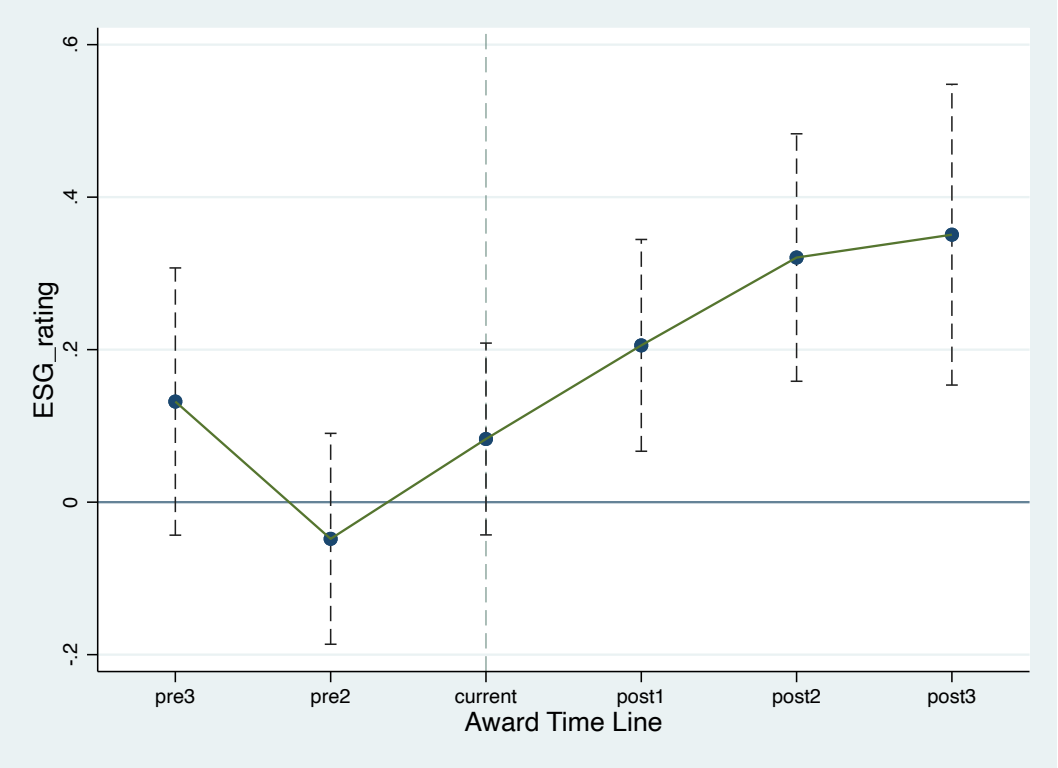

Table5. 1 PSM comparison of variables

This table presents the descriptive statistics in means for the variables I used for PSM in the treatment and control firms. Firm size is the natural logarithm of total employees. Firm age is the age since establishment in the fiscal year. ROA is a return on assets. CEO duality has a value of 1 if the CEO is also the chairman of the firm and 0 otherwise. CEO tenure is the number of years that the CEO has worked for the given firm. CEO gender has a value of 1 if the CEO is female and 0 if female.

Variables	Treatment (N = 1,050)	Control (N = 971)	T value	P Value
ROA	0.069	0.057	0.20	0.839
Tobin Q	2.646	2.536	0.06	0.956
Firm Size	23.653	21.069	1.37	0.172
Firm Age	10.455	6.509	0.67	0.501
Leverage	0.490	0.379	0.57	0.566
CEO Duality	0.264	0.111	0.43	0.666
CEO Gender	0.057	0.127	-0.37	0.712
CEO Education	3.641	3.019	0.75	0.454
CEO Age	53.393	50.502	0.53	0.597
Board Size	2.195	2.114	0.41	0.683
Independence	0.383	0.340	0.07	0.945

Table5. 2 Summary statistics

Panel A reports the descriptive statistics and Panel B presents the awards distribution used in the study. ESG rating ranges from 1 (lowest) to 9 (highest). Employee is the number of total employees at the end of the financial year. Tobin's Q is the ratio of market value to total book assets. ROA is the ratio of net profits to total book assets. Leverage is total debt to total assets. State Ownership is a dummy variable with a value of 1 if the firm is a state-owned enterprise and 0 otherwise. CEO age is the age of the CEO in a given firm-year. CEO education is measured on a 5-point scale based on the highest degree as follows: 1 for high school and below, 2 for college, 3 for bachelor's degree, 4 for master's degree, 5 for doctoral degree. CEO duality has a value of 1 if the CEO is also the chairman of the firm and 0 otherwise. Board size is the number of board members in a fiscal year. Board Independence is the ratio of independent members to total board members.

