

Article

Exploring the Impact of Board Size on ESG Controversies: New Evidence from China

Jian Yin and Jian Xu * 

School of Economics and Management, Qingdao Agricultural University, Qingdao 266109, China

* Correspondence: jianxusword@qau.edu.cn

Abstract: This study aims to investigate the impact of board size on environmental, social, and governance (ESG) controversies using data from Chinese-listed companies during 2007–2022. In addition, we explore the moderating effects of female participation on corporate boards, board age, financing constraints, and internal control. ESG controversies are measured by an ESG controversies score from the LSEG Workspace, and fixed effects models are used to perform the analysis. The results show that larger boards can lead to more ESG controversies in China. This impact is greater in non-manufacturing, heavily polluted, and non-high-tech industries, in state-owned enterprises, eastern regions, and non-foreign-funded companies. Additionally, women on boards and internal control weaken the impact of board size on ESG controversies, while financing constraints strengthen this impact. The moderating effect of board age is not significant. The findings can help Chinese-listed companies improve their ESG performance and achieve sustainable development through strengthening corporate governance.

Keywords: board size; ESG controversies; female participation on corporate boards; board age; financing constraints; internal control



Academic Editors: Frank Li and
Grigorios L. Kyriakopoulos

Received: 29 March 2025

Revised: 18 May 2025

Accepted: 22 May 2025

Published: 26 May 2025

Citation: Yin, J.; Xu, J. Exploring the Impact of Board Size on ESG Controversies: New Evidence from China. *Sustainability* **2025**, *17*, 4855. <https://doi.org/10.3390/su17114855>

Copyright: © 2025 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Recently, environmental, social, and governance (ESG) issues have attracted increasing attention worldwide [1], and ESG performance is an important indicator for measuring a company's sustainable development capabilities [2]. According to the stakeholder theory, companies that prioritize ESG tend to exhibit high financial performance and gain a strong competitive advantage, contributing to their long-term sustainability [3,4]. However, previous literature seldom focuses on ESG controversies, which is an understudied research direction [5–7]. ESG controversies pertain to unfavorable media exposure of a company's ESG failures [8,9]. When a company becomes involved in ESG-related controversies, it will impair the company's reputation [10], reduce economic returns [11], and disrupt long-term sustainability [12,13]. Therefore, it is imperative for companies to proactively prevent potential ESG controversies to uphold their commitment to sustainability.

In corporate governance, the board of directors has the responsibility to formulate major decisions, guide daily operations, and monitor the management [14,15]. As a monitor and an advisor, a resourceful board can help prevent the occurrence of ESG scandals, thereby safeguarding the company's long-term sustainability [16]. Board size is closely related to the advisory function of the board, with implications for sustainability [17]. Based on the stakeholder theory, large boards encourage stakeholders to actively participate in decision-making processes [18], which can effectively avoid contentious issues and promote sustainable practices. However, large boards might have difficulties in collective judgment

and communication challenges [19], which leads to weak oversight and makes the company involved in controversial activities that threaten its sustainability. The newly revised Company Law of the People's Republic of China, effective from 1 July 2024, introduces new regulations concerning the board of directors of joint stock limited companies. Firstly, the upper limit on the number of board members is abolished, and the lower limit is reduced to three. Secondly, smaller joint stock limited companies may choose not to establish a board of directors and instead appoint a single director to exercise the powers and responsibilities of the board of directors. Therefore, understanding the role of board size in the prevention of ESG controversies is of great significance for fostering corporate sustainability in the Chinese context.

Previous studies have not explored the roles of female participation on boards, board age, financing constraints, and internal control in the relationship between board size and ESG controversies, which are important directions in corporate governance. Female directors are generally more concerned about corporate social responsibility and environmental protection issues, which can enhance the company's ESG awareness and reduce the occurrence of ESG controversies [20]. In corporate boards, older board members are likely to have a richer experience and industry knowledge [21], which can enable them to identify ESG risks more sensitively and guide the company in responding to such risks more effectively. Companies facing serious financing constraints might pay more attention to risk management [22], including ESG-related risks, thus reducing ESG risks. An effective internal control system can promptly detect and correct potential violations of ESG regulations. Meanwhile, it also assists companies in identifying, assessing, and managing ESG-related risks [23], which can mitigate ESG controversies. This study attempts to fill this gap by uncovering the roles of female participation on boards, board age, financing constraints, and internal control between board size and ESG controversies.

Based on the stakeholder theory and agency theory, this study aims to explore the influence of board size on ESG controversies based on the data of Chinese-listed companies from 2007 to 2022. This study also analyzes whether this impact is different in different industries, ownerships, regions, and sources of capital. In addition, this study tries to explore the moderating effects of female participation on corporate boards, board age, financing constraints, and internal control. ESG controversies are measured by the ESG controversies score from the LSEG Workspace (previously known as the Refinitiv database), and fixed effects models are used to analyze the relationship between board size and ESG controversies.

This study can contribute to the existing literature on the topic of ESG controversies and corporate governance in three aspects. First, this study examines the impact of the size of the board of directors on ESG controversies using Chinese data, which paves the way for future studies on ESG controversies that have received less attention compared to other aspects of corporate social responsibility. Secondly, this study extends the existing body of knowledge by exploring the moderating roles of several key corporate governance factors—female participation on corporate boards, board age, financing constraints, and internal control—in the relationship between board size and ESG controversies. These moderators have not been comprehensively examined together in previous research, and our findings shed light on how these factors influence ESG outcomes. Finally, by providing empirical evidence on the relationship between board characteristics and ESG controversies, this study offers actionable recommendations for how management can leverage corporate governance mechanisms to minimize negative ESG consequences. This practical guidance is particularly timely given the increasing importance of ESG performance in corporate strategy and stakeholder relations.

2. Theoretical Background and Hypotheses Development

2.1. Theoretical Background

2.1.1. Stakeholder Theory

Stakeholder theory was proposed by Freeman [24]. Based on corporate strategic management theory, he discussed how business managers communicate with their stakeholders and balance the interests of all parties involved [24]. Stakeholders refer to individuals and groups that can influence or be influenced by corporate management objectives, including but not limited to shareholders, creditors, employees, consumers, and the government [25]. These stakeholders have explicit or implicit “contractual relationships” with the enterprise [26]. To achieve the goal of maximizing value, enterprises need to satisfy the demands of all stakeholders [27]. In the process of adjusting the interests of all stakeholders, enterprises may suffer financial and reputation losses due to improper methods. Therefore, effectively managing stakeholders is a good path for enterprises to achieve their sustainability goals.

From the stakeholders’ perspective, the board of directors is an important business decision-making body and represents the shareholders. It plays a crucial role in balancing the needs of different stakeholders. For listed companies, they need to fulfill not only economic responsibilities but also other responsibilities, such as legal, ethical, and social responsibilities [28]. Each stakeholder has a different focus regarding the fulfillment of corporate responsibilities. Shareholders may focus more on economic responsibilities, governments on legal responsibilities, and social citizens on ethical responsibilities. Therefore, when formulating strategic decisions, the board of directors should consider issues more comprehensively and serve the interests of multiple stakeholders rather than merely advocating for the needs of shareholders.

2.1.2. Agency Theory

Agency theory was proposed by Berle and Means [29], and it suggested that when shareholders concurrently serve as management, the company’s operational efficiency declines. Therefore, this theory advocates the separation of corporate ownership and management rights. However, when company shareholders delegate management tasks to managers, there often exists information asymmetry between them [30]. Shareholders focus on corporate value, while management prioritizes their personal interests. In such circumstances, management may sacrifice the company’s long-term development for their personal interests. Ultimately, this has a severe impact on the company’s sustainable development. The operational dilemma arising from the divergence of interest demands between principals and agents is known as the principal–agent problem [31].

To address this problem, modern corporate governance primarily focuses on two aspects. The first is aligning the interest demands of managers with those of shareholders. For example, adopting management equity incentives can enable managers to pursue the maximization of shareholders’ value while maximizing their own interests [32]. Second, a board of directors should be established to mediate the relationship between shareholders and management. The roles of the board of directors are summarized in two points: (1) enhancing information transparency to resolve information asymmetry between the two sides through an information transmission channel of management—board of directors—shareholders, and (2) establishing effective supervision mechanisms for management to prevent their behaviors from harming shareholders’ interests. As a pivotal link in corporate governance, it is crucial for the board of directors to prevent business risks by balancing the relationship between shareholders and management.

