

## Article

# Board Power Hierarchy, Corporate Mission, and Green Performance

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**Abstract:** Green governance is the only way to build a community for humankind with a shared future. Existing research has concentrated more on the macro level rather than the micro level of green governance—the power hierarchy of the governance subjects and its influence on decision-making and the implementation of green governance. The board of directors is the main green governance body, and the consciousness and conducts of the green governance of board members are determined by corporate mission. As a result, we explored the mechanism of the impact of board power hierarchy on green governance performance through the influence of green governance conduct. To interpret this mechanism, we introduced relational contract theory and conducted an empirical analysis. The results show that board power hierarchy negatively affects green governance conduct. Corporate mission restrains the board power hierarchy's negative influence on green governance conduct, showing that board power structure has a significantly positive effect on green governance performance through the mediator of green governance conduct. Therefore, the positive role of corporate mission is identified.

**Keywords:** board power hierarchy; corporate mission; green governance conducts; green governance performance

## 1. Introduction

The green concept was first listed as one of the five development concepts in the thirteenth five-year plan in the fifth plenary session of the eighteenth Central Committee of the Communist Party of China, indicating the focus on the construction of an ecological civilization and that green concepts will lead the sustainable development of China in the future [1]. The Group of Twenty Finance Ministers and Central Bank Governors also emphasized inclusive development of humans and nature. Environmental problems have become increasingly serious, prompting people to reevaluate the relationship between human and nature. In December 2015, representatives of 195 parties reached the historic Paris Agreement in Paris, France, a sign that we have recognized that human beings can be the destroyer of natural ecology and a new concept is needed to achieve the concomitant development of humans and nature [2]. “The union of nature and humans” concept of green governance advocates the inclusive development of human and nature [3]. According to the world's first green governance guidelines [4], green governance is a public affairs activity that aims to build an ecological civilization and achieve green and sustainable development with the participation of governance bodies, implementation of governance means, and coordination of governance mechanisms. Green governance has become a governance paradigm that promotes environmental protection and enhances business success and environmental protection [5].

The concept of green development has been gradually recognized by the world. From firms' green management [6], green finance and the green supply chain, the government's green administration and green gross domestic product (GDP), to the public's green consumption, all society participants have gradually begun to implement green practices [7,8]. Some international organizations have

implemented many initiatives or declarations about resources and environmental protection, which provide a certain direction for green development. However, the concrete practical content of these initiatives is not clear [3], and standard guidance connecting the green concept and practice is lacking [6], which has led to the overall low level of green governance of listed companies [8]. Therefore, the establishment of an effective mechanism for green governance has become a key issue in current green governance research [3]. Research into and measurement of green governance performance can help enterprises to realize green development and transformation [7]. The traditional development mode that involves high energy consumption and pollution has caused serious environmental pollution and excessive consumption of resources, and has led to the lack of an internal driving force for China's economic development. Transforming the development mode and cultivating new drivers through green transformation are necessary, as is implementing the Silk Road Economic Belt and the 21<sup>st</sup>-Century Maritime Silk Road strategy [7]. Advocating green governance will help Chinese enterprises to practice green governance; help nations to break through national boundaries, share green values, and build a green road; and promote fair, ecological, and sustainable global economic development. Finally, green governance helps improve the growth capacity and long-term value of enterprises [9].

The board of directors (BOD) is the main body and key actor of green governance. Enterprises should improve the corporate governance structure based on the concept of green governance and practice the concept of green governance during all activities including assessment, supervision, information disclosure, etc. Presently, the research on enterprise' green governance has mainly focused on the behavior orientation and corresponding economic performance of enterprise green management practices of enterprise strategy (innovation strategy, green innovation strategy, etc.), with little attention paid to the role of the BOD in selecting strategy in enterprise green governance.

Many factors affect enterprise performance. From the perspective of senior executives, studies have explored the effect of chief executive officer (CEO) compensation incentives [10], CEO's inside debt [11], and CEO incentives in industry tournament [12] on corporate performance.

As the center of corporate governance, the BOD deeply influences corporate strategies and corporate performance [13]. The board plays a crucial role in enterprise green strategy development and green decision-making, and it is the key link to improving the green governance structure and optimizing the green governance mechanism. The green governance of the board directly determines the potential governance risk and the sustainable development of the company. The board, the core decision-making body of corporate governance, should be responsible for the effectiveness of green governance [5]. In terms of the role of the BOD on corporate governance, the research has mainly focused on the effects of the horizontal structure of the BOD (personal experience of board members, composition of the BOD, etc.) instead of the vertical power hierarchy of the board based on individual competence. According to relational contract theory and differential pattern theory of Chinese social class [14], the formal power of the BOD and the informal power based on ability and personality work together during strategic decision-making and further influence organizational performance [15–22] and efficiency [23]. Under the cultural and institutional background of imperial power politics and authority obedience in China, discussing the hierarchical order and green governance of the BOD caused by the imbalance of authority among individual directors is of theoretical and practical significance. The sense of corporate mission constrains board behavior. Responsible corporate mission promotes the internal harmony of the board team [21,24] and encourages the board members to work together to realize the green development of the enterprise.

The existing research paradigm of structure–performance fails to reveal the process of board conduct and its acting mechanism [25], which had led to the bias of theoretical research conclusions. Compared with the former, the structure–conduct–performance (SCP) research paradigm aligns better with the realistic logic of the role of the board team on governance performance [18]. Therefore, mediating variables should be considered when exploring the effect of board power structure on enterprise green management performance [26]. The power of the board team members mainly depends on their interactions. So, the mediating variable of green governance conduct was included to

open the black box of board green governance in this paper partially creating consistency between the theoretical model and practical logic, thus narrowing the gap between theoretical research and practice.

Based on the above analysis, we think that, as a decision-making institution of corporate governance, the governance conduct of the board has an important impact on green corporate governance performance. The SCP research paradigm is more consistent with practical logic. As a result, based on the SCP paradigm, we built a mechanism model, into which corporate mission, formal, and informal power hierarchy of BOD and green governance conducts were introduced. Through this model, we aimed to explore the mechanism and impact of green governance performance of the board on green governance performance under the moderating effect of corporate mission.

## 2. Theoretical Analysis and Research Hypothesis

### 2.1. Board Power Hierarchy and Green Governance Conduct

Fama [27] regarded the BOD as the highest-level control system of the company and stated that companies with a good board would continuously produce decent performance. According to organizational hierarchy theory, hierarchy has two major functions in organizations, especially in task-oriented teams: to establish organizational order and promote internal coordination. Through empowerment, team leaders influence organizational decisions and others' behaviors, and team members at lower levels are expected to conform to leaders and form leaders' opinions. Power hierarchies help teams make effective decisions and avoid invalid conflicts [15]. Additionally, hierarchy helps with the partitioning of resources and the orderly influence of team members, which is conducive to the effective flow of information among team members [28]. Secondly, the power hierarchy helps to motivate individuals in an organization. Higher ranks involve more material benefits, spiritual rewards, and comforts, so individuals will try to pursue higher ranks in a team or organization. Continuous promotion in the formal power hierarchy provides a career ladder for employees, and the expectation of promotions motivates people in lower ranks to work harder to achieve organizational goals. In the elite team of the board, each director has different managerial and professional ability as well as influence, and is respected by others, thus forming an informal power hierarchy [16,19,21].

#### 2.1.1. The Influence of Board Formal Power Hierarchy on Green Governance Conduct

Nielsen and Huse [29], Gore et al. [30], and Finkelstein and Mooney [31] found that the efficiency of the board depends on its ability to operate effectively as a team. The BOD is a group decision-making institution, and the differences in the composition of the board members affect the governance performance [32]. In a team with superior–subordinate relationships, the authority and responsibility of the individuals are clearly defined, which means that the superiors have legitimate authority to command the subordinates, and the formal hierarchy is clear.