Panel A. Descriptive statistics

Variable	Obs	Mean	SD	Median	Skewness
ESG Rating	2,021	4.512	1.154	5	-0.498
ROA	2,021	0.0603	0.0614	0.051	0.214
Tobin's Q	2,021	2.156	1.488	1.606	2.135
Firm Value	2,021	665742	2684547	14488.59	4.918
Firm Age	2,021	9.282	6.395	8	0.489
Leverage	2,021	0.481	0.237	0.455	0.226
Duality	2,021	0.185	0.388	0	1.626
Education	2,021	3.572	0.922	4	-0.0478
Age	2,021	52.21	6.668	52	0.0194
Board Size	2,021	9.369	2.524	9	1.166
Board Independence	2,021	0.382	0.0614	0.036	1.49
SOE	2,021	0.451	0.498	0	0.196

Panel B. Award distribution

Award Distribution by List	
Forbes	75
Fortune	30
Harvard	16
CCTV	5
Award Distribution by Year	
2012	19
2013	19
2014	12
2015	22
2016	27
2017	12
2018	15
Award Distribution by Industry	
Agriculture, forestry and fisheries	1
Mining	3
Manufacturing	84

Construction	3
Wholesale and retail trade	1
Transport, storage and postal services	1
Information Transmission, Software and Information Technology Services	17
Finance	4
Real Estate	5
Rental and business services	6
Culture, Sports and Entertainment	1
Total	126

Table5. 3 CEO awards and ESG performance

This table reports regression estimates of ESG rating on CEO awards and the control variables. The dependent variable is the ESG rating, ranging from 1 (lowest) to 9 (highest). Treatment has a value of 1 for firms with award-winning CEOs and 0 for others. Post-award period receives a value of 1 for the years when an award is received and those afterwards, and 0 for years beforehand. The interaction term captures the effect of winning an award on firms' ESG for treatment firms compared to control firms. Column (1) shows the estimation results of the OLS regression without control variables. Column (2) shows the estimation results of the OLS regression with control variables. Treatment is omitted because it is time-invariant, and I have already controlled for CEO-fixed effects. Post-award period is omitted because I have already controlled for year-fixed effects. Robust standard errors are used; *t*-values are given in parentheses, and ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

	OLS with Fixed Effect			
	(1)		(2)	
Treat × Post	0.187***	(3.679)	0.162***	(2.981)
Firm Size			0.014	(0.264)
Tobin's Q			-0.057***	(-3.389)
ROA			3.027***	(5.159)
Leverage			-0.192	(-0.778)
SOE			-0.322**	(-1.997)
CEO Age			0.018	(0.367)
CEO Education			-0.108	(-1.385)
CEO Duality			-0.093	(-1.160)
Board Size			0.460**	(2.560)
Board Independence			0.021	(0.033)
Year Fixed Effect	YES		YES	
CEO× Firm Fixed Effect	YES		YES	
N	2021		2021	
R^2	0.0043		0.061	

Table5. 4 Robustness Check: Additional Fixed Effect

This table provides a robust check of the main results with extra fixed effects. Columns (1) to (3) show OLS regression with extra fixed effects controlled (Province fixed effects for Column (1), industry-fixed effects for Column (2), and firm fixed effects for Column (3)). In all models, the dependent variables are ESG ratings as in the main regression treatment is omitted because it is time-invariant, and I have already controlled for CEO-fixed effects. The post-award period is omitted because I have already controlled for year-fixed effects. Robust standard errors (clustered by CEO) are used; *t*-value are given in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Dependent Variable	ESG Rating		
	(1)	(2)	(3)
Treat×Post	0.162***	0.152***	0.105*
	(2.970)	(2.746)	(1.710)
Firm Size	0.014	0.014	0.019
	(0.267)	(0.251)	(0.330)
Tobin's Q	-0.057***	-0.056***	-0.060***
	(-3.374)	(-3.332)	(-2.917)
ROA	3.028***	3.066***	2.510***
	(5.146)	(5.126)	(3.385)
Leverage	-0.193	-0.223	0.004
	(-0.774)	(-0.879)	(0.014)
SOE	-0.322**	-0.324**	-0.130
	(-1.993)	(-1.990)	(-0.705)
CEO Age	0.018	0.009	0.020
	(0.365)	(0.185)	(0.451)
CEO Education	-0.109	-0.108	-0.048
	(-1.374)	(-1.363)	(-0.594)
CEO Duality	-0.092	-0.090	-0.148*
	(-1.153)	(-1.106)	(-1.847)
Board Size	0.458**	0.468**	0.183
	(2.493)	(2.485)	(0.812)
Board Independence	-0.015	0.037	0.010
	(-0.023)	(0.057)	(0.013)
CEO-Fixed Effect	YES	YES	YES
Year Fixed Effect	YES	YES	YES
Firm Fixed Effect	YES	YES	YES
Industry-Fixed Effect	YES	YES	YES
Province Fixed Effect	NO	YES	YES
Year x Province Fixed Effect	NO	NO	YES
N	2021	2016	2016
R^2	0.042	0.043	0.025

