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# Sustainable Practices and Performance of Resource-Based Companies: The Role of Internal Control

**Xiao Liu [1], Huanxue Pan [1,*], Weixing Lin [1], Mengkai Wang [2] and Qiange Zhang [3]**

[1] School of Economics and Management, Beijing Forestry University, Beijing 100083, China; lxx887@bjfu.edu.cn (X.L.); woodslin1995@163.com (W.L.)
[2] School of Business, Renmin University of China, Beijing 100872, China; mengkaiw@ruc.edu.cn
[3] School of Economics and Management, Beijing University of Posts and Telecommunications, Beijing 100876, China
* Correspondence: panhuanxue@bjfu.edu.cn; Tel.: +86-18610353377

**Abstract:** As the concept of sustainable resource usage gains popularity, resource-based companies are faced with the challenge of reconciling environmental responsibility with corporate performance to achieve the "coexistence" of environmental and economic benefits. We take data related to RBCs for 2010–2020 and perform a multiple regression analysis of the data. This study focuses on the role of internal control in analyzing the impact of resource-based companies (RBCs) on corporate financial performance (CFP) while assuming corporate environmental responsibility (CER). The findings reveal that the fulfillment of CER by RBCs positively impacts CFP. We then add a moderating test to observe the role of internal controls in the relationship between the two. The results show that the positive effect of CER on CFP is greater with stronger internal control measures. In addition, we introduce heterogeneity analysis to analyze the effect of firm ownership. The moderating effect is diminished in privately owned companies. This research provides empirical evidence for the moderating effect of internal control on the connection between CER and CFP while also considering the influence of ownership.

**Keywords:** resource-based enterprises; internal control; financial performance; corporate environmental responsibility



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## 1. Introduction

Currently, the world is entering the Industry 4.0 era [1]. With the continuous development of science and technology and the economy, the problem of pollution and the destruction of the ecological environment are becoming more serious [2]. Due to their unique characteristics, resource-based companies are the primary ones to pollute the environment. There are currently not many resource-based companies that have embraced CER [3]. This is caused by the clear expenses associated with CER [4]. The advantages have not yet fully materialized. Additionally, companies frequently worry that their CFP may suffer due to their environmental obligation [5].

Moreover, the theory of corporate social responsibility (CSR) emphasizes the responsibility of business towards society and the environment [6]. The theory of sustainable development emphasizes meeting current needs without compromising the needs of future generations [7]. The theory explains that companies seek a balanced relationship between CER and CFP [8–10]. The relationship between CER and CFP in China is related to the social, political, and economic context of China. The realization of CER is essential to the growth of businesses in the Chinese market, given the growing focus on environmental protection by the Chinese government [11–13]. Chinese customers are also becoming more aware of CER, which affects a company's ability to compete and function in the market. Consequently, given China's circumstances, the correlation between CER and CFP in the Chinese market is even more crucial.

To help resource-based enterprises better fulfill their CER, they can also obtain higher CFP, thus realizing the purpose of a "coexistence" of environmental and economic benefits. In the process of research and analysis, this paper explores the relationship between CER and CFP. It also introduces internal control as a moderating variable to analyze the relationship between CER and CFP from different dimensions, and whether internal control has a moderating effect on the relationship between the two is empirically analyzed.

Finally, we reintroduce ownership in the heterogeneity test. This is mainly because state-owned enterprises, as an important pillar of the country's economic development, bear important social responsibilities [14]. As an important strategic implementer of the country's economic development, state-owned enterprises play a pivotal role in the realization of the country's strategic goals [15]. The investment and development direction of state-owned enterprises is often closely related to the national strategic objectives [16]. Therefore, we divide the sample into state-owned enterprises and non-state-owned enterprises.

The results show that CER among RBCs has a beneficial effect on CFP that increases with the internal control level. After passing the robustness test, the conclusions are still consistent. In addition, heterogeneity analyses indicate an attenuation in non-state-owned firms.

To realize synergies between green and economic development, as well as sustainable development goals, our study makes three contributions. Firstly, in studying the relationship between CER and CFP, we precise our sample data in RBCs. Internal control was introduced to have a moderating effect and improve accuracy. To ensure rigor, a heterogeneity analysis was added to determine the effect of the nature of RBCs' problems. Secondly, the study helps companies comprehensively consider the impact of CER in the process of making development decisions. Finally, it helps the government provide important references for formulating policies and regulations on environmental protection.

