

The Impact of the Degree of RMOR on Corporate ESG Performance

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Abstract. Mixed-ownership reform is one of the core measures of China's economic system reform, aiming to optimize corporate governance structures and stimulate market vitality through the integration of diverse capital. In recent years, the emerging "reverse mixed-ownership reform (RMOR)" has gradually become an innovative path for deepening reform, especially in promoting corporate sustainable development and green transformation. Based on panel data of A-share listed companies in China from 2009 to 2023, this study constructs a mediation effect model to empirically examine the impact of the degree of RMOR on corporate ESG performance and its mechanism of action. The findings indicate that the degree of RMOR significantly enhances corporate ESG performance. In terms of resource effects, RMOR significantly amplifies the efficiency of corporate ESG investment by reducing major shareholders' fund occupation, alleviating financing constraints, and enhancing the ability to obtain government subsidies. Regarding management effects, RMOR effectively promotes corporate ESG performance by increasing the average employee salary, raising the proportion of independent directors, and optimizing the quality of internal control. Moreover, heterogeneity analysis shows that the improvement effect of RMOR on ESG performance is more significant for enterprises in the eastern and western regions. From an industry perspective, the promoting effect of RMOR is significant in manufacturing, real estate, and transportation industries, while it is delayed in the construction industry with strong resource rigidity. This study provides strong empirical evidence for how state-owned capital can promote the sustainable development of private enterprises and offers data support and reference for relevant policy-making.

Keywords: Degree of RMOR; ESG performance; Resource effect; Management effect.

1. Introduction

The concept of environment, social, and governance (ESG) represents a reexamination of the nature of business and corporate value and is a highly comprehensive and concrete interpretation of sustainable development. It has also become an inescapable "important issue" for enterprises on the path to high-quality development (Zhai & Li, 2024). Good ESG performance holds significant value for enterprises, investors, and society as a whole.

For enterprises, ESG practices can not only shape a positive corporate brand image and enhance market competitiveness but also improve decision-making efficiency and management levels through optimized governance structures. This enables them to seize more business opportunities and market shares in the current wave of green economy. For investors, ESG performance of enterprises is an important indicator for assessing long-term value and risk. Through ESG information disclosure, investors can more accurately identify potential risks, thereby adjusting their investment portfolios in advance to avoid losses. For society as a whole, the ESG concept advocates that enterprises should actively fulfill their social responsibilities and undertake the obligation of environmental protection while pursuing economic benefits. This will help achieve the global goals of sustainable development and provide a micro-foundation for building a green governance system that promotes harmonious coexistence between humans and nature.

In recent years, "RMOR" has deepened as an innovative breakthrough in China's economic system reform. Unlike the one-way integration of traditional mixed-ownership reform, RMOR can strategically inject state-owned capital into private enterprises, innovatively creating a new model of

“mutual progress between state and private sectors” through two-way integration. This reform model has significant uniqueness at the institutional level, mainly in the following three aspects:

First, in terms of capital flow direction, RMOR breaks the traditional path. With the market-oriented operation of state-owned capital as the link, it accurately imports institutional advantages such as policy resources and credit endorsement into the governance system of private enterprises.

Second, in terms of functional positioning, RMOR forms a complementary mechanism. It can help private enterprises break through development bottlenecks such as financing constraints and technological barriers while assisting state-owned capital in optimizing the layout of strategic emerging industries.

Third, in terms of governance structure, RMOR achieves innovative balance. Through a series of institutional designs such as the dispatch of directors by state-owned shareholders and ESG-specific supervision, it effectively promotes private enterprises to build modern governance frameworks.

At the critical stage of current economic transformation and upgrading, the strategic significance of RMOR is further highlighted. From a macroscopic perspective, RMOR effectively resolves the binary dilemma of "state advance, private retreat" or "state retreat, private advance" in the traditional system through the deep integration and collaboration of state-owned and private capital. It provides a practical path for the coordinated development of various ownership systems under the new development pattern. From a micro-mechanistic standpoint, this model, driven by dual forces of resource empowerment and governance restructuring, not only helps private enterprises obtain key resources such as green credit and technical standards but also enhances the scientific and professional nature of board decision-making through professional transformation of the board of directors and upgrading of the internal control system. This has led to the transformation of ESG performance from a compliance requirement to a core competitive advantage. This two-way empowerment institutional innovation is reshaping the sustainable development ecosystem of Chinese enterprises.

As the degree of RMOR deepens, scholars have conducted in-depth research on its impacts from multiple dimensions, focusing primarily on the following aspects:

Regarding the impact of RMOR on corporate sustainable development and social responsibility, scholars have initiated discussions on the relevant effects of RMOR on the sustainable development capabilities and social responsibility fulfillment of private enterprises from a corporate perspective. Dai et al. (2025) pointed out that the implementation of RMOR leads enterprises to pay more attention to the concept of sustainable development in social practice. Meanwhile, enterprises take a series of positive measures to fulfill their social responsibilities, thereby enhancing their performance in the field of social responsibility. Li et al. (2022) found that the entry of state-owned capital into private enterprises significantly enhances their strategic risk-taking ability, which further strengthens their creativity and sustainable development capabilities. Ren et al. (2023) emphasized that enterprises can obtain reputational endorsement after RMOR, which effectively alleviates the operational pressure of private enterprises and improves their market recognition.