Table5. 5 Robustness Check: Alternative Valuation

This table provides a robust check of the main results by different measures of ESG performance. Column (1) shows ESG performance categorised by level of classification (all A-level and BBB-levels are assigned a value of 3 to indicate the firm is a leader; BB, B and CCC are assigned a value of 2, and CC and C are assigned a value of 1). Column (2) shows ESG performance categorised by span assignment between A, B and C levels (C levels are assigned a value of 1, 2 or 3; B levels are assigned a value starting from 4.) In both models in Table 4, the dependent variables are ESG ratings as in the main regression. Treatment is omitted because it is time-invariant, and I have already controlled for CEO-fixed effects. The post-award period is omitted because I have already controlled for year-fixed effects. Robust standard errors (clustered by CEO) are used, and *t*-values are given in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)
	ESG_rating2	ESG_rating3
Treat×Post	0.012**	0.216***
	(2.52)	(2.835)
Firm Size	-0.025	0.023
	(-1.257)	(0.322)
Tobin Q	-0.005	-0.094***
	(-0.739)	(-4.064)
ROA	0.776***	4.282***
	(3.585)	(5.473)
Leverage	-0.240***	-0.082
	(-3.163)	(-0.247)
SOE	-0.092***	-0.491***
	(-4.419)	(-1.989)
CEO Age	0.008	0.007
	(0.480)	(0.104)
CEO Education	-0.034	-0.138
	(-1.174)	(-1.333)
CEO Duality	0.027	-0.114
	(0.871)	(-1.028)
Board Size	0.138**	0.624**
	(2.267)	(2.449)
Board Independence	0.129	-0.164
	(0.567)	(-0.199)
CEO-Fixed Effect	YES	YES
Year Fixed Effect	YES	YES
N	2021	2021
R^2	0.03	0.043

Table5. 6 Robust Check: Alternative Database

Panel A. Summary statistics for the SynTao Database

Variables	Observations	Mean	SD	Median
ESG Rating	931	3.27	1.083	3.00
Employee	931	47585.82	97687.434	12966.00
Tobin's Q	931	2.92	2.710	1.80
ROA	931	0.09	0.072	0.08
Leverage	931	0.46	0.232	0.41
State	931	0.59	0.492	1.00
CEO Age	931	53.16	7.199	53.00
CEO Education	931	3.66	0.796	4.00
CEO Duality	931	0.22	0.414	0.00
Board Size	931	9.55	2.778	9.00
Board Independence	931	0.38	0.062	0.36

Panel B. Robust Check

This table provides a robust check of the main results by different measures of ESG performance from the Syntao Database. Column (1) shows the estimation results of OLS regression without control variables. Column (2) shows the estimation results of OLS regression with control variables. In both cases, the dependent variable is the SynTao ESG rating. Treatment is omitted because it is time-invariant, and I have already controlled for CEO-fixed effects. The post-award period is omitted because I have already controlled for year-fixed effects. Robust standard errors (clustered by CEO) are used; *t*-values are given in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

	(1) ESG (SynTao)	(2) ESG (SynTao)
Treat×Post	0.127**	0.069*
	(1.986)	(1.858)
Firm Size		0.017
		(0.174)
Tobin's Q		0.051*
		(1.720)
ROA		0.895
		(1.165)
Leverage		-0.011
		(-0.024)
CEO Age		0.084
		(1.232)
CEO Education		0.087
		(0.862)
CEO Duality		0.060
		(0.629)
Board Size		-0.991***
		(-3.932)

Board Independence		-3.335***
		(-4.827)
Year Fixed Effect	YES	YES
CEO x Firm Fixed Effect	YES	YES
N	931	931
R^2	0.01	0.06