In summary, we analyze the impact on CFP when RBCs take on CER and the moderating effect of the introduction of internal controls. To address these issues, Section 2 of this study presents the research hypotheses through a literature review. In Section 3, the research sample is determined by selecting data from resource-based firms from 2012 to 2020. Moreover, we design the relevant variables and models. In Section 4, the effects of both are systematically examined through empirical research, and internal control is introduced to make moderating effects. Robustness tests are also conducted to determine the final results. In Section 5, we perform a heterogeneity analysis to determine the effects caused by different ownerships of resource-based firms. The comparison of this study with other researchers is presented in Section 6 of the paper. Section 7 concludes the study.

## 2. Literature Analysis and Research Hypothesis

The primary objective of companies during the development phase is to maximize earnings [17]. However, the knowledge of CER is growing in the context of increased global environmental consciousness and the drive towards sustainable development [18]. Currently, it is mainly considered that CER refers to protecting the environment [19]. That is, in the process of carrying out production and business activities, enterprises should actively undertake CER to fulfill the important social responsibility of protecting the ecological environment, contributing to the sustainability of resources, and reducing the emission of pollutants [3,4,20,21]. CER is subdivided into two types, one of which is the responsibility of peremptory legal norms, and the other is the responsibility of arbitrary legal norms [22]. Either type is not only a legal responsibility but also a moral one [23]. This is part of corporate social responsibility (CSR), which emphasizes that enterprises should actively protect the environment, promote sustainable development of resources, and reduce pollutant emissions in their business activities.CER is not only a legal responsibility but also a moral responsibility. Enterprises should not only pursue the maximization of operational efficiency but also make rational use of resources and prevent environmental pollution [23–25]. It also has to use resources rationally, prevent

environmental pollution, and assume CER [22]. RBCs are very important components of economic development. They have high energy consumption, high pollution, and high cost. Green technological innovations are used to reduce these points, especially in heavily polluting types of enterprises [23].

In the process of business development, when enterprises ensure that the environment's carrying capacity is under normal conditions, it is an important manifestation of the fulfillment of CER [26]. Along with bigger listed companies, some medium-sized and smaller companies have started to tell the public about their social responsibility reports and information on how well their CERs are being met [27]. Companies are investing more in the environment when the long-term development factor is considered [8,9] to successfully enhance the conditions for the growth of companies and the creation of their products, as well as to assist them in developing a positive social reputation [28]. CER is essentially a signaling mechanism to gain support from stakeholders [29]. When a company fulfills its CER, it allows some companies with high CFP to continue to maintain their competitive advantage, while for those companies with poor CFP, fulfilling their CER can optimize their CFP [24,27,30]. Additionally, many firms can increase their total value and CFP by optimizing investments in environmental resource management and CERs through resource planning [31,32]. Increased environmental investment by enterprises can improve the production and operation environment, help enterprises establish a good social image, improve their overall value and CFP, and thus promote the sustainable development of enterprises. [7,27,29,33]. Enterprises' investment in the use of environmental resources and CER can also lead to a further increase in the overall value and CFP of the enterprise. Therefore, Hypothesis 1 is proposed [30,32]

**H1:** *The achievement of CER by listed resource-based companies (RBCs) significantly impacts CFP with a certain lag.*

As an internal control system covering all aspects of business, internal control is conducive to the scientific prevention of financial risks [34,35]. Internal control permeates and is involved in all facets of company management [36]. Departmental control plays a positive role in promoting the fulfillment of CER by enterprises. It provides institutional safeguards for enterprises practicing CER and effectively reduces the risk of CER. In addition, internal control ensures the accuracy of accounting information, supervises and improves the efficiency of each department, and manages the input–output and transformation efficiency of CER [37]. The collaboration of several departments is necessary for everything from the fulfillment of CER to the enhancement of CFP [36,38]. Reduced stakeholder disputes will result from better internal controls [39].