Since the process of strategic decision-making is non-procedural and highly uncertain, formal power is considered to play a crucial role in strategic formulation. The formal power hierarchy of the board is formed by the power distribution of directors generated by organizational system arrangement. When the board is embedded with a higher formal power hierarchy, that is, the power distribution is more unbalanced, individuals who have attracting personalities strongly impact group members, which is conducive to improving the effectiveness of the governance of the board [18,19], which leads to the increase in green governance conduct [33]. Smith et al. [34] found that the smaller the formal power hierarchy, the less predictable the attitude and behavior of team members, making the discussion of strategic issues useless and thus delaying the strategic opportunity. Therefore, formal organizational design is needed to control team meetings and ensure focus on decision-making rather than maintaining order, to improve the efficiency and effectiveness of a board's decision-making and strengthen green governance conduct and performance. From the perspective of competence, directors with more power are often more familiar with the internal and external environment of

enterprises. They will focus on new developments occurring in the policy and the industry, and consider excessive environmental pollution, excessive consumption of resources, and the need for the green transformation of the enterprise. Then, they are able to adjust the content and process of decision-making to make high quality decisions [35,36], encouraging the board to focus on green development. Finally, high-power directors create constructive conflicts to promote constructive comments by setting fair rules for the team [37], which facilitates member involvement in discussions and promoting directors to devote themselves to strategic decisions, so they formulate strategic conduct concerning the sustainable development of enterprises. Based on the above analysis, we hypothesized:

**Hypothesis 1a (H1a).** *Board formal power hierarchy is positively correlated with enterprise green governance conduct.*

### 2.1.2. The Influence of Board Informal Power Hierarchy on Green Governance Conduct

Existing studies on the effect of team power hierarchy differ [38], forming two different views: functionalism states that power hierarchy promotes the internal coordination of teams and contributes to team performance [39,40]. Like other work teams, informal power hierarchy generate implicitly and automatically in the board. Board informal hierarchy, also known as status hierarchy, is based on directors' evaluation of each other's abilities and influence [16]. Because directors usually spend little time together, and tasks are ambiguous, they cannot be guided by formal rules [31], and this informal power hierarchy may strongly influence on board members' communication and coordination [15]. When a clear informal power hierarchy exists on the board, the degrees to which board members are respected significantly differ. A clear hierarchy provides clear guidance to board members [41]. However, according to dysfunctionism, power hierarchy leads to internal conflicts in teams, which is not conducive to team performance [42]. The BOD at a lower level is marginalized and negative behaviors occur, such as silence in decision-making [31], which leads to a relatively depressed meeting atmosphere. This reduces information sharing [19] and green governance conduct, resulting in unwise strategic choices [21,37], thus decreasing the awareness and action of the green strategy of the BOD. Therefore, the larger the board informal power hierarchy, the greater the negative impact on the formulation of the company's green governance strategy and the implementation of green governance conduct. Based on the above analysis, we hypothesized:

**Hypothesis 1b (H1b).** *Board informal power hierarchy is negatively correlated with enterprises' green governance conducts.*

### 2.2. Green Governance Conduct and Green Governance Performance

Since the United Nations (UN) introduced the concept of sustainable development in 1987, the carrying capacity of natural resources in the process of economic development has received considerable attention [42–44]. Then, based on the research of green GDP [45], Pierce et al. introduced the concept of green economy, thinking that economy and environment affect each other and integrating environmental concerns into capital investment benefit solving the contradiction between economic growth and protecting the environment [46]. In 2005, the fifth ministerial conference on environment and development introduced the concept of green growth, that is, an environmentally-sustainable and socially-inclusive economic growth mode to maximize the use of natural resources and minimize environmental pollution [47]. The presentation of these concepts indicates that the theoretical circle had begun to pay attention to the coordinated development of economy, society, and nature [4]. However, different from the above concepts, green governance promotes the importance of the natural environment, equal to that of human beings, focusing on human survival and long-term development. In essence, green governance is a public affairs activity involving the participation of governance bodies, the implementation of governance means and the coordination of governance mechanism [4], emphasizing the carrying capacity of the ecological environment, the orientation of green effects and its

institutional nature. Enterprises are the main subjects of natural resource consumption and pollutant emission. The development of social economy requires enterprises to upgrade their green behaviors to the level of governance [9]. Therefore, according to the concept of green governance, if enterprises want to achieve sustainable development, they should not only pay attention to economic benefits, but also attach importance to green governance performance [48,49], enhancing environmental protection awareness, minimizing the harm to the environment, and protecting stakeholders' rights and interests.

Some scholars have found that corporate social responsibility (CSR) fulfillment is significantly positively correlated with environmental performance [50–55], which indicates that enterprises with better CSR performance perform better environmentally. Green innovation is an important capability to help firms manage environmental problems [56]. The internal driving force of enterprises' green R&D investment is to pursue sustainable development [57]. Some scholars conducted research on green innovation behavior and environmental performance and found that green innovation in the technology and products is beneficial to the improvement of enterprises' social awareness and gaining support for environmental protection from the government and relevant departments. Then, enterprises are further incentivized to increase investment in environmental protection, thus improving environmental performance [3,58,59]. Therefore, we hypothesized the following:

**Hypothesis 2 (H2).** *Green governance conduct of the board is positively correlated with corporate green governance performance.*

### 2.3. Mediating Role of Green Governance Conduct

According to upper echelon theory, a manager's cognitive framework (the process of searching for and evaluating information) depends on their experience, knowledge, and values, which affect how they search for and interpret information. Therefore, the experience, knowledge, and values of managers determine the strategic decision-making process and the performance results of teams [36]. The board is often referred to as super senior management teams, so this theory is also applied to the study of boards of directors [60]. Traditional studies on the board usually attach importance to the correlation between board structure and corporate performance, and do not investigate the intermediate path. This sometimes results in contradictory empirical results [61]. As a top team involved in the strategic decision-making process, a sound board structure promotes cooperation and communication among directors [62]. However, this does not mean that a certain relationship exists between the board structure and corporate performance. Firm performance depends on the strategic behavior of the BOD, which is the actual engagement of the board's strategic function [63]. Therefore, the antecedent variable that affects corporate performance is governance behavior rather than structural characteristics [18].

A sound board structure promotes cooperation and communication among directors and avoiding inappropriate behavior in the process of strategic decisions. Therefore, a sound structure is conducive to the implementation of green governance conduct and the improvement of green governance performance. According to upper echelon theory, the characteristics of the board indirectly affect corporate performance through product innovation, mergers and acquisitions, diversification, and other strategies [35]. Studies have shown that strategic conduct plays a significant mediating role between board structure and firm performance [64–66]. The board exercises the strategic function through meetings. Adequate meeting frequency strengthens the communication among directors, and facilitates the BOD to formulate reasonable strategic decisions, such as innovation and green governance strategies to better safeguard shareholder interests and improve the economic and green performance of firms [67–69]. The supervision of the board improves the quality of information disclosure [70]. Relevant empirical studies have shown that the strategic conduct of the BOD directly impacts corporate information disclosure [71–73]. Through green governance conduct, such as increasing investment in environmental governance, the board aims to obtain better disclose quality social responsibility

information and improve the enterprises' green governance performance [74]. Based on the above analysis, we hypothesized:

**Hypothesis 3a (H3a).** *Green conduct plays a mediating role between board formal power hierarchy and green governance performance.*

**Hypothesis 3b (H3b).** *Green conduct plays a mediating role between board informal power hierarchy and green governance performance.*

#### 2.4. Moderating Role of Corporate Mission

The study of corporate mission originated from Drucker [75,76]. He stated that three questions are at the core of corporate strategy: What is our business? What kind of business should we be? What kind of business should we be in the future? Since then, scholars have studied corporate missions. According to Cooney [77], a mission statement is a statement of the company's goals, vision, behavior, culture, and strategy. Campbell [78] wrote that corporate mission clarifies corporate goals and is; therefore, a guide of corporate behavior. The mission statement, one of the commonly used enterprise managerial tools, has not yet been recognized by Chinese enterprises [79]. Unclear enterprise positioning and unclear enterprise existence purpose are common problems faced by Chinese enterprises [79].