Agency theory focuses on the principal–agent relationship within enterprises, emphasizing the coordination of conflicts of interest between shareholders and management

through incentive and monitoring mechanisms to reduce agency costs. Stakeholder theory advocates that enterprises should consider the interests of all stakeholders, emphasizing corporate social responsibility and sustainable development. The two theories share a common goal of minimizing conflicts of interest, optimizing resource allocation, and enhancing corporate value. The former focuses on internal interest coordination, and the latter emphasizes broader social responsibilities.

2.2. Literature Review and Hypotheses Development

2.2.1. Board Size and ESG Controversies

A large board of directors refers to a board structure with numerous members, characterized by diverse perspectives and extensive information resources, but it also confronts challenges in coordination costs and decision-making efficiency. Regarding the impact of board size on ESG controversies, there are two different opinions. Firstly, larger boards decrease the likelihood of firms engaging in ESG controversies. Drawing on the stakeholder theory, larger boards foster greater opportunities to establish connections with other stakeholders by combining financial and non-financial objectives [33]. In addition, such boards encourage stakeholder participation in corporate decision-making, thereby motivating companies to achieve better ESG performance. In terms of environmental performance, de Villiers et al. [18] confirmed the advantages of a large board. Treepongkaruna et al. [16] also confirmed this opinion. Secondly, larger boards bring more ESG controversies. Large boards have difficulties in reaching collective decisions [34], the free-rider problem, and communication and operational hurdles [19], which can lead to weak managerial oversight. In contrast, smaller boards are less affected by these challenges and are more adept at monitoring management. Agency theory posits that managers may engage in ESG controversies that benefit them personally at the expense of shareholders. Therefore, this study puts forward the following hypotheses:

H1-0. *A large board of directors reduces ESG controversies.*

H1-1. *A large board of directors increases ESG controversies.*

2.2.2. Moderating Effect of Female Participation on Corporate Boards

The reason why female participation on corporate boards moderates the relationship between board size and ESG controversies primarily stems from the following aspects. First, the inclusion of female directors contributes to the diversity of the board, which is not only reflected in gender but also in perspectives, experiences, and backgrounds [35]. A diversified board can provide more decision-making strategies, which helps to avoid group-based thinking and blind conformity and enhances the quality and efficiency of decision-making. Second, female directors typically pay more attention to long-term interests and corporate social responsibility and consider more ESG factors in the decision-making process. For instance, female directors may focus more on climate change, environmental protection, and social responsibility, which drives the company to adopt more sustainable and responsible business strategies and reduces the occurrence of ESG controversies [20,36]. Meng and Zhu [37] found that female executives play a greater role in improving ESG performance. Yang et al. [38] also found a positive relationship between female participation on corporate boards and ESG performance in companies with a high market share. Furthermore, female participation on corporate boards can also enhance the oversight function of the board. They are better able to represent the interests of investors and fulfill the board's oversight responsibilities, thereby lowering risks related to corporate governance [39,40]. Many countries, such as the UK and China, have issued some policies promoting gender diversity

on corporate boards and in executive positions [41]. Therefore, this study puts forward the following hypotheses:

H2-0. *Female participation on corporate boards strengthens the relationship between board size and ESG controversies.*

H2-1. *Female participation on corporate boards weakens the relationship between board size and ESG controversies.*

2.2.3. Moderating Effect of Board Age

On the one hand, older board members usually possess richer experience and professional knowledge, which can help them consider ESG factors more comprehensively in the decision-making process [42]. They may focus more on the long-term development of the enterprise [43], thereby tending to formulate strategies and policies that better align with ESG standards. On the other hand, a board of directors with a younger demographic may be more innovative and flexible and easily embrace new ESG concepts and practices. However, if younger board members lack sufficient experience and professional knowledge, they may encounter difficulties when addressing ESG issues and potentially stir up controversies. In addition, the age structure of the board may also influence the attitude and response to ESG controversies. Older members are more inclined to adopt conservative strategies [44], avoiding risks and controversies, whereas younger members are more adventurous and willing to try new ESG practices [45], which may easily lead to more controversies. Emadeldeen et al. [46] argued that board age enhances the ESG performance of medium- and high-sustainability companies in non-sensitive industries. However, Jeyhunov et al. [47] found that age diversity is negatively related to the ESG performance of Korean-listed companies. Therefore, this study puts forward the following hypotheses:

H3-0. *Board age strengthens the relationship between board size and ESG controversies.*

H3-1. *Board age weakens the relationship between board size and ESG controversies.*

2.2.4. Moderating Effect of Financing Constraints

Firstly, financing constraints limit the sources of funding for enterprises, affecting their investment decisions and business expansion capabilities [48,49]. Enterprises may place greater emphasis on short-term financial performance and neglect long-term development and sustainability considerations when facing financing constraints. If the board size is small, the decision-making process may be more concentrated, but it may also be difficult to comprehensively consider ESG factors due to the lack of consideration from diversified perspectives, thereby increasing the risk of ESG controversies. Secondly, financing constraints may prompt enterprises to actively seek improvements in ESG practices in order to enhance their reputation and obtain more financing opportunities [50]. In this scenario, a board of directors with a moderate size and sufficient ESG expertise can better guide enterprises in formulating and implementing ESG strategies, reducing the occurrence of ESG controversies. Third, financing constraints may also influence how the board of directors addresses ESG controversies. Facing tight funding conditions, board members usually adopt conservative strategies to avoid ESG controversies that could lead to capital outflows. However, if board members possess sufficient ESG expertise, they may be more proactive in addressing ESG controversies by communicating and cooperating with stakeholders, thereby maintaining corporate reputation. Du et al. [51], using data from new

energy enterprises in China, argued that financing constraints inhibit the positive impact of ESG on firm value. Ho et al. [52] also confirmed the negative moderating effect of financing constraints on ESG performance and firm performance. Therefore, this study puts forward the following hypotheses:

H4-0. *Financing constraints strengthen the relationship between board size and ESG controversies.*

H4-1. *Financing constraints weaken the relationship between board size and ESG controversies.*

2.2.5. Moderating Effect of Internal Control

Effective internal control ensures that corporate assets are effectively protected, monitored, and managed, which helps reduce fraud, losses, and non-compliance within the enterprise [53]. In a larger board size, strengthened internal control can assist the board in better supervising and managing various corporate activities, thereby avoiding management risks associated with scale expansion [54]. This effective supervision and management can reduce the occurrence of ESG controversies, as enterprises can better comply with ESG regulations and standards [55]. In addition, the improvement of internal control can enhance the transparency and credibility of enterprises [56], strengthening the trust of external investors, regulatory bodies, and the public towards the enterprise. The establishment of this trust helps reduce information asymmetry between the enterprise and external stakeholders, thereby lowering the risk of ESG controversies. In a larger board size, transparent internal control ensures that the decision-making process of the board is fairer, making it easier to obtain recognition and support from external stakeholders. Furthermore, the enhancement of internal control can promote communication and collaboration within the enterprise [57], improving the efficiency of board decisions. In a larger board size, the improvement of internal control ensures smoother information sharing and communication among board members, thereby avoiding ESG controversies triggered by information asymmetry and poor communication. Koo and Ki [23] found that firms with internal control weaknesses have low ESG performance. Therefore, this study puts forward the following hypotheses:

H5-0. *Internal control strengthens the relationship between board size and ESG controversies.*

H5-1. *Internal control weakens the relationship between board size and ESG controversies.*

Figure 1 shows the conceptual framework.

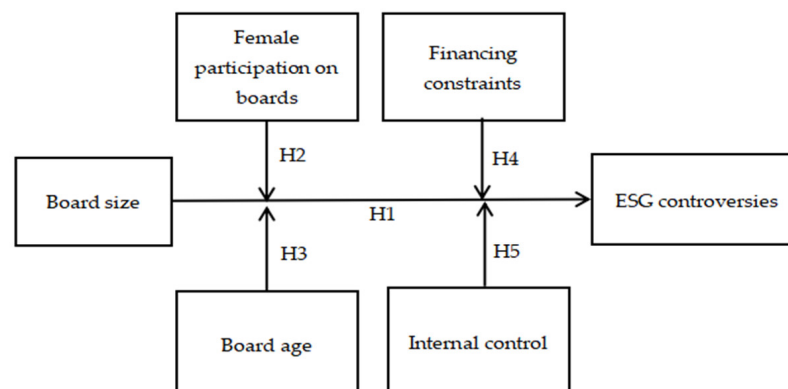


Figure 1. Conceptual framework.

