

# Board Gender Diversity, Corporate Productivity and ESG Performance

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**Abstract:** *This study is based on the two major strategies of new productivity and corporate ESG development, using data from China's A-share listed companies from 2011 to 2022 to empirically test the impact of female directors on corporate ESG performance, and the impact of corporate new productivity development on both. potential role. Research results show that the presence of female directors has a positive effect on improving corporate ESG; the development level of corporate new productivity can strengthen the positive impact of female directors on corporate ESG. In addition, further heterogeneity analysis found that in companies with strong profitability, female directors and corporate new productivity have a more significant role in promoting ESG.*

**Keywords:** Female Directors, ESG, New Quality Productivity Of Enterprises.

## 1. Introduction

In the past few decades, listed companies have been under great pressure to adopt sustainable business strategies. With the prevalence of the concept of corporate social responsibility (CSR), companies have gradually increased their focus on their responsibilities to stakeholders, the environment and society as a whole [1]. However, faced with increasingly severe problems of climate change and social inequality [2], there are calls to transform CSR from an optional or voluntary activity to a rapid and comprehensive response to the three key areas of environment, social and governance (ESG) [3-4]. Due to its measurability and traceability, ESG has become a key indicator for capital markets and investors to assess corporate sustainability [5]. It has been proven that companies with high ESG scores tend to have lower risks and higher returns, and also show greater resilience during market turmoil [5]. Therefore, all sectors of society continue to pay more attention to improving corporate ESG [3-5].

The impact of corporate governance on corporate ESG-related decisions has attracted widespread attention in academia, especially research on female directors [6-7]. As the core institution of the corporate governance system [8], the board of directors plays a key role in corporate supervision and regulation [2-3]. Corporate regulatory policies and strategic planning are often formed during the deliberation and decision-making of the board of directors [9]. Therefore, the composition of the board of directors can directly or indirectly affect the attitude and behavior of the company towards social and environmental responsibility [10]. Given that society often expects women to demonstrate compassion, helpfulness and noble moral qualities [11], female directors are more likely to promote companies to adopt responsible environmental and social behaviors in board decisions [2]. The academic community is constantly exploring the role of female directors in promoting corporate ESG performance [6-7]. Existing research on female directors and corporate ESG is relatively extensive, but the empirical results are inconsistent [10-13]. Research on the relationship between female directors and corporate ESG has shown mixed results, with positive correlations [3], negative correlations [12], and even no effects [13]. In response, some scholars have pointed out that it is necessary to reconsider the impact of female

directors on corporate ESG [1].

The impact of female directors on corporate ESG may be affected by the company's own conditions. Women's empathy and moral sensitivity [11] may enable them to propose proposals to improve corporate ESG in board decisions, but this may not necessarily translate into corporate action [1]. This is because the improvement of corporate ESG is a long-term investment process that requires sufficient technical and resource support [7]. It not only involves the optimization of existing production processes, but also includes the research and development and application of emerging environmental protection technologies. Therefore, in companies with weak technological foundations and limited resources, female directors' suggestions on ESG improvement may be difficult to translate into actual corporate actions. On the contrary, in companies with advanced technology and abundant resources, female directors' suggestions are more likely to be adopted and implemented, thereby effectively promoting corporate ESG improvements.

The level of development of new quality productivity of enterprises may affect the improvement of corporate ESG by female directors. In September 2023, the concept of "new quality productivity" was first proposed during an inspection in Heilongjiang, and it was clearly pointed out that it is necessary to "accelerate the formation of new quality productivity and enhance new development momentum" [14]. In December of the same year, the Central Economic Work Conference listed "developing new quality productivity" as an important task [15]. The proposal of new quality productivity has pointed out the goal for my country's next stage of economic development. From the connotation of new quality productivity, new quality productivity is a "new" productivity with technological innovation as its distinctive background [4]. It can be said that the development of new quality productivity of enterprises represents the technological development level and productivity of enterprises. As can be seen from the above, the proposals of female directors for improving corporate ESG require the support of corporate technology and resources [7]. Therefore, the level of development of new quality productivity of enterprises may be the key to influencing female directors to improve corporate ESG.

Based on this, this paper uses my country's A-share listed companies from 2011 to 2022 as a sample to empirically test the impact of female directors on corporate ESG and the potential moderating effect of the level of development of corporate new quality productivity on this relationship, in order to provide theoretical basis and practical guidance for Chinese companies in optimizing board structure, improving ESG performance and paying attention to the development of new quality productivity.

## 2. Theoretical Analysis and Hypothesis Formulation

### 2.1 Female Directors and Corporate ESG

Women's upbringing may make them pay more attention to vulnerable stakeholders. Gender socialization theory provides a powerful explanation for how women think and act under the guidance of social concepts [16]. Unlike men, women generally have public values of caring for others and being morally sensitive [17]. This social concept has a potential impact on women's emotional tendencies and forms differentiated values between men and women [8] (Nadeem et al., 2020a). That is, women have higher moral sensitivity than men [8], and they are also more likely to perceive the needs of others [10]. Martínez et al. (2022) [16] pointed out that women's emotional tendencies are also reflected in their daily work. This means that female directors can pay attention to the demands of vulnerable stakeholders at work, and they are also willing to speak for them on the board of directors [2]. Previous studies have also verified this concept, that is, female directors can meet the environmental demands of vulnerable stakeholders with an equal, fair and open attitude [2].

Female directors' attention to vulnerable stakeholders may improve corporate ESG. The board of directors is the core of corporate strategic decision-making and is responsible for balancing the interests of all stakeholders [8]. Previous studies have shown that female directors can bring diverse perspectives to the board of directors and thereby influence corporate decision-making [16-17]. As mentioned above, under the influence of gender roles, women in the workplace tend to pay attention to the demands of corporate stakeholders [2] and reject unethical behavior [1]. This means that boards with female directors can better understand and respond to the demands of corporate stakeholders [18], while avoiding companies from making unethical decisions [17], thereby improving corporate ESG performance [1]. Therefore, we propose the hypothesis:

H1: The presence of female directors can improve corporate ESG.

### 2.2 Female Directors, Corporate New Quality Productivity and ESG Performance

New productivity is a "new type" productivity with technological innovation as its distinctive background. Emphasis: "We must use scientific and technological innovation to promote industrial innovation, especially disruptive and cutting-edge technologies to spawn new industries, new models, new kinetic energy, and develop new quality productivity" [15]. It can be said that new productivity

is an advanced production capability based on technological innovation and application. It transcends traditional production factors and achieves significant improvements in production efficiency and product quality by introducing new technologies, new processes, new materials, new equipment, etc. For enterprises, enterprise new productivity is a kind of high-tech, high-efficiency, high-quality characterized by technological innovation as the core and through revolutionary technological breakthroughs, innovative allocation of production factors, and in-depth industrial transformation and upgrading. Advanced productivity.

The level of development of new quality productivity of an enterprise may affect the relationship between female directors and the enterprise's ESG. The improvement of an enterprise's ESG is the result of a strategic decision-making process. Although female directors may propose proposals to improve the enterprise's ESG [1], this depends on the support of a majority of board members [10]. Since the improvement of an enterprise's ESG is a long-term investment process that requires sufficient technical and resource support [7], the level of development of new quality productivity of an enterprise may affect the relationship between female directors and the enterprise's ESG. The improvement of an enterprise's ESG is the result of a strategic decision-making process. Although female directors may propose proposals to improve the enterprise's ESG [1], this depends on the support of a majority of board members [10]. Since the improvement of an enterprise's ESG is a long-term investment process that requires sufficient technical and resource support [7], board members will take the development status of the enterprise into comprehensive consideration when making decisions. This means that whether an enterprise adopts the suggestions of female directors to improve the enterprise's ESG is related to the enterprise's existing capabilities. As mentioned above, the level of development of an enterprise's new quality productivity is a reflection of the enterprise's technological level and existing productivity. Therefore, the level of development of an enterprise's new quality productivity will affect the role of female directors in improving the enterprise's ESG. Specifically, when the level of development of an enterprise's new quality productivity is high, the enterprise's technology and production capacity will be at a high level. In this case, female directors' proposals to improve the enterprise's ESG are more likely to become actual actions of the enterprise. On the contrary, if the development of an enterprise's new quality productivity is not good, female directors' proposals to improve the enterprise's ESG may only be superficial and fail to make actual moves.

H2: The level of development of a company's new quality productivity can affect the role of female directors in corporate ESG.

## 3. Research Samples and Methods

### 3.1 Data and Samples

In this study, based on the availability of data and the needs of the study (i.e., new quality productivity has a greater impact on manufacturing companies), we selected the data of China's A-share listed manufacturing companies from 2011 to 2022 and the ESG rating data of Huazheng Company as the research

samples. After excluding ST, \*ST companies, and companies with missing indicators, 15, 071 observations were obtained. Except for the ESG performance of enterprises in this study, which comes from the Huazheng ESG database, the rest of the data comes from the Guotai An database.

### 3.2 Empirical Model and Variables

In order to test the research hypothesis H1, this paper constructed a regression model (1):

$$ESG_{it} = \alpha_0 + \alpha_1 FD_{it} + \sum \varphi Control_{it} + \mu_i + \lambda_t + \gamma_t + \varepsilon_{it} \tag{1}$$

In model (1), is the explained variable, representing the ESG performance of the enterprise ; FDis an explanatory variable, indicating the proportion of female directors on the board; Control refers to a series of control variables;  $\alpha_0$  is the intercept term;  $\mu$ ,  $\lambda$  and  $\gamma$  represent time fixed effects, industry fixed effects, and region fixed effects, respectively;  $\varepsilon$  is the random disturbance term; subscript i and t represent individuals and time (year), respectively.

In order to test the moderating effect of new quality productivity, this paper constructs a regression model (2):

$$ESG_{it} = \alpha_0 + \alpha_1 FD_{it} + \alpha_2 Nqpf_{it} + \alpha_3 FD \times Nqpf_{it} + \sum \varphi Control_{it} + \mu_i + \lambda_t + \varepsilon_{it} \tag{2}$$

In Nqpfmodel (2), the moderating variable represents the development level of the enterprise's new quality productivity,  $FD \times Nqpf$  and is the interaction term between female directors and the enterprise's new quality productivity, which is used to test the existence of the moderating effect. The meanings of the remaining variables are the same as those in formula (1).

#### 3.2.1 Explained variable

The explained variable in this paper is the corporate ESG performance (ESG), which is measured using the Huazheng ESG rating system, which divides ESG levels into nine different levels, namely C, CC, CCC, B, BB, BBB, A, AA and AAA, which represent ESG performance from low to high. In this study, we convert the ESG ratings of listed companies into numerical values according to this rating standard and assign values from 1 to 9 from low to high.

#### 3.2.2 Explanatory variables

The explanatory variable in this paper is female directors (FD), Referring to the research of Peng et al. (2023)[2], the ratio of female directors to the total number of directors is used to express it.

#### 3.2.3 Moderating variables

The moderating variable in this paper is the development level of the new quality productivity of enterprises (Nqpf). Emphasis: "The new quality of productivity is based on the leap forward of laborers, labor materials, labor objects and their optimized combination" [7]. Therefore, this article refers to the important discussion, Following the research of Song Jia et al. (2024)错误!未找到引用源。 , we construct the new quality productivity index of enterprises from three aspects:

workers, labor materials, and labor objects. See Table 1 for details. In order to reduce the influence of subjective assignment, this paper uses the entropy method to calculate the new quality productivity index, which is recorded as Nqpf.

#### 3.2.4 Control variables

This article refers to existing research literature and uses enterprise-level control variables: enterprise size (F\_size), financial leverage (F\_lev), profitability (F\_roa), and growth opportunities (F\_growth); board-level control variables: board size (B\_size); board independence (B\_ind); board meeting frequency (B\_meet); and dual-position office (B\_Dua). Among them, enterprise size (F\_size) is expressed as the logarithm of total assets; financial leverage (F\_lev) is measured by the ratio of total liabilities to total assets ; profitability (F\_roa) is expressed by net profit divided by total assets ; growth opportunities (F\_growth) are measured by the logarithm of the operating income growth rate ; board size (B\_size) is expressed by the number of board members; board meeting frequency (B\_meet) is measured by the number of board meetings; board independence (B\_ind) is expressed by the proportion of independent directors to the total number of board members; if the two positions are combined (B\_Dua), that is, the chairman and general manager are combined, then the value is 1, otherwise it is 0 .

**Table 1:** Evaluation indicators of new quality productivity of enterprises

Target layer	index	Indicator Explanation
Workers	Highly educated personnel	Number of employees with bachelor degree or above/Total number of employees in the company
	R&D personnel ratio	Number of R&D personnel/total number of employees in the company
	R&D staff salary	R&D expenses-salary/operating income
Labor information	Intangible assets	Intangible assets/total assets
	R&D rental fees	R&D expenses-rental fees/operating income
	Research and development depreciation and amortization	R&D expenses - depreciation and amortization / operating income
	Direct investment in R&D	R&D expenses-direct investment/operating income
Labor Object	Total asset turnover	Operating income/average total assets
	Reciprocal Equity Multiplier	Owners' Equity/Total Assets
	Fixed assets	Fixed assets/total assets
	Manufacturing costs	(Subtotal of cash outflow from operating activities + depreciation of fixed assets + amortization of intangible assets + impairment provision - cash paid for goods and services - wages paid to and for employees) / (Subtotal of cash outflow from operating activities + depreciation of fixed assets + amortization of intangible assets + impairment provision)

## 4. Empirical Results and Analysis

4.1 Descriptive Statistics

Table 2 shows the statistical characteristics of each variable. As the explained variable, Nqpf has an average value of 5.101, a median of 4.767, and a standard deviation of 2.191. This reflects that the enterprise's new quality productivity development level is normally distributed, which is in line with the assumptions of the study. At the same time, there is a significant difference between the minimum and maximum values of Nqpf, and the average value is much lower than the maximum value. This implies that there are significant differences in the level of new quality productivity among different enterprises. It also means that Chinese companies have different levels of new quality productivity. Great potential for improvement. In addition, the collinearity test of the main variables showed that the variance inflation factor (VIF) values ranged from 1.01 to 1.57, which indicated that there was no obvious collinearity problem among the selected variables.

Table 2: Descriptive statistics of each variable

Variable	N	Mean	Min	Max	p50	SD
ESG	15071	4.062	1.000	8.000	4.000	0.914
FD	15071	0.155	0.000	0.800	0.125	0.133
Nqpf	15071	5.101	1.334	13.93	4.767	2.191
F size	15071	22.03	16.70	27.62	21.87	1.176
F lev	15071	0.397	0.008	11.51	0.384	0.239
F roa	15071	0.0410	-3.565	6.365	0.040	0.112
F growth	15071	-1.600	-12.72	10.99	-1.519	1.376
B size	15071	8.372	4.000	18.00	9.000	1.584
B ind	15071	0.376	0.143	0.750	0.357	0.0540
B meet	15071	9.390	2.000	55.00	9.000	3.678
B Dua	15071	1.676	1.000	2.000	2.000	0.468

4.2 Basic Regression

Table 3 presents the results of basic regression analysis. Column (1) indicates that there is a significant positive correlation between female directors and corporate ESG performance, and this relationship is confirmed at the 5% significance level ; further, in column (2), time, industry and region fixed effects, the improvement of corporate ESG performance of female directors is significantly positive at the 1% significance level. Columns (1) and (2) illustrate that the presence of female directors can improve corporate ESG performance, assuming H 1 is true. Column (3) adds an interaction term FD × Nqpf to test the moderating effect of corporate new quality productivity. The coefficient of the interaction term is significantly positive at the 5 % level, which shows that the development of corporate new quality productivity can enhance the improvement of corporate ESG by female directors., assuming H 2 is established.

Table 3: Basic regression results

	(1) ESG	(2) ESG	(3) ESG
FD	0.114** (0.054)	0.141*** (0.054)	0.158*** (0.054)
F_size	0.184*** (0.007)	0.200*** (0.007)	0.199*** (0.007)
F_lev	-0.756*** (0.033)	-0.767*** (0.032)	-0.766*** (0.032)
F_roa	0.475*** (0.066)	0.407*** (0.065)	0.416*** (0.065)
F_growth	-0.037*** (0.005)	-0.027*** (0.005)	-0.027*** (0.005)
B_size	0.013** (0.006)	0.021*** (0.006)	0.021*** (0.006)
B_ind	1.444***	1.504***	1.481***

	(0.157)	(0.154)	(0.154)
B_meet	-0.010*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)
B_Dua	-0.046*** (0.016)	-0.015 (0.016)	-0.015 (0.016)
Npro			0.012*** (0.003)
FD×Nqpf			0.041** (0.017)
_cons	-0.270* (0.154)	-0.676*** (0.163)	-0.702*** (0.163)
years	Uncontrolled	control	control
industry	Uncontrolled	control	control
province	Uncontrolled	control	control
N	15071.000	15071.000	15071.000
F	161.625	43.216	41.993
R <sup>2</sup>	0.088	0.129	0.130

Note: Standard errors are in parentheses, \*\*\*, \* and \* indicate significance at the 1%, 5% and 10% levels respectively.

4.3 Robustness Test

In order to reduce the dependence of the regression results on specific variable measurement methods, this article uses the number of female directors as the explanatory variable (denoted as FDN) to replace the original proportion of female directors. From column (1) in Table 4, we can see that female directors improve corporate ESG performance at the 5% significance level. In addition, the positive moderating effect of the development of corporate new productivity on the relationship between female directors and corporate ESG is significant at the 1% significance level. These results verify the stability and reliability of the above regression analysis.

Table 4: Robustness test (replacement variable) - Number of female directors

	(1)	(2)
	ESG	ESG
FDN	0.014** (0.007)	0.017** (0.007)
Nqpf		0.013*** (0.004)
FDN×Nqpf		0.007*** (0.002)
_cons	-0.651*** (0.162)	-0.676*** (0.162)
Control variables	control	control
Fixed time	control	control
Industry fixed	control	control
Province fixed	control	control
N	15071.000	15071.000
F	43.167	42.017
R <sup>2</sup>	0.129	0.130

Considering that existing research commonly uses the gender diversity index [17], Blau, to measure the gender heterogeneity of corporate boards, this article uses Blau instead of FD for robustness testing. In Table 5, both Blau and Blau×Nqpf show significant positive correlation at the 5% significance level, which is consistent with the above research results and confirms the robustness of the above conclusions.

Table 5: Robustness test (replacement variable) - Board gender heterogeneity index

	(1)	(2)
	ESG	ESG
Blau	0.106** (0.044)	0.118*** (0.044)
Nqpf		0.012*** (0.003)
Blau×Nqpf		0.035** (0.017)
_cons	-0.672***	-0.698***

	(0.163)	(0.163)
Control variables	control	control
Fixed time	control	control
Industry fixed	control	control
Province fixed	control	control
N	15071.000	15071.000
F	43.194	41.942
R <sup>2</sup>	0.129	0.130

During the sample period, the COVID-19 epidemic has a very large impact on the development of enterprises. In order to reduce the impact of abnormal years, referring to the method of Song Jia et al. (2024) [4], this study eliminates data after 2021 and continues the regression. It can be seen from Table 6 that the improvement of corporate ESG by female directors is positive at the 5% level of significance, and the moderating effect of corporate new quality productivity is significantly positive at the 1% level. These results are consistent with the previous analysis and further verify the robustness of the previous conclusions.

**Table 6: Robustness test - excluding abnormal years**

	(1)	(2)
	ESG	ESG
FD	0.121** (0.060)	0.144** (0.060)
Nqpf		0.008** (0.004)
FD×Nqpf		0.077*** (0.026)
_cons	-0.720*** (0.177)	-0.743*** (0.177)
Control variables	control	control
Fixed time	control	control
Industry fixed	control	control
Province fixed	control	control
N	13343.000	13343.000
F	37.379	36.248
R <sup>2</sup>	0.124	0.125

#### 4.4 Heterogeneity Analysis

The nature of an enterprise determines its differences in business methods and goals. In order to evaluate the potential impact of the nature of enterprise property rights on the research results, this article divides the research sample into two categories: state-owned and non-state-owned according to the type of property rights to explore the impact of different enterprise properties on the research conclusions. Table 7 shows the results of the heterogeneity analysis. From the perspective of the relationship between female directors and corporate ESG, the improvement of corporate ESG by female directors is more evident in non-state-owned enterprises. This may be because state-owned enterprises have more social attributes, and corporate ESG improvement initiatives mostly originate from national strategies and decisions. In terms of moderating the new productivity of enterprises, the interaction terms between state-owned enterprises and non-state-owned enterprises are both significantly positive at the 5% significance level, which shows that new productivity has a promoting effect on female directors in improving corporate ESG. In state-owned enterprises It also exists in non-state-owned enterprises.

**Table 7: Heterogeneity analysis - nature of enterprise**

	(State-owned Enterprise)	(Non-state-owned enterprise)	(State-owned Enterprise)	(Non-state-owned enterprise)
	ESG	ESG	ESG	ESG
FD	0.066	0.136**	0.066	0.153**

	(0.128)	(0.060)	(0.129)	(0.060)
Nqpf			0.026*** (0.007)	0.011** (0.004)
FD×Nqpf			0.108** (0.051)	0.038** (0.018)
_cons	-1.349*** (0.294)	-0.415* (0.216)	-1.457*** (0.295)	-0.434** (0.216)
Control variables	control	control	control	control
Fixed time	control	control	control	control
Industry fixed	control	control	control	control
Province fixed	control	control	control	control
N	4024.000	11047.000	4024.000	11047.000
F	15.939	31.145	15.651	30.243
R <sup>2</sup>	0.164	0.126	0.167	0.127

The suggestions made by female directors in promoting corporate ESG improvements can only effectively improve corporate ESG performance when they are translated into specific corporate actions. The financial status of the company is a key factor in determining whether these suggestions can be turned into action. At the same time, the core of the development of new productive forces lies in technological innovation, which also requires sufficient funding to support it. In view of the fact that the financial status of a company is usually closely related to its profitability, this study uses the median of corporate profitability as the classification standard, and defines companies with profitability higher than the median as highly profitable companies, and companies with profitability lower than the median. Enterprises are defined as low-profit enterprises, and then the heterogeneous impact of enterprise profitability on the research results is analyzed.

From Table 8, we can see that the impact of female directors on corporate ESG and the moderating effect of new productivity are significantly positive at the 1% level for highly profitable companies. In low-profit companies, the impact of female directors and the moderating role of new productivity are not obvious. This may be because when a company's profitability is high, the company has enough remaining funds to support female directors' proposals to improve the company's ESG, and also has enough ability to develop new productive forces. When a company's profitability is poor, its main task will always be to ensure its survival. In this case, the proposal of female directors may not be taken seriously by the company, and the company's new quality production industry may not be developed.

