

Study on the Effect of CEO Green Background on Firm Performance based on the Mediating Role of ESG Disclosure

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Abstract. This paper further analyzes the mediating effect of ESG information disclosure by using the data of A-share listed companies in Shanghai and Shenzhen from 2010 to 2020 as the initial research object to examine the effect of CEO green background on firm performance. It also argues that ESG information disclosure may play a mediating role between CEO green background and firm performance. In the empirical part, descriptive statistical analysis, multiple cointegration tests, and smoothness tests are conducted to benchmark the effect of CEO green background on firm performance. The regression results prove that CEOs with green backgrounds promote firm performance, and the results pass the endogeneity and robustness tests. By using the stepwise regression method, the Sobel test, and the bootstrap test to test the mediation effect of ESG disclosure between CEO green background and firm performance, the study finds that the green background of corporate CEOs drives firms to make ESG disclosure and thus improves firm performance, and corporate ESG disclosure plays a mediating role between CEO green background and firm performance (The findings of this paper not only enrich our understanding of ESG but also provide insights into the role of ESG disclosure in corporate performance. The findings of this paper not only enrich the empirical research on ESG but also provide suggestions for macro-government departments to strengthen the improvement of the ESG system, micro-subject enterprises, and corporate CEOs to practice green sustainability.

Keywords: ESG Disclosure; Green Context; Mediating Effect; Corporate Performance.

1. Introduction

The world is currently in the midst of a century of unprecedented changes, with the center of the global economy gradually shifting to both sides of the Pacific Ocean, and many companies are facing not only the pressure of transformation and governance but also the environmental risks brought by climate change. Since the United Nations Environment Programme introduced the concept of ESG, it has promoted the development of ESG information disclosure globally. The market is increasingly focusing on non-financial performance information and on the performance of enterprises in environmental, social responsibility, and corporate governance and expects listed enterprises to disclose their ESG initiatives. The above changes have led to the establishment and improvement of ESG disclosure systems in many countries around the world, while many companies have started to actively assess and disclose their ESG performance to improve the transparency of corporate information and corporate risk management capabilities, helping the market to more accurately assess the sustainability of companies.

In the initial stage of development, the Hong Kong Stock Exchange started to require listed companies to disclose ESG reports, while ESG disclosure in mainland China is gradually developing towards semi-mandatory, and in the deepening stage, ESG reports will change towards mandatory disclosure. At the same time, against the background of China's "carbon peak and carbon neutral" target and related policies, more and more company operators are aware of the importance of green development for company performance and long-term development.

In the case of CEOs, the acquired characteristics of their past experiences not only equip them with expertise and competence but can also shape their decision-making style as well as influence their cognitive and thinking patterns. Through reading a large amount of literature, it is found that studies on traits related to corporate executives have mainly focused on personality traits, educational backgrounds, and gender of executives, whether research studies innate or acquired traits. Less

attention has been paid to the green background of CEOs, and their impact on corporate performance has not been studied as an internal driver. In terms of ESG disclosure, whether a firm takes the initiative to disclose information is significantly related to the CEO's management of the firm, and the CEO's background influences whether the CEO values the green development of the firm and actively makes ESG disclosure. Meanwhile, in terms of company performance, we believe that companies make ESG disclosures for non-financial environmental efforts or mainly to improve the company's financial performance.

This paper presents a novel perspective and in-depth study on the mediating role of ESG information disclosure between CEO green background and corporate performance, an aspect that has been relatively little studied in current academic research. By further analyzing the mediating effect of ESG disclosure, this paper provides new perspectives and ideas for research on corporate environmental responsibility and social responsibility, among others, and is expected to promote the development of related fields. In addition, this paper pays special attention to the effect of the CEO's green background on corporate performance, which is a direction that is relatively lacking in current research. Therefore, the significance and value of this paper are not only to reveal the mediating effect of ESG information disclosure but also to be able to make an important assessment of the quality and background of corporate insiders and related decision-makers and to provide guidance and support for the successful sustainable development of companies.