3. Methodology

3.1. Sample

The original sample in our study includes Chinese A-share-listed companies from 2007 to 2022. Due to the availability of the ESG controversies score, the year 2007 is selected as the starting point. The data are screened according to the following criteria. We exclude companies with missing data, companies delisted from the market, financial companies, and special treatment (ST) companies. Finally, we attain an unbalanced panel data set including 793 companies with 3556 observations. The information on ESG controversies is from the LSEG Workspace (previously known as the Refinitiv database) [58], and other data are collected from the CSMAR database [59]. All continuous variables are winsorized at the 1% and 99% levels.

3.2. Variables

3.2.1. Dependent Variable

Guided by Xue et al. [12] and Treepongkaruna et al. [16], we use the ESG controversies score from the LSEG Workspace to measure ESG controversies (Esgc). The ESG controversies score represents a quantitative assessment tool designed to evaluate the extent to which a company's operations intersect with ESG-related controversies and adverse incidents reflected in international media coverage. This score is based on 23 controversial topics, with current controversies represented in the most recent completed period. The score ranges from 0 to 100, and the higher score means fewer ESG controversies. In order to facilitate interpretation, it is calculated by subtracting this score from 100. A score of 0 means no controversies, and the higher the score, the more controversies.

3.2.2. Independent Variable

Board size (Board) is the independent variable. Guided by Treepongkaruna et al. [16] and Nuswantara et al. [60], we use the natural logarithm of the number of directors on the board to measure it. In the robustness check, we also use the number of directors on the board.

3.2.3. Moderators

In this study, we include four moderating variables: female participation on boards (Female), board age (Bage), financing constraints (FC), and internal control (IC). Guided by Nuswantara et al. [60], Female is a measure of the percentage of female directors on the board. As per Oliveira and Zhang [45], Bage is measured by the average age of board directors. Referring to Hadlock and Pierce [61] and Xu and Yin [62], we use the SA index to measure financing constraints. The SA index is calculated as follows (see Equation (1)):

$$SA_{i,t} = -0.737 \times \text{Size}_{i,t} + 0.043 \times \text{Size}_{i,t}^2 - 0.040 \times \text{Age}_{i,t} \quad (1)$$

where Size is the natural logarithm of total assets; Age is the number of years since the setup of the enterprise.

In terms of IC, consistent with Xu et al. [53] and Wang et al. [63], we use the internal control index from the DIB database. This index can reflect the internal control and risk management of Chinese-listed companies, which is widely used in internal control research [63].

3.2.4. Control Variables

Referring to Treepongkaruna et al. [16] and Wu et al. [55], firm size (Size), firm leverage (Lev), return on assets (Roa), sales growth rate (Growth), cash flow (Cash), independent director proportion (Inde), CEO duality (Dual), and shareholding concentration (Top) are

chosen as control variables. In addition, we include year-fixed effects (Year) and firm-fixed effects (Firm). Variable definition is presented in Table 1.

Table 1. Variable definition.

Variable Type	Variable	Symbol	Measurement
Dependent variable	ESG controversies	Esgc	100—ESG controversies scores, 0 means no controversies
Independent variable	Board size	LnBoard	Natural logarithm of the number of directors on the board
		Board	The number of directors on the board
Moderating variables	Female participation on boards	Female	Percentage of female directors on the board
	Board age	Bage	Average age of all board members
	Financing constraints	FC	SA index
	Internal control	IC	Internal control index from the DIB database
Control variables	Firm size	Size	Natural logarithm of total assets
	Firm leverage	Lev	Total debts/total assets
	Return on assets	Roa	Net income/total assets
	Sales growth rate	Growth	(Current year's sales-last year's sales)/last year's sales
	Cash flow	Cash	Operating cash flow/total assets
	Independent director proportion	Inde	Percentage of independent directors on the board
	CEO duality	Dual	Dummy variable that takes 1 if the CEO and the chairman are the same person and 0 otherwise
	Shareholding concentration	Top	Percentage of shareholding of the largest shareholder

3.3. Models

Model (1) (Equation (2)), as the baseline model, is used to test the impact of board size and ESG controversies.

$$\text{Esgc}_{i,t} = \beta_0 + \beta_1 \text{LnBoard}_{i,t} + \beta_2 \text{CONTROLS}_{i,t} + \sum \text{Year} + \sum \text{Firm} + \varepsilon_{i,t} \quad (2)$$

Model (2) (Equation (3)) is used to examine the moderating effects of female participation on corporate boards, board age, financing constraints, and internal control.

$$\text{Esgc}_{i,t} = \beta_0 + \beta_1 \text{LnBoard}_{i,t} + \beta_2 \text{MOD}_{i,t} + \beta_3 \text{LnBoard}_{i,t} \times \text{MOD}_{i,t} + \beta_4 \text{CONTROLS}_{i,t} + \sum \text{Year} + \sum \text{Firm} + \varepsilon_{i,t} \quad (3)$$

where *i* is the firm; *t* is the year; CONTROLS represents control variables; MOD includes Female, Bage, FC, and IC; ε is the measurement error term.

4. Results and Discussion

4.1. Descriptive Statistics

Table 2 shows the descriptive statistics. Esgc has a mean value of 0.8042 with a minimum value of 0 and a maximum value of 35.2900, similar to the findings of Treepongkaruna et al. [16], who selected U.S. firms as the sample. This suggests that most companies in China face some controversial issues. The average corporate board has nine members. The mean values of Size and Lev are 24.2143 and 0.4762, respectively. The mean value of Roa (0.0647) implies that Chinese companies have low profitability. Growth has a mean value of 0.1721, which suggests the good health of growing businesses in China. Cash has a mean value of 0.0779.

Table 2. Descriptive statistics.

Variable	N	Mean	Median	Minimum	Maximum	SD
Esgc	3556	0.8042	0	0	35.2900	4.7784
Board	3556	9.0408	9	5	15	2.0051
Female	3556	0.1771	0.1579	0	0.5000	0.1114
Bage	3556	51.4646	51.6700	42.8600	58.3600	3.1377
FC	3543	−3.7632	−3.8371	−4.4376	−2.4110	0.3803
IC	3463	689.3121	688.6200	338.7000	944.0600	90.1208
Size	3556	24.2143	24.0559	21.6806	28.0035	1.3331
Lev	3556	0.4762	0.4877	0.0770	0.8768	0.1918
Roa	3556	0.0647	0.0516	−0.1247	0.3030	0.0687
Growth	3556	0.1721	0.1242	−0.4723	1.6981	0.3176
Cash	3556	0.0779	0.0701	−0.0881	0.2940	0.0689
Inde	3556	0.3838	0.3636	0.3077	0.6000	0.0613
Dual	3556	0.2365	0	0	1	0.4250
Top	3556	0.3752	0.3639	0.0782	0.8025	0.1691

4.2. Correlation Analysis

Table 3 shows the results of the correlation analysis. LnBoard, Bage, and FC are found to be positively related to Esgc, while Female is negatively related to Esgc. IC is not related to Esgc. In addition, all values of the variance inflation factor (VIF) are less than five, which implies no serious multicollinearity in this study.

Table 3. Correlation matrix.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Esgc	1													
2 LnBoard	0.100 ***	1												
3 Female	−0.104 ***	−0.185 ***	1											
4 Bage	0.094 ***	0.178 ***	−0.358 ***	1										
5 FC	0.180 ***	0.087 ***	−0.293 ***	0.302 ***	1									
6 IC	0.014	0.064 ***	−0.064 ***	0.169 ***	0.138 ***	1								
7 Size	0.183 ***	0.228 ***	−0.354 ***	0.429 ***	0.669 ***	0.248 ***	1							
8 Lev	0.054 ***	0.111 ***	−0.230 ***	0.183 ***	0.346 ***	0.078 ***	0.586 ***	1						
9 Roa	−0.023	−0.078 ***	0.151 ***	−0.122 ***	−0.139 ***	0.246 ***	−0.284 ***	−0.470 ***	1					
10 Growth	−0.013	−0.047 ***	0.063 ***	−0.126 ***	0.014	0.174 ***	−0.058 ***	−0.019	0.402 ***	1				
11 Cash	0.021	0.001	0.070 ***	−0.038 **	−0.079 ***	0.107 ***	−0.161 ***	−0.329 ***	0.612 ***	0.165 ***	1			
12 Inde	0.023	−0.441 ***	−0.032 *	0.110 ***	0.148 ***	0.051 ***	0.096 ***	0.043 **	−0.003	−0.018	0.007	1		