**Table 8: Heterogeneity Analysis - Corporate Profitability**

	(low profit enterprise)	(Highly profitable companies)	(Low-profit enterprise)	(Highly profitable companies)
	ESG	ESG	ESG	ESG
FD	0.034 (0.079)	0.217*** (0.073)	0.047 (0.079)	0.248*** (0.073)
Npro			0.016*** (0.005)	0.012** (0.005)
NproFD			0.024 (0.021)	0.077*** (0.029)
_cons	-0.834*** (0.227)	-0.547** (0.239)	-0.853*** (0.226)	-0.585** (0.239)
Control variables	control	control	control	control
Fixed time	control	control	control	control
Industry fixed	control	control	control	control

Province fixed	control	control	control	control
N	7763.000	7308.000	7763.000	7308.000
F	21.170	19.346	20.632	18.896
r2_a	0.121	0.117	0.122	0.119

## 5. Conclusion and Recommendations

### 5.1 Conclusions

This study is based on the data of China's A-share listed companies from 2011 to 2022. Through theoretical discussion and empirical analysis, this study conducts an in-depth study of the impact of female directors on corporate ESG, as well as the moderating role of the development level of corporate new productivity in this impact. The main conclusions drawn from the study are as follows: (1) The existence of female directors has a significant improvement effect on corporate ESG; (2) The development level of corporate new productivity plays a positive role in the relationship between female directors and corporate ESG. Moderating effect, which shows that the company's investment in new quality productivity can help transform female directors' proposals into actual ESG improvement measures; (3) The positive impact of female directors on corporate ESG and the moderating effect of new quality productivity have a positive impact on profitability. The performance is more obvious in enterprises with stronger capabilities; (4) Whether it is a state-owned enterprise or a non-state-owned enterprise, the moderating effect of the development level of new productive forces is universal.

### 5.2 Policy Recommendations

Based on the above research conclusions, this study puts forward the following policy recommendations: (1) Improve the level of gender diversity on the board of directors. Studies have shown that female directors on the board of directors can improve the ESG performance of enterprises by introducing new perspectives. Therefore, for enterprises, in the face of increasing environmental pressure and stakeholder pressure, they can better improve the ESG performance of enterprises by increasing the proportion of female members in the composition of the board of directors and giving full play to the unique advantages of female directors to alleviate the pressure. (2) Accelerate the development of new quality productivity. In view of the positive regulatory role of the new quality productivity of enterprises. Enterprises should take measures to accelerate the development of new quality productivity. To this end, enterprises should strengthen infrastructure construction to provide solid material support for new quality productivity; at the same time, they should strive to break through key technological barriers to cultivate its sustained growth momentum. In addition, by combining traditional industries with innovative technologies, the development path of new quality productivity can be optimized to achieve the upgrading and transformation of industrial structure.

### 5.3 Research Limitations and Prospects

Based on existing literature and research methods, this paper conducts an in-depth discussion on the relationship between female directors, corporate new quality productivity and ESG performance. At present, the quantitative research on

corporate new quality productivity is still in its early stages, and a widely recognized mature method has not yet been formed. Therefore, there is a certain degree of difficulty in accurately defining this concept and evaluating it using data science technology. In addition, with the rapid development of science and technology, the development of corporate new quality productivity has become a trend. Exploring how corporate new quality productivity affects corporate governance through its internal mechanism is a topic that needs further research and improvement.

## Acknowledgements

Funded projects: 2023 Qinghai Minzu University Graduate Innovation Project "Board Gender Diversity and Corporate Carbon Disclosure: Analysis of Macro and Micro Influencing Factors" (65M2023066); Guangdong Provincial Philosophy and Social Sciences Planning Project, Guangdong Regional Coordinated Development to Achieve Common Prosperity's Real Dilemma and Innovative Path (GD23XYJ60)

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