2. Literature Review

In terms of defining the green background of CEOs, Lu and Jiang (2020) and others have defined CEO green-related experiences and green behaviors [1]. Bombiak (2022) highlighted green intellectual capital (GIC) as a unique intangible asset that can help organizations pursue sustainability strategies, and the CEO's green experience is also part of the green intellectual capital [2]. Regarding the rationality of CEO-related experience in promoting corporate green innovation, Zhang and Shi (2022) elaborated on several aspects, focusing on the fact that the academic experience of CEOs in companies can, to a certain extent, promote corporate green innovation and ESG information disclosure, thus promoting sound corporate development [3]. Chen, Chia-Min (2022), et al. elaborated on the difference and connection between political affiliation and financial background in a CEO's professional background for influencing corporate green technology innovation [4]. Ashok and Jintian (2019) concluded that green transformational leadership has a direct impact on green innovation and green competence, which also found that green competence plays a partially mediating role between green transformational leadership and green innovation. Through this study, it can be concluded that organizations have green leadership for project team members, which shows that corporate CEOs have a role in corporate green development and ESG information disclosure [5].

On this basis, a closer look at the study of the impact of ESG performance on the performance of listed companies by scholar Wu (2022) suggests that companies above the median ESG rating have a higher focus on social responsibility and corporate governance, and their financial performance is significantly improved as a result [6]. The empirical results of the study on ESG performance and the performance of listed firms by Xu (2022), a scholar from Fudan University, found that good corporate ESG performance has a positive contribution to corporate performance [7]. Actively promoting the ESG responsibility of enterprises can help enterprises achieve high-quality development and ensure the completion of China's "double carbon" target. Scholars such as Li (2021) have studied the mechanism of ESG to promote corporate performance based on the perspective of corporate innovation, which opens the way for the development of the proposal in this paper. [8]. With the inclusion of Chinese A-shares into MSCI, FTSE Russell, and other related indices, the concepts related to the ESG evaluation system have gradually started to have a substantial impact on information disclosure, corporate governance, corporate strategy, and resource allocation activities of Chinese listed companies. In recent years, based on sustainable development theory, stakeholder theory, and principal-agent theory, as the government introduces more and more green finance

policies, the domestic ESG system has developed, and more and more companies no longer focus only on the development of corporate financial performance but begin to pay attention to their own performance in environmental performance, social responsibility, and corporate governance. [9] The development of the ESG system in China is making it more and more important for companies to focus on their environmental performance, social responsibility, and corporate governance. And by reading the literature, it is found that the green background of corporate CEOs can promote corporate ESG disclosure to some extent and can improve corporate financial performance and environmental performance by promoting green innovation. Sugeno and Sato (2022) study the relationship between environmental management efforts and corporate performance based on the Japanese financial project database and find that product measures in environmental management efforts have a statistically significant effect on financial performance. Their data analysis method and systematic pipeline help to design ESG portfolios [10].

The personal experience of CEOs, the relationship between ESG performance and corporate performance, and the green development of enterprises have become hot topics of attention for many scholars, and more research results have been achieved. However, due to the late start of ESG development in China, a mature ESG research system has not yet been formed, and there are still few studies on ESG disclosure, rating, and correlation with other elements of enterprises.

3. Theoretical Analysis and Research Hypothesis

3.1 CEO Green Background and Corporate Performance

Higher-order theory is based on the premise of limited human rationality and incorporates the characteristics of top managers, strategic choices, and organizational performance into the models studied in higher-order theory, highlighting the role of demographic characteristics on managers' cognitive patterns and their impact on organizational performance.

First, in terms of green background, this paper focuses on the CEO's green work experience and green education. In today's world of advocating green sustainability, CEOs with green backgrounds have a higher sense of moral and social responsibility and pay more attention to corporate sustainability issues. After the formation of the CEO's personal related traits, they will provide relevant ways of thinking when solving problems, so having a green-related background can influence the CEO's behavioral decisions within the company. Yang, Chen, and Yang (2023) found that the hiring of executives with environmental backgrounds in listed companies helps to promote green investors to invest in such companies, and as the number of executives with environmental backgrounds increases, their attraction effect on green investors becomes more obvious.[11] CEOs with green experience are more likely to favor the green and environmental direction in their decision-making and incorporate their decisions into the company's strategy, and these decisions will promote the company's sustainable development to some extent, making the company's stakeholders trust the company's development more and gaining opportunities and resources for development.