Table 3. Cont.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
13 Dual	−0.024	−0.176 ***	0.157 ***	−0.222 ***	−0.097 ***	−0.029 *	−0.189 ***	−0.136 ***	0.130 ***	0.117 ***	0.063 ***	0.048 ***	1	
14 Top	0.072 ***	0.062 ***	−0.222 ***	0.314 ***	0.300 ***	0.111 ***	0.271 ***	0.084 ***	−0.010	−0.077 ***	0.049 ***	0.096 ***	−0.154 ***	1

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4.3. Regression Results

Table 4 shows the results of baseline regression analysis. The first column without control variables shows that the coefficient of LnBoard is positive and significant ($\beta = 3.489$, $t = 2.475$). After control variables are introduced, LnBoard still has a positive and significant impact on Esgc ($\beta = 3.902$, $t = 3.612$), which suggests that the increase in board size will cause more controversial activities. Therefore, H1-1 is supported. Contrary to the stakeholder theory, a possible explanation for this might be that large boards will easily result in decision-making delays, conflicts of interest, and social loafing. Another possible explanation is that in larger boards, the distribution of leadership might be more complex, which affects the identification and handling of ESG controversies. The collective decision-making model rooted in traditional Chinese culture presents a striking contradiction when it comes to ESG issues. Chinese corporate boards exhibit a tendency toward middle-of-the-road decision-making, often opting for compromise solutions in an attempt to balance the interests of multiple stakeholders, including the government, shareholders, and the public. However, in cases such as environmental accidents or labor disputes, this ambiguous approach to decision-making can intensify controversies. In addition, members of large boards may develop a “bystander mentality”, leading to evasion of responsibility during ESG crises, which stands in contrast to the clear accountability mechanisms in Western boards. This outcome is not in line with that of Treepongkaruna et al. [16], who found that as board size increases, there are fewer ESG controversies. As for control variables, Roa has a positive impact on Esgc.

Table 4. Baseline regression results.

Variable	(1)	(2)	(3)
	Esgc	Esgc	VIF
LnBoard	3.489 ** (2.475)	3.902 *** (3.612)	1.38
Size		−0.123 (−0.310)	1.54
Lev		−0.781 (−0.504)	1.20
Roa		5.033 ** (2.018)	1.65
Growth		0.038 (0.106)	1.37
Cash		−0.618 (−0.308)	1.30
Inde		1.869 (0.671)	1.37
Dual		0.053 (0.142)	1.01
Top		−0.867 (−0.361)	1.11

Table 4. *Cont.*

Variable	(1)	(2)	(3)
	Esgc	Esgc	VIF
Constant	−6.783 ** (−2.215)	−5.009 (−0.513)	—
Year	Yes	Yes	—
Firm	Yes	Yes	—
N	3556	3556	—
R2	0.346	0.347	—
F	6.124	2.415	—

Notes: ** $p < 0.05$, *** $p < 0.01$.

4.4. Robustness Check

We use a one-year lagged board size (LnBoard_lag) to replace the independent variable. The first column of Table 5 shows that the coefficient of LnBoard_lag is significant and positive ($\beta = 3.457$, $t = 2.598$). In addition, to exclude the impact of the COVID-19 pandemic, we shorten the time span to a 14-year period (2007–2020). In the second column of Table 5, LnBoard still has a positive and significant impact on Esgc ($\beta = 6.200$, $t = 2.705$). In the third column of Table 5, we use the number of directors on the board to measure the independent variable, and the coefficient of Board is positive and significant ($\beta = 0.456$, $t = 4.011$).

To alleviate endogeneity issues caused by selection bias, we use the propensity score matching (PSM) method. The specific processes are as follows. First, guided by Treep-ongkaruna et al. [16], the sample is split into quartiles. The top quartile of the sample (largest board size) is included in the treatment group. Based on this, logistic regression is used to estimate the probability of each company entering the treatment group using company characteristics (X_{it}), including Size, Lev, Roa, Growth, Cash, Inde, Dual, and Top. Therefore, apart from board size, the treatment group and the control group are basically comparable in all observable aspects. Second, a 1:1 nearest neighbor matching method is used to match each company in the treatment group with the most similar company in the control group. As shown in Table A1 of Appendix A, the matching balance results suggest that the PSM method used in this study is feasible. The fourth column of Table 5 shows that the coefficient of LnBoard is still positive and significant ($\beta = 7.205$, $t = 3.186$).

The baseline model may have an endogeneity issue, and we use an instrumental variable (IV) analysis to solve this issue. The annual city mean value of board size is the IV. It is related to the firm but does not directly affect the firm's ESG controversies, which meets the requirements of an IV. Table 6 reports the IV results. The number of endogenous explanatory variables is equal to the number of instrumental variables in this study, making it impossible to report the Sargan statistic. The first column shows the first-stage regression results. The coefficient of IV is significant and positive. The Kleibergen–Paap rk LM is 270.064, indicating that there is no underidentification issue with the IV. The Cragg–Donald Wald F-statistic is 297.479, which suggests that the IV is not weak. The second column shows the second-stage regression results. The coefficient of LnBoard is still positive and significant, indicating that our conclusions are robust.

Table 5. Regression results of robustness check.

Variable	(1)	(2)	(3)	(4)
	Lagged Independent Variable	Time Span Reduction	Replacing Independent Variable	PSM
LnBoard_lag	3.457 *** (2.598)			
LnBoard		6.200 *** (2.705)		7.205 *** (3.186)
Board			0.456 *** (4.011)	
Size	0.152 (0.234)	0.225 (0.229)	−0.149 (−0.375)	0.371 (0.383)
Lev	−1.646 (−0.687)	−3.753 (−1.086)	−0.674 (−0.435)	−0.741 (−0.195)
Roa	5.675 (1.453)	11.575 * (1.821)	5.108 ** (2.049)	8.294 (1.388)
Growth	0.176 (0.301)	−0.433 (−0.509)	0.035 (0.096)	−0.076 (−0.095)
Cash	0.160 (0.053)	2.953 (0.599)	−0.595 (−0.297)	−3.008 (−0.605)
Inde	−3.450 (−1.005)	1.577 (0.286)	1.930 (0.708)	9.776 (1.604)
Dual	0.113 (0.205)	1.305 (1.538)	0.048 (0.126)	0.542 (0.556)
Top	1.074 (0.302)	−2.205 (−0.418)	−0.801 (−0.334)	5.636 (1.079)
Constant	−8.847 (−0.561)	−16.901 (−0.699)	−0.101 (−0.011)	−30.343 (−1.265)
Year	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes
N	2688	1932	3556	1180
R ²	0.157	0.131	0.348	0.231
F	1.524	2.123	2.753	1.635

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.**Table 6.** Regression results of IV analysis.

Variable	(1)	(2)
	Board	Esgc
LnBoard		5.861 * (1.725)
IV	0.425 *** (17.245)	
Size	0.043 *** (6.334)	−0.208 (−0.494)
Lev	−0.020 (−0.747)	−0.687 (−0.443)

Table 6. Cont.

Variable	(1)	(2)
	Board	Esgc
Roa	−0.077 * (−1.809)	5.184 ** (2.076)
Growth	0.001 (0.228)	0.039 (0.109)
Cash	−0.002 (−0.057)	−0.606 (−0.303)
Inde	−1.151 *** (−27.562)	4.347 (0.882)
Dual	−0.013 * (−1.946)	0.074 (0.196)
Top	−0.090 ** (−2.209)	−0.652 (−0.270)
Constant	0.703 *** (4.045)	−7.714 (−0.685)
Year	Yes	Yes
Firm	Yes	Yes
N	3556	3556
R ²	0.149	0.049
F	62.788	5.423
Kleibergen–Paap rk LM	270.064	
Cragg–Donald Wald F	297.479	

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4.5. Moderating Effects Analysis

Table 7 shows the results of the moderating effects of female participation on corporate boards, board age, financing constraints, and internal control. The interaction between LnBoard and Female is negative and significant ($\beta = -14.504$, $t = -2.161$), which suggests that female board participation can weaken the impact of board size on ESG controversies. Similarly, Issa and Hanaysha [64] confirmed that women on the board could reduce the number of ESG controversies. Female board members are more sensitive to ESG-related issues, which makes them advocate for more responsible corporate conduct. However, the percentage of female directors in China is significantly lower than the global average. The coefficient of LnBoard $\times$ FC is positive and significant ($\beta = 4.372$, $t = 2.362$), implying that the impact of board size is more pronounced when companies face serious financing constraints. Financing constraints may increase the complexity of board decisions [65], and a larger board size may entail higher decision-making costs and a longer decision-making cycle, which is unfavorable for enterprises to respond quickly to controversial ESG issues. The interaction between LnBoard and IC is negative and significant ($\beta = -0.010$, $t = -2.055$), which suggests that effective internal control can weaken the impact of board size on ESG controversies. Internal control requires companies to establish an ESG risk database and an emergency response plan, which reduces the likelihood of delayed responses from the board of directors due to its expanded scale. In addition, the moderating role of board age is not significant, which leads to the rejection of H3-0 and H3-1. This could be explained by the fact that ESG controversies often involve complex legal and ethical issues that require

specialized knowledge and experience to tackle, and this knowledge and experience do not solely depend on age.