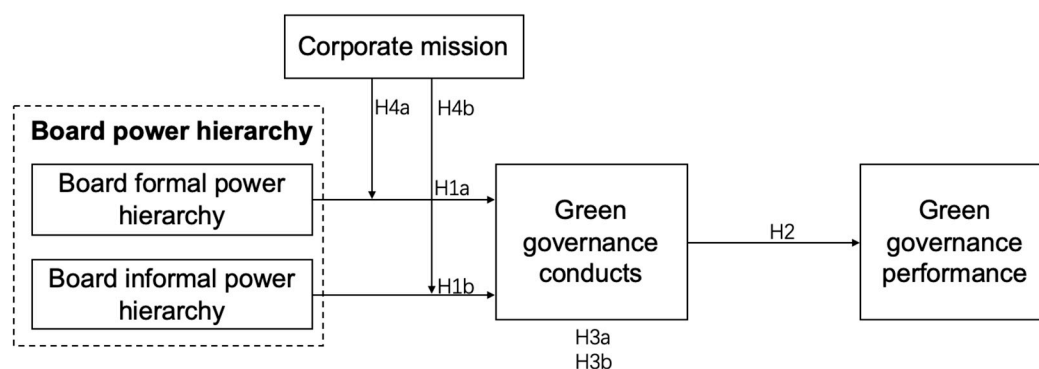
Mission statements have been examined as a key indicator of organizational performance [80–85]. Some empirical studies proved that a positive correlation exists between corporate mission statement and corporate performance [86–90]. However, research results are mixed regarding their impact on firm performance [80,84,91]. Overall, the management literature suggests that the relationship between mission statements and organizational performance is weak [76,83].

Some studies found that the relationship between power hierarchy and team performance is affected by contingency factors [38,40,92]. The strategy formulation and resource allocation of the BOD [93] are constrained by the corporate mission when implementing green governance [75]. A clear mission statement is essential for effectively establishing objectives and formulating strategies [75,91,94]. Mission statements help ensure all employees and managers understand the firm's purpose or reason for being and provide a basis for prioritization of key internal and external factors used to help boards formulate feasible strategies, for the allocation of resources, and for organizing work, departments, activities, and segments around a common purpose [76]. In the decision-making process, under the regulation of interests [95], alliances merge based on interests. These alliances exert formal or informal influences on decision-making, leading to the aggravation of inter-group conflicts. However, inspired by common enterprise missions, the hostility among different alliances are reduced, and end up in inter-group harmony [21,24]. Based on the above analysis, we hypothesized:

**Hypothesis 4a (H4a).** *Corporate mission moderates the relationship between board formal power hierarchy and green governance conduct.*

**Hypothesis 4b (H4b).** *Corporate mission moderates the relationship between board informal power hierarchy and green governance conduct.*

Lastly, according to the above analysis, we summarized our study's mechanism, as shown in Figure 1.



**Figure 1.** The mechanism diagram of board power hierarchy's influence on green governance performance through green governance conducts. H denotes hypothesis.

### 3. Research Design

#### 3.1. Sample Selection and Data Sources

In this study, we selected A-share state-owned listed companies in Shanghai and Shenzhen stock markets in China from 2012 to 2017 as the initial samples. Some samples were excluded if firms with special treatments (ST), or if firms lacked data concerning green governance conduct, board power hierarchy, and relevant control variables. We excluded financial and insurance companies. Finally, 614 effective sample points were selected. Additionally, we logged in through the national certification and accreditation information public service platform, the Shanghai stock exchange and Shenzhen stock exchange websites, and the China Stock Market Accounting Research database (CSMAR) to manually search for information concerning green governance conduct, green governance performance, and CSR. Then, we conducted content analysis and assignment to obtain evaluation values. The proxy index of board power hierarchy, the coefficient of variation, Gini coefficient, and other indexes were calculated according to the CSMAR database.

#### 3.2. Variables and Measurement

##### 3.2.1. Dependent Variable (GGP: Green Governance Performance)

Considering the characteristics of Chinese content and the scientific nature of index selection, by referring to Li's research on green governance guidelines, Zhang [96], and the green governance index system of Chinese listed companies, we used second-hand data to assign a green governance performance evaluation value. Specifically, we used the green certifications of firms as the standard to measure the green governance performance. To obtain relevant data, we logged in through the national certification and accreditation information public service platform [97] to manually research relevant data. During the period of 2012 to 2017, if an enterprise passed the ISO14000 system certification or was within the validity period of the certification, it was assigned a value of 1; otherwise, it was assigned a value of 0. Finally, we obtained the green governance performance evaluation value.

##### 3.2.2. Independent Variable

According to Harrison and Klein [98], hierarchy reflects the distance between team members and the concentration of resources, which is usually measured by the Gini coefficient or coefficient of variation. When the resources of all team members are evenly distributed, the Gini coefficient and coefficient of variation are all 0, and there is no hierarchical structure. With an increase in the Gini coefficient or variation coefficient, the power hierarchy of team members becomes more prominent.

### Board Formal Power Hierarchy (FP)

Formal power is derived from the design of organizational systems, that is, the relationship between the BOD and the CEO. Referring to Wei et al. [99], board formal power of the sample company was assigned first. Among them, board members who are neither the CEO nor chairman are denoted 1, board members who are the CEO or chairman are denoted 2, and the board members who are both the CEO and chairman are denoted 3. Then, we calculated the mean and standard deviation of the official power distribution of the board team and determined its coefficient of variation.

### Board Informal Power Hierarchy (IP)

Currently, the number of part-time positions of board members is usually selected to measure directors' respect from others [16–18,21]. Then, we used the Gini coefficient to measure board power hierarchy. The Gini coefficient is calculated as follows:

$$G = \frac{2COV(y, r_y)}{N\bar{y}}, \quad (1)$$

where  $G$  represents the Gini coefficient of informal power hierarchy,  $y$  is the number of executive positions held by each director in the company, and  $r_y$  is the sorting number of directors' part-time roles where the minimum number of part-time roles is defined as 1. The more part-time roles the person has, the higher the value. If the number of part-time roles is the same of two directors, the sorting number of these two directors will take the same value.  $2COV(y, r_y)$  is the covariance between  $y$  and  $r_y$ ;  $N$  means board size;  $\bar{y}$  represents the mean of  $y$ . The higher the value of  $G$ , the higher the informal power level.

### 3.2.3. Mediating Variable (GGC: Green Governance Conduct)

Including process variables in the path of the influence of the power structure of the board on the performance of green corporate governance is necessary [26], that is, green governance conduct, such as the formulation of green development strategy and decision-making regarding environmental protection behaviors. To obtain green governance conduct data, we used enterprise environmental disclosure information [100] and social responsibility disclosure information. Referring to the green governance conduct measurement method by Jaaffar and Amran [44], we obtained data from the CSMAR database and the annual reports of listed companies. Then, we analyzed the following 10 elements of the obtained data: protection of the rights and interests of shareholders, employees, suppliers, customers and consumers, environment and sustainable development, public relations and social public welfare undertakings, and social responsibility system construction, and the improvement measures and safety in production. If any of the above 10 aspects were disclosed in the data we obtained, the assignment was 1; otherwise, the assignment was 0. Lastly, we summarized all the scores to obtain a comprehensive evaluation value of the board green governance conduct.

### 3.2.4. Moderating Variable (CM: Corporate Mission)

At present, the main methods used to measure the enterprise mission statement in China and abroad are David's nine-element method [75], Baetz's 10-element method, and Bart's 25-element method [101]. Among them, David's nine-element method is the basis of the other two measurement methods and has been recognized by many scholars [102]. David stated that enterprise mission can be measured by nine factors: customer, product and service, market, technology, concern for production, growth and profit, corporate philosophy, corporate self-perception, concern for public image, and concern for employees. To obtain corporate mission data, we obtained the corporate mission through content analysis of the annual reports of companies. We logged in through the official websites of the Shanghai stock exchange [103] and the Shenzhen stock exchange [104], and then manually downloaded the annual reports of all sample enterprises from 2012 to 2017, and

supplemented the missing information by manually referring to the relevant information on the official enterprise websites. After the enterprise mission statement was obtained, the content analysis method and Nvivo12 (QSR International Pty Ltd., Doncaster, Australia) were used to analyze the text of the mission statement of each enterprise. Those who had one of the nine elements of David's nine-element method in the enterprise mission statement were assigned a value of 1; otherwise, the value was assigned as 0. The specific measurement standards are shown in Table 1. Finally, the scores of each element of the enterprise were counted to create the total score of the corporate mission.

**Table 1.** Measurement of corporate mission statement.

Element	Measurement Standard
Customers	Are the company's customers, including the company's main target market customer group, or the company's strategic customer group clearly defined? If the relevant concepts are explicitly presented, the value is 1; otherwise, 0.
Product and service	Are the main products and services provided by the company clear? If the relevant concepts are explicitly presented, the value is 1; otherwise, 0.
Market	Is where the company operates primarily or where it will expand clear? The market here mainly refers to the geographical concept. If the relevant concepts are explicitly presented, the value is 1; otherwise, 0.
Technology	Is the core technology of the company's business development clear? If the relevant concepts are explicitly presented, the value is 1; otherwise, 0.
Concern for production, growth, and profit	Does the company clearly indicate its efforts to achieve business growth and sound financial position? If the company explicitly states it attempts to achieve business growth and financial health, the value is 1; otherwise, 0.
Corporate philosophy	Does it clearly state the company's business philosophy, values, or moral predisposition to reflect the company's philosophy of expression? If the relevant concepts are explicitly presented, the value is 1; otherwise, 0.
Corporate self-perception	Does the firm clearly identify and state the company's unique capabilities or core competitive advantages, or evaluate the company's competitive advantages and disadvantages? If the relevant concepts are explicitly presented, the value is 1; otherwise, 0.
Concern for public image	Does the company clearly indicate its concern for the development of society and the community, and for environmental protection, or assume corresponding social responsibilities and provide contributions? If the relevant concepts are explicitly presented, the value is 1; otherwise, 0.
Concern for employees	Is it clear that the company regards employees as assets and cares about employees' lives and development? If the relevant concepts are explicitly presented, the value is 1; otherwise, 0.

### 3.2.5. Control Variables

Referring to existing studies, we selected proportion of independent directors (IDB), board size (BSZ), agency cost (AGC), equity restriction (EQR), equity concentration (SHC3), return on assets (ROA), asset-liability ratio (LEV), company size (LTA), and the natural logarithm of the number of management shareholdings (STI3) as control variables [17,18,21,65]. Among them, the equity restriction is the ratio of the number of shares held by the largest shareholder to the sum of shares held by the second largest shareholder to the fifth largest shareholder. The equity concentration is the sum of the shareholding ratio of the first five largest shareholders.

### 3.3. Research Model

#### 3.3.1. Theoretical Model of the Influence of Board Power Hierarchy on Green Governance Conduct

Through theoretical analysis, we established relevant assumptions of board power hierarchy, green governance conduct and green governance performance. On the basis of variable measurement, the following theoretical models were constructed:

$$GGC = a_0 + \sum a_{i0}controls + \varepsilon, \quad (2)$$

$$GGC = a_0 + a_1FP + a_2IP + \sum a_{i0}controls + \varepsilon, \quad (3)$$

Model (2) represents the relationship between green governance conduct and control variables.

Model (3) corresponds to H1a and H1b, where GGC denotes for green governance conduct, *FP* is board formal power hierarchy, *IP* is board informal power hierarchy, and *controls* represents the control variables that impact green governance conduct.

#### 3.3.2. Theoretical Model of the Moderating Effect of Corporate Mission

Referring to Wen et al.'s method of testing for a mediating effect with moderators [105], we examined the moderating effect of corporate mission on the influence of board power hierarchy on green governance conduct.

The specific testing methods were as follows: (1) The proxy variables of board formal and informal power hierarchy were taken as explanatory variables, and the enterprise mission was taken as the explained variable for regression analysis. (2) Referring to Wu's establishment of interaction items [106], interaction items concerning board formal power hierarchy, informal power hierarchy, and enterprise mission were set up separately. The moderating effect model of corporate mission's influence on board power hierarchy on green governance conduct is shown in models (3) and (4), corresponding to H4a and H4b, respectively.

$$GGC = a_0 + a_1FP + a_2IP + a_3CM + a_4FP * CM + a_5IP * CM + \sum a_{i0}controls + \varepsilon, \quad (4)$$

Among them, model (3) is the basic model of the influence of board formal and informal power hierarchy on green governance conducts; model (4) represents the relationship model of mediating variable green governance conduct with the inclusion of the moderating variable and its cross term with the explanatory variable, where  $a_4$  is the regression coefficient of the cross term between formal power hierarchy of BOD and corporate mission and  $a_5$  is the regression coefficient of the cross term between board informal power hierarchy and the corporate mission.

#### 3.3.3. Mediating Effect Model of Green Governance Conduct in Impact of Board Power Hierarchy on Green Governance Performance

The mediating effect model was constructed based on the above hypothesis. Since the dependent variable in this paper is distributed within (0, 1), the following logit regression model was constructed to verify the effect of board power hierarchy on corporate green governance performance through green governance conduct. Models (5) and (6) were set to verify the mediating role of green governance conduct in the impact of board power hierarchy (formal hierarchy and informal hierarchy) on green governance performance (H3a and H3b). In model (6), the coefficient can verify hypothesis H2.

$$\ln \left[ \frac{P(GGP)}{1-P(GGP)} \right] = a_0 + a_1FP + a_2IP + a_3CM + a_4FP * CM + a_5IP * CM + \sum a_{i0}controls + \varepsilon_i(1), \quad (5)$$

$$\ln \left[ \frac{P(GGP)}{1-P(GGP)} \right] = a_0 + a_1FP + a_2IP + a_3CM + a_4FP * CM + a_5IP * CM + a_6GGC + \sum a_{i0}controls + \varepsilon_i(2), \quad (6)$$

## 4. Empirical Research and Result Analysis

### 4.1. Correlation Analysis of Descriptive Statistical Results

Table 2 provides the descriptive statistical results of variables. The minimum, maximum, and average values of the board formal power hierarchy of state-owned listed companies in 2012–2017 were 0.2665, 0.6124, and 0.3790, respectively, indicating that the board formal power hierarchy of state-owned listed companies in China differed little. The minimum value of board informal hierarchy was 0.1667, the maximum was 1.0000, and the mean was 0.6950, indicating that informal hierarchies differ among different boards of directors. The average board informal power hierarchy of Chinese state-owned listed companies was higher than that of listed companies in the United States (Gini coefficient = 0.2100) [16]. The minimum value of green governance conduct was 1.0000, the maximum was 10.0000, and the average value was 7.3510. Additionally, the minimum value of green governance performance was 0, the maximum was 1, and the average value was 0.3270, which indicates that some companies focused on green governance, while others did not. The average enterprise mission value was 8.4020 and the standard deviation was 0.7400, which is smaller than the average, indicating that the enterprise missions of China's state-owned listed companies were generally complete, but varied considerably among companies.

**Table 2.** Descriptive statistics ( $n = 614$ ).

Variable	Mean	SD	Min.	Max.
GGP	0.3270	0.4700	0.0000	1.0000
FP	0.3790	0.0600	0.2665	0.6124
IP	0.6950	0.1600	0.1667	1.0000
CM	8.4020	0.7400	6.0000	9.0000
GGC	7.3510	1.3600	1.0000	10.0000
LTA	23.1800	1.4100	20.3261	28.5087
ROA	0.0310	0.0700	−0.6829	0.2198
LEV	0.4820	0.2200	0.0370	1.1123
IDB	0.3540	0.0700	0.2143	0.6667
BSZ	11.1020	2.8300	6.0000	25.0000
EQR	6.8970	9.9800	0.3459	82.5512
AGC	0.1580	0.1200	0.0060	0.7410
SHC3	56.7040	15.0600	11.9803	98.4689

Table 3 shows the correlation coefficients between variables. The correlation coefficient between board formal power hierarchy and green governance performance is 0.1667, which is significant at the 10% significance level. This preliminarily indicates that board formal power hierarchy is positively correlated with green governance performance. The correlation coefficients between the formal and informal hierarchy of the BOD and green governance conducts are −0.0146 and −0.0251, respectively, but they are insignificant. The correlation coefficient between green governance conducts and green governance performance is 0.1910, but is not significant. Table 3 shows that the correlation coefficient among most variables is lower than 0.3, indicating that no serious multicollinearity problem exists in the regression model.

**Table 3.** Correlation coefficients between variables.

Variables	GGP	FP	IP	CM	GGC	LTA	ROA	LEV	IDB	BSZ	EQR	AGC	SHC3	STI3
GGP	1													
FP	0.1167 *	1												
IP	0.0834	−0.2338 *	1											
CM	0.0195	0.0065	−0.0093	1										
GGC	0.0910	−0.0146	−0.0251	−0.0793	1									
LTA	−0.0483	−0.0414	−0.0284	0.0577	−0.0726	1								
ROA	0.0270	0.1345 *	−0.1321 *	0.0760	0.0313	−0.0045	1							
LEV	−0.1228 *	−0.0752	−0.0825	−0.0774	−0.0305	0.5711 *	−0.2962 *	1						
IDB	0.0466	0.0994 *	−0.1160 *	−0.0273	0.0180	0.2013 *	0.1322 *	0.0459	1					
BSZ	0.0065	−0.3169 *	0.3933 *	0.0196	0.0496	0.2068 *	−0.0895	0.0931	−0.1065 *	1				
EQR	0.0133	−0.1740 *	0.0020	−0.1573 *	0.0768	−0.0029	−0.1639 *	0.1488 *	−0.1037 *	−0.0386	1			
AGC	−0.0613	0.0158	0.0025	0.0847	0.0573	−0.2039 *	0.2084 *	−0.2735 *	−0.0917	0.0740	−0.2350 *	1		
SHC3	0.0138	−0.0140	−0.0371	0.0710	−0.1586 *	0.2047 *	0.0694	0.0404	−0.0053	0.0320	0.1016 *	−0.1476 *	1	
STI3	−0.0512	0.1335 *	−0.1627 *	−0.0275	0.0888	−0.0914	0.1408 *	−0.1567 *	0.0862	−0.0276	−0.2644 *	0.1166 *	−0.2078 *	1

Note: \* represent significance  $p < 0.10$ .

#### 4.2. Analysis of Regression Results

Based on the econometric model established above, STATA15.1 (StataCorp LLC, College Station, TX, USA) was applied to analyze the effect of the board power hierarchy of Chinese state-owned listed companies on green governance performance through green governance conduct and under the regulation of enterprise mission.

Table 4 shows that, in model 2, the coefficient between the board formal power hierarchy and green governance conducts was  $-0.2610$ , which is not significant. After including enterprise mission as the moderator in model 3, the coefficient was  $-17.8700$ , significant at the 10% level, and the interaction coefficient between board formal hierarchy and enterprise mission was significantly positive. This result indicates that the greater the power difference among board members, the more unlikely for green governance conduct to be positive. Therefore, H1a is not supported. Corporate mission positively moderates the negative effect of board formal power hierarchy on green governance conducts, so H4a is supported. According to principal–agent theory, in the corporate governance structure, the key responsibility of the board is to make daily decisions and supervise the management team under the authorization of shareholders. The management team, headed by the CEO, focuses mainly on implementation and operation and reports to the BOD. The relationship between the board and the management team is a principal–agent relationship based on division of labor and cooperation. Therefore, agency conflicts occur between management teams, BOD and owners of the firm, and some governance tools help reduce these conflicts, such as mutual monitoring between CEOs [107–109]. The board is an important mechanism in the supervision of managers [110]. So, when the director at the highest level of the board power hierarchy does not double as the CEO, their supervisory role of the management team is more independent. However, when the highest-ranking director on the board is also the CEO of the firm, the supervisory role of other board members may be weakened [16]. When the highest-ranking director doubles as CEO and board chairman, the board can be easily manipulated by the general manager, or even become a managerial tool for the implementation of management teams' insider control of behavior. Then, the board is less likely to conduct green governance activities; hence, the positive effect of the board on green governance conduct weakens. Conversely, board members are more likely to agree on decisions related to green governance if the power difference among board members is minimal.

**Table 4.** Regression of power hierarchy of the board of directors (BOD) and green governance conduct.

	Model 1	Model 2	Model 3
Dependent Variable	GGC	GGC	GGC
LTA	$-0.1240^{***} (-2.96)$	$-0.1230^{***} (-2.94)$	$-0.1140^{***} (-2.67)$
ROA	$-0.8470 (-0.95)$	$-0.9810 (-1.07)$	$-1.1780 (-1.29)$
LEV	$0.1890 (0.66)$	$0.1420 (0.49)$	$0.1800 (0.62)$
IDB	$-0.1310 (-0.18)$	$-0.1940 (-0.27)$	$-0.0238 (-0.03)$
BSZ	$0.0288 (1.44)$	$0.0352^{*} (1.72)$	$0.0372^{*} (1.79)$
EQR	$-0.0081 (-1.32)$	$-0.0088 (-1.39)$	$-0.0101 (-1.55)$
AGC	$0.4500 (1.10)$	$0.3720 (0.89)$	$0.4400 (1.05)$
FP	-	$-0.2610 (-0.25)$	$-17.8700^{*} (-1.74)$
IP	-	$-0.5730^{*} (-1.68)$	$6.2110 (1.58)$
CM	-	-	$-0.3550 (-0.57)$
FP $\times$ CM	-	-	$2.1280^{*} (1.76)$
IP $\times$ CM	-	-	$0.8120^{*} (1.75)$
_cons	$9.8660^{***} (11.07)$	$10.3400^{***} (10.01)$	$12.9500^{**} (2.36)$
Adjusted $R^2$			0.0465
F			3.2100 <sup>***</sup>

Note: The figures in brackets are  $t$  values. '\_cons' is the constant term.  $R^2$  is the goodness of fit. F is the statistic value of F test. \*, \*\*, and \*\*\* represent significance  $p < 0.10$ ,  $p < 0.05$ , and  $p < 0.01$ , respectively (the same below).

In model 2, the regression coefficient between the board informal power hierarchy and green governance conducts is  $-0.5730$ , which is significant at the 10% level, indicating that board informal hierarchy significantly negatively influences green governance conduct, and H1b is supported. In the decision-making process of the BOD, members interact by sharing information, establishing knowledge, and forming decision results [111]. In the process of interaction, both rational and political behaviors exist [21,112]. Procedural rationality refers to the decision maker's collection and analysis of relevant information to make decisions [112]. Another type of decision-making, political behavior refers to the alignment of organizational members with each other due to the competitive interests related to the decision-making results, the coordination of interests among the members [95], and the formal or informal influence in the decision-making [113]. When statuses are different within the BOD, the board makes decisions both rationally and politically. Based on functionalism, the clearer the informal hierarchy of the board, the more conducive for the board to make rational decisions, thus improving the efficiency and effectiveness of decision-making [41]. However, based on the theory of equity, dysfunction holds the opinion that team members may be dissatisfied with the existing power order, leading to conflicts and power struggles [17,114,115], which is not conducive to green governance conduct, especially when people at the top of the official hierarchy harbor resistance to green governance, and is not conducive to the green governance decisions of the board team. The empirical results of model 2 in this paper verify the dysfunctionism viewpoint. This result is consistent with the result reported by Groysberg et al. that too many high-status members in an organization negatively affect organizational efficiency [116].

In model 3, the interaction coefficient of board informal power hierarchy and green governance conducts is  $-0.8120$ , which is significant at the 10% level. The regression coefficient of board informal hierarchy and green governance conduct is negative and becomes positive after combining the moderating effect of corporate mission, which shows that corporate mission weakens the negative effect of board informal power hierarchy on green governance conduct. This means that the corporate mission reinforces board members' perceptions of green governance, and the corporate mission plays a positive role. In the process of social identity, group members are interdependent in role and status [117]. Although members of the board behave politically based on the alignment of interests, inter-group hostility is weakened under the influence of corporate mission, and inter-group harmony is manifested [21,24]. Inspired by the corporate mission, board members concentrate on green governance, which weakens the opposition among board members and the control authority of the top management of the BOD, thus contributing to boards' positive green governance conduct. Therefore, enterprise mission significantly regulates the influence of board informal power hierarchy on green governance conduct, and H4b is supported.

The board power hierarchy can be divided into two dimensions: formal power hierarchy and informal power hierarchy. Other measures can be applied, such as the division of power and status of board members [22]. However, the board plays its role as a whole entity. In this paper, the board is divided into formal and informal hierarchies, and these two dimensions do not exist in isolation [15] but play a role together. Hierarchical differences exist within any organization. For an organization, only one major hierarchical structure plays the leading role at any one time [15]. In model 2, the regression coefficient of board formal hierarchy and green governance behavior is  $-0.2610$ , which is not significant, whereas the regression coefficient of board informal hierarchy and green governance behavior is  $-0.5730$ , which is significant at the 10% level. Therefore, board informal power hierarchy plays a leading role in influencing green governance conduct. The basis for board members to obtain status and respect is competence or the judgment of others on their own competence [118]. For many reasons, including stereotypes [119], board members hold expectations about each other's performance of tasks. In social interactions, expectations provide observers with an interpretative framework [120] through which they process subsequent information and impressions. When expectations are confirmed, the informal hierarchy is self-reinforcing, leading to confirmation of conduct and maintenance of the hierarchy.

In models 2 and 3, the regression coefficients of board size (BSZ) and green governance conducts are 0.0352 and 0.0372, respectively, which are both significant at the 10% level, indicating that the larger the board size, the greater the benefit to the board for producing positive green governance conduct. In models 1 to 3, the company scale (LTA) and green governance conduct correlation coefficients are 0.1240, 0.1230, and 0.1140, respectively, and significant under the 1% level, suggesting that the company size and green governance conduct are significantly negatively correlated; the bigger the scale of the company, the more prone to poor green governance conduct.

Models 4 and 5 were used to verify the effect of the board power hierarchy on green governance performance through the mediator of green governance conduct. As shown in Table 5, in models 4 and 5, the regression coefficients of board formal power hierarchy and green governance performance are 36.0900 and 40.3800, respectively, and both are significant at the 10% level. This indicates that board formal hierarchy has a significant positive impact on green governance performance. Hence, H3a is supported and H3b is not. The coefficient of green governance conduct and green governance performance is 0.2130, which is significant at the 1% significance level, indicating that green governance conduct positively affects green governance performance, so H2 is supported. The regression results of models 4 and 5 further prove that after incorporating green governance conduct, the power hierarchy of the board has a significantly positive impact on green governance performance as a whole, and, during this process, the formal power hierarchy of the BOD plays a major role. This shows that the formal power of the BOD of China's state-owned listed companies plays a greater role in green performance. This confirms that governance conduct, rather than structural characteristics, is the antechamber affecting corporate performance [15]. Therefore, the SCP research paradigm aligns better with the realistic logic of the role of the board on governance performance.

**Table 5.** Regression of board power hierarchy, green governance conduct, and green governance performance.

	Model 4	Model 5
Dependent Variable	GGP	GGP
LTA	0.0250 (0.24)	0.0330 (0.32)
LEV	−1.6140 ** (−2.24)	−1.6700 ** (−2.37)
ROA	−0.7760 (−0.45)	−0.5750 (−0.34)
BSZ	0.0570 (1.34)	0.0460 (1.07)
SHC3	0.0030 (0.46)	0.0050 (0.59)
STI3	−0.0620 (−1.50)	−0.0650 (−1.56)
FP	36.0900 * (1.78)	40.3800 * (1.86)
IP	−1.3430 (−0.13)	−3.8410 (−0.37)
FP × IP	−20.9000 * (−1.74)	−18.2100 (−1.44)
CM	−0.0010 (−0.00)	0.1970 (0.12)
FP × CM	−2.0610 (−0.86)	−2.7920 (−1.07)
IP × CM	1.2370 (1.13)	1.4300 (1.26)
GGC	−	0.2130 ** (2.39)
_cons	−8.7010 (−0.66)	−11.4200 (−0.83)
Pseudo R <sup>2</sup>	0.0575	0.0694
Wald $\chi^2$	35.0700	35.9800
N	416	416

Note:  $\chi^2$  is the statistic value of  $\chi^2$  test. N is the sample size.

#### 4.3. Robustness Test

To verify the robustness of the results, the robustness test was conducted by replacing the regression model. Because the explained variable in this paper could only take a value of 0 or 1, so the Poisson regression model was selected for analysis and Table 6 shows the regression results of the model.

**Table 6.** Poisson regression of board power hierarchy, green governance conduct, and green governance performance.

Dependent Variable	Model 6	Model 7
	GGP	GGP
FP	18.3400 (1.55)	21.4200 * (1.73)
IP	−0.5310 (−0.08)	−2.5410 (−0.35)
FP × IP	−11.3100 * (−1.81)	−9.8570 (−1.52)
CM	−0.0538 (−0.05)	0.0420 (0.04)
FP × CM	−0.9090 (−0.63)	−1.4030 (−0.94)
IP × CM	0.6720 (0.91)	0.8560 (1.13)
LTA	0.0154 (0.23)	0.0166 (0.25)
LEV	−1.1030 ** (−2.29)	−1.1090 ** (−2.37)
ROA	−0.5300 (−0.46)	−0.4030 (−0.36)
BSZ	0.0408 (1.47)	0.0328 (1.19)
SHC3	0.0023 (0.46)	0.0029 (0.57)
STI3	−0.0424 (−1.49)	−0.0446 (−1.59)
GGC	−	0.1380 ** (2.49)
_cons	−5.3700 (−0.59)	−6.7950 (−0.74)
N	416	416

As shown in Table 6, in model 6, the coefficient between board formal power hierarchy and green governance performance is 18.3400 (insignificant); after the addition of mediating variables in model 7, the coefficient is 21.4200, which is significant at the 10% level. This result shows that green governance conduct acts as a mediator between board power hierarchy and green governance performance, which is consistent with previous results. The coefficients of board informal power hierarchy and green governance performance are −0.5310 and −2.5410, respectively, and they are not significant, which is consistent with the results of models 4 and 5. The coefficient of green governance conduct and green governance performance is 0.1380, which is significant at the 1% level. This indicates that green governance conduct significantly positively impacts on green governance performance, which is consistent with the results of model 5 and further supports H2. In conclusion, the Poisson regression results further show that the power hierarchy of the board influences green governance performance through green governance conduct and the mediating role of green governance conduct. To some extent, this indicates the robustness of the empirical research results outlined in this paper.

Based on the above empirical test, the greater the difference in the board power hierarchy of listed companies in China, the more likely senior directors have more control, and the more likely the disharmony among members, which is not conducive to positive green governance. However, under the influence of the corporate mission, board members concentrate on green governance, and the negative influence of board power hierarchy on green governance conducts weakens. Therefore, overall, the power hierarchy of the board positively impacts green governance performance and this impact is realized through the mediator of green governance conduct. Corporate mission weakens the negative impact of board power hierarchy on green governance conduct, and the positive effect of corporate mission is manifested.

#### 4.4. Further Discussion

The impact of board power structure on corporate performance through conduct is affected by environment and specific factors, such as performance pressure. Previous studies revealed that when a company performed well in the past, the board faces less decision-making pressure and is satisfied with current strategies, so internal conflicts are minimized [121]. Conversely, when the company's past performance is relatively poor, the board faces more pressure, and conflicts and disagreements are more likely to occur within the board [17]. When measuring performance pressure, we assigned a value of one if the company's financial performance indicator (ROE) is worse than that of the previous year,

indicating the presence of performance pressure; otherwise, we assigned a value of zero, indicating the absence of performance pressure.

The relationship between board power hierarchy and green governance conduct under different performance pressures is shown in Table 7. When performance pressure is lacking, board informal power hierarchy negatively influences green governance conduct, and this influence is significant. The impact of board formal hierarchy on green governance conducts is insignificant. The coefficient between corporate mission and board informal hierarchy is negative. These mean that in the process of the board hierarchy's influence on green governance conduct, the informal hierarchy plays a leading role in board power hierarchy. This indicates that in listed companies without performance pressure, the greater the power difference among board members, the less positive green governance behaviors are cultivated. However, corporate mission inhibits this negative effect, and urges board members in high positions to adopt positive green conduct and influence other board members. This is consistent with the regression results in this paper. When firms are under performance pressure, board informal power hierarchy insignificantly negatively influences green governance behavior. The corporate mission inhibits this effect, and the coefficient between corporate mission and informal hierarchy is not significant. This shows that when enterprises face more operating pressure (that is, poor performance in the previous year), the efficiency advantage of informal power hierarchy of the board and its influence on green conducts are weakened.

Table 7 also reveals that regardless of performance pressure, the scale of a company always negatively influences green governance conduct, suggesting that the larger the company, the less inclined the board is to adopt positive green governance conduct. This may be due to the high cost of large enterprises adopting green governance conduct or the higher probability of large companies' green governance issues. In companies lacking performance pressure, equity restriction has a significantly positive impact on green governance conduct, indicating that in companies without performance pressure, the balance between major shareholders plays a positive role in green governance conduct.

**Table 7.** Board power hierarchy and green governance conduct under different performance pressures.

	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13
Performance Pressure?	No	Yes	No	Yes	No	Yes
Dependent Variable	GGC	GGC	GGC	GGC	GGC	GGC
LTA	−0.1212 * (−1.69)	−0.1212 ** (−1.97)	−0.1205 * (−1.68)	−0.1151 * (−1.86)	−0.1203* (−1.68)	−0.0993 (−1.62)
ROA	−1.3080 (−1.20)	−1.0320 (−0.63)	−1.3161 (−1.21)	−1.1603 (−0.71)	−1.3034 (−1.19)	−1.6756 (−1.02)
LEV	−0.0286 (−0.06)	0.2792 (0.66)	−0.0304 (−0.07)	0.2566 (0.61)	0.0273 (0.06)	0.2947 (0.71)
IDB	0.2114 (0.17)	−0.5426 (−0.51)	0.1959 (0.16)	−0.5673 (−0.53)	0.3834 (0.31)	−0.2681 (−0.25)
BSZ	0.0274 (0.98)	0.0470 (1.50)	0.0275 (0.98)	0.0525 * (1.67)	0.0218 (0.77)	0.0599 * (1.92)
EQR	−0.0246 *** (−2.74)	−0.0010 (−0.13)	−0.0252 *** (−2.74)	−0.0008 (−0.12)	−0.0251 *** (−2.66)	−0.0012 (−0.17)
AGC	−0.2042 (−0.30)	0.9125 (1.33)	−0.1768 (−0.26)	1.1212 (1.61)	−0.2176 (−0.31)	1.1745 * (1.70)
FP	−0.3432 (−0.27)	−0.0422 (−0.03)	−0.3781 (−0.29)	0.0614 (0.05)	−5.9032 (−0.41)	−27.1776 ** (−2.15)
IP	−0.8173 * (−1.66)	−0.3958 (−0.73)	−0.8312 * (−1.67)	−0.3069 (−0.57)	8.1837 (1.30)	6.4869 (1.11)
CM	-	-	−0.0348 (−0.31)	−0.1625 (−1.58)	0.4602 (0.47)	−0.8795 (−1.02)
FP × CM	-	-	-	-	0.6673 (0.39)	3.3104 ** (2.18)
IP × CM	-	-	-	-	−1.0689 * (−1.44)	−0.8215 (−1.17)
_cons	10.6170 *** (6.50)	9.9858 *** (6.61)	10.9237 *** (5.69)	11.0183 *** (6.70)	6.6729 (0.78)	16.3530 ** (2.25)
F	1.7900 *	1.1700	1.6200	1.3100	1.6000 *	1.8100 **
R <sup>2</sup>	0.0598	0.0300	0.0601	0.0371	0.0710	0.0607
N	264	350	264	350	264	350

Table 8 shows the regression of board power hierarchy, green governance conduct, and green governance performance under different performance pressures. Regardless of performance pressure, a significant positive correlation exists between board formal power hierarchy and green governance performance, and green governance conduct plays a significant positive mediating role. Informal hierarchy has no significant influence on green governance performance. This shows that the power hierarchy of the board, overall, has a significant positive impact on green performance, and plays a role partly through the intermediary of green governance conduct. The formal power hierarchy of the board plays a leading role in this process.

**Table 8.** Board power hierarchy, green governance conduct, and green governance performance under different performance pressures.

	Model 14	Model 15	Model 16	Model 17
Performance Pressure?	No	Yes	No	Yes
Dependent Variable	GGP	GGP	GGP	GGP
LTA	0.0594 (0.36)	0.0409 (0.29)	0.0488 (0.29)	0.0395 (0.28)
LEV	−1.4915 (−1.39)	−1.8775 ** (−1.98)	−1.3791 (−1.24)	−2.0444 ** (−2.10)
ROA	2.4713 (0.89)	−8.8865 *** (−2.60)	3.1082 (1.11)	−8.1772 ** (−2.34)
BSZ	0.1074 * (1.84)	0.0130 (0.21)	0.0918 (1.53)	−0.0003 (−0.01)
SHC3	−0.0150 (−1.30)	0.0244 ** (2.27)	−0.0150 (−1.28)	0.0261 ** (2.36)
STI3	−0.1261 *** (−1.96)	−0.0119 (−2.23)	−0.1105 (−1.61)	−0.0086 (−0.16)
FP	10.0948 *** (3.42)	4.3908 * (1.86)	66.4405 (1.46)	33.2608 (1.24)
IP	1.7414 (1.38)	0.4254 (0.38)	−0.2726 (−0.01)	−4.4102 (−0.27)
CM	−	−	1.1734 (0.37)	0.2281 (0.11)
FP × CM	−	−	−5.1112 (−0.99)	−2.4422 (−0.78)
IP × CM	−	−	1.2880 (0.60)	1.2510 (0.74)
GGC	−	−	0.2751 * (1.83)	0.2042 * (1.75)
_cons	−5.6425 (−1.53)	−3.8478 (−1.23)	−22.9712 (−0.82)	−10.4908 (−0.57)
Wald $\chi^2$	23.8000 ***	17.6000 **	31.1200 ***	23.8400 **

In companies under performance pressure, corporate debt (LEV) always negatively affects green governance performance, which indicates that when listed companies experience performance pressure, debt restricts the improvement in green governance performance. In listed companies under performance pressure, the scale of the board is always positively affecting the performance of green governance, and the larger the scale of the board, the more attention the board pays to improve green governance to alleviate business risks due to performance pressure.