Table5. 7 The effect on firm performance

This table present the results to investigate the relationship between ESG improvement by awarded CEO and firm performance. The dependent variable is the ROA (in column (1) and (2)) and industry-adjusted ROA (column (3) and (4)). Year fixed effect and CEO fixed effect are controlled in all regressions. Robust standard errors (clustered by CEO) are used, and t-value are given in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
	ROA	IA ROA
ΔESG	-0.0125***	-0.00347
	(-3.10)	(-1.57)
Post x Treat	0.00328	-0.0131
	(0.41)	(-1.36)
Post x Treat x ΔESG	0.0338**	0.0115*
	(2.34)	(1.93)
ROA	1.136***	0.196
	(2.99)	(1.42)
Tobin Q	-0.00595	-0.00363
	(-1.03)	(-1.30)
Firm Size	0.0158	0.0118
	(0.81)	(1.44)
Firm Age	-0.0536*	-0.0266*
	(-1.74)	(-1.83)
Leverage	0.0641	0.00391
	(1.25)	(0.18)
Duality	-0.0451	-0.0311
	(-0.70)	(-1.28)
Education	-0.0135	-0.00353
	(-0.74)	(-0.47)
Age	0.0621*	0.00522
	(1.95)	(0.38)
Board Size	0.304*	0.108
	(1.73)	(1.43)
Independence	0.437	0.106
	(1.60)	(0.76)
SOE	-0.0465**	-0.0286
	(-1.98)	(-1.38)
CEO fixed effect	YES	YES
Time fixed effect	YES	YES
N	2021	2021
R^2	0.103	0.025

Table5. 8 Testing the image control motivation channel through advertising and philanthropy

Table 5.8 shows the testing of the image control channel. Specifically, I investigated the link between CEO awards and firms' advertising (Column 1) or philanthropy (Column 2) expenditure. A firm's advertising expenditure is the ratio of advertising to sales expenditure in a given year. Philanthropy is the natural logarithmic value of philanthropic expenditure in a given year. The independent variable of interest is also the interaction term of the post-award period and treatment firms that captures the effect of winning an award. Year fixed effect and CEO-fixed effect are controlled in all regressions. Robust standard errors (clustered by CEO) are used; *t*-values are given in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

Dependent Variable	Advertising		Philanthropy	
	(1)		(2)	
Treat × Post	0.017***	(2.992)	9.187***	(3.616)
Firm Size	-0.021***	(-2.969)	4.077**	(2.380)
Tobin's Q	0.006***	(2.582)	0.527	(0.792)
ROA	0.166***	(2.904)	-25.124*	(-1.882)
Leverage	-0.001	(-0.027)	-1.513	(-0.193)
State	0.099***	(6.824)	4.651	(1.341)
CEO Age	-0.015***	(-3.003)	-3.017	(-1.533)
CEO Education	-0.003	(-0.382)	-0.353	(-0.177)
CEO Duality	-0.024***	(-2.969)	-2.148	(-0.914)
Board Size	-0.086***	(-2.998)	15.147	(1.114)
Board Independence	-0.185**	(-2.251)	42.777*	(1.682)
Year Fixed Effect	YES		YES	
CEO× Firm Fixed Effect	YES		YES	
N	2021		2021	
R^2	0.08		0.01	

Table5. 9 Testing for the financial constraint channel: Mediation Effect of Financial Constraints

This table shows a stepwise test of the moderation effect of financial constraints on the effect of winning an award to ESG rating . The dependent variable is the ESG rating, ranging from 1 (lowest) to 9 (highest) as shown in Columns (1) and (3), and the WW index in Column (2). The interaction term captures the effect of winning an award for treatment firms compared to control firms on firms' ESG performance or WW index. Year fixed effect and CEO-fixed effect are controlled in all regressions. Robust standard errors (clustered by CEO) are used, *t*-values are given in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Dependent Variable	ESG Rating	WW Index	ESG Rating
	(1)	(2)	(3)
Treat × Post	0.162***	-0.005**	0.154**
	(2.970)	(-1.999)	(2.248)
WW Index			-1.277**
			(-2.276)
Firm Size	0.014	-0.003	-0.001
	(0.267)	(-0.832)	(-0.025)
Tobin's Q	-0.057***	-0.004***	-0.070***
	(-3.374)	(-2.882)	(-4.014)
ROA	3.028***	0.004	3.324***
	(5.146)	(0.113)	(5.544)
Leverage	-0.193	-0.003	-0.148
	(-0.774)	(-0.160)	(-0.563)
SOE	-0.322**	-0.007	-0.326**
	(-1.993)	(-0.983)	(-2.032)
CEO Age	0.018	-0.003	0.009
	(0.365)	(-1.025)	(0.181)
CEO Education	-0.109	-0.002	-0.128
	(-1.374)	(-0.426)	(-1.592)
CEO Duality	-0.092	-0.009	-0.104
	(-1.153)	(-1.503)	(-1.265)
Board Size	0.458**	-0.036***	0.405**
	(2.493)	(-3.585)	(2.179)
Board Independence	-0.015	-0.027	-0.110
	(-0.023)	(-0.941)	(-0.182)
Year Fixed Effect	YES	YES	YES
CEO× Firm Fixed Effect	YES	YES	YES
N	2021	2021	2021
R^2	0.042	0.024	0.054