Secondly, in terms of corporate performance, the introduction of government policies and various incentive policies have forced companies to carry out green reforms and actively assume social responsibility; company stakeholders will also want companies to engage in socially desirable behaviors in order to obtain long-term and stable income; end-consumers hope that the company's products are in line with the concept of green consumption, not only in the use of products but also extended to the whole process of product disposal. The end-consumers would like to see the company's products conform to the concept of green consumption, not only in the use of products but also in the whole process of product disposal. Therefore, a CEO with a green background can lead the company to carry out good environmental practices, so that in the face of different stakeholders, the CEO with a green background is more capable of responding to them, thinking in terms of green sustainability, increasing the relevant knowledge base, correctly identifying market opportunities, gaining more stakeholder recognition, and thus increasing the company's profitability.

Therefore, this paper assumes that

H1: CEO green background has a positive effect on firm performance (ROA)

3.2 Mediation Effect of ESG Information Disclosure

The relevant literature points out that, as managers of business activities, CEOs are bound to have an impact on corporate ESG practices. The awareness of managers to proactively disclose ESG is an important factor in promoting corporate ESG disclosure, and top-down promotion of ESG philosophy can only promote the development of ESG philosophy within the enterprise. In China, the CEO is the core person who makes decisions on ESG practices in the company. In China, CEO power is significantly and positively correlated with the level of ESG practices in the company, and when the core decision-makers of the company pay special attention to ESG, the transparency and responsibility of the company will increase, and the trust of the stakeholders in the company will be enhanced. Managers should fully recognize that ESG information disclosure is indispensable for the sustainable development of enterprises, deeply understand that the financial benefits of enterprises cannot be separated from the enhancement of social and environmental benefits, recognize the importance of implementing ESG concepts for the fundamental interests and long-term development of enterprises, incorporate ESG indicators into management assessment, enhance the responsibility of ESG information disclosure, and strengthen ESG information disclosure implementation and supervision.

ESG disclosure is fundamental to investment and resource allocation in the overall capital market. The stakeholder hypothesis argues that modern enterprises can no longer be limited to the perspective of shareholders' interests but should focus on multiple interests, and enterprises that take on more social responsibility will also benefit from it. The comparative advantage theory analyzes the reasons why companies are involved in ESG from a strategic perspective and believes that ESG practices can create competitive advantages for companies and ultimately increase corporate value. Shared value creation theory advances the comparative advantage argument even further by incorporating a stakeholder perspective, and when companies introduce creative solutions to pressing social issues for their stakeholders, they can create shared value for both parties and increase the value of each other. Related studies have shown that ESG disclosure is the focus of corporate disclosure. Sila and Cek (2017) also found that the good environmental and social responsibility performance of a company can help enhance its economic performance. Liu and Zhang (2017) studied the relationship between corporate governance, social responsibility disclosure, and firm value in a sample of Chinese listed companies with heavy pollution and found that a high level of corporate governance can contribute to corporate social responsibility information disclosure, and social responsibility information disclosure can contribute to long-term corporate value. High-scoring results in ESG and high transparency in information disclosure can bring higher market returns to the company, thus creating a win-win situation for shareholders' investment and sustainable corporate development. Some experts believe that although companies carry out ESG practices to practice green behaviors, these behaviors will increase the operating costs of the company, reduce profits, harm the welfare of employees, and reduce the company's operating performance and put it in a disadvantageous position in the competition, but having these ideas is a short-sighted behavior of the company, and from the long-term development, with the continuous improvement of China's ESG disclosure system, the long-term operation of the company will meet the relevant From the employee side, companies that actively practice ESG practices and make information disclosures will attract new high-quality employees to maintain existing employees; from the consumer side, in the long term, it will increase user stickiness and trust; and from the investor side, positive non-financial behavior of companies will bring long-term financial benefits.

Therefore, this paper assumes that

H2: CEO's green background plays a positive role in ESG disclosure by listed companies

H3: Corporate ESG disclosure mediates the relationship between CEO green background and firm performance (ROA)

4. Data Variables and Model Settings

4.1 Sample Selection and Data Sources

CEO green background involves the personal characteristics of CEOs, and the more complete relevant information in the CSMAR database started in 2002, where the original data were obtained and collated from the relevant literature of Lu and Jiang (2020), and Chen, Wen, and Cao (2019).

The data on firm performance (ROA), firm size, number of independent directors, total number of board of directors, and gearing ratio were mainly obtained from the data of A-share main board listed companies on the Shanghai and Shenzhen exchanges in China from 2010 to 2020 as the initial research sample, excluding financial companies and ST and other companies, excluding samples with missing relevant data, and finally obtaining 1158 company 11-year observations. At the same time, in order to eliminate the influence of outliers, the continuous variables are treated with a 1% level of tail reduction (Winsorize).

The ESG disclosure data is mainly from the China Securities ESG Rating.

The software used for the statistical tests in this paper was Stata 17.0.

4.2 Variable Selection

4.2.1 Explained Variable: Firm Performance

ROA (return on assets) is one of the most commonly used metrics when measuring a company's performance. This article references Li (2011) use of ROA to measure firm performance [15], which also uses ROA as an explanatory variable to measure firm performance.

4.2.2 Explanatory Variable: CEO Green Background

As an important figure in strategic decision-making and execution, CEOs play an important role in the process of ESG disclosure and improving firm performance. In this paper, we refer to Jiang and Hwang, Succession (2013), Hsu and Li (2016), Lu and Jiang (2022), and select CEOs as the target of this paper. [1] The CEO's green background mainly includes whether the CEO has engaged in "green"-related work and received "green"-related education, such as whether his or her work history or position involves or belongs to the Ministry of Environmental Protection, members of environmental protection committees, or corporate pollution. Whether he or she has received education in pulp and paper, the environment, environmental engineering, environmental science, etc. If the CEO has a green background, the CEO takes the value of 1, otherwise it takes the value of 0.

4.2.3 Mediating Variable: ESG Information Disclosure

By comparing the existing methods of measuring ESG disclosure, the CSI ESG Rating is more suitable for analyzing Chinese local enterprises because it is based on the core ESG connotation and development experience through big data technology-enabled data itself, combined with the actual situation of the domestic market, regular evaluation and dynamic tracking on a quarterly basis, quantitative calculation, and strong localization ability. Therefore, the ESG rating of CSI is chosen to measure the quality of ESG disclosure, and the nine grades of the "AAA-C" ESG rating of CSI are assigned 1–9 grades in order.

4.2.4 Control Variables

Firm performance is affected not only by working capital management but also by director structure, solvency, and firm size. Therefore, this paper selects firm size, proportion of sole directors, and assets and liabilities as control variables.

Company size: In the study of the relationship between company size and company value, scholars often use the total assets of the company as an indicator. In the study of corporate governance, company size is a very important factor, so it is chosen as a control variable in this paper. Considering the large difference in asset size between companies in different industries, this paper takes a logarithmic treatment of company size to narrow the gap and make the empirical study more relevant.

Proportion of independent directors: when analyzing corporate performance, most scholars focus on the impact of internal governance mechanisms of listed companies on corporate performance, and the concentration of equity is one of the key indicators of governance mechanisms. This paper draws on Wang and Xue (2017) to choose the proportion of independent directors, i.e., the proportion of the number of independent directors on the board of directors, to specifically measure corporate governance [18]. This paper analyzes the proportion of independent directors as a control variable for firm performance.

Assets and liabilities: Companies with high debt ratios may need to pay higher interest charges, which can reduce the overall return on assets. Some related studies have shown that higher corporate gearing may be more detrimental to the improvement of corporate financial performance. Therefore, this paper uses gearing as a control variable to eliminate the possible interference of gearing on ROA in order to more accurately study the effects of other factors on ROA and improve the reliability of the research findings.

Table 1. Variable definition

Company Performance	ROA	Net profit ÷ Total assets
CEO Green Experience	CEO	If the CEO of the listed company has green work experience or green education, the value is 1, otherwise the value is 0.
ESG Disclosure	ESG	According to the ESG rating of China Securities, the nine grades of "C-AAA" are assigned "1-9" in order
Company Size	size	Ln (total business assets)
Proportion of sole directors	bind	Percentage of independent directors on the board of directors
Assets and liabilities	lev	Total liabilities ÷ Total assets

4.3 Model Construction

In order to analyze the effect of the green background of corporate CEOs on firm performance, this paper uses the green background of CEOs as the explanatory variable and firm performance as the explanatory variable to establish a benchmark regression model by:

$$ROA_{i,t} = cCEO_{i,t} + \alpha_0 + \alpha_1size_{i,t} + \alpha_2debt_{i,t} + \alpha_3ind_{i,t} + e_1 \tag{1}$$

In model (1), $ROA_{i,t}$ is the firm performance, α_0 is the constant term, $\alpha_1 \sim \alpha_3$ are the regression coefficients, subscript i is the i -th sample firm, t is the t -th year, $CEO_{i,t}$ is the explanatory variable representing the CEO green background of listed firm i in year t , and e_1 is the random disturbance term representing other factors that have an impact on the explained variable.

To further analyze the influence mechanism of corporate CEO's green background on firm performance, this paper suggests that there may be a mediating effect of ESG information disclosure between corporate CEO's green background and performance, referring to the mediation test conducted by Zhonglin Wen and Baojuan Ye (2014)[19], two regression models are established as follows:

$$ESG_{i,t} = aCEO_{i,t} + \beta_0 + \beta_1size_{i,t} + \beta_2debt_{i,t} + \beta_3ind_{i,t} + e_2 \tag{2}$$

$$ROA_{i,t} = c'CEO_{i,t} + bESG_{i,t} + \gamma_0 + \gamma_1size_{i,t} + \gamma_2debt_{i,t} + \gamma_3ind_{i,t} + e_3 \tag{3}$$

In model (1), the regression parameter c of $CEO_{i,t}$ indicates the total effect of the green background of the firm's CEO on firm performance.

In model (2), the regression parameter a of $CEO_{i,t}$ is the effect of green background of corporate CEO on the mediating variable ESG disclosure.

In model (3), the mediating variable $ESG_{i,t}$ of the regression parameter b indicates the effect of the mediating variable on firm performance after controlling for the effect of the green background of the firm's CEO.

5. Empirical Analysis

5.1 Descriptive Statistics

The mean value of ROA is 0.031 with a standard deviation of 0.063, indicating that most companies have profitability around the average, but there are some companies with low or negative ROA. In terms of ESG ratings, the mean value of this sample is 4.028 with a standard deviation of 1.161, indicating that most companies have room for improvement in terms of integrated ratings for environmental, social, and governance issues, and secondly, 028 data on CEO green background shows that most of the companies do not have a CEO with a mean value of 0.026. There is a large variability in the size of different companies, and the data on the percentage of independent directors indicates that most of the companies have independent board members, but there are some companies that have interested board members. The gearing indicator indicates that there is some volatility in the gearing situation in the sample companies studied, but overall it is at a healthy level.

Table 2. Descriptive statistics

VARIABLES	N	Mean	SD	Min	Max
ROA	12738	0.031	0.063	-0.275	0.195
CEO	12738	0.026	0.159	0	1
ESG	12738	4.028	1.161	1	8
size	12738	22.460	1.466	19.249	27.307
bind	12738	0.371	0.052	0.333	0.571
lev	12738	0.490	0.216	0.060	0.982

5.2 Multicollinearity Test

5.2.1 Correlation Coefficient Test Method

By calculating the correlation coefficients between the variables ROA, CEO green background, ESG disclosure, and the control variables size, bind, and lev, among them, the only correlation coefficient with an absolute value greater than 0.3 is 0.411 between lev and size, and this correlation coefficient is slightly high, but it does not reach an excessive level. In addition, the correlation coefficients between the other independent variables are relatively low, and there is no obvious problem of multicollinearity.

Table 3. Correlation coefficient test

	CEO	ESG	bind	lev	size
CEO	1				
ESG	0.028***	1			
bind	0.014	0.053***	1		
lev	0.022**	-0.037***	0.023***	1	
size	0.013	0.345***	0.036***	0.411***	1

*** p<0.01, ** p<0.05, * p<0.1

5.2.2 VIF Test

To more accurately determine whether there is a multicollinearity problem, a variance inflation factor (VIF), was used to perform further statistical tests, and the test results are shown in Table 4.

It is generally considered that when the VIF value is greater than 10, it indicates a relatively obvious problem of multicollinearity that needs to be dealt with by appropriate measures. And when the VIF value is greater than 5, further examination may be required. The VIFs of all variables were calculated to be relatively small, with the largest being 1.43, all of which were much smaller than 10, so it can be assumed that there is no obvious multicollinearity problem in the data.

Table 4. VIF test

Variable	VIF	1/VIF
CEO	1.000	0.998
ESG	1.190	0.840
bind	1.000	0.996
lev	1.260	0.794
size	1.430	0.701
Mean VIF	1.180	

The variance inflation factor of the variables is judged according to 1/VIF. The closer the 1/VIF is to 1, the smaller the correlation between the variables and the smaller the variance inflation factor; conversely, if the 1/VIF is smaller, the stronger the correlation between the variables and the larger the variance inflation factor. By calculating the 1/VIF values of all variables to be close to 1, it means that the correlation between variables is small and can be analyzed subsequently.

5.3 Smoothness Test

When at least three results are significant, the representative variables are balanced. Stability test In order to avoid the negative impact on the test results due to the limitations of the test methods, this paper simultaneously used the three methods of LLC, IPS, and ADF-Fisher for the unit root test, and the test results are shown in Table 5.

Table 5. Stability test

Variable Type	Variables	LLC	IPS	ADF	Is it smooth
Explained variables	ROA	-66.1849*** (0.0000)	-2.6614*** (0.0000)	42.3776*** (0.0000)	Smooth and stable
Explanatory variables	CEO	-3.4e+02*** (0.0000)	-4.8769*** (0.0000)	-11.8245*** (0.0000)	Smooth and stable
Intermediate variables	ESG	-64.193*** (0.0000)	-2.7828*** (0.0000)	29.2296 *** (0.0000)	Smooth and stable
Control variables	bind	-61.9145*** (0.0000)	-1.8393*** (0.0000)	17.5324*** (0.0000)	Smooth and stable
	lev	-2.7e+02*** (0.0000)	-4.2256*** (0.0000)	32.0791*** (0.0000)	Smooth and stable
	size	-60.5389*** (0.0000)	-2.2574*** (0.0000)	22.1195*** (0.0000)	Smooth and stable

*** p<0.01, ** p<0.05, * p<0.1

The calculation shows that the p-value of all variables in the LLC, IPS, and ADF-Fisher tests is 0.0000, meaning that all variables pass the unit root test at the 1% level of significance and can be considered as smooth.

5.4 Baseline Regression

This section investigates the relationship between corporate CEO green background and firm performance by using linear regression, and the regression results are shown in model (1) in Table 6 below. The regression results of model (1) in the table below show that the regression coefficient of the green background of corporate CEO (CEO) and firm performance (ROA) is 0.0109 and is significantly positive at the 1% level.

The CEO of a firm with a green background makes the firm's performance increase by 0.0109 units, which indicates that the higher the financial performance of the firm when the CEO of the firm has a green background, the more the CEO's green background plays a positive role in the firm's performance, so hypothesis H1 is verified.

Table 6. Baseline regression results

VARIABLES	Model (1) ROA
CEO	0.011*** (0.003)
size	0.011*** (0.000)
bind	-0.057*** (0.010)
lev	-0.134*** (0.003)
Constant	-0.129*** (0.009)
Observations	12,738
R-squared	0.184

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

5.5 Endogeneity Analysis

The previous paper discussed that CEOs with green backgrounds promote firm performance, and in order to avoid the problem of model endogeneity due to causality, the explanatory variable CEO green background is lagged by one period before model regression. The regression results are shown in Table 7 below; the coefficient of CEO green background is 0.00870 and significant at the 1% level, and the direction of the coefficient estimation is consistent with the direction of the previous benchmark regression. The above results, after taking into account the two-way causality, still indicate that a CEO with a green background can promote the improvement of the firm's financial performance, indicating that the results have stability.

Table 7. Lagged one-period regression of variables

VARIABLES	ROA
CEO	0.0087*** (0.003)
size	0.011*** (0.000)
bind	-0.057*** (0.010)
lev	-0.134*** (0.003)
Constant	-0.129*** (0.009)
Observations	12,738
R-squared	0.184

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

5.6 Robustness Test

In order to ensure the robustness of the conclusions of the previous analysis, the following tests were conducted: replace the explanatory variables, replace the explanatory variable ROA, the return on total assets, with ROE, the return on net assets, and at the same time, shrink the tail and eliminate the vacancy value of ROE; at the same time, shorten the time window to 2020, when China is more affected by the new crown epidemic. According to Zheng, Lili, and Liu Chen (2021), a related study proved that the occurrence of the epidemic significantly reduces the financial performance of enterprises [20] (2021), so the data related to 2020 are excluded. After replacing the explanatory variables and shortening the time window, the regression results are shown in Table 8. According to the regression results, CEO's regression coefficient is 0.0193 and is significant at the 5% level, which

is consistent with the results of the previous study and proves that the results of the previous study are robust.

Table 8. Robustness test results

VARIABLES	ROE
CEO	0.019** (0.008)
size	0.029*** (0.001)
bind	-0.115*** (0.025)
lev	-0.186*** (0.007)
Constant	-0.451*** (0.024)
Observations	10,990
R-squared	0.079

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

5.7 Analysis of Intermediary Effects

5.7.1 Step-by-step Test Method

The previous section obtained through regression analysis that CEO green background is significantly and positively related to both firm performance and the total effect of firm CEO green background on firm performance c is 0.0109.

This paper argues that ESG disclosure may have a mediating effect between CEO green background and firm performance, so this section uses stepwise regression to test the mediating effect.

Table 9. Stepwise test results

VARIABLES	Model (2) ESG	Model (3) ROA
CEO	0.194*** (0.060)	0.010*** (0.003)
ESG		0.007*** (0.001)
size	0.342*** (0.007)	0.009*** (0.000)
bind	0.921*** (0.180)	-0.063*** (0.010)
lev	-1.160*** (0.048)	-0.127*** (0.003)
Constant	-3.429*** (0.163)	-0.106*** (0.009)
Observations	12,738	12,738
R-squared	0.160	0.197

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The test of whether there is a mediating effect of ESG disclosure between CEO green background and firm performance yields the results shown in the table below: To determine whether the mediating effect of ESG disclosure exists, the regression coefficient a of CEO green background (CEO) is found to be 0.194 and significantly positive at the 1% significance level through model (2), and CEO green background promotes firms to make ESG disclosure, so hypothesis 2 is verified. The regression coefficient b of the mediating variable ESG disclosure (ESG) in model (3) is 0.00676, which is

significantly positive at the 1% level of significance, and the indirect effect of CEO green background on firm performance ROA c' is 0.00957, which is significant at the 1% level.

Therefore, based on the significant regression coefficients of CEO green background (CEO) in models (1) and (2) and the significant regression coefficients of the mediating variable ESG disclosure (ESG) in model (3), i.e., the joint significant coefficients of the three regressions, the mediating effect is obtained to hold, indicating that the green background of the corporate CEO drives ESG disclosure and thus improves corporate performance.

5.7.2 Sobel Test

In order to precisely verify the intermediary effect of ESG information disclosure of the above results, a Sobel test is conducted, and the test results are shown in Table 10 below. The Z value in the Sobel test is 3.184, and the P value is 0.00145 less than 0.05, which is significant on the basis of 1%, proving that the intermediary effect of the Sobel test also holds, which is consistent with the conclusion of the previous stepwise test method.

Table 10. Results of Sobel test

	Coef	Std Err	Z	P>Z
Sobel	0.00131	0.00041	3.184	0.00145
Goodman-1 (Aroian)	0.00131	0.00041	3.177	0.00149
Goodman-2	0.00131	0.00041	3.191	0.00142

Proportion of total effect that is mediated: 0.12064
Ratio of indirect to direct effect: 0.13719
Ratio of total to direct effect: 1.13719

5.7.3 Bootstrap Test

Further Bootstrap was used to do further testing of the mediation effect, with a put-back repeated sampling of 1000 times, and according to the results of the test in Table 11, the confidence interval of the indirect effect did not contain 0 and the indirect effect was significant at the 95% confidence interval, and the confidence interval of the direct effect likewise did not contain 0 and the direct effect was significant, and the mediation effect passed the significance test.

Table 11. Bootstrap test results

	Observed coefficient	Bootstrap std.err.	z	P>z	Normal-based [95% conf.interval]
_bs_1	0.00131	0.00043	3.05	0.002	0.00047 0.00216
_bs_2	0.00957	0.00292	3.28	0.001	0.00385 0.01529

The results of all three tests of the mediation effect above indicate that ESG disclosure has a mediating role in the relationship between CEO green background and firm performance, so hypothesis 3 is tested.