Table 7. Regression results of moderating effects.

Variable	(1)	(2)	(3)	(4)
	Esgc	Esgc	Esgc	Esgc
LnBoard	3.426 *** (3.112)	3.463 *** (3.106)	2.858 *** (2.608)	4.275 *** (4.055)
Female	−3.091 (−1.472)			
Bage		−0.021 (−0.255)		
FC			−3.879 (−1.626)	
IC				−0.002 (−1.351)
LnBoard × Female	−14.504 ** (−2.161)			
LnBoard × Bage		0.379 (1.629)		
LnBoard × FC			4.372 ** (2.362)	
LnBoard × IC				−0.010 ** (−2.055)
Size	−0.102 (−0.256)	−0.106 (−0.264)	0.810 (1.464)	0.084 (0.207)
Lev	−0.872 (−0.562)	−0.782 (−0.504)	−0.914 (−0.604)	−0.580 (−0.373)
Roa	5.082 ** (2.039)	4.982 ** (1.991)	2.180 (0.887)	3.818 (1.414)
Growth	0.049 (0.137)	0.042 (0.118)	0.146 (0.419)	0.258 (0.723)
Cash	−0.589 (−0.294)	−0.659 (−0.328)	0.276 (0.142)	0.506 (0.254)
Inde	1.416 (0.508)	1.635 (0.585)	1.250 (0.464)	3.454 (1.274)
Dual	0.058 (0.154)	0.061 (0.162)	0.157 (0.430)	0.176 (0.474)
Top	−0.606 (−0.252)	−1.052 (−0.438)	−0.616 (−0.265)	−0.877 (−0.377)
Constant	−3.901 (−0.400)	−3.275 (−0.324)	−39.712 * (−1.926)	−10.396 (−1.042)
Year	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes
N	3556	3556	3543	3463
R ²	0.149	0.148	0.153	0.157
F	2.543	2.226	2.464	2.584

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4.6. Heterogeneous Analysis

Tables 8 and 9 show the results of the heterogeneous analysis. First, we conduct heterogeneity tests by grouping industries based on their attributes. We divide the sample into manufacturing industries, non-manufacturing industries (excluding service industries), and service industries. The impact of board size on ESG controversies is more evident in non-manufacturing industries. Manufacturing industries focus more on production processes, product quality, and cost control, while ESG issues may not be their primary concern. Service industries typically prioritize customer experience, brand reputation, and rapid response to market demands rather than relying on heavy asset investments. In this model, board decisions focus more on strategic oversight, such as service innovation and customer relationship management, rather than directly intervening in the ESG details of daily operations. However, in non-manufacturing industries, ESG issues are often related to various aspects, including business models, brand image, and long-term competitiveness, and these are more likely to become the focus of corporate boards, which could lead to more controversies.

Table 8. Heterogeneous analysis results by industry.

Variable	Manufacturing Industries	Non-Manufacturing Industries	Service Industries	Heavy-Polluted Industries	Non-Heavy-Polluted Industries	High-Tech Industries	Non-High-Tech Industries
LnBoard	−1.993 (−0.954)	18.608 *** (4.870)	0.749 (0.830)	11.340 ** (2.496)	2.413 (1.598)	−1.414 (−0.634)	11.538 *** (5.010)
Size	−0.596 (−0.870)	5.435 ** (2.387)	−0.055 (−0.171)	4.328 ** (2.340)	−1.141 ** (−2.018)	−0.794 (−1.141)	2.473 ** (2.268)
Lev	−0.568 (−0.187)	−4.007 (−0.640)	1.818 (1.496)	−4.750 (−0.652)	0.219 (0.103)	−1.914 (−0.622)	−2.723 (−0.753)
Roa	10.725 ** (2.494)	9.859 (0.671)	−1.857 (−1.287)	18.816 * (1.700)	2.615 (0.772)	8.680 ** (2.099)	1.253 (0.183)
Growth	−0.257 (−0.435)	1.070 (0.568)	0.145 (0.608)	−1.576 (−1.000)	−0.205 (−0.411)	−0.328 (−0.538)	0.643 (0.698)
Cash	−3.111 (−0.920)	−0.370 (−0.034)	2.991 ** (2.005)	−2.516 (−0.270)	−0.410 (−0.149)	−4.056 (−1.138)	5.229 (1.002)
Inde	−9.494 * (−1.686)	24.883 *** (2.913)	−1.598 (−0.591)	18.706 * (1.651)	−0.312 (−0.079)	−7.418 (−1.205)	16.036 *** (2.871)
Dual	0.500 (0.733)	3.698 ** (2.063)	−0.263 (−1.070)	2.092 (1.285)	0.448 (0.856)	0.292 (0.419)	1.619 * (1.773)
Top	−4.724 (−1.190)	17.564 (1.431)	0.203 (0.090)	5.648 (0.570)	−1.049 (−0.309)	−2.992 (−0.641)	3.618 (0.650)
Constant	24.418 (1.467)	−192.564 *** (−3.350)	−0.510 (−0.062)	−138.012 *** (−3.067)	23.203 * (1.683)	27.324 (1.599)	−92.396 *** (−3.478)
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2111	840	605	879	2677	1986	1570
R ²	0.358	0.387	0.266	0.367	0.360	0.373	0.362
F	1.451	4.015	1.203	2.159	0.879	0.993	4.288

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Further, we divide the sample into heavy-polluted industries and non-heavy-polluted industries. In heavily polluted industries, board size has a greater impact on ESG controversies than in non-heavy-polluted industries. For heavily polluted industries, environmental regulations have a significant impact on companies' ESG performance. However, large boards may face difficulties in internal coordination and communication, which could lead to delays in responding to environmental regulations, thus increasing ESG controversies.

Table 9. Heterogeneous analysis results by ownership, region, and source of capital.

Variable	SOEs	POEs	Eastern Regions	Central and Western Regions	Foreign-Funded Companies	Non-Foreign-Funded Companies
LnBoard	8.409 *** (3.749)	−1.165 (−0.517)	6.538 *** (3.375)	−2.343 (−1.030)	1.102 (0.339)	5.137 *** (3.061)
Size	0.904 (0.897)	−1.097 * (−1.712)	0.012 (0.016)	1.363 * (1.763)	−0.459 (−0.490)	0.530 (0.840)
Lev	−1.545 (−0.422)	1.443 (0.557)	−1.455 (−0.510)	−0.412 (−0.136)	0.218 (0.059)	−1.298 (−0.533)
Roa	12.485 * (1.699)	5.038 (1.471)	8.954 * (1.943)	−1.497 (−0.322)	0.583 (0.124)	7.574 * (1.911)
Growth	−0.691 (−0.696)	0.426 (0.863)	−0.386 (−0.569)	0.576 (0.914)	−0.053 (−0.055)	−0.200 (−0.355)
Cash	0.799 (0.164)	0.079 (0.024)	−1.359 (−0.352)	2.172 (0.638)	0.134 (0.035)	−0.821 (−0.259)
Inde	9.106 * (1.779)	−15.796 ** (−2.275)	6.258 (1.247)	−8.020 (−1.347)	4.145 (0.374)	4.695 (1.101)
Dual	1.734 * (1.891)	−0.547 (−0.880)	1.506 ** (2.190)	−1.850 ** (−2.446)	−0.293 (−0.279)	0.860 (1.458)
Top	−0.934 (−0.182)	1.040 (0.214)	−2.219 (−0.500)	−0.115 (−0.024)	14.093 (1.493)	−1.187 (−0.317)
Constant	−42.933 * (−1.752)	33.940 ** (2.135)	−14.864 (−0.818)	−23.573 (−1.260)	1.817 (0.075)	−24.252 (−1.569)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes
N	1774	1782	2688	868	210	3346
R ²	0.317	0.502	0.357	0.287	0.214	0.346
F	2.745	1.632	2.405	1.496	0.393	2.126

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In addition, we divide the sample into high-tech industries and non-high-tech industries. We find that the impact of board size is more pronounced in non-high-tech industries. In non-high-tech industries, because of relatively low attention to ESG issues, there can be significant variations in the board's perception of ESG issues. As the size of the board increases, these differences might become more prominent, leading to more controversies in ESG strategies.