Regarding the mechanism by which external environment affects corporate ESG performance, Zhou et al. (2024) found that although ESG initiatives may bring new development opportunities for firms, their high capital intensity and risk, especially in the context of rising climate risks, may reduce corporate ESG performance. Luo et al. (2025) pointed out at the firm level that environmental uncertainty not only affects corporate information transparency but also may weaken their green innovation capabilities and impact the stability of the top management team, thereby exerting a negative influence on ESG performance. Tan and Cao (2024) discovered that government subsidies have a significant positive incentive effect on corporate ESG performance, particularly in the area of corporate environmental responsibility fulfillment, where the incentive effect of government subsidies is more pronounced, strongly promoting superior corporate performance in the environmental responsibility domain.

Regarding the differentiated effects of RMOR under different contexts, scholars have explored its varied impacts from multiple perspectives, including regional and industry aspects. Cao et al. (2024)

found that in regions with a high degree of marketization, developed regional economies, and favorable external governance environments, RMOR has a stronger inhibitory effect on investment inefficiency. This significantly enhances firms' willingness and ability to invest, making their investment decision-making processes more scientific and efficient. Yin and Liu (2024), analyzing from an industry perspective, discovered that RMOR has a more pronounced promoting effect on the sustainable development of private enterprises in traditional industries. In contrast, in non-traditional industries such as information technology and modern services, where the advantages of resource integration are not significant, the promoting effect is relatively weaker. However, Liao and Li (2024) pointed out that RMOR has a more significant promoting effect on green transformation in high-tech industries.

Regarding the optimization effects from the perspectives of resources and management, scholars have focused on the improvement of financing capabilities, governance structures, and management efficiency of private enterprises through RMOR. Chen and He (2024) found that state ownership, by exerting "information effects" and "financial effects," can provide private enterprises with a continuous and stable cash flow, which ensures financial support for their green transformation. Ye and Wu (2024), taking "Fresh Environment" as a case study, conducted an in-depth analysis of how state shareholders provide resource support for enterprises through equity and debt financing under RMOR. Dong et al. (2021) pointed out that RMOR can improve the relationship between private enterprises and the government, enhance governance levels, and promote the fulfillment of social responsibilities, thereby alleviating the financing constraints of private enterprises. Yan et al. (2024) demonstrated that by restructuring the board of directors and introducing management personnel, RMOR can effectively increase the centrality of private enterprises' director networks. This, in turn, makes it more likely for enterprises to obtain cooperation opportunities and gain insights into industry insider information, leading to more scientific and rational management decisions and a stronger ability to undertake strategic risks. Cui (2023) further indicated that RMOR can significantly address the issue of high equity concentration in private enterprises. Specifically, by optimizing the equity structure, it improves the corporate governance environment, enhances decision-making levels, and boosts governance efficiency, bringing benefits to the subsequent operations and financing of enterprises.

A review of the existing literature reveals that the majority of studies on RMOR have focused on its impacts on corporate sustainable development and financing channels. However, research that links the degree of RMOR to corporate ESG performance is relatively scarce. Moreover, the existing literature primarily centers on analyses of individual private firms, lacking comprehensiveness. Although most studies mention that RMOR can promote the sustainable development of private enterprises and enhance their capital liquidity and management levels, a systematic analysis of the profound impact of the degree of RMOR on corporate ESG performance is absent. Building on these observations, this paper examines the mechanisms through which the degree of RMOR affects corporate ESG performance. The findings indicate that RMOR primarily influences corporate ESG performance through the following two core mechanisms: (1) In terms of the resource effect, RMOR can broaden the financing channels of private enterprises, bringing more liquid funds. As a result, firms can leverage this advantage to allocate more resources to ESG-related projects, thereby facilitating their green transformation and better fulfillment of social responsibilities. (2) Regarding the management effect, the involvement of state-owned capital can effectively supervise private enterprises to optimize their governance structures and enhance the quality of internal control, thereby improving corporate governance levels and management efficiency.

The academic contributions of this paper are primarily reflected in the following three aspects:

First, from a theoretical perspective, existing studies have mainly focused on the impacts of RMOR on corporate sustainable development and financing channels. This paper, for the first time, examines RMOR from the perspective of ESG performance, systematically analyzing its mechanisms of action. This provides a novel research perspective for evaluating the effects of RMOR and helps the academic

community gain a more comprehensive understanding of its role, further enriching the empirical evidence on how RMOR supports corporate development.

Second, in terms of research methodology, this paper considers the heterogeneous impacts of RMOR on corporate ESG performance across different regions and industries. This approach helps us gain a deeper understanding of the differentiated effects of RMOR.

Third, regarding practical significance, the conclusions of this study hold important real-world implications. On the one hand, they provide a solid theoretical foundation for firms to obtain more industry resources and development opportunities in fierce market competition. On the other hand, they offer practical guidance for firms to establish more standardized governance mechanisms and enhance their management and operational efficiency.

2. Theoretical Analysis and Research Hypotheses

2.1. The Degree of RMOR and Corporate ESG Performance

RMOR is a particular form of mixed-ownership reform, specifically manifested in private enterprises introducing state-owned capital elements and taking measures such as adjusting equity structures to transform the ownership form from a single private ownership to a blend of public and private ownership. Nowadays, as the degree of RMOR deepens, private enterprises have successively leveraged the resource and institutional advantages brought by state-owned capital to break through their previous development bottlenecks and effectively enhance their performance in environmental (E), social (S), and governance (G) aspects.

In terms of resources, the integration of state-owned capital with private enterprises endows the latter with certain unique advantages of state-owned enterprises. For instance, enterprises can more conveniently obtain natural resources and financing resources, thereby enhancing their risk-taking capabilities and commercial credit levels (Qian & Wu, 2021). The environmental benefits derived from natural resources can help enterprises reduce environmental risks and meet the national “dual carbon” strategy requirements, thereby improving their ESG ratings. Regarding financing resources, the implementation of RMOR enables enterprises to more easily secure financial support while effectively reducing financing costs. This further optimizes the financing structure and alleviates financing constraints, thus achieving high-quality development. Moreover, the involvement of state-owned capital strengthens the connection between enterprises and the government, making private enterprises more likely to become key government-supported projects and thereby obtain relevant policy support. This policy advantage also provides enterprises with more sustainable resources for ESG practices, stimulating their vitality and innovation capabilities (Zhang et al., 2025).

In terms of management, the involvement of state-owned capital can help firms optimize their governance structures. Specifically, following RMOR, firms can improve the transparency of corporate governance through a series of internal governance mechanisms such as supervision, checks and balances, and feedback. By publicly disclosing important information related to operations and management, firms can effectively curb downward earnings management in private enterprises (Sun & Liu, 2021). In addition to this, state-owned shareholders can promote the integration of environmental, social, and governance objectives into strategic decision-making by appointing independent directors and establishing ESG-specific committees, thereby strengthening the firm’s supervisory mechanisms. On the other hand, private enterprises often have a situation where equity is highly concentrated in a single shareholder. Therefore, after the entry of state-owned capital, this phenomenon can be further weakened, achieving equity balance and board diversification, and effectively preventing the firm’s management from engaging in actions detrimental to the company for their own benefit. By optimizing governance mechanisms, not only is the scientific nature of managerial decision-making effectively enhanced, but also the stability and sustainability of the firm are increased, helping the firm attract more long-term capital and thereby improving its ESG performance. Based on the above analysis, this paper proposes the following hypothesis:

Hypothesis 1: The degree of RMOR can significantly enhance corporate ESG performance.

2.2. The Degree of RMOR Affects Corporate ESG Performance through Resource Allocation

The resource advantages brought by RMOR can significantly enhance the resource allocation efficiency of private enterprises, thereby improving their ESG performance. During the operation of private enterprises, the problem of information asymmetry often arises, which is specifically manifested in the low degree of information disclosure and the severe lack of non-financial information. Moreover, the credibility and professional level of existing credit rating agencies cannot meet market demands. As a result, different rating agencies may produce discrepancies when assessing the ESG performance of the same enterprise. This makes it difficult for financial markets to predict and judge the future development of enterprises, thus causing concerns about their development prospects and affecting investors' risk-return trade-offs (Avramov et al., 2022). Meanwhile, for capital suppliers, it is often difficult to accurately assess the future operating conditions of enterprises, leading to financing constraints and increased financing costs for enterprises (Yu et al., 2012).

RMOR significantly alleviates the financing predicament of private enterprises through optimizing resource allocation. Specifically, following RMOR, enterprises benefit from the credibility endorsement and support of state-owned shareholders, which substantially enhances the information transparency of private enterprises. This, in turn, reduces the risk concerns of financial institutions regarding the enterprises and generates positive market expectations for their development prospects, effectively helping private enterprises gain access to more resources and opportunities (Zhang et al., 2022). This improvement not only eases the financing constraints of private enterprises but also broadens their green financing channels, thereby providing stable financial safeguard for the long-term investment in corporate ESG projects.

In addition, China's resource allocation system has not yet been fully market-oriented, as the government still controls a large amount of scarce resources and administrative approval power (Yao & Xu, 2025). After the introduction of state-owned capital through RMOR, private enterprises' connections with the government are strengthened, making it easier for them to obtain tax preferences (Wu et al., 2009) and government subsidies and other policy supports. In the capital market, enterprises with government support have more opportunities to obtain listing qualifications and equity refinancing qualifications (Yu et al., 2012). Therefore, RMOR enhances corporate competitiveness in terms of financing convenience, accessibility to social resources, and resource utilization efficiency by optimizing resource allocation, thereby significantly improving corporate ESG performance.

Based on the above analysis, this paper proposes the following hypothesis:

Hypothesis 2: The degree of RMOR significantly improves corporate ESG performance by optimizing resource allocation.

2.3. The Degree of RMOR Affects Corporate ESG Performance through Management Supervision

RMOR can effectively enhance corporate ESG performance from three dimensions: pay equity, board independence, and internal control compliance. Specifically, the implementation of RMOR can promote improvements in corporate ESG performance in the following ways:

In terms of pay equity, RMOR leads to more fair and reasonable pay distribution, which can effectively guide enterprises to actively fulfill their social responsibilities. The entry of state-owned capital prompts enterprises to pay more attention to internal pay distribution issues and encourages them to establish more rational pay systems compared to the past. This optimization not only increases the average pay level of employees but also boosts corporate investment in employee benefits, such as launching vocational training and providing health care. These measures significantly enhance employee job satisfaction and directly improve the ESG scores of enterprises in the social responsibility dimension (Wen et al., 2022).

Regarding board independence, RMOR enhances corporate ESG performance by strengthening supervision and promoting the scientific nature of decision-making. First, the involvement of state-

owned capital increases the proportion of independent directors on the board to a certain extent, ensuring board independence and effectively fulfilling its supervisory functions. This mitigates the agency problems between shareholders and management, thereby safeguarding shareholder interests and preventing short-term actions by management or controlling shareholders from harming the firm's long-term value (Adams et al., 2010). This supervisory mechanism effectively improves corporate ESG performance. Second, independent directors can enhance the scientific nature of corporate decision-making through external oversight and strategic advice, thereby effectively supervising the authenticity and compliance of corporate financial and ESG information disclosure and reducing the investment risks of state-owned capital (Doyle et al., 2007). Finally, the participation of independent directors can also improve the decision-making level of corporate management in ESG information disclosure, further enhancing corporate ESG performance.

Regarding internal control compliance, RMOR enhances corporate compliance, thereby ensuring the standardization and transparency of ESG investments. Robust internal control quality enables corporate management to make scientific financial decisions and implement mechanisms under effective rules and procedures. The optimization of internal control mechanisms can effectively curb managerial moral hazard and adverse selection behaviors, while significantly reducing inefficient investments and keeping corporate financial leverage within a reasonable range (Zhang & Tong, 2023). By improving internal control compliance, firms can better achieve ESG goals at the governance level and further enhance their ESG performance.

Based on the above analysis, this paper proposes the following hypothesis:

Hypothesis 3: The degree of RMOR significantly improves corporate ESG performance through managerial supervision.

3. Sample Selection and Research Design

3.1. Sample Selection and Data Sources

This study selects A-share listed companies in China from 2009 to 2023 as the initial research sample and conducts the following screening procedures: (1) excluding samples from the financial and insurance industries; (2) excluding firms labeled as ST or PT; (3) excluding samples with missing values for the main variables and applying a 1% and 99% winsorization to continuous variables. The final sample consists of 26,209 valid observations. The data used in this study are primarily sourced from the CSMAR and Wind databases, while ESG rating data are obtained from the ESG ChinaBond Index.

3.2. Variable Design and Model Construction

For the dependent variable, this study employs the annual composite score of the Huazheng ESG rating to measure corporate ESG performance, converting the rating results into numerical scores: AAA = 9, AA = 8, A = 7, BBB = 6, BB = 5, B = 4, CCC = 3, CC = 2, C = 1. A higher score indicates better corporate ESG performance. The Huazheng rating system encompasses over 200 detailed indicators across the three dimensions of ESG, featuring comprehensiveness and timeliness, and is capable of objectively reflecting a firm's sustainable development capabilities (Zhang et al., 2022).

For the independent variable, following the studies of Yu (2021) and Zeng et al. (2022), this paper measures the degree of RMOR in private enterprises using the ratio of the sum of state-owned shareholders' equity to the sum of the top ten shareholders' equity among the top ten shareholders (Soeov). This approach eliminates the impact of firm size differences and ensures the horizontal comparability of the RMOR degree across different firms. Additionally, considering other factors, the control variables are set as follows: firm size (Size), total asset turnover (ATO), return on equity (ROE), cash flow ratio (Cashflow), revenue growth rate (Growth), Tobin's Q value (TobinQ), number of directors (Board), and management shareholding ratio (Mshare). All control variables are lagged by one period.

Based on the above variable design, the following empirical model is constructed in this study:

$$ESG_{i,t} = \alpha_0 + \alpha_1 Soeov_{i,t} + \sum \alpha_2 Controls + \varepsilon_{i,t} \quad (1)$$

In the mechanism model, this study selects the following variables as mediators to conduct mediation effect analysis: the proportion of funds occupied by major shareholders, financing constraints, government subsidies, average employee compensation, the proportion of independent directors, and internal control quality. The Sobel Z-test is employed to examine the mediation effects, which is based on the principle of stepwise regression. The models are specified as follows:

$$ESG_{i,t} = \alpha_0 + \alpha_1 Soeov_{i,t} + \sum \alpha_2 Controls + \varepsilon_{i,t} \quad (2)$$

$$Occupy_{i,t} = \beta_0 + \beta_1 Soeov_{i,t} + \sum \beta_2 Controls + \varepsilon_{i,t} \quad (3)$$

$$FC_{i,t} = \beta_0 + \beta_1 Soeov_{i,t} + \sum \beta_2 Controls + \varepsilon_{i,t} \quad (4)$$

$$GovSub_{i,t} = \beta_0 + \beta_1 Soeov_{i,t} + \sum \beta_2 Controls + \varepsilon_{i,t} \quad (5)$$

$$AEC_{i,t} = \beta_0 + \beta_1 Soeov_{i,t} + \sum \beta_2 Controls + \varepsilon_{i,t} \quad (6)$$

$$Indep_{i,t} = \beta_0 + \beta_1 Soeov_{i,t} + \sum \beta_2 Controls + \varepsilon_{i,t} \quad (7)$$

$$ICQ_{i,t} = \beta_0 + \beta_1 Soeov_{i,t} + \sum \beta_2 Controls + \varepsilon_{i,t} \quad (8)$$

In the equations, Equation (2) is consistent with the benchmark regression model in Equation (1). Equation (3) specifies the mediator variable as the proportion of funds occupied by major shareholders (Occupy). Equation (4) specifies the mediator variable as financing constraints (FC). Equation (5) specifies the mediator variable as government subsidies (GovSub). Equation (6) specifies the mediator variable as average employee compensation (AEC). Equation (7) specifies the mediator variable as the proportion of independent directors (Indep). Equation (8) specifies the mediator variable as internal control quality (ICQ).

4. Empirical Tests and Results Analysis

4.1. Descriptive Statistics Results

As shown in Table 1, the descriptive statistics indicate that a total of 37,038 observations were collected in this study. The mean ESG performance score of the sample firms is 73.34, with a standard deviation of 4.859. The substantial difference between the minimum value (36.62) and the maximum value (92.93) suggests that while the overall ESG performance of the sample firms is at a certain level, there are significant variations among individual firms. This reflects the considerable disparity in the comprehensive practices of different firms in the areas of environment, social responsibility, and governance.

Among the mediator variables, the standard deviation of the proportion of funds occupied by major shareholders is 0.0210, with a minimum value of 0 and a maximum value of 0.202. This indicates that while some firms have a low proportion of funds occupied by major shareholders, a few firms have a relatively high ratio. The mean of financing constraints is 0.492, with a minimum value of 0 and a maximum value of 0.997, suggesting that the degree of financing constraints faced by firms is unevenly distributed across the sample, with significant differences in financing constraints among firms. The mean of government subsidies is 0.00700, with a minimum value of -0.00400 and a

maximum value of 69.40, indicating a substantial disparity in the amount and level of government subsidies received by firms. The mean of average employee compensation is 135,951, with a standard deviation of 85,211, a minimum value of 11,705, and a maximum value of 586,507. This demonstrates significant differences in employee compensation among firms, reflecting variations in human resource investment and compensation strategies. The standard deviation of the proportion of independent directors is 5.342, with a minimum value of 25 and a maximum value of 60, indicating that while there is a certain concentration trend in the proportion of independent directors, there are still differences among firms, reflecting different arrangements for independent directors in corporate governance structures. The mean of internal control quality is 642.7, with a minimum value of 0 and a maximum value of 900.0, indicating differences in internal control quality among firms, with some firms having high-quality internal controls and others needing improvement.

Table 1. Descriptive Statistical Analysis

Variable	N	Mean	Std. Dev.	Min	Median	Max
ESG	37039	73.340	4.859	36.620	73.470	92.930
Soeov	37039	0.298	0.379	0	0.0360	1
Occupy	37021	0.014	0.021	0	0.007	0.202
FC	32805	0.492	0.278	0	0.517	0.997
GovSub	37039	0.007	0.361	-0.00400	0.00300	69.400
AEC	37039	135951	85211	11705	115732	586507
Indep	37037	37.610	5.342	25	36.360	60.000
ICQ	37039	642.700	121.000	0	663.300	900.000
Size	37039	22.250	1.272	19.410	22.060	26.440
ATO	37038	0.646	0.434	0.055	0.550	2.907
ROE	37012	0.060	0.131	-0.962	0.069	0.420
Cashflow	37039	0.049	0.068	-0.224	0.048	0.283
Growth	37033	0.150	0.372	-0.653	0.096	3.808
TobinQ	37039	2.034	1.293	0.789	1.630	16.650
Board	37037	2.120	0.197	1.609	2.197	2.708
Mshare	36021	13.770	19.410	0	1.027	70.600

4.2. Benchmark Regression

The results in column (1) of table 2 show that the coefficient of Soeov on corporate ESG performance is 0.535 and significant at the 1% confidence level, indicating that the degree of RMOR has a significantly positive impact on corporate ESG performance. Column (2) of table 2 adds four control variables to column (1) of table 2. Column (3) of table 2 further introduces additional control variables, and the results show that the impact of the degree of RMOR on corporate ESG performance remains significantly positive at the 1% confidence level, with a coefficient of 0.588. This finding is consistent with the theoretical expectation that the involvement of state-owned capital, through optimizing governance structures and enhancing resource acquisition capabilities, significantly promotes corporate ESG performance (Li et al., 2020). The benchmark regression results not only explain that the degree of RMOR can effectively enhance corporate ESG performance but also support Hypothesis 1.

4.3. Robustness Analysis

To ensure the reliability of the benchmark regression results, this study conducts robustness tests by replacing the dependent variable, adding control variables, adjusting the sample period, and employing the Difference-in-Differences (DID) method. The results are presented in the table.

Table 2. Benchmark Regression

	(1) ESG	(2) ESG	(3) ESG
Soeov	0.535*** (8.044)	-0.251*** (-3.690)	0.588*** (7.625)
Size		0.744*** (36.350)	0.874*** (37.916)
ATO		-0.300*** (-5.234)	-0.141** (-2.430)
ROE		6.516*** (32.390)	6.772*** (32.252)
Cashflow		1.596*** (4.194)	1.449*** (3.769)
Growth			-0.927*** (-13.534)
TobinQ			-0.014 (-0.681)
Board			-0.775*** (-5.906)
Mshare			0.038*** (25.509)
_cons	73.180*** (2280.774)	56.595*** (126.296)	54.634*** (96.263)
N	37039	37012	35990
r2	0.002	0.077	0.098
F	64.702	613.222	433.434
p	0.000	0.000	0.000

Note: ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses are t-values. The same applies below.

4.3.1. Alternative Dependent Variable

Considering that the ESG composite score may be subject to short-term fluctuations or subjective biases from rating agencies, this study selects the annual average ESG score published by the WIND database as an alternative dependent variable. This approach effectively smooths out random fluctuations and reduces the impact of short-term outliers. As shown in column (1) of table 2, the coefficient of Soeov is 0.116 and remains significantly positive at the 1% confidence level. The signs and significance levels of the control variables are consistent with those in the benchmark model, indicating that the main regression conclusions are robust to changes in the measurement of ESG.

4.3.2. Additional Control Variables

Concentration of managerial power may influence ESG investments through decision-making efficiency. To control for the potential impact of managerial structure on ESG performance, this study introduces an additional control variable, “Dual,” which indicates whether the positions of chairman and CEO are held by the same individual. This helps to mitigate omitted variable bias. As shown in column (2) of table 2, the significance of the core explanatory variable Soeov remains unaffected, and the positive effect of Dual suggests that firms with higher power concentration are more likely to coordinate resources to support ESG practices, further validating the robustness of the model.

4.3.3. Excluding Pandemic Samples

During the pandemic, economic policies and market environments experienced significant fluctuations, and firms faced substantial survival pressures, which may have crowded out long-term ESG investments (Zhang et al., 2022). Excluding these abnormal samples allows us to test the generalizability of the conclusions under normal economic conditions. After excluding samples from 2020 to 2022 in column (3) of table 2, the coefficient of Soeov significantly increases to 0.622 and

remains significantly positive at the 1% confidence level. This indicates that in non-pandemic periods, the degree of RMOR has a more pronounced positive effect on corporate ESG performance. The main conclusion is not affected by sample bias during special periods, as expected.

4.3.4. DID Analysis

To identify the causal effect of the degree of RMOR on corporate ESG performance, this study constructs a DID model based on an exogenous policy shock. The interaction term between the presence of state-owned shareholders among the top ten shareholders and the policy implementation time ($did = treat \times time$) is used as the primary measure of the degree of RMOR. Specifically, firms with state-owned shareholders are assigned to the treatment group and coded as 1, while firms without state-owned shareholders are assigned to the control group and coded as 0. Additionally, the year of policy implementation (2013) and subsequent years are coded as 1, while other periods are coded as 0. The regression results, as shown in column (4) of table 3, indicate that the DID coefficient is 0.296 and significantly positive at the 5% confidence level. This suggests that following the policy implementation, the ESG scores of firms in the treatment group increased significantly by 0.296 units, further validating the robustness of the study's conclusions.

Table 3. Robustness test

	(1) ESG	(2) ESG	(3) ESG	(4) ESG
Soeov	0.116*** (8.658)	0.126*** (9.240)	0.622*** (8.419)	
treat				-0.132 (-1.044)
post				-0.631*** (-5.560)
did				0.296** (2.153)
Size	0.159*** (40.836)	0.160*** (40.946)		0.892*** (33.026)
ATO	-0.027*** (-2.689)	-0.026*** (-2.632)		-0.087 (-1.361)
ROE	1.331*** (38.255)	1.330*** (38.216)		7.455*** (31.014)
Cashflow	0.184*** (2.858)	0.187*** (2.904)		1.693*** (4.109)
Growth	-0.156*** (-13.631)	-0.156*** (-13.640)		-0.988*** (-13.827)
TobinQ	-0.023*** (-6.457)	-0.023 (-6.508)		-0.201*** (-8.487)
Board	-0.134*** (-5.996)	-0.127*** (-5.636)		-0.774*** (-5.338)
Mshare	0.008*** (32.437)	0.008*** (31.848)		0.035*** (22.124)
Dual		0.038*** (3.930)		
_cons	0.748*** (7.778)	0.709*** (7.329)	73.044*** (2005.653)	55.174*** (85.366)
N	42571	42571	31275	30296
r2	0.109	0.110	0.002	0.107
F	580.337	524.025	70.877	330.203
p	0.000	0.000	0.000	0.000

4.4. Heterogeneity Analysis

4.4.1. Regional Heterogeneity

Considering regional characteristics, the sample is divided into three categories of firms located in the eastern region, central region, and western region. According to the regression results in column (1) of table 4, the coefficient of the degree of RMOR in the eastern region is 0.710 and significantly positive at the 5% confidence level. The primary reason is the high degree of marketization in the eastern region. Market mechanisms, by optimizing resource allocation and governance structures, enhance the synergistic effect of RMOR on corporate ESG performance.

In column (3) of table 4, the coefficient of RMOR in the western region is as high as 2.103 and significantly positive at the 1% confidence level, with an effect size far exceeding that of the eastern region. The main reason is that western firms have a weaker foundation. RMOR, by introducing external capital and management experience, significantly compensates for the deficiencies in ESG infrastructure construction. Moreover, the preferential support for mixed-ownership reform in the western region by central policies further amplifies the marginal effect of ESG improvement.

The coefficient of RMOR in the central region is 0.607 and does not pass the significance test. The reason is that the central region is in a “transitional zone” for policy implementation and resource allocation. On the one hand, local governments' policy support for mixed-ownership reform is weaker than that in the eastern region, leading to a lag in the reform process. On the other hand, central region firms face dual pressures of capital constraints and insufficient innovation capabilities, making it difficult for mixed-ownership reform to effectively break through the resource constraints on ESG investment.

4.4.2. Industry Heterogeneity

In terms of industry characteristics, the sample is divided into four sectors: manufacturing, real estate, transportation, and construction.

Manufacturing: In column (4) of table 4, the coefficient of the degree of RMOR on the ESG performance of manufacturing firms is 0.895 and significantly positive at the 1% confidence level. The primary reason is the tight upstream and downstream linkages in the manufacturing sector. State-owned capital often has stronger coordination capabilities within the supply chain, enforcing compliance through supply chain management and creating comprehensive ESG governance across the entire chain.

Real Estate: In column (5) of table 4, the coefficient of RMOR on the ESG performance of real estate firms is 2.463 and significantly positive at the 1% confidence level. The main reason is the sector's high sensitivity to policy changes. After the involvement of state-owned capital, firms are more likely to obtain policy-favored resources, thereby enhancing their ESG performance. Additionally, the capital-intensive nature of the real estate industry means that the credit endorsement from state-owned capital can leverage more social capital to support long-term green projects, creating a synergistic effect between capital and policy. This results in a strong and pronounced effect in the regression results.

Transportation: In column (6) of table 4, the coefficient of RMOR on the ESG performance of transportation firms is 1.376 and significantly positive at the 5% confidence level. The reason is that the transportation sector, as a key part of public utilities, is often directly constrained by government environmental policies. RMOR strengthens government-enterprise cooperation, enabling firms to prioritize subsidies and reduce the costs of green transformation, thereby significantly enhancing the sector's ESG efficiency.

Construction: In column (7) of table 4, the coefficient of RMOR in the construction sector is -0.359 and does not pass the significance test. The reason is the sector's heavy asset and high energy consumption characteristics, which lead to short-term performance pressures that crowd out ESG investments after RMOR. Moreover, the low standardization in the industry means that the governance effectiveness of RMOR is difficult to quickly penetrate to the project execution level, resulting in no significant short-term ESG improvement.

Table 4. Heterogeneity analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	East	Central	West	Manufacturing	Real Estate	Transportation	Construction
Soeov	0.710** (2.187)	0.607 (1.088)	2.103*** (2.795)	0.895*** (6.898)	2.463*** (6.200)	1.376** (2.284)	-0.359 (-0.506)
Size	0.711*** (12.556)	0.690*** (5.716)	1.071*** (7.270)	0.668*** (15.866)	1.480*** (10.332)	1.112*** (6.624)	1.586*** (7.138)
ATO	0.439*** (2.802)	0.988*** (3.016)	1.232*** (3.121)	-0.182* (-1.702)	-1.131 (-1.191)	-0.002 (-0.004)	-1.913** (-2.412)
ROE	3.421*** (11.528)	1.936*** (3.026)	4.469*** (6.301)	7.416*** (19.460)	7.113*** (4.425)	6.969*** (2.776)	12.026*** (4.355)
Cashflow	-1.443*** (-2.664)	-1.314 (-1.117)	-0.369 (-0.261)	4.975*** (7.511)	-1.317 (-0.762)	-1.770 (-0.557)	-3.762 (-1.091)
Growth	-0.734*** (-8.355)	-0.641*** (-3.789)	-1.031*** (-5.314)	-0.988*** (-8.530)	-0.610** (-2.268)	-0.298 (-0.606)	-0.032 (-0.056)
TobinQ	-0.213*** (-6.358)	-0.352*** (-4.760)	-0.167** (-1.990)	-0.279*** (-7.780)	-0.178 (-0.791)	-0.318 (-1.203)	-0.916** (-2.254)
Board	-1.046*** (-3.636)	0.530 (0.910)	-0.702 (-0.954)	-0.300 (-1.336)	-0.959 (-1.213)	-1.134 (-1.092)	-3.222** (-2.416)
Mshare	0.031*** (8.271)	0.054*** (5.482)	0.014 (1.056)	0.035*** (15.056)	0.082*** (3.506)	0.082** (2.433)	0.038** (2.428)
_cons	59.480*** (40.817)	55.587*** (17.891)	48.727*** (12.528)	58.296*** (57.440)	42.552*** (11.748)	46.913*** (11.482)	43.039*** (6.986)
N	18141	4367	2932	13973	643	601	510
r2	0.031	0.032	0.052	0.087	0.302	0.125	0.218
F	51.259	13.558	14.980	147.808	30.429	9.374	15.476
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5. Mechanism Analysis

To uncover the pathways through which the degree of RMOR affects corporate ESG performance, this study draws on the causal inference experience of Jiang (2020) and employs a mediation effect model to analyze the issue from dual perspectives of resource and management effects.

First, regarding the resource effect, as shown in column (1) of table 5, a one-unit increase in the degree of RMOR leads to a 0.2% decrease in the proportion of funds occupied by major shareholders. This is because RMOR, by introducing state-owned capital to optimize equity structure, curbs the behavior of major shareholders in siphoning off corporate funds, thereby reducing fund occupation and releasing corporate cash flow for targeted investment in environmental governance and social responsibility projects, which directly improves ESG performance (Chen et al., 2021). In column (4) of table 5, the impact of RMOR on corporate ESG performance is significantly positive at the 1% confidence level, with a coefficient of 0.671. The main reason is that RMOR, through the “implicit guarantee” effect of state-owned capital, reduces the risk perception of financial institutions, broadens financing channels, and alleviates financing constraints, enabling firms to provide stable financial support for long-term ESG projects. In column (6) of table 5, the impact of RMOR on corporate ESG performance is significantly positive at the 1% confidence level, with a coefficient of 0.676. This is because the involvement of state-owned capital allows firms to steadily obtain policy resources and leverage more financial resources to match government subsidies, thereby expanding the scale of ESG investments (Zhang et al., 2022).

Table 5. Analysis of Resource Effects

	(1) Tunneling rate of major shareholders	(2) ESG	(3) Financing constraints	(4) ESG	(5) Government subsidies	(6) ESG
Soeov	-0.002*** (-4.024)	0.698*** (8.199)	0.005 (0.950)	0.671*** (7.226)	0.013 (1.548)	0.676*** (7.270)
Tunneling rate of major shareholders		-13.933*** (-11.511)				
Financing constraints				0.648*** (5.739)		
Government subsidies						0.021 (0.310)
Size	0.002*** (12.624)	0.849*** (32.677)	-0.007*** (-4.265)	0.902*** (31.124)	-0.005* (-1.864)	0.898*** (30.969)
ATO	0.001*** (4.378)	-0.052 (-0.817)	0.013*** (3.288)	-0.101 (-1.432)	-0.004 (-0.620)	-0.093 (-1.321)
ROE	-0.019*** (-16.396)	7.408*** (31.011)	0.153*** (10.366)	6.994*** (26.191)	0.025 (1.001)	7.093*** (26.598)
Cashflow	-0.039*** (-20.048)	1.026** (2.484)	-0.137*** (-5.313)	2.211*** (4.745)	-0.007 (-0.171)	2.119*** (4.548)
Growth	0.001*** (4.071)	-0.932*** (-13.070)	0.046*** (10.211)	-1.061*** (-12.972)	-0.002 (-0.331)	-1.032*** (-12.629)
TobinQ	0.001*** (12.091)	-0.192*** (-8.188)	0.014*** (9.536)	-0.117*** (-4.321)	-0.001 (-0.499)	-0.108*** (-3.979)
Board	-0.001* (-1.938)	-0.831*** (-5.759)	0.079*** (8.890)	-0.956*** (-5.963)	0.002 (0.135)	-0.902*** (-5.634)
Mshare	-0.000*** (-11.752)	0.037*** (22.948)	0.002*** (23.668)	0.036*** (19.373)	-0.000 (-0.291)	0.037*** (20.427)
_cons	-0.016*** (-5.236)	55.771*** (87.396)	-3.852*** (-97.141)	57.000*** (68.148)	0.114* (1.738)	54.491*** (76.224)
N	30282	30328	25439	25439	25440	25440
r2	0.044	0.111	0.052	0.100	0.000	0.099
F	153.742	379.419	154.804	282.318	0.708	278.729
p	0.000	0.000	0.000	0.000	0.703	0.000

Regarding the management effect, this study examines how RMOR enhances corporate ESG performance through three major mechanisms: increasing average employee compensation, raising the proportion of independent directors, and optimizing internal control quality.

First, in column (2) of table 6, the impact of RMOR on corporate ESG performance is significantly positive at the 1% confidence level, with a coefficient of 0.628. The reason is that the involvement of state-owned capital prompts firms to establish a more equitable pay system, increase average employee compensation, and narrow the pay gap between management and ordinary employees. This enhances employee satisfaction and sense of belonging, making employees more willing to serve the firm in the long term and more actively participate in their work, which helps to improve the firm's ESG performance in the social dimension.

In column (4) table 6, the impact of RMOR on corporate ESG performance is significantly positive at the 1% confidence level, with a coefficient of 0.611. The reason is that RMOR, through the appointment of directors by state-owned capital, significantly increases the proportion of independent directors. This promotes firms to improve ESG information disclosure mechanisms, enhances market trust, and strengthens corporate governance supervision and strategic guidance functions, thereby improving corporate ESG performance.

In column (6) table 6, the impact of RMOR on corporate ESG performance is significantly positive at the 1% confidence level, with a coefficient of 0.617. The main reason is that RMOR, by improving internal control systems and enhancing internal control quality, helps firms identify, assess, and manage risks. It also enables firms to comprehensively consider risks related to management as well as environmental, social, and governance aspects, significantly promoting ESG performance.

Table 6. Analysis of Management Effects

	(1) Average employee compensation	(2) ESG	(3) Proportion of independent directors	(4) ESG	(5) Quality of internal control	(6) ESG
Soeov	1.7e+04*** (11.111)	0.628*** (6.752)	0.844*** (9.733)	0.611*** (6.575)	7.807*** (3.713)	0.617*** (6.737)
Average employee compensation		0.000*** (7.366)				
Proportion of independent directors				0.077*** (11.551)		
Quality of internal control						0.008*** (27.617)
Size	2.3e+04*** (48.465)	0.833*** (27.519)	0.642*** (23.736)	0.848*** (29.010)	5.499*** (8.380)	0.857*** (29.936)
ATO	-1.3e+04*** (-11.527)	-0.055 (-0.789)	-0.215*** (-3.287)	-0.076 (-1.088)	20.050*** (12.624)	-0.244*** (-3.517)
ROE	-3.1e+04*** (-7.033)	7.180*** (26.928)	-0.360 (-1.448)	7.122*** (26.774)	389.195*** (64.510)	4.158*** (14.670)
Cashflow	1.8e+04** (2.379)	2.068*** (4.442)	0.557 (1.281)	2.076*** (4.466)	-17.287 (-1.640)	2.250*** (4.899)
Growth	-1.6e+03 (-1.196)	-1.027*** (-12.588)	-0.116 (-1.519)	-1.023*** (-12.552)	16.586*** (8.974)	-1.157*** (-14.349)
TobinQ	6096.241*** (13.800)	-0.125*** (-4.605)	0.142*** (5.631)	-0.119*** (-4.396)	-3.648*** (-5.946)	-0.080*** (-3.008)
Board	-4.3e+04*** (-16.329)	-0.782*** (-4.860)	-15.531*** (-103.952)	0.300 (1.576)	9.002** (2.485)	-0.970*** (-6.148)
Mshare _cons	261.934*** -3.0e+05*** (-26.139)	0.037*** 55.355*** (76.500)	0.010*** 55.758*** (83.599)	0.037*** 50.176*** (62.330)	0.281*** 468.532*** (28.972)	0.035*** 50.959*** (71.184)
N	25440	25440	25440	25440	25440	25440
r2	0.108	0.101	0.308	0.103	0.204	0.125
F	341.570	284.739	1256.553	293.524	726.326	363.346
p	0.000	0.000	0.000	0.000	0.000	0.000

6. Conclusions and Suggestions

6.1. Conclusions

First, RMOR significantly enhances corporate ESG performance. By optimizing resource allocation and governance structures, RMOR substantially improves corporate ESG performance. In terms of heterogeneity, RMOR has a more pronounced effect on improving the ESG performance of firms in the eastern and western regions. From an industry perspective, the positive impact of RMOR is significant in manufacturing, real estate, and transportation, while it is delayed in the construction industry, which has strong resource rigidity.

Second, regarding the resource effect, RMOR significantly amplifies the efficiