

Power plays: How women directors' collective power influences corporate environmental performance

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Abstract

Purpose: The purpose of this article is to explore the complex role of women directors in corporate green governance and their impact on environmental performance. It examines the extent to which board gender diversity, especially the presence and attributes of women directors, influences corporate environmental responsibility. The article reviews inconsistent findings in existing literature, suggesting that the impact of women directors cannot be fully understood by simply counting the number or proportion of women on boards. Instead, it argues that factors like individual power, collective influence, and structural empowerment are essential for women to make a substantive impact on corporate environmental strategies. Ultimately, the article highlights the need for a collective voice and empowerment among women directors to address structural barriers and effectively contribute to corporate green governance.

Design/methodology/approach: The study examines a group of Chinese listed companies that made their social responsibility reports available on the Cninfo official website from 2019 to 2022, serving as the foundation for the initial sample pool. After excluding ST (special treatment) companies and companies with missing information, 2022 sample observations are finally obtained. All the data comes from public sources, including the social responsibility reports, financial reports, company websites, and CSMAR database.

Findings: The findings of the study demonstrate a significant correlation between corporate governance, organizational climate, and sustainable development. Women directors not only impact corporate decision-making as individuals but also as a collective entity. Corporate managers must acknowledge the significance of women directors as a group in advancing corporate environmental responsibility and implement measures to ensure their voices and perspectives are duly considered.

Research limitations/implications: The influence and collective power of female directors may manifest in different ways in different cultural and industry contexts. Consequently, although this study offers insights into the influence of women directors' collective power on corporate environmental performance, it is not without limitations. Primarily, the study's sample scope is constrained to listed companies in China, which may not fully reflect the nuances of different cultural and legal contexts. Secondly, the study does not account for the potential impact of industry characteristics on the findings. Future research could expand the sample scope, consider industry differences, and further investigate the multidimensional impact of board gender diversity.

Practical implications: This study examines the mechanisms through which the presence of women on boards of directors affects environmental performance, which is conducive to understanding the “board composition--firm outcome” relationship, and has positive significance for the improvement of corporate environmental performance. This study provides a new perspective for understanding the role of gender diversity in corporate governance and provides empirical support for corporate practices that promote gender equality and sustainable development.

Originality/value: Prior research often explored the effects of board gender diversity by looking at the number or proportion of women directors and has yielded mixed results. This study introduces the idea that the collective influence of women directors—when they are seen and operate as a unified, empowered group—can create a more significant, measurable impact on corporate environmental performance. By analyzing this collective power, highlight an aspect of board dynamics that may be more instrumental than individual representation alone in influencing corporate strategies on sustainability.

Keywords: Women directors, Collective power, Corporate environmental performance, Fairness climate, Openness climate

Introduction

The increasing attention has been paid to how companies can contribute to environmental protection. Among the factors identified, women directors' role in corporate green governance attracts researchers' attention recently (Rao & Tilt, 2016) as a result of the growing appeal for board gender diversity and the extant evidence indicating that women are expected to enact the role of proponents and defenders of CSR issues (Cruz et al., 2019). Focusing their attention on whether gender-diverse boards can lead to greener companies, researchers have mainly explored the relationship between the number or proportion of women directors and corporate environmental performance. However, the empirical evidence is not yet consistent. On the one hand, it is indicated that women directors have pro-environmental attitudes and show a significantly positive impact on environmental performance (Post et al., 2011; Provasi & Harasheh, 2021; Walls et al., 2012). They may increase firm's awareness of environmental issues (Kassinis et al., 2016; Li et al., 2017), promote sustainable investments (Atif et al., 2020), encourage environmental innovation (Liao et al., 2019), motivate the adoption of environmental management systems (Rehman et al., 2020) and prevent environmental misconducts (Liu, 2018). On the other hand, researchers have also found opposite results. Gender-diverse boards do not lead to more ethical companies (Rodriguez-Dominguez et al., 2009) or have a pronounced impact on corporate responses to climate change (Galbreath, 2010). The proportion of women directors does not link with the quality of corporate sustainability reports (Amran et al., 2013). The interplay between female board members and ecological sustainability exhibits a complex, non-linear dynamic within the banking sector (Birindelli et al., 2019). Sometimes board gender diversity may even be a defender for corporate greenwashing (Deschênes et al., 2015).

Literature Review

The number or proportion may not be appropriate proxy variables to investigate the impacts of women directors because women are a minority group in the boardroom and their legitimacy of being directors is often challenged (Elstad & Ladegard, 2012). Hence, some researches have shed light on the impacts of women directors' attributes. Cruz et al. (2019) argue that categories of women directors may have different influences and empirically examines the

impacts of the presence of outsider nonfamily and insider family women directors on corporate social performance in family firms. Elmagrhi et al. (2018) find the positive effects of the proportion, age, and level of education of women directors on the environmental performance of Chinese listed firms. Gull et al. (2018) pay attention to the influence of women directors' positions, educational expertise, and experience.

Recent studies have also identified that women in the boardroom possess different levels of influence on a firm's strategy, their contributions cannot be consistently and uniformly leveraged (Terjesen & Sealy, 2016). Token women directors face stronger barriers while powerful ones have more chances to demonstrate their value in the board decision-making process and exert significant influence on final strategic plans. Individual power has been highlighted as the base of one's influence (McNulty et al., 2011). With the activation of power, members with elevated communal traits and ideals, such as women, are likely to engage in behaviors that are more aligned with social responsibility (Chen et al., 2001). Research by Byron and Post (2016) indicates that in countries with greater ease for women to attain power, the positive correlation between women's board representation and CSR is stronger.

Additionally, the strength of the collective has also been touched upon. Critical mass theory, which states that the size of a subgroup is vital to its influence (Amorelli & García-Sánchez, 2021), has been applied to explain the impacts of women directors on boards. Previous research points out that three or more women's presence may change the board interactions and motivates women's engagement in board discussions (Torchia et al., 2012). By acting collectively, women's opinions are more likely to be valued (Konrad, Kramer, & Erkut, 2008). In general, previous research findings support this argument (Amorelli & García-Sánchez, 2020; Jia & Zhang, 2013; McGuinness et al., 2017). But there is also some evidence to the contrary. For example, Birindelli et al. (2018) propose that once a critical mass is achieved, a further increase in the number of women directors may not inherently result in enhanced sustainability performance.

Combining the two factors mentioned above, namely, individual power and the strength of the collective, this study goes further and emphasizes the importance of collective power. The research on women's empowerment has highlighted the implication of collective power in advancing gender balance in various sectors and organizations (Dulhunty, 2020; Hossain, 2012). It has been posited that individual empowerment serves as a crucial entry point for the processes of social transformation, yet its effectiveness in challenging systemic inequality is limited unless it catalyzes structural transformation (Kabeer, 2003). Therefore, we argue that with stronger collective power, women can fundamentally break the barriers they face and enhance their influence so as to generate significant changes. Although there has been some improvement in women's representation, the board remains largely controlled by men (Birindelli et al., 2019). The improvement in individual power will not be sufficient for the women group to participate effectively and shift the unequal power relations in the boardroom unless a collective voice is built for women.

Hypothesis Development

Theoretical framework and hypotheses development

Women directors' collective power and corporate environmental performance

According to the literature on gender and environment, compared with men, women are more sensitive to environmental issues and conduct more pro-environmental behavior (Stern et al., 1993). During the process of growth, women are mainly influenced by mothers. They will form

a relationship-based and community-based worldview and tend to pay great attention to the needs of others (Davidson & Freudenburg, 1996). Therefore, they are more likely to perceive environmental risks, attach environmental quality to their health and family safety (Bord & O'Connor, 1997), understand the destructive effects of human behavior on the ecological environment (Stern et al., 1993), and more willing to pay for environmental protection (Ciocirlan & Pettersson, 2012). As the upper echelons perspective (Hambrick & Mason, 1984) indicated, the pro-environmental value may be reflected in women directors' strategic choices. Women directors are more likely to concern about environmental issues, provide suggestions for environmental strategies, monitor corporate environmental impacts and risks, and promote positive environmental practices.

More specifically, firstly, women directors' collective power affects the internal dynamics within the women group. Operating as a powerful collective and constructing a common identity can enhance the sense of security and belonging of women members. Deep communication and cooperation can improve mutual understanding and trust. They may reach an agreement on proposals before the meeting and support each other during the meeting. Secondly, women directors' collective power affects the opinions of the men group. Viewing women directors as a collective makes gender differences less noticeable, therefore gender bias may be reduced and women's professional knowledge and ability are more likely to be valued. Board members also show respect and obedience based on member's power (Belliveau et al., 1996). With stronger collective power, women gain greater respect and recognition from men members, making it easier for their pro-environmental opinions to be understood and accepted. Thirdly, women director's collective power ensures the full implementation of green practices. Organizational resources are limited. Power is a key factor that influences the flow of resources (Salancik & Pfeffer, 1974). Board members have different concerns and the focus of resource allocation may reflect the powerful group's preferences. Women directors' collective power determines the number of organizational resources to support green actions and further substantial changes in environmental performance. Drawing from the preceding analysis, we introduce our first hypothesis.

H1: There is a significant positive relationship between women directors' collective power and corporate environmental performance.

The moderating effect of organizational climate

The moderating effect of board fairness climate

The reasons why board fairness climate may strengthen the positive impact of women directors' collective power on corporate environmental performance include two aspects. Firstly, for women themselves, strong board fairness provides more chances for the presentation of their pro-environmental voices. When women perceive that they are treated fairly, they will be actively engaged in the board meeting and share views without reservation. In a fair board, women directors will bravely express their ideas without fear of being unfairly treated even though the concept of green development may challenge the status quo of the company. Secondly, for the board dynamic, board fairness climate strengthens the effectiveness of board discussions and thus women's pro-environmental ideas can be given full play in the decision-making process. Fairness promotes group harmony and enables board members to build a relationship of trust and mutual aid in the interaction of knowledge sharing and mutual understanding. The reduction of misunderstanding and conflict ensures a full discussion of different views. Given the analysis presented, we formulate our second hypothesis.

H2: Board fairness climate strengthens the relationship between women directors' collective power and corporate environmental performance.

The moderating effect of TMT openness climate

Open organizations accept knowledge heterogeneity among members and embrace the participation of marginalized groups (Sun et al., 2015). TMT openness climate enhances the connection between the collective power of women directors and corporate environmental performance in a dual manner. Firstly, an open TMT has a more positive attitude towards women directors. Open climate can reduce the bias caused by demographic differences, which is especially important for women (Kanadli et al., 2018). Women are inclined to gain positive attitudes from men managers and contribute their knowledge and wisdom. An open TMT respects and encourages different viewpoints. Through sincere and open discussions, senior managers can fully understand the pro-environmental value of women directors and implement environment strategies. Secondly, an open TMT has a more positive attitude towards the green change of the organization. The green transition requires the reformation of development ideas and adjustment of organizational structure. An open TMT with expanded vision can embrace and quickly adapt to changes in the environment (LePine, 2003). So, in an open TMT, pro-environmental ideas put forward by women are more likely to be supported by executives. Based on the synthesis of our findings, we introduce the third hypothesis.

H3: TMT openness climate reinforces the correlation between women directors' collective power and corporate environmental performance.

Methods

Our study examines a group of Chinese listed companies that made their social responsibility reports available on the Cninfo official website from 2019 to 2022, serving as the foundation for the initial sample pool. After excluding ST (special treatment) companies and companies with missing information, 2022 sample observations are finally obtained. All the data comes from public sources, including the social responsibility reports, financial reports, company websites, and CSMAR database.

*Variables**Dependent variable*

Corporate environmental performance (CEP): Drawing on the prior literature (Birindelli et al., 2019; Daddi et al., 2019; Jiang et al., 2020), our evaluation of corporate environmental performance mainly captures two dimensions: pollutant treatment and energy usage. The pollutant treatment dimension comprises 4 indicators which refer to the treatment efficiency of four kinds of pollutants, namely waste water, waste gas, solid waste, and noise. Each indicator measures three aspects of treatments, including (1) whether the emission complies with the standards; (2) whether the emission declines compared with the previous year; (3) whether the pollutant is reused. The energy usage dimension also comprises 4 indicators, including energy consumption, energy conservation, usage of new energy and renewable energy. Each indicator is treated with equal weight and all indicators are summed up to create the score of corporate environmental performance.

Independent variable

Women directors' collective power (Fepower): In Chinese listed companies, the listing order of directors can reflect power allocation within the board. The directors who are ranked higher have more influence in decision-making. Despite that a few companies may list their directors alphabetically, the rank is still credible to mirror the director's power. Therefore, adopting the method provided by Zhu et al. (2016), we create the standardized rank of each women director and interpret it as her power. Then the women directors' collective power variable is

equal to the sum of the individual power of all women directors. In the robustness tests, we also provide an alternative measurement of women directors' collective power.

Moderating variables

Board fairness climate (Bdfair): Theoretical frameworks surrounding fairness, such as equity theory (Adams, 1965), the concept of relative deprivation (Crosby, 1984), distributive justice (Thibaut & Walker, 1975), and social comparison theory (Festinger, 1954), suggest that perceptions of fairness stem from a process of social evaluation (Wade et al., 2006). Previous studies use the fairness of compensation systems to represent the fairness of the company (Dai et al., 2017). Thus in this study, the pay gap within the board is employed to measure board fairness climate. After excluding independent and non-paid directors, the pay gap is expressed as the ratio of the highest pay to the lowest pay of directors. And the bigger the pay gap is, the less fair the board is, so the board fairness climate variable is calculated as the negative of the pay gap.

TMT openness climate (Tmtopen): Following Datta et al. (2003)'s research, TMT openness climate is expressed as the synthesis of three demographic characteristics of TMT members. Following their approach, we standardize three indicators, namely age, tenure, and education level of each member, and create an individual openness index. TMT openness climate variable is calculated as the mean of all members' openness index.

Control variables

This study introduces multi-level control variables, including firm size (Fsize), firm age (Fage), debt-to-equity ratio (Lev), financial performance (Roa), growth capacity (Growth), nature of the property right (State), board size (Bdsize) and board independence (Indep). Industry and year fixed effects are also employed.

Findings

The findings of the study demonstrate a significant correlation between corporate governance, organizational climate, and sustainable development. Women directors not only impact corporate decision-making as individuals but also as a collective entity. Corporate managers must acknowledge the significance of women directors as a group in advancing corporate environmental responsibility and implement measures to ensure their voices and perspectives are duly considered.

Discussion and Conclusion

Table 1 shows the descriptive statistics and correlations. According to this table, the mean of CEP is 55.400, the mean of Fepower is 0.524, and CEP is positively correlated with Fepower.

Table 1 Descriptive statistics and correlations

	Mean	1	2	3	4	5	6	7	8	9	10	11
1-CEP	55.400											
2-Fepower	0.524	0.011										
3-Fsize	23.444	0.212***	-									
4-Fage	18.684	0.047**	0.090***	0.122***								

5-Lev	0.502	0.071 ***	- 0.036	0.625 ***	0.146 ***							
6-Roa	0.037	- 0.008	0.058 ***	0.098 ***	0.041 *	- 0.409 ***						
7-Growth	0.419	- 0.038 *	- 0.024	0.027	- 0.011	0.025	0.015					
8-Bdsize	9.150	0.106 ***	0.054 **	0.365 ***	0.105 ***	0.229 ***	- 0.054 **	0.000				
9-Indep	0.376	- 0.003	- 0.020	0.061 ***	- 0.064 ***	0.006	0.057 **	- 0.019	- 0.378 ***			
10-State	0.578	0.120 ***	- 0.086 ***	0.261 ***	0.118 ***	0.203 ***	- 0.159 ***	- 0.041 *	0.224 ***	- 0.020		
11-Bdfair	- 13.16 1	0.001	- 0.071 ***	- 0.028	- 0.029	- 0.013	- 0.087 ***	- 0.001	- 0.090 ***	0.020	- 0.005	
12-Tmtopen	- 0.088	- 0.093 ***	0.061 ***	0.000	- 0.118 ***	0.038 *	0.007	0.040 *	- 0.056 **	0.002	- 0.058 **	0.010

Table 2 shows the regression results. Model 1 addresses hypothesis 1, revealing the effects of women directors' collective power on corporate environmental performance. In Model 1, the calculated coefficient for Fepower is affirmative and statistically significant at the 5% level ($b=0.383$, $p<0.05$), which corroborates Hypothesis 1. Models 2 and 3 evaluate the potential moderating impact of the board fairness climate. Specifically, Model 3 reveals a positive and highly significant coefficient for the interaction term (Fepower*Bdfair) at the 1% level ($b=0.007$, $p<0.01$), thereby endorsing Hypothesis 2. Models 4 and 5 investigate the moderating role of the TMT openness climate, with Model 5 indicating a positive and significant coefficient for the interaction term (Fepower*Tmtopen) at the 5% level ($b=0.164$, $p<0.05$), which supports Hypothesis 3.

Table 2 Women directors' collective power and corporate environmental performance

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	19.122*** (7.436)	18.941*** (7.180)	19.000*** (7.207)	18.452*** (7.084)	18.560*** (7.143)
Fsize	1.366*** (11.786)	1.362*** (11.490)	1.359*** (11.464)	1.393*** (11.780)	1.395*** (11.816)
Fage	0.055** (2.550)	0.049** (2.241)	0.047** (2.169)	0.059*** (2.635)	0.057** (2.567)
Lev	-1.153 (-1.438)	-1.137 (-1.395)	-1.148 (-1.408)	-1.157 (-1.402)	-1.192 (-1.446)
Roa	-0.156 (-0.080)	0.213 (0.112)	0.283 (0.149)	-0.263 (-0.134)	-0.108 (-0.055)
Growth	-0.029**	-0.019***	-0.019***	-0.029**	-0.028**

	(-2.205)	(-3.646)	(-3.598)	(-2.234)	(-2.288)
State	0.326 (1.282)	0.369 (1.439)	0.390 (1.527)	0.320 (1.224)	0.325 (1.244)
Indep	0.744 (0.331)	0.974 (0.425)	1.008 (0.440)	0.914 (0.391)	1.049 (0.448)
Bdsize	0.136** (2.045)	0.157** (2.301)	0.151** (2.228)	0.132** (1.966)	0.133** (1.980)
Fepower	0.383** (2.030)	0.434** (2.279)	0.440** (2.315)	0.377* (1.928)	0.356* (1.820)
Bdfair		0.002 (0.949)	0.000 (-0.058)		
Fepower * Bdfair			0.007*** (3.176)		
Tmtopen				-0.034 (-0.607)	-0.036 (-0.644)
Fepower*Tmtopen					0.164** (1.978)
Adj. R ²	0.287	0.284	0.286	0.276	0.277
N	2022	1965	1965	1945	1945

The conclusions include: Firstly, there is a significantly positive relationship between women directors' collective power and corporate environmental performance. This reveals the positive impact of the collective power of women directors on corporate environmental performance, suggesting that when women directors are able to form a strong collective on the board, they are more likely to push companies to adopt more sustainable strategies and practices. Gender diversity facilitates the exchange of different perspectives and experiences among board members, thus contributing to more holistic and innovative decision-making. Secondly, both the board fairness climate and the TMT openness climate significantly enhance this relationship. When the atmosphere within the board of directors is characterized by fairness and justice, the views of each director are fully respected and taken into account. In such an atmosphere, the voices of women directors are more likely to be heard and their suggestions and propositions are more likely to be accepted and implemented. Management's openness is a crucial factor in the implementation of board decisions. When management demonstrates a willingness to listen to, accept, and implement the decisions of women directors with the aim of enhancing the environmental performance of the organization, these decisions can be translated into tangible environmental outcomes. An atmosphere of openness on the part of management facilitates the effective implementation of decisions and creates a conducive environment for full participation. Furthermore, this atmosphere amplifies the positive impact of the collective influence of women directors on corporate environmental performance.

Theoretical Implications

This study extends the existing literature by introducing collective power into the research on women directors' effects. Viewing women as a whole and emphasizing their collective power

shift the attention from the balance of the number to the balance of the power between the two groups: men and women in the boardroom.

Practical and Social Implications

This study examines the mechanisms through which the presence of women on boards of directors affects environmental performance, which is conducive to understanding the “board composition--firm outcome” relationship, and has positive significance for the improvement of corporate environmental performance. This study provides a new perspective for understanding the role of gender diversity in corporate governance and provides empirical support for corporate practices that promote gender equality and sustainable development.

Limitations and Suggestions for Future Research

The influence and collective power of female directors may manifest in different ways in different cultural and industry contexts. Consequently, although this study offers insights into the influence of women directors' collective power on corporate environmental performance, it is not without limitations. Primarily, the study's sample scope is constrained to listed companies in China, which may not fully reflect the nuances of different cultural and legal contexts. Secondly, the study does not account for the potential impact of industry characteristics on the findings. Future research could expand the sample scope, consider industry differences, and further investigate the multidimensional impact of board gender diversity.

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