Regarding ownership, we divide the sample into state-owned enterprises (SOEs) and privately owned enterprises (POEs). The impact of board size on ESG controversies in SOEs is more evident than that in POEs. SOEs often take on more social responsibilities. With the expansion of the board size, different members may have different views towards these responsibilities, which increases ESG controversies. However, POEs may have deficiencies in internal governance and supervision, and the relatively smaller size of the board of directors leads to an insignificant impact on ESG controversies. In our sample, we find that the size of the board of directors in SOEs is larger than that in POEs.

Regarding region, Table 9 shows that the impact of board size on ESG controversies is more significant in eastern regions. The eastern regions, as China's economic core area, host larger enterprises with more complex operations, inherently exposing them to higher ESG risks. Large boards of directors, comprising more stakeholders, may experience disagreements on ESG strategies (e.g., carbon neutrality pathways and labor rights), thereby slowing decision-making efficiency. In contrast, companies in the central and western regions are predominantly in their growth phase, prioritizing scale expansion and regional economic contributions, resulting in relatively fewer ESG controversies. These enterprises

focus more on immediate objectives such as revenue growth and securing policy subsidies, with ESG issues often being addressed through local government coordination, thus exerting less pressure on board decisions.

Regarding the source of capital, Table 9 shows that the impact of board size on ESG controversies is more significant in non-foreign-funded companies. Non-foreign-funded companies tend to prioritize short-term profitable projects, often viewing ESG initiatives as cost centers. Expanding board sizes may trigger strategic disagreements. For example, in traditional industries, power struggles between new members and old members could obstruct ESG transformation. In contrast, foreign-funded companies typically establish globally unified ESG compliance frameworks, enabling easier experience-sharing when scaling board sizes.

4.7. Additional Analysis

In order to further the non-linear relationship between board size and ESG controversies, we categorize corporate boards into size ranges. Table 10 and Figure 2 show the average ESG controversy scores for each category. Table 10 shows that the average ESG controversy scores become larger with the increase in board size, which also supports the results of Table 4. However, Treepongkaruna et al. [16] argued that larger boards are more effective in mitigating ESG controversies in US companies. For US companies, the mean Board is 10.1370 [16], and in our study, the mean Board is 9.0408, suggesting that there is no great difference in board size between US companies and Chinese companies. The fitted values in Figure 2 show the positive linear relationship between board size and ESG controversies.

Table 10. Average ESG controversy scores for each category of corporate boards.

Board Size	N	Esgc (Mean)
Small: ≤ 5 directors	79	0
Medium: 5–10 directors	2657	0.5525
Large: 11–17 directors	820	1.6973
Very large: ≥ 18 directors	0	0
Total	3556	0.8042

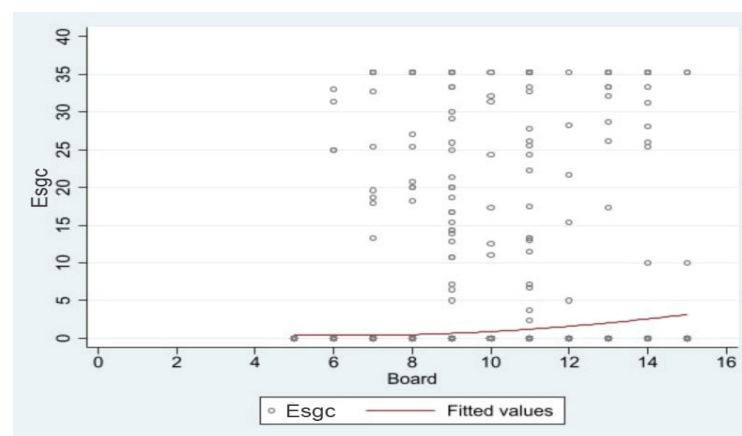


Figure 2. Trend between board size and average ESG controversy scores.

5. Conclusions

From a sample of Chinese-listed companies, this study explores the impact of board size on ESG controversies based on the stakeholder theory and agency theory. In addition,

this study examines the moderating effects of female participation on corporate boards, board age, financing constraints, and internal control. ESG controversies are measured by the ESG controversies score from the LSEG Workspace. The results reveal that companies with larger boards of directors tend to exhibit more ESG controversies. In addition, women on boards and internal control weaken the impact of board size on ESG controversies, while financing constraints strengthen this impact. The moderating effect of board age is not significant.

The theoretical contributions of this study are summarized in the following aspects. First, this study provides new evidence on the impact of board size on ESG controversies in China, which expands the existing literature on ESG controversies. Second, this study uncovers the moderating effects of female participation on corporate boards, board age, financing constraints, and internal control in the relationship between them, which deepens the understanding of corporate governance. Finally, this study provides new insights for managers to improve ESG performance by avoiding ESG controversies and enhancing corporate governance.

This study provides some practical implications for managers and policymakers. First, the results from this study suggest that there is a need to optimize the size of the board of directors of Chinese-listed companies. A moderate board size can serve as a catalyst for gradual and steady improvements in the sustainability of Chinese companies [66]. Meanwhile, Chinese companies should actively seek to increase the representation of women on their boards, recognizing the value they bring to strategic discussions and operational oversight [67]. By emphasizing the inclusion of women in leadership roles, companies can leverage diverse viewpoints and potentially mitigate groupthink, leading to more innovative and ethical decision-making. This gender balance not only aligns with global trends promoting gender equality but also contributes to a stronger corporate culture that supports sustainability initiatives.

Second, Chinese companies should strengthen internal control and improve risk management to prevent potential ESG controversies. In today's increasingly transparent and scrutinized business environment, companies must have robust systems in place to identify, assess, and mitigate ESG risks. This includes not only adhering to regulatory requirements but also proactively addressing issues such as environmental impact, employee welfare, and corporate governance practices. By strengthening these internal mechanisms, Chinese companies can anticipate and resolve potential ESG challenges before they escalate into larger crises, thereby preserving their reputation and stakeholder trust.

Finally, regulators should consider making relevant policies that aim to help reduce ESG controversies and foster a more sustainable business environment. These policies could range from tax incentives for companies meeting ESG benchmarks to stricter penalties for violations of environmental or labor laws. In addition, it is imperative that regulators carefully consider the role of internal control before enforcing any external regulations.

However, this study also suffers from some limitations. First, our sample is limited to Chinese companies, and future studies could compare with other countries or regions to enhance the generalizability of the findings. Second, we only consider the impact of board size, and future studies could take into account other board characteristics, such as board experience. Additionally, it should be noted that our research assumptions, including the specific variables and models used, may not reflect the influence of all relevant factors, which is an inherent limitation in any empirical study. Furthermore, ESG controversies can be divided into environmental controversies, social controversies, and governance controversies [66], and future studies could analyze the impact of board size on each dimension of ESG controversies to gain a more nuanced understanding of this relationship.

Author Contributions: Conceptualization, J.X.; methodology, J.Y.; software, J.Y.; validation, J.Y. and J.X.; formal analysis, J.Y.; investigation, J.X.; resources, J.X.; data curation, J.Y. and J.X.; writing—original draft preparation, J.Y. and J.X.; writing—review and editing, J.Y. and J.X.; visualization, J.X.; supervision, J.X.; project administration, J.Y.; funding acquisition, J.X. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Qingdao Agricultural University Doctoral Start-Up Fund, grant number 6631121703 and XJ20210028, and the Qingdao Agricultural University, grant number 6602424713.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study are available on request from the corresponding author due to the ongoing research.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1. Matching balance results.