Internal control plays a positive role in promoting the relationship between CER and CFP [39]. Internal control is essentially an important system for enterprises to carry out governance work [40]. It can provide an institutional guarantee for enterprises to practice environmental responsibility better and effectively reduce the risk of CER [41]. Further, it improves the accuracy of accounting information [42,43]. Moreover, internal control may monitor and enhance the productivity of various departments, manage the input and output of CER and its transformation efficiency, and offer a significant level of assurance for enhancing CFP [35,44,45]. CER and internal control show the relationship between mutual promotion and mutual achievement, while enterprises actively fulfilling their CER can improve the level of corporate internal control [37,46,47]. On the contrary, internal control work can provide an important institutional guarantee for enterprises to fulfill their CER, and the positive interaction between the two can greatly improve the level of CFP [48–51]. Based on the analysis of the above research, Hypothesis 2 is proposed. The exact logic of the derivation is shown in Figure 1.

**H2:** *The association between CER and CFP is positively moderated by internal control.*

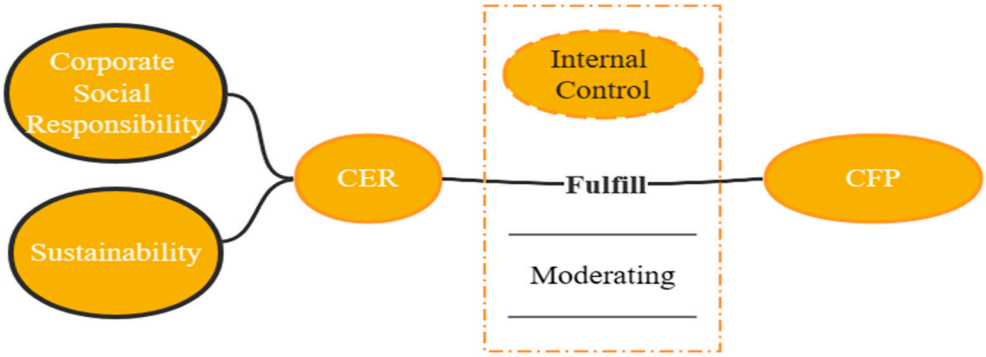


**Figure 1.** Model logic.

## 3. Empirical Research Design

### *3.1. Sample Selection and Data Sources*

We collected data on RBCs for the period 2012–2020 using data from the China Dibble Internal Control Index Library (DIB), the China National Intellectual Property Administration (CNIPA), and the China Stock Market Accounting Research (CSMAR). After taking into account unusual financial circumstances, missing indicators, ownership changes over the period, and newly listed companies after 2012, there were a total of 1025 valid sample research data for 165 companies. All continuous variables were shrink-tailed at the 1% and 99% quantiles to remove the impact of aberrant extreme values [35].

### *3.2. Design of Relevant Variables*

(1) Explained Variable

The composite scores of the methodologies of CFP were calculated using prior research from the literature [8,9,35]. To produce more precise and useful indicators and findings, the weights of the composite indicators created by using the entropy weight approach were selected as proxy variables for the explanatory variable company's financial performance (Score) [7]. Table 1 defines all indicators, and Table 2 shows the calculated scores for CFP.

**Table 1.** Selection of financial performance indicators.

| Variable Name | Code | Definitions |
|---|---|---|
| Return on net assets | Roe | Net Profit/Net Assets |
| Net interest rate on total assets | Roa | Net Profit/Total Assets |
| Cash Flow Level | Cash | Cash received from sales of goods/operating income |
| Inventory turnover days | Turnover | Operating Income/Inventory |
| Gross Profit Margin | Gpm | Gross Profit/Revenue |
| Revenue Growth Rate | Growth | Year-on-year growth rate of operating income |
| Financial Leverage | Lev | Total Liabilities/Total Assets |
| Net Profit Level | Profit | Net Profit |
| Revenue Size | Income | Operating Income |

The theoretical basis for the entropy weight method of calculating financial performance is as follows: The main entropy weight method comes from the information entropy theory, which is used for the description of uncertain events and information. The entropy weight method for measuring the weight is divided into three steps: in the first step, the variables for non-outline quantitative processing are established, and the value of different variables are placed into relative positions; in the second step, through the information entropy formula, the information entropy of each variable is calculated; in the third step, the information entropy of each variable is standardized after the product of each variable, and the summary of the summation is made to get the integrated index.