Table5. 10 Testing for the market pressure channel through earning management

Table 5.10 shows the estimation of CEO awards and short-term earning boost behaviour. For robustness, the dependent variables are three types of firm short-term proxy in a given year. MAP is the manipulation of accrued profits calculated by the modified Jones model (1995). REM is real earning management. The calculation process for MAP and REM is shown in the Appendix. AD is the asset duration (the ratio of net fixed assets to depreciation costs). The independent variable of interest is the interaction term of the post-award period and treatment firms that captures the effect of winning an award. Year fixed effect and CEO-fixed effect are controlled in all regressions. Robust standard errors (clustered by CEO) are used; *t*-values are given in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)
	MAP	REM	AD
Treat × Post	-0.001	-0.016	-0.069
	(-0.131)	(-1.366)	(-0.787)
Firm Size	-0.001	0.020**	0.092
	(-0.239)	(2.142)	(1.113)
Tobin's Q	0.008***	-0.026***	-0.012
	(4.226)	(-5.894)	(-0.341)
ROA	0.139***	-0.623***	-0.036
	(2.648)	(-5.302)	(-0.027)
Leverage	0.005	-0.160***	-0.578
	(0.222)	(-3.144)	(-1.311)
SOE	0.004	-0.025	-0.611
	(0.138)	(-0.821)	(-1.103)
CEO Age	-0.002	0.007	-0.047
	(-0.227)	(0.428)	(-0.314)
CEO Education	-0.018***	0.032*	0.304
	(-2.978)	(1.955)	(1.450)
Board Size	-0.064***	-0.015	0.806*
	(-3.391)	(-0.331)	(1.881)
Board Independence	-0.024	-0.169	2.549**
	(-0.491)	(-1.412)	(2.227)
Year Fixed Effect	YES	YES	YES
CEO× Firm Fixed Effect	YES	YES	YES
N	2021	2021	2021
R^2	0.031	0.079	0.011

Table5. 11 Testing for the overconfidence risk-taking channel through risky investment

Table 5.11 shows the estimation of CEO awards and high-risk investment behaviour. The dependent variables are the number of announced M&As in Column (1), a dummy variable indicating whether dividends were paid in Column (2), cash holding (ratio of cash and cash equivalents to total assets) in Column (3), and R&D expense (R&D expense to total income) in Column (4). The independent variable of interest is the interaction term of the post-award period and treatment firms that captures the effect of winning an award. Year fixed effect and CEO-fixed effect are controlled in all regressions. Robust standard errors (clustered by CEO) are used; *t*-values are given in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

	(1) Announced M&A	(2) Dividends Paid	(3) Cash Holding	(4) R&D
Treat × Post	0.118	0.018	0.002	-0.396*
	(1.022)	(0.792)	(0.397)	(-1.864)
Firm Size	0.008	0.027	-0.020***	0.480**
	(0.091)	(1.383)	(-4.065)	(2.076)
Tobin's Q	-0.020	-0.023***	0.016***	-0.166
	(-0.569)	(-2.719)	(5.413)	(-1.326)
ROA	0.297	0.595**	0.051	-3.392
	(0.415)	(2.444)	(0.705)	(-1.300)
Leverage	-1.329***	-0.019	0.121***	-4.408***
	(-3.054)	(-0.188)	(4.268)	(-4.039)
State	0.918*	-0.028	-0.040**	5.678***
	(1.717)	(-0.884)	(-2.202)	(3.907)
CEO Age	-0.089	0.022	0.005	0.253
	(-0.764)	(0.609)	(0.482)	(1.451)
CEO Education	0.005	-0.045	-0.010	-0.188
	(0.031)	(-1.322)	(-1.075)	(-0.368)
Board Size	0.615	-0.163	0.093	4.611**
	(0.495)	(-0.551)	(1.499)	(2.321)
Board Independence	0.195	-0.040	0.031	-0.971
	(0.436)	(-0.450)	(1.378)	(-1.616)
Year Fixed Effect	YES	YES	YES	YES
CEO× Firm Fixed Effect	YES	YES	YES	YES
N	2021	2021	2021	2021
R^2	0.010	0.016	0.058	0.047