Variable	Unmatched (U)	Mean		Bias (%)	Reduct (%)	t Test	
	Marched (M)	Treated	Control			t Value	p Value
Size	U	24.7520	24.0220	55.5000	89.4000	14.5400	0.0000
	M	24.7050	24.7830	−5.9000		−1.2100	0.2270
Lev	U	0.5095	0.4650	23.7000	96.5000	6.0400	0.0000
	M	0.5054	0.5070	−0.8000		−0.1800	0.8580
Roa	U	0.0552	0.0686	−18.2000	73.7000	−4.4900	0.0000
	M	0.0561	0.0596	−4.8000		−1.0600	0.2880
Growth	U	0.1765	0.2053	−4.5000	58.2000	−1.1800	0.2370
	M	0.1790	0.1910	−1.9000		−0.3700	0.7100
Inde	U	0.3705	0.3883	−30.4000	84.8000	−7.3500	0.0000
	M	0.3718	0.3745	−4.6000		−1.1000	0.2700
Dual	U	0.1545	0.2644	−27.2000	75.2000	−6.8700	0.0000
	M	0.1601	0.1329	6.8000		1.6500	0.0990
Top	U	0.3949	0.3665	16.6000	51.3000	4.4100	0.0000
	M	0.3894	0.4032	−8.1000		−1.7200	0.0850

References

1. Xu, J.; Liu, F.; Shang, Y. R&D investment, ESG performance and green innovation performance: Evidence from China. *Kybernetes* **2020**, *50*, 737–756.
2. Bruna, M.G.; Loprevite, S.; Raucci, D.; Ricca, B.; Rupo, D. Investigating the marginal impact of ESG results on corporate financial performance. *Financ. Res. Lett.* **2022**, *47*, 102828. [[CrossRef](#)]
3. Bhandari, K.R.; Ranta, M.; Salo, J. The resource-based view, stakeholder capitalism, ESG, and sustainable competitive advantage: The firm's embeddedness into ecology, society, and governance. *Bus. Strategy Environ.* **2022**, *31*, 1525–1537. [[CrossRef](#)]
4. Chen, S.; Song, Y.; Gao, P. Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *J. Environ. Manag.* **2023**, *345*, 118829. [[CrossRef](#)]
5. DasGupta, R. Financial performance shortfall, ESG controversies, and ESG performance: Evidence from firms around the world. *Financ. Res. Lett.* **2022**, *46*, 102487. [[CrossRef](#)]
6. Agnese, P.; Battaglia, F.; Busato, F.; Taddeo, S. ESG controversies and governance: Evidence from the banking industry. *Financ. Res. Lett.* **2023**, *53*, 103397. [[CrossRef](#)]

7. Agnese, P.; Cerciello, M.; Oriani, R.; Taddeo, S. ESG controversies and profitability in the European banking sector. *Financ. Res. Lett.* **2024**, *61*, 105042. [\[CrossRef\]](#)
8. Aouadi, A.; Marsat, S. Do ESG controversies matter for firm value? Evidence from international data. *J. Bus. Ethics* **2018**, *151*, 1027–1047. [\[CrossRef\]](#)
9. Ghafoor, A.; Gull, A.A. Do co-opted boards protect CEOs from ESG controversies? *Financ. Res. Lett.* **2024**, *63*, 105263. [\[CrossRef\]](#)
10. Nirino, N.; Santoro, G.; Miglietta, N.; Quaglia, R. Corporate controversies and company's financial performance: Exploring the moderating role of ESG practices. *Technol. Forecast. Soc. Change* **2021**, *162*, 120341. [\[CrossRef\]](#)
11. Treepongkaruna, S.; Kyaw, K.; Jiraporn, P. Shareholder litigation rights and ESG controversies: A quasi-natural experiment. *Int. Rev. Financ. Anal.* **2022**, *84*, 102396. [\[CrossRef\]](#)
12. Xue, R.; Wang, H.; Yang, Y.; Linnenluecke, M.K.; Jin, K.; Cai, C.W. The adverse impact of corporate ESG controversies on sustainable investment. *J. Clean. Prod.* **2023**, *427*, 139237. [\[CrossRef\]](#)
13. Xiao, H. Research progress on ESG controversies. *Econ. Perspect.* **2024**, *65*, 145–160. (In Chinese)
14. Melón-Izco, A.; Ruiz-Cabestre, F.J.; Ruiz-Olalla, M.C. Diversity in the board of directors and good governance practices. *Econ. Bus. Lett.* **2020**, *9*, 97–105. [\[CrossRef\]](#)
15. Safiullah, M.; Miah, M.D.; Azad, A.S.; Hassan, M.K. Does the board of directors influence Shariah governance in Islamic banks? *Pac.-Basin Financ. J.* **2024**, *85*, 102346. [\[CrossRef\]](#)
16. Treepongkaruna, S.; Kyaw, K.; Jiraporn, P. ESG controversies and corporate governance: Evidence from board size. *Bus. Strategy Environ.* **2024**, *33*, 4218–4232. [\[CrossRef\]](#)
17. Chatjuthamard, P.; Ongsakul, V.; Jiraporn, P.; Uyar, A. Corporate governance and generalist CEOs: Evidence from board size. *Corp. Gov.-Int. J. Bus. Soc.* **2022**, *22*, 148–158. [\[CrossRef\]](#)
18. de Villiers, C.; Naiker, V.; van Staden, C.J. The effect of board characteristics on firm environmental performance. *J. Manag.* **2011**, *37*, 1636–1663. [\[CrossRef\]](#)
19. Huang, Y.S.; Wang, C.-J. Corporate governance and risk-taking of Chinese firms: The role of board size. *Int. Rev. Econ. Financ.* **2015**, *37*, 96–113. [\[CrossRef\]](#)
20. Fan, Y.; Li, S.; Yang, W. The impact of the percentage of female directors on corporate ESG score. *Financ. Res. Lett.* **2024**, *63*, 105376. [\[CrossRef\]](#)
21. Ma, A.K.F.; Chen, Y. Board attributes, ownership structure, and corporate social responsibility: Evidence from A-share listed technological companies in China. *Soc. Bus. Rev.* **2022**, *19*, 181–206. [\[CrossRef\]](#)
22. He, G.; Liu, Y.; Chen, F. Research on the impact of environment, society, and governance (ESG) on firm risk: An explanation from a financing constraints perspective. *Financ. Res. Lett.* **2023**, *58*, 104038. [\[CrossRef\]](#)
23. Koo, J.E.; Ki, E.S. Internal control personnel's experience, internal control weaknesses, and ESG rating. *Sustainability* **2020**, *12*, 8645. [\[CrossRef\]](#)
24. Freeman, R.E. *Strategic Management: A Stakeholder Approach*; Cambridge University Press: Boston, MA, USA, 1984.
25. Al Amosh, H. Exchange Rate Volatility and ESG Performance: An International Empirical Analysis. *J. Corp. Account. Financ.* **2024**, *early view*. [\[CrossRef\]](#)
26. Kušnířová, D.; Bubelíny, O.; Ďurišová, M. Value Management: Enterprises' Interest in Stakeholders and Its Impact on Creating Sustainable Relationships with Suppliers and Buyers. *Sustainability* **2024**, *16*, 7148. [\[CrossRef\]](#)
27. Rathobei, K.E.; Ranängen, H.; Lindman, A. Stakeholder integration in sustainable business models to enhance value delivery for a broader range of stakeholders. *Bus. Strategy Environ.* **2024**, *33*, 3687–3706. [\[CrossRef\]](#)
28. Talan, G.; Sharma, G.D.; Pereira, V.; Muschert, G.W. From ESG to holistic value addition: Rethinking sustainable investment from the lens of stakeholder theory. *Int. Rev. Econ. Financ.* **2024**, *96*, 103530. [\[CrossRef\]](#)
29. Berle, A.A.; Means, G.C. *The Modern Corporation and Private Property*; revised edition (1967); Harvourt, Brace and World, Inc.: New York, NY, USA, 1932.
30. Zhou, Z.; Yin, Y.; Zhou, M.; Cheng, H.; Pardalos, P.M. Equity-based Incentive to Coordinate Shareholder-manager Interests under Information Asymmetry. *J. Ind. Manag. Optim.* **2022**, *18*, 4447–4470. [\[CrossRef\]](#)
31. Yan, T.; Hyman, M.R. The principal-agent problem and its mitigation: A critical historical analysis. *J. Manag. Hist.* **2024**, *30*, 615–636. [\[CrossRef\]](#)
32. Benson, B.W.; James, H.L.; Park, J.C. Heterogeneity in the Effect of Managerial Equity Incentives on Firm Value. *Financ. Rev.* **2019**, *54*, 583–638. [\[CrossRef\]](#)
33. Alhejji, A.I.; Khawaja, A.T. Effects of Board Size and Board Composition on Firms' Financial Performance in Saudi Arabia. *Int. Trans. J. Eng. Manag. Appl. Sci. Technol.* **2021**, *12*, 12A12T. [\[CrossRef\]](#)
34. Jensen, M.C. The modern industrial revolution, exit, and the failure of internal control systems. *J. Financ.* **1993**, *48*, 831–880. [\[CrossRef\]](#)
35. Meliá-Martí, E.; Tormo-Carbó, G.; Fernández-Guadano, J. Board gender diversity and employee productivity. The moderating role of female leaders. *Eur. Res. Manag. Bus. Econ.* **2024**, *30*, 100257. [\[CrossRef\]](#)

36. Bosone, C.; Bogliardi, S.M.; Giudici, P. Are ESG Female? The Hidden Benefits of Female Presence on Sustainable Finance. *Rev. Econ. Anal.* **2022**, *14*, 253–274. [\[CrossRef\]](#)
37. Meng, X.; Zhu, P. Females' social responsibility: The impact of female executives on ESG performance. *Appl. Econ. Lett.* **2024**, *31*, 1292–1297. [\[CrossRef\]](#)
38. Yang, T.; Huang, A.; Shang, L.-D. Diverse links: Female board representation and ESG in varied business landscapes. *J. Clean. Prod.* **2025**, *490*, 144720. [\[CrossRef\]](#)
39. Fenoy-Castaño, C.; Martínez-Romero, M.J.; Martínez-Alonso, R. Does the Female Presence in Corporate Governance Influence the Level of Indebtedness in Agri-Food Family Firms? *Agriculture* **2021**, *11*, 1135. [\[CrossRef\]](#)
40. Amin, A.; Ali, R.; Rehman, R.U.; Naseem, M.A.; Ahmad, M.I. Female presence in corporate governance, firm performance, and the moderating role of family ownership. *Econ. Res.-Ekon. Istraz.* **2022**, *35*, 929–948. [\[CrossRef\]](#)
41. Brahma, S.; Nwafor, C.; Boateng, A. Board gender diversity and firm performance: The UK evidence. *Int. J. Financ. Econ.* **2021**, *26*, 5704–5719. [\[CrossRef\]](#)
42. Menicucci, E.; Paolucci, G. Board Diversity and ESG Performance: Evidence from the Italian Banking Sector. *Sustainability* **2022**, *14*, 13447. [\[CrossRef\]](#)
43. Gao, Y.; Tian, X.; Xu, J. Intellectual Capital, Board Diversity, and Firms' Financial Performance: A Complex System Perspective. *Systems* **2024**, *12*, 363. [\[CrossRef\]](#)
44. Wu, Z.; Gao, J.; Luo, C.; Xu, H.; Shi, G. How does boardroom diversity influence the relationship between ESG and firm financial performance? *Int. Rev. Econ. Financ.* **2024**, *89*, 713–730. [\[CrossRef\]](#)
45. Oliveira, M.; Zhang, S. The trends and determinants of board gender and age diversities. *Financ. Res. Lett.* **2022**, *46*, 102798. [\[CrossRef\]](#)
46. EmadEldeen, R.; Elbayuomi, A.F.; Elmoursy, H.; Bouaddi, M.; Basuony, M.A.K. Does Board Diversity Drive Sustainability? Evidence from UK-Listed Companies. *Sustainability* **2025**, *17*, 1177. [\[CrossRef\]](#)
47. Jeyhunov, A.; Kim, J.D.; Bae, S.M. The Effects of Board Diversity on Korean Companies' ESG Performance. *Sustainability* **2025**, *17*, 787. [\[CrossRef\]](#)
48. Islam, A.R.M.; Luo, R.H. Financing constraints and investment efficiency: Evidence from a panel of Canadian forest firms. *Appl. Econ.* **2018**, *50*, 5142–5154. [\[CrossRef\]](#)
49. Luo, H.; Islam, A.M.; Wang, R. Financing Constraints and Investment Efficiency in Canadian Real Estate and Construction Firms: A Stochastic Frontier Analysis. *Sage Open* **2021**, *11*, 21582440211031502. [\[CrossRef\]](#)
50. Ng, Y.L.; Lau, W.T.; Soh, W.N.; Razak, N.H.A. Financial constraints of ASEAN firms: Impact alleviation by ESG pillars. *Econ. Financ. Lett.* **2024**, *11*, 126–145. [\[CrossRef\]](#)
51. Du, Y.; Zhang, J.; Deng, H. Environmental, Social and Governance (ESG), Financing constraints, and Enterprise Value. *Transform. Bus. Econ.* **2023**, *22*, 1039–1059.
52. Ho, L.; Nguyen, V.; Dang, T. ESG and firm performance: Do stakeholder engagement, financial constraints and religiosity matter? *J. Asian Bus. Econ. Stud.* **2024**, *31*, 263–276. [\[CrossRef\]](#)
53. Xu, J.; Song, D.S.; Sim, J.W. Internal control, executive compensation and firm performance: An empirical analysis of strategic emerging enterprises. *J. Comput. Theor. Nanosci.* **2017**, *14*, 2853–2859. [\[CrossRef\]](#)
54. Chauvey, J.N.; Naro, G. Internal control and risk management: From compliance to strategy The risk mapping case in a French insurance company. *Comptab. Controle Audit* **2023**, *29*, 85–129. [\[CrossRef\]](#)
55. Wu, Z.; Lin, S.; Chen, T.; Luo, C.; Xu, H. Does effective corporate governance mitigate the negative effect of ESG controversies on firm value? *Econ. Anal. Policy* **2023**, *80*, 1772–1793. [\[CrossRef\]](#)
56. Khlif, H.; Samaha, K.; Amara, I. Internal control quality and voluntary disclosure: Does CEO duality matter? *J. Appl. Account. Res.* **2021**, *22*, 286–306. [\[CrossRef\]](#)
57. Boufounou, P.; Eriotis, N.; Kounadeas, T.; Argyropoulos, P.; Pouloupoulos, J. Enhancing Internal Control Mechanisms in Local Government Organizations: A Crucial Step towards Mitigating Corruption and Ensuring Economic Development. *Economies* **2024**, *12*, 78. [\[CrossRef\]](#)
58. LSEG ESG Scores. Available online: <https://www.lseg.com/en/data-analytics/sustainable-finance/esg-scores> (accessed on 12 February 2025).
59. CSMAR. Available online: <https://data.csmar.com/> (accessed on 10 November 2023).
60. Nuswantara, D.A.; Fachruzzaman; Prameswari, R.D.; Suyanto; Rusdiyanto, R.; Hendrati, I.M. The role of political connection to moderate board size, woman on boards on financial distress. *Cogent Bus. Manag.* **2023**, *10*, 2156704. [\[CrossRef\]](#)
61. Hadlock, C.J.; Pierce, J.R. New evidence on measuring financial constraints: Moving beyond the KZ index. *Rev. Financ. Stud.* **2010**, *23*, 1909–1940. [\[CrossRef\]](#)
62. Xu, J.; Yin, J. Digital transformation and ESG performance: The chain mediating role of technological innovation and financing constraints. *Financ. Res. Lett.* **2025**, *71*, 106387. [\[CrossRef\]](#)

63. Wang, S.; Zhang, X.; Cebula, R.J.; Foley, M. Cross-shareholding, Managerial capabilities, and Strategic risk-taking in enterprises: A game or a win-win? *Financ. Res. Lett.* **2024**, *62*, 105228. [[CrossRef](#)]
64. Issa, A.; Hanaysha, J.R. Breaking the glass ceiling for a sustainable future: The power of women on corporate boards in reducing ESG controversies. *Int. J. Account. Inf. Manag.* **2023**, *31*, 623–646. [[CrossRef](#)]
65. Shakil, M.H. Environmental, social and governance controversies: A bibliometric review and research agenda. *Financ. Res. Lett.* **2024**, *70*, 106325. [[CrossRef](#)]
66. Guo, Z. Analysis of Influencing FACTORS of information Asymmetry: Evidence from Listed Companies in China. Master's Dissertation, Chinese Academy of International Trade and Economic Cooperation, Beijing, China, 2019.
67. Liu, Y.; Tang, Y.; Yang, Y. Are female directors more employee-friendly? Board gender diversity and employee benefits: Evidence from China. *Front. Psychol.* **2024**, *15*, 1285056. [[CrossRef](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.