**Table 2.** Financial performance composite score.

| Year | Roe | Roa | Cash | Turnover | Gpm | Growth | Lev | Profit | Income |
|---|---|---|---|---|---|---|---|---|---|
| 2012 | 0.20% | 1.32% | 0.91% | 6.68% | 0.43% | 4.34% | 2.19% | 32.37% | 51.56% |
| 2013 | 0.60% | 0.72% | 0.93% | 5.92% | 0.60% | 1.34% | 2.53% | 31.51% | 55.84% |
| 2014 | 0.72% | 2.14% | 1.27% | 6.05% | 0.76% | 1.55% | 2.99% | 20.83% | 63.70% |
| 2015 | 1.12% | 1.08% | 2.26% | 5.97% | 1.88% | 3.43% | 4.04% | 12.29% | 67.94% |
| 2016 | 0.53% | 1.11% | 0.93% | 7.99% | 1.47% | 3.00% | 3.93% | 1.72% | 79.32% |
| 2017 | 0.23% | 1.24% | 1.30% | 8.93% | 3.67% | 4.04% | 1.95% | 3.55% | 75.09% |
| 2018 | 0.31% | 0.67% | 0.85% | 6.00% | 2.98% | 1.93% | 3.42% | 24.67% | 59.17% |
| 2019 | 1.01% | 0.90% | 1.13% | 7.14% | 5.04% | 2.19% | 2.59% | 29.15% | 50.84% |
| 2020 | 1.43% | 1.59% | 3.15% | 7.20% | 6.48% | 3.83% | 3.06% | 18.22% | 55.03% |

In the first step, the variables are dimensionless processing, and the values of different variables are transformed into relative positions:

$$Y_{ij} = \frac{X_{ij} - \min(X_{ij})}{\max(X_j) - \min(X_j)}$$

In the second step, the information entropy of each variable is calculated through the following information entropy formula:

$$e_j = -\ln(n)^{-1} \sum_{i=1} f_{ij} ln f_{ij}$$

$$w_i = \frac{1 - e_j}{k - \sum e_j}$$

In the third step, the information entropy of each variable is multiplied by the standardized variables, and the synthesized index is obtained by aggregating and summing:

$$Q = \sum_{n=1}^{j} Y_{ij} W_{ij}$$

(2) Explanatory Variable

The availability and objective authenticity of the data were considered. In this research, the number of green patents acquired by RBCs (Green) was selected as a proxy variable for corporate CER in combination with the choice of variable indicators of prior studies [19,52–54]. Green patents are those that have some degree of environmental protection technology innovation and are primarily concerned with conserving resources, increasing energy efficiency, using clean energy, preventing and controlling pollution, and lowering carbon emissions, among other things. It indirectly reflects the level of CER adopted by RBCs as well as the efficacy of environmental protection input and output. Data sources included the CnopenData database and the State Intellectual Property Office.

(3) Moderating Variables

They were analyzed based on the status of the company's internal control and the previous literature. The Dibor Internal Control Index was selected by analyzing the internal control status of enterprises and considering various factors. This index has been widely recognized and validated by academics and has strong authority and universality. This study chose the company's internal control index (Dib_index) as the moderating variable of the model [6,9,10].

(4) Control Variables

To reduce the influence of other factors on the results, the following control variables were also selected based on the existing literature [6,8,9,35]: enterprise nature (Soe), enter-

prise size (Size), proportion of independent directors (In_rate), management shareholding ratio (Manger_rate), enterprise age (Age), separation of two positions (Dua), shareholding ratio of the largest shareholder (Crl), year dummy variables (Year), and industry dummy variables (Ind). The specific variables are defined in Table 3.

**Table 3.** Variable definitions.

| Variable Type | Variable Name | Definitions |
|---|---|---|
| Explained Variables | Score | Financial performance calculated by the entropy weighting method |
| Explanatory Variable | Green | ln(number of green patents + 1) |
| Moderating Variable | Dib_index | DiBo Internal Control Composite Index |
| Control Variable | Soe | Set to 1 for state-owned enterprises and 0 for non-state-owned enterprises |
| | Size | Logarithmic form of total assets |
| | In_rate | Independent directors/total number of board members |
| | Manger_rate | Management shareholding/total shares |
| | Age | Difference between the current year and the year of establishment of the company |
| | Dua | The chairman of the board of directors who is also the general manager is recorded as 1; otherwise, it is 0 |
| | Crl | Shareholding of the largest shareholder/total shareholding |
| | Year | Year dummy variable |
| | Ind | Industry dummy variables |

### *3.3. Model Building*

Based on the relevant variables and the two hypotheses presented in the previous section, the following regression equation model 1 was constructed:

$$lnscore_{it} = \beta_1 lnGreen_{it} + \gamma Control_{it} + c + \varepsilon_{it} + \sum Year + \sum Ind$$

Considering the moderating effect of firms' internal controls, the moderating variable (*Dib_index*) was multiplied by the explanatory variable (green). The interaction term (*Dib_index* ∗ *green*) was obtained. The moderating effect model 2 was constructed as follows:

$$lnscore_{it} = \beta_2 lnGreen_{it} + \delta_1 Dib\_index * Green_{it} + Dib\_index_{it} + \gamma Control_{it} + c + \varepsilon_{it} + \sum Year + \sum Ind$$

In the above two models, *Control* is the control variable, *i* denotes an individual firm, t denotes the year, $\beta$ and $\gamma$ are the fit coefficients of the model, *c* is the intercept term of the model, $\varepsilon_{it}$ is the random error term of the model, *Year* is the control variable of the year, *Ind* is the dummy variable of the industry, and the coefficient $\beta$ is the main observation. If the results of testing the model are significant and positive, it means that the expectations of Hypothesis 1 are met.

## 4. Empirical Results

### *4.1. Descriptive Statistics*

After observing and analyzing Table 4, it can be found that when analyzing and measuring the CFP, if the pre-tax profit margin of total assets after eliminating surplus management is applied, the average, maximum, and minimum values can be found, i.e., 0.613, 0.932, and 0.248, respectively. From the above analysis, it can be seen that the CFP of resource-based enterprises is much more different from that of other enterprises. There is a large difference, which is mainly manifested in the overall lower level of profitability. Additionally, the mean value of firm size (Size) is 23.256, indicating that there is little variation in asset size. This finding may be related to the traits of the RBCs themselves.

**Table 4.** Sample descriptive statistics.

| Variable Name | Observations | Mean | Standard Deviation | Minimum | Median | Maximum |
|---|---|---|---|---|---|---|
| Score | 1025 | 0.613 | 0.504 | 0.248 | 0.560 | 0.932 |
| Green | 1025 | 1.230 | 1.075 | −0.185 | 2.498 | 5.182 |
| Dib_index | 1025 | 6.511 | 0.162 | 5.700 | 6.200 | 6.698 |
| Size | 1025 | 23.256 | 1.667 | 18.370 | 23.173 | 28.543 |
| In_rate | 1025 | 0.368 | 0.048 | 0.231 | 0.364 | 0.667 |
| Manger_rate | 1025 | 1.424 | 6.478 | 0.000 | 0.000 | 57.075 |
| Age | 1025 | 18.651 | 5.196 | 5.000 | 19.000 | 40.000 |
| Dua | 1025 | 0.201 | 2.219 | 0.000 | 0.196 | 1.000 |
| Cr1 | 1025 | 0.417 | 0.174 | 0.778 | 0.425 | 0.863 |
| Soe | 1025 | 0.778 | 0.416 | 0.000 | 1.000 | 1.000 |

For resource-based enterprises, the mean, maximum, minimum, and standard deviation of the internal control variables was 6.511, 6.698, 5.700, and 0.162, respectively. In the paper, the logarithm of the internal control index allows for a further narrowing of the range of internal control in terms of numbers in the course of the research and analysis. In this way, it can be learned that there are significant differences in internal control among different enterprises. For resource-based enterprises, the maximum and minimum values of CER were 5.182 and −0.185, respectively, which shows that there are relatively large differences in CER performance among different enterprises, and the average value was 1.230, which means that there is a relatively poor performance of social responsibility for RBCs.

The difference in the first major shareholder is very significant among different companies; among individual companies, the shareholders of the first major shareholder are relatively high, and there are other companies where the share of the first major shareholder is the very first, and the shareholding shows the problem of excessive division, so the management mode applied by the companies also has significant differences. The mean value of separation of two positions (Dua) was 0.201, indicating that most companies fulfill the basic need of separating the chairman and general manager.