Appendix A. Definition of Variables

Variable	Definition
ESG Rating	ESG performance measures range from 1 (lowest) to 9 (highest)
Treat	Dummy variable with a value of 1 for firms with award-winning CEOs and 0 for others
Post	Dummy variable with a value of 1 for the years of and after a CEO receives an award and 0 for years before an award
Tobin's Q	Ratio of market value to total book assets
ROA	Ratio of net profit to total book assets
Leverage	Ratio of total debt to total assets
Firm Size	The natural logarithmic value of total employees
WW Index	A financial constraint measure calculated by $WW\ Index_{i,t} = -0.091 \times \mathrm{CF}_{i,t} - 0.062 \times \mathrm{DIVPOS}_{i,t} + 0.021 \times \mathrm{TLTD}_{i,t} - 0.044 \times \mathrm{LNTA}_{i,t} + 0.102 \times \mathrm{ISG}_{i,t} - 0.035 \times \mathrm{SG}_{i,t}$ A higher value of WW index suggests greater financial constraints.
SOE	Dummy variable with a value of 1 if the firm is a state-owned enterprise and 0 otherwise
CEO Duality	Dummy variable with a value of 1 if the CEO is also the chairman of the board and 0 otherwise
CEO Age	CEO age in a given year
CEO Education	1 for high school and below, 2 for college, 3 for bachelor's degree, 4 for master's degree, 5 for doctoral degree.
CEO retirement	Dummy variable with a value of 1 if the CEO will retire in the next 2 years and 0 otherwise.
Board Size	The logarithmic value of total board members
Board Independence	The ratio of independent board members on the board
Advertisement Expense (million)	Ratio of advertising expenditure to sales expenses
Philanthropy(million)	The natural logarithmic value of total philanthropy
MAP	Manipulation of accrued profits (See. Appendix. B.1)
REM	Real earning management (See. Appendix. B.2)
AD	Asset duration: the ratio of net fixed assets to depreciation expenses
Announced M&A	The number of deals announced in a fiscal year
Paying Dividend	Dummy Variable with a value of 1 if the firm pays dividends along with its stock and 0 otherwise
Cash Holding	The ratio of cash and cash holdings to total assets
R&D	R&D expenses to total income

Appendix B: Earning Management Variables

B.1: Manipulation of accrued profits

For the **MAP**, I apply the modified Jones model according to Dechow (1995) as follows:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{\Delta REV_{it}}{A_{it-1}} + \alpha_3 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it} \quad (1)$$

$$NMAP_{i,t} = \widehat{\alpha_1} \frac{1}{A_{i,t-1}} + \widehat{\alpha_2} \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + \widehat{\alpha_3} \frac{PPE_{it}}{A_{it-1}} \quad (2)$$

$$MAP_{i,t} = \frac{TA_{it}}{A_{it-1}} - NDA_{i,t} \quad (3)$$

TA_{it} is total accrued profit, equal to operating profits minus the operating net cash flow. $NMAP_{i,t}$ is the non-manipulated accrued profit. ΔREV_{it} is the change of operating revenue of firm *i* in year *t*. ΔREC_{it} is the change in accounts receivable. PPE_{it} represents the net fixed assets. A_{it-1} represents total assets in year *t*-1.

Firstly, I regress Equation (1) by industry and year and bring the estimated coefficients to Equation (2) to find the non-manipulated accrued profits. Then I manipulate the accrued profits with Equation (3).

B.2: Real earning management

According to research by Dechow (1998) and Roychowdhury (2006), **REM** is calculated by obtaining the error term of industry year regressions as follows:

$$\frac{CFO_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{REV_{it}}{A_{it-1}} + \alpha_3 \frac{\Delta REV_{it}}{A_{it-1}} + CFO\_\varepsilon_{it} \quad (4)$$

$$\frac{PROD_{it}}{A_{it-1}} = \beta_0 + \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{REV_{it}}{A_{it-1}} + \beta_3 \frac{\Delta REV_{it}}{A_{it-1}} + \beta_4 \frac{\Delta REV_{it-1}}{A_{it-1}} + PROD\_\varepsilon_{it} \quad (5)$$

$$\frac{DISEXP_{it}}{A_{it-1}} = \gamma_0 + \gamma_1 \frac{1}{A_{it-1}} + \gamma_2 \frac{REV_{it}}{A_{it-1}} + DISEXP\_\varepsilon_{it} \quad (6)$$

CFO_{it} is the operating cash flow for firm *i* in year *t*. $PROD_{it}$ is the cost of production, which is equal to the sum of operating costs and changes in inventories for firm *i* in year *t*. $DISEXP_{it}$ represents the manipulated expenses, which equal the sum of sales expenses and administrative expenses. REV_{it} is the operating revenue of firm *i* in year *t*. ΔREV_{it} is the change of operating revenue of firm *i* in year *t*. ΔREV_{it-1} is the change of operating revenue of firm *i* in year *t*-1. A_{it-1} represents total assets in year *t*-1.

The real earnings management then should be

$$REM_{it} = (-1)CFO_{\varepsilon_{it}} + PROD_{\varepsilon_{it}} + (-1)\, DISEXP\_\varepsilon_{it}$$

Asset duration is the ratio of net fixed assets to depreciation expenditure for firm *i* in year *t*.

CHAPTER SIX: CONCLUSION

This thesis focuses primarily on the motivations of CSR, in other words, what drives firms to engage in CSR and uses a range of variables to measure firms' CSR performance – including CSR ratings, CSR scores, ESG indexes from various databases – and one director measure – greenhouse gas emissions. Overall, the findings identify three types of organisational or individual that significantly improve CSR: female directors, institutional investors, and award-winning CEOs.

Specifically, Chapter 3 discusses the role of female directors in promoting firms' CSR engagement. By analysing the CSR ratings of China's listed companies from 2010 to 2020, the results show that female directors significantly improve firms' CSR performance. The results still hold after accounting for endogeneity. This thesis also discusses the mechanisms behind the relationship between female directors and CSR performance. Females are proven to be more ethical and risk-averse than their male counterparts. Thus, this chapter hypothesises that the ethicality and risk-aversion mechanisms promote CSR engagement by female directors. In addition, board diversity can bring more connections with external organisations and support board decision-making. In this case, this thesis hypothesises that female directors use board diversity mechanisms to affect firms' CSR performance. To test the two mechanisms, this thesis first used the sub-CSR ratings of total CSR to identify the role of female directors in different aspects of CSR. The results show that female directors have no significant effect in the most ethical aspects of environmental responsibility and social responsibility, which rejects the ethical mechanism hypothesis. Then, this thesis tested whether the female directors in the sample are more risk-averse than their male counterparts. The results show that female directors show less evidence of risk aversion; as a result, the risk-aversion mechanism was also rejected. Finally, this thesis introduced other aspects of board diversity and tested the role of board diversity on influencing CSR performance. The results show that other aspects of board diversity also play a significant role in promoting CSR performance. The role of female directors is less significant when the board is already diverse. In further discussion, based on gender discrimination in China, this thesis argues that the effectiveness of female directors

depends on gender discrimination levels and social trust can significantly mitigate discrimination. To test this hypothesis, this thesis investigates dialect diversity and education levels in the cities of the firms' headquarters. The results show that in areas with high levels of social trust, the role of female directors is more significant, which explains gender discrimination to a certain degree.

Chapter 4, in contrast, focuses on an organizational factor—ownership structure, in other words, the role of institutional investors. Chapter 4 tests whether institutional investors are activist shareholders and have an impact on GHG emissions. The role of institutional investors is considered thoroughly in previous literature, however, due to the compulsory data disclosure policy and different disclosure criteria, it is hard to investigate firm level factors and firm level emissions. Thus, there is few literature considering the role of institutional investors on affecting firms GHG emissions. Chapter 4 hands collect the GHG emission data and combine them with corporate ownership structure. In This chapter finds that institutional investors play a significant role in affecting firms' GHG emissions: the higher the institutional ownership, the lower the GHG emissions. To test heterogeneity, the chapter finds that PSIIs are less likely to have an impact on firms' decision-making because they need to maintain their business relationship. In contrast, PRIIs have significant influence on GHG emissions. The findings show that institutional investors use their voice (through shareholder proposals) to impact GHG emissions. The most noticed contribution for chapter four might be connecting the firm level factors and greenhouse gas emissions in China. Institutional level factors have been discussed thoroughly responding to the Carbon Neutral Policy. In addition, the policy implements machine role of state-owned firms are also discussed. What should be noted is that not only state-owned firms cares about the national policy. Any other public firms also take actions to respond to national policy.

Chapter 5 also discusses the role of TMTs. As the decision-makers, the impact of CEO behaviours on CSR has been a topic of academic discussion for some time. Chapter 5 considers the award-winning experience of CEOs and subsequent CSR performance.

The findings show that after winning an award, firms tend to improve their CSR engagement. The channels to explain this relationship could be that CEOs are motivated to improve their reputation because they want to convert their celebrity status into solid reputation and make profits, as well as the relaxing of financial constraints as a result of the influential award received. To rule out a net effect caused by a potential negative relationship, I also tested two possible negative channels – the overconfidence channel and the market pressure channel. The results reject the suggestions that award-winning CEOs in the sample are more overconfident and that they possibly manipulate earnings in response to market pressure. Finally, this chapter discusses whether these CEOs engage in ESG to improve their own reputation or to contribute to firm value. The results show that the ESG conducted by award-winning CEOs is an expression of agency problem and harms firm value. This chapter draws innovatively on the difference between celebrity status and reputation in considering the influence of award on CEOs' behaviour. And then connect the external experience as factors that influence firms' ESG engagement.