6. Conclusion and Recommendations

6.1 Conclusion

This paper explores the impact of the CEO's green background on firm performance by selecting data from 1158 Shenzhen and Shanghai A-share listed companies from 2010–2020 through benchmark regression analysis. The regression results show that a CEO with a green background has a positive contribution to firm performance, i.e., a CEO with a green background will promote the improvement of firm corporate financial performance. The CEO's green background reflects the CEO's personal characteristics, and the

CEO's green background will make him/her pay more attention to the green and sustainable development of the company, which will be recognized by investors as having the ability to develop sustainably and achieve the win-win situation of green development and economic growth of the company. Meanwhile, this paper further analyzes the effect of the CEO's green background on firm performance based on the mediating effect of ESG information disclosure. According to the test results of mediation, there is a mediating effect of ESG information disclosure between the CEO's green background and firm performance, i.e., the CEO's green background improves firm performance by promoting the firm to make ESG information disclosure, which in turn improves firm performance. CEOs with a green background will be more profoundly aware of the relationship between the company's ecological performance, social performance, etc. and financial performance, more profoundly aware of the relationship between the company's current interests and long-term interests, and pay more attention to the company's ESG information disclosure. A CEO with a green background has a positive promotion effect on the company's ability to conduct ESG information disclosure, while in the process of the company's ESG information disclosure, it will strictly comply with At the same time, in the process of ESG disclosure, the company will strictly comply with relevant policies and regulations, avoid short-sighted behavior and major accidents, continuously release its efforts in achieving high-quality development and sustainable development to the market, establish a good social image, get the recognition of investors, and thus improve the company's performance.

6.2 Recommendations

6.2.1 ESG Governance Core Principles and Strategies

ESG governance of enterprises should balance the cost-benefit relationship and achieve the optimal solution under the dual constraints of social and financial performance. According to the optimal social responsibility hypothesis, there is an inverted U-shaped relationship between social performance and the financial performance of enterprises. The initial ESG investment of enterprises brings positive feedback to enterprises, which can better offset the cost, but when the ESG score of enterprises is higher, the marginal effect of the investment diminishes and the financial performance of enterprises decreases, so enterprises should promote enterprises to achieve the maximum merit of social responsibility and financial performance.

In order to achieve a win-win situation between corporate social responsibility and financial performance, firstly, enterprises should optimize their organizational structure, build an ESG management system, and formulate a company-level ESG strategy to realize the implementation of the strategy at the decision-making, management, and executive levels; secondly, enterprises should combine industry characteristics, policy guidance, and their own characteristics, make full use of policy preferences, identify substantive ESG issues in the industry, and design reasonable ESG Secondly, enterprises should make full use of policy preferences, identify substantive ESG issues in the industry, design reasonable ESG improvement projects, closely integrate ESG governance with their own businesses, and carry out targeted ESG special governance; Thirdly, they should improve the quality of ESG disclosure, prepare social responsibility reports, refer to international common ESG disclosure principles in form, highlight substantive and forward-looking content, and make moderate localization improvements; Finally, enterprises should maintain active communication with various rating agencies. Finally, enterprises should maintain active communication with rating agencies, take the initiative to update their own ESG data, and actively participate in ESG discussions organized by associations and conventions to promote and lead the development of cutting-edge ESG industry standards and enhance corporate influence.

6.2.2 Enterprises Should Pay Attention to the Impact of the Institutional Environment

Companies must proactively respond to institutional pressures in their own way. Currently, the institutional environment in which companies operate has a significant impact on strategic decisions, especially given the simultaneous pressures in the institutional environment. Active corporate ESG

responsibility can serve as a corporate response to government, society, and the organization, satisfying the requirements of governmentalism while promoting a higher level of economic benefit for the company, which can lead to greater organizational legitimacy and competitiveness.

6.2.3 Optimize the Environmental Performance of Business Managers

Companies need to continuously improve their corporate governance mechanisms, strengthen internal controls, and improve oversight and checks and balances on the CEO. Companies need to recognize the important role of CEOs in green innovation strategy decision-making, give CEOs a certain degree of ownership, motivate CEOs to exert their abilities, coordinate resource allocation, and promote development within the company. Corporate executives should strengthen their personal self-cultivation, conform to the development of the times, and actively study the ESG system and green concepts to contribute to the improvement of corporate performance.

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