### *4.2. Multicollinearity Test*

To improve the reliability of the regression results, reduce the impact of a possible correlation between the variables on the results, and test the existence of multicollinearity problems in the explanatory and control variables in the model, this paper introduced the degree of dependence, or variance inflation factor (VIF). If the value of 1/VIF is relatively small, it indicates that there is a relatively more serious covariance problem with this variable and other variables. The results of the VIF values are summarized in Table 5:

**Table 5.** Summary results of VIF values.

| Name | VIF |
|---|---|
| Green | 1.88 |
| Size | 2.45 |
| Iin_rate | 1.23 |
| Manger_rate | 1.15 |
| Age | 1.15 |
| Dua | 1.37 |
| Cr1 | 1.42 |
| VIF mean value | 1.62 |

Normally, when analyzing and determining the multicollinearity criterion, the VIF is less than 10, and in strict cases, the VIF is less than 5. By analyzing the model test analysis in Table 5, it can be found that the maximum VIF value is less than 2, which shows that there is no multicollinearity problem.

### *4.3. Multiple Regression Analysis*

As shown in Table 6, it can be seen that $R^2$ was 0.737, with a good overall fit, and the fitting coefficient of Green was 0.134, with a positive fitting coefficient and passing the test of significance at the 1% level. Since a double logarithmic model was established in this study, the fitted coefficient can be thought of as an elasticity. Thus, the RBCs will see a boost in CFP of 0.134% for every 1% increase in CER undertaken by RBCs. This is consistent with Hypothesis 1, that the fulfillment of CER significantly improves CFP.

**Table 6.** Results of regression analysis.

| | **(1)**<br>**Score** |
|---|---|
| Green | 0.134 *** |
| | (7.296) |
| Size | 0.085 *** |
| | (9.552) |
| In_rate | 0.190 |
| | (1.079) |
| Manger_rate | −0.001 |
| | (−0.393) |
| Age | 0.003 * |
| | (1.807) |
| Dua | 0.007 |
| | (1.474) |
| Cr1 | 0.001 ** |
| | (2.113) |
| _cons | −4.894 *** |
| | (−24.814) |
| IND | Yes |
| YEAR | Yes |
| N | 1025 |
| $R^2$ | 0.737 |

***, **, and * represent statistically significant at 1%, 5%, and 10% levels, respectively, with standard errors in parentheses.

This shows that the better the CER implementation and the greener production technology, the more effective and high-quality use of reduced sources and reduced hidden costs will be, and the input-output ratio will be correspondingly improved. This will ultimately be reflected in the improvement of CFP. From the perspective of stakeholders, the enterprise's management behavior directly affects not only the company's internal performance but also the interests of shareholders and employees. They also convey positive or negative information to the public through financial statement disclosure, the company's official website, and various media. It affects the overall attitude of external stakeholders, such as suppliers, investment and financing institutions, and consumers towards the enterprise. Then, it further affects the cooperation intention, purchase preference, etc., thus indirectly affecting the CFP of the enterprise.

### *4.4. Moderating Effect Test*

This study focuses on the impact of moderating effects and chooses to use the internal control of RBCs as a moderating variable [6]. The interaction term (Dib*green) constructed by internal control and CER was added to the regression model, and the interaction term's fit coefficient was observed. Table 7 shows that the fitted coefficient of Dib*green is 0.023 and

passes the test of significance at the 1% level. It is consistent with Hypothesis 2, that is, in the case of the same level of CER, the higher the level of corporate internal control, the higher the efficiency in risk management, resource allocation and supervision, and control, and the better the ability to transform CER into corporate performance, so the greater the degree of enhancement of CFP.

**Table 7.** Analysis of results of moderating effects.

| | **(1)**<br>**Score** |
|---|---|
| Green | 0.073 *** |
| | (4.727) |
| Dib*green | 0.023 *** |
| | (4.867) |
| Dib_index | 0.001 *** |
| | (7.741) |
| Size | 0.068 *** |
| | (8.140) |
| In_rate | 0.235 |
| | (1.460) |
| Manger_rate | −0.001 |
| | (−0.433) |
| Age | 0.002 |
| | (0.972) |
| Dua | 0.007 * |
| | (1.694) |
| Cr1 | 0.001 * |
| | (1.919) |
| _cons | −5.125 *** |
| | (−27.638) |
| IND | Yes |
| YEAR | Yes |
| N | 1025 |
| $R^2$ | 0.789 |

***, **, and * represent statistically significant at 1%, 5%, and 10% levels, respectively, with standard errors in parentheses.