This thesis significantly contributes to the understanding of Corporate Social Responsibility (CSR) motivations, particularly within the context of China's publicly listed companies. This investigation reveals the unique roles that female directors, institutional investors, and award-winning CEOs play in bolstering CSR engagement, thus shedding new light on the dynamics of corporate social responsibility. For corporations, the findings underscore the value of board diversity and the need to acknowledge and leverage the distinct strengths of female directors. The significant relationship between the board gender diversity and CSR engagement could potentially redefine human resource strategies and board composition policies. For policymakers, the results reaffirm the necessity of promoting diversity within corporate boardrooms, thereby advocating for gender equality and equitable representation. The demonstrated impact of institutional investors on reducing GHG emissions identifies an effective lever for policy manipulation to further environmental sustainability. The distinctive behavior of awarding CEOs on CSR and firm value inform the validity of rewards on

motivating CEO to care about CSR, encouraging policymakers to design such rewards. For investors, the results also suggest three specific kind of firms that may have higher CSR performance or engagement, which helps investors to make investment decisions and portfolio management.

Despite its significant contributions, this study does have limitations. First, its focus on publicly listed companies in China could potentially limit its generalizability to other contexts or privately held companies. Different cultural, regulatory, and market dynamics in other countries might influence the roles and impacts of female directors, institutional investors, and CEOs on CSR engagement. Second, the study relies on available data on CSR ratings, CSR scores, ESG indexes, and GHG emissions. These metrics, although comprehensive, may not fully capture all aspects of a firm's CSR performance, or there might be variations in how these measures are reported across different companies. Lastly, the study predominantly concentrates on the positive influences of female directors, institutional investors, and award-winning CEOs on CSR, which could skew perspectives towards overly optimistic outcomes. The potential negative influences or unintended consequences associated with these actors are not extensively explored, which might present a gap in the holistic understanding of the dynamics at play.

Given the scope and findings of this study, several directions are suggested for future research. First, similar studies could be conducted in other countries to verify and complement the findings of this thesis, extending the insights beyond China's listed companies. This would allow for a broader, more global understanding of CSR motivations and practices. Additionally, future research could explore other factors that might influence CSR engagement in firms, such as the roles of other board members, firm size, industry dynamics, or firm-specific factors. Unpacking the potential negative influences of those individual and firm level factors on CSR concerns could also be a fruitful area for future exploration, contributing to a more balanced and nuanced understanding of CSR dynamics. Moreover, in terms of CSR, future research could

focus on the lower-level materialization instead of evaluating the CSR performance by overall score. this would help us further understand the CSR focus of different firms and concerns.

Specifically, one promising area for future research is the role of family ownership in shaping firm decisions and performance. As noted in the literature, family ownership is globally prevalent and has unique implications for agency problems and corporate governance (Baysinger et al., 1991; Lee and O'neill, 2003; Villalonga and Amit, 2020). The dynamics of family ownership can mitigate Type I agency conflicts but intensify Type II conflicts, affecting not only the firm's decision-making but also its risk appetite, culture, and strategic outlook (Shleifer and Vishny, 1986; Villalonga and Amit, 2020).

Family ownership can also influence firm value and market reactions (Adams et al., 2009 2009; Fahlenbrach, 2004; Lansberg, 1999; Morck et al., 1988 1988; Villalonga and Amit, 2020). The negative market reactions to the appointment of family members to key positions (Pérez-González, 2001; Smith and Amoako-Adu, 1999) and the potential for nepotism and myopic behaviors (Dunn, 1995; Lee, 2006; Schulze et al., 2001 & Buchholtz, 2001; Sirmon and Hitt, 2003; Wu et al., 2005 2005) make family ownership an interesting area for further exploration.

Moreover, the unique characteristics of family firms, such as their long-term orientation and concern for reputation and family legacy (Fernández and Nieto, 2006; Miller and Le Breton-Miller, 2005; Zahra, 2003), can have implications for their investment in R&D or CSR, presenting another direction for future research. In addition, the family firms succession also provide a unique period for the role of CSR to build social networks.

In summation, this dissertation delves into the determinants of firms' engagement in CSR activities and their performance in such endeavours, as well as the subsequent outcomes of this engagement. The study enriches the extant literature on the roles of Top Management Teams (TMTs) and shareholders by not only investigating the

connections between these stakeholders and CSR, but also unravelling the underlying mechanisms and conduits that facilitate these relationships. The research further aims to contribute to policy discussions, offering implications for designing effective CSR frameworks that not only support sustainable business practices but also foster economic growth. By drawing attention to the multifaceted role of CEO demographics, institutional ownership, and the distinctive Chinese market context, this thesis hopes to inspire future research in the fascinating intersection of corporate leadership, governance, and sustainability.

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