## 5. Conclusions, Contributions, and Prospects

### 5.1. Conclusions

The power hierarchy of the BOD negatively affects green governance conduct. This result is consistent with the conclusion of board power hierarchy dysfunction theory, indicating that power hierarchies lead to internal conflicts in teams, which is not conducive to information sharing among members. The decision-making of the BOD is more reflected in political behaviors, which tend to produce unwise strategic choices [21] and reduce the analysis of green strategies and the implementation of green governance conduct by the BOD. Based on principal–agent theory, agency conflicts exist between company management teams, the board, and owners. The board acts as an important supervision and management mechanism. When the board chairperson is also the CEO, the supervisory role of other board members may be weakened [16] and agency costs may increase, leading to the board's poor green governance conduct. By grouping the samples, we found that the results are consistent in listed companies under no performance pressure.

The corporate mission inhibits the negative impact of board power hierarchy on green governance conduct. The relationship between power hierarchy and team performance is affected by contingency factors [38]. An active corporate mission drives the BOD to effectively define goals and formulate strategies [88]. After grouping the samples, we found that in listed companies lacking performance pressure, the enterprise mission reduces the negative effect of board power hierarchy on green governance conduct. Inspired by a common mission, conflicts within the BOD are minimized, inhibiting the negative effect of the board power hierarchy on green governance conduct.

Board power hierarchy positively affects green governance performance. This conclusion is similar to that of Wei et al. [99]. After grouping of the samples, we found that regardless of experiencing performance pressure, board power hierarchy stably and positively affects green governance performance. This indicates that the greater the difference in the board power hierarchy of state-owned listed companies in China, the more conducive the board power hierarchy to the improvement of green governance performance, and the authority of the power hierarchy produces positive governance effect.

Green governance conduct acts as a mediator between board power hierarchy and the green performance of enterprises. Combined with the above findings, board power hierarchy negatively influences green governance conduct, but this negative influence is inhibited by corporate mission. Green governance conduct plays a positive mediating role, enabling the power structure of the board to play a significant positive role in green governance performance. This further indicates that the SCP research paradigm is better aligned with the realistic logic of the board team's governance performance actions.

## 5.2. Contributions

Based on our research, we think that the SCP research paradigm is more in line with the realistic logic of the board's governance performance actions. The power of the authority of the board of state-owned listed companies in China has a positive impact on green governance performance through the intermediation of green governance conduct, and corporate mission plays a positive role.

### 5.2.1. Theoretical Contribution

Firstly, we explored and measured green governance conduct and green governance performance, which enriches the research in this field. We referenced Jaaffar and Amran's measurement of enterprise green action [44] and Li's green governance guidelines and analyzed corporate social responsibility reports and green certifications, and used the (0, 1) assignment method to obtain an evaluation value of green governance conduct. This enriches the theoretical research and provides support for the index measurement for the research in this field.

Secondly, we defined and measured corporate mission, and tested its moderating effect, which enriches the research on corporate missions. The enterprise mission is the business philosophy of a firm that determines the value concept, thinking mode, and decision-making action of the members of the organization, and is the most fundamental power source of enterprises. However, unclear positioning or even wrong positioning has become a common problem in Chinese enterprises. Theoretical research, especially in China, lacks necessary attention in this field. We used David's division of corporate mission as a reference [75], and used content analysis and the assignment method and finally obtained an evaluation value of corporate mission. We fully considered the impact of corporate mission on green governance conduct and obtained results that enriches the research in this field and provides a feasible index measurement method for future research.

Thirdly, these findings enrich the empirical research on board governance, and reached the agreement between the theoretical model and practical logic. The role of board power depends on the interactions between the members. Therefore, mediating variables reflecting the interaction process or interaction results of board members should be included to further reveal the mechanism of the informal power of the board. However, researchers in this field mostly adopted the structure–performance

paradigm and ignored the member interactions. We built the structure–conduct–performance mechanism model and revealed the power of the BOD and partly opened the black box of board governance, matching the theoretical model with practical logic and narrowing the gap between theory and management practice. This, to some extent, confirms the view that the antecedent variable affecting corporate performance is governance conduct rather than governance structure [13,18,122].

### 5.2.2. Practical Contributions

Firstly, these conclusions can help guide state-owned listed companies to improve their green conduct and enhance their green governance performance by strengthening their sense of mission. A positive corporate mission weakens the negative effect of board power hierarchy on green governance conduct and helps improve the performance of enterprise green governance.

Our study helps guide listed companies to focus on improving green governance performance through good green governance conduct, and demonstrates the positive role of the power hierarchy in green governance performance.

### 5.3. Suggestions

First, listed companies need to explicitly improve the awareness of green governance. Listed companies should establish a corresponding green governance framework, cultivate green culture, improve the mission of environmentally-friendly enterprises, and acknowledge the positive role of the corporate mission. Secondly, the government could introduce relevant policies to guide state-owned listed companies to improve the design of the BOD system to fully benefit from the positive role of board power hierarchy in green governance. Finally, the government should encourage enterprises to establish social responsibility committees and other institutions to improve their green performance. By coordinating the relationship between stakeholders, the social responsibility committee and other organizations help promote the improvement of corporate green performance [123].

### 5.4. Research Prospects

Future studies on the impact of board power hierarchy on green governance performance may be conducted from the following aspects:

- (1) Searching for more appropriate proxy variables is suggested for future research. Referencing Jaaffar and Amran [23], we analyzed the following 10 elements of firm information disclosure: protection of the rights and interests of shareholders, employees, suppliers, customers and consumers; environment and sustainable development; public relations and social public welfare undertakings and social responsibility system construction; and the improvement measures and safety in production. We adopted a (0, 1) assignment method to indirectly measure the green governance conduct of the BOD. The best measurement of conduct is directly measuring the decision-making process of the BOD on green governance, or choosing outcome variables reflecting the board's decisions about green strategy. For the former option, directly measuring the decision-making process of the BOD with a large sample is difficult as it requires participation during board meetings or questionnaire surveys, but it is still an alternative plan. For the latter, the outcomes of the board's green governance decisions require listed companies to disclose detailed related information. To evaluate green governance performance, we adopted binary variables related to whether firms obtained green certification, reflecting only a narrow aspect of the green governance effect. Further research is recommended to extend the evaluation of green management performance, more widely adopt the concepts of green and green governance, and extend green governance performance to dark green performance involving economic performance, social performance, the improvement of employees' spiritual intelligence, and traditional environmental performance [124].

- (2) Discussing the influence of board power hierarchy on green governance conduct and green governance performance for different types of listed companies is necessary. Based on the mechanism analysis and effect verification of the influence of board power hierarchy of state-owned listed companies on green governance performance through green governance conduct, we discussed the effect of different performance pressures, and obtained a series of findings. The influence of the power of the board of state-owned and private listed companies in different industries and regions on green governance conduct and green governance performance is also a research direction for future studies. Thus, the power hierarchy difference between state-owned and private listed companies and its influence on green governance conduct and governance performance could be revealed. By comparing the differences in the power hierarchy of the board and green governance, the characteristics of green governance in different industries could be identified. Comparative studies of different regions could help to explore the influence of external factors, such as regional culture, regional economic development, regional market competition, and regional innovation ability, on internal elements such as board power hierarchy, green governance conduct, and green governance performance to discover the common and individual factors affecting green governance in different regions. The influence of governance on enterprise performance is restricted by many situational factors, such as industry competition. This effect is always small and insignificant in competitive industries and large and significant in non-competitive industries [125]. Therefore, future studies may incorporate industry competition into the model to further explore the impact of board governance on corporate green performance in industries with different levels of competition.
- (3) The consistency and deviation of the power as well as status of those on the board should be considered. We divided the board power hierarchy into formal and informal power hierarchies. The consistency of board power hierarchy, which is the degree of matching between power and status, may be explored. A mismatch often occurs between power and status within the BOD, which affects the governance behavior of the board and further affects the governance performance. Discussing the consistency and deviation between power and status would help enterprises to build a BOD with matching power and status to improve the governance effectiveness of the BOD.

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