### *4.5. Robustness Tests*

In this paper, the lag of the explanatory variable was chosen as a replacement variable for the robustness test. CER may ultimately affect CFP due to the lag in signaling and internalization into production technology improvement, etc. This process takes time and lasts for a certain period, so this paper adopted CER data lagged by one period ($t-1$) to replace the current period's CER indicators for the robustness test. The results are demonstrated in Table 8, where the impact of fulfilling CER on CFP is still significantly positive, and this positive impact has a certain lag, which again verifies the original Hypothesis 1.

We consider that more companies' financial data are chosen and that there may be direct or indirect financial data collinearity. This, coupled with the fact that the explanatory variable (Green) and the explained variable (Score) may be causal to each other, leads to endogeneity problems in the model. Therefore, we chose the indicator of the number of the companies' environmental information disclosure in social responsibility reports (L · green). Table 9 shows the Phase 1 and Phase 2 regression results, respectively. There is a logical correlation between the number of corporate environmental information disclosures on the one hand and the explanatory variable CER on the other hand: the better the CER is taken, the more timely and effective the number of environmental information disclosures is, and it is significantly positively correlated in the regression results at the 1% level, with a correlation coefficient of 0.832, and Hypothesis 1 is validated.

**Table 8.** Robustness test-variable lag.

| | **Score** |
|---|---|
| $Green_{t-1}$ | 0.124 *** |
| | (5.388) |
| Size | 0.098 *** |
| | (11.022) |
| In_rate | 0.077 |
| | (0.406) |
| Manger_rate | 0.001 |
| | (0.418) |
| Age | 0.005 ** |
| | (2.481) |
| Dua | 0.006 |
| | (1.100) |
| Cr1 | 0.001 |
| | (0.968) |
| _cons | −5.168 *** |
| | (−26.194) |
| IND | Yes |
| YEAR | Yes |
| N | 1025 |
| $R^2$ | 0.775 |

***, **, and * represent statistically significant at 1%, 5%, and 10% levels, respectively, with standard errors in parentheses.

**Table 9.** Endogeneity test.

| | **Phase 1 Green** | **Phase 2 Score** |
|---|---|---|
| Green | | 0.241 *** |
| | | (12.001) |
| L · green | 0.832 *** | |
| | (35.840) | |
| Size | 0.073 *** | 0.102 *** |
| | (4.420) | (9.798) |
| In_rate | −0.487 | 0.003 |
| | (−1.130) | (0.013) |
| Manger_rate | 0.002 | 0.001 |
| | (0.720) | (0.500) |
| Age | −0.005 | 0.016 *** |
| | (−1.370) | (7.053) |
| Dua | 0.000 | −0.005 |
| | (−0.040) | (−0.778) |
| Cr1 | 0.001 | 0.000 |
| | (0.400) | (0.298) |
| _cons | −1.176 *** | −5.008 *** |
| | (−2.950) | (−20.568) |
| IND | Yes | Yes |
| YEAR | Yes | Yes |
| N | 1025 | 1025 |
| $R^2$ | 0.787 | 0.585 |

***, **, and * represent statistically significant at 1%, 5%, and 10% levels, respectively, with standard errors in parentheses.

In Phase 2, considering the inclusion of other control variables, Green and Score are still significant at the 1% level, and the correlation coefficient is 0.241. This indicates that the original Hypothesis was still met even after the endogeneity of the variables was taken into account, which is consistent with the results of the previous test.

## 5. Heterogeneity Analysis

Considering the problem of heterogeneity of ownership in companies, this study divides the RBCs in the sample into a state-owned sample group and a non-state-owned sample group for regression. The results are shown in Table 10. The fitted coefficient of Green in the state-owned companies was 0.087, which passes the test of significance at the 1% level; in the subgroup of non-state-owned companies, the fitted coefficient of Green was 0.014, with a positive coefficient, but it does not pass the test of significance. This suggests that there is a significant positive correlation only in state-owned companies, and the effect is not significant in non-state-owned companies.

**Table 10.** Results of heterogeneity test.

| | **State-Owned Score** | **Non-State-Owned Score** |
|---|---|---|
| Green | 0.087 *** | 0.014 |
| | (3.771) | (0.591) |
| Size | 0.098 *** | 0.026 |
| | (10.269) | (1.281) |
| In_rate | 0.306 * | 0.533 |
| | (1.708) | (1.155) |
| Manger_rate | 0.004 * | −0.001 |
| | (1.703) | (−0.557) |
| Age | 0.003 | −0.002 |
| | (1.145) | (−0.459) |
| Dua | 0.009 * | 0.004 |
| | (1.905) | (0.231) |
| Cr1 | 0.000 | 0.001 |
| | (0.757) | (1.112) |
| _cons | −5.247 *** | −3.769 *** |
| | (−22.860) | (−7.550) |
| IND | Yes | Yes |
| YEAR | Yes | Yes |
| N | 797 | 228 |
| $R^2$ | 0.802 | 0.616 |

***, **, and * represent statistically significant at 1%, 5%, and 10% levels, respectively, with standard errors in parentheses.

Mainly because in China's current economic system and the nature of the social environment, there is only a significant positive correlation between source-based CER and state-owned enterprises; in non-state-owned enterprises, the effect is not very significant. The resource advantages and business objectives acquired by non-state-owned enterprises are different from those of state-owned enterprises, and the investment and financing channels are relatively few. The state-owned enterprises' internal control system and environmental R&D governance of the input and output system are more complete and more likely to get government resource subsidies and policy support, etc. They are less likely to face financing constraints due to the high capital utilization rate. They have an intrinsic willingness to fulfill CER, and the conditions of external support are adequate. At the same time, they will also receive more social attention and exposure, so the positive impact of actively fulfilling CER on CFP will be relatively more significant.

## 6. Discussion

As a result of the above findings, it is found that when RBCs take on CER, there is a positive and significant effect on CFP. Moreover, the higher the level of internal control of RBCs, the previous impact of both will be significantly higher. Even after robustness tests, the study's conclusions remain valid.

Regarding Hypothesis 1, our findings are largely similar to those of [8]. However, we found that there was a lagged response after adding the lag period to our regression analysis. In the other study, government regulation and organization are taken as moderating roles, whereas we believe that the role of government regulation makes a full impact. If we want to explore the changing state of the impact clearly, we should start from the organization itself. Moreover, in the other study, they did prove that the effect of government regulation on CFP was not significant. Therefore, we took internal control as a moderating variable. Under its influence, organizational regulation and government regulation are added to judge the CFP. We find that the CER of RBCs plays a positive influence on the improvement of CFP not only in the current period but also in the long term. This step also rounds out their study's mention of ignoring this factor of industry competition. It also suggests that companies need to improve their CER awareness, starting by protecting the rights and interests of all stakeholders, establishing a more complete management system and sustainable business model, and making employees and the public perceive the sense of CER and value belonging to the company and, at the same time, continuously enhance the quality of the companies' internal control to realize a better CFP.

Regarding Hypothesis 2, our findings were inconsistent with those of [13]. They concluded that the effect of CER on CFP was not significant. Their study introduced environmental regulation and internal control as moderating variables in the cross-influence of CFP and CER. It is argued that internal control is instead significant in the effect of CER on CFP. We carefully analyzed the situation when conducting the study. Therefore, the heterogeneity test was introduced. It is found that differences such as company property rights lead to differences in business objectives and internal management style, and the test concludes that the positive contribution of CER to CFP is significant in resource-based state-owned companies, while it is not significant in non-state-owned companies. Therefore, non-state-owned companies should strengthen internal control to take CER to a greater extent to improve CFP and promote the long-term development of companies.

## 7. Conclusions

This study found that the internal control of RBCs has a positive moderating effect on the correlation between CER and CFP, i.e., the higher the level of internal control, the higher the positive impact of CER on CFP. In terms of company nature, the positive contribution of CER to CFP is significant in resource-based state-owned companies but not in non-state-owned companies. It is possible that this lies in its own wide range of industries, low degree of restriction, etc.

Therefore, non-state-owned companies should strengthen internal control to make CER enhance CFP to a greater extent and promote the long-term development of the companies. Moreover, it will weaken non-state-owned companies. There is relatively little current research on the relationship between the three dimensions. There are even fewer mechanisms and empirical studies that take internal control as a regulating variable. This paper combines the data on internal control as a reference to carry out research and to improve the accuracy of the analytical conclusions, which can greatly enrich the theoretical research results in this area. In addition, the factors we considered in this study are not comprehensive enough. The factors behind how a firm's CER is affected have not been studied in depth. In terms of long-term changes, a company's external environment is likely to affect CER undertaken by the company. In our future research, we will adopt a dynamic tracking approach to continue focusing on this issue and adopt more advanced research methods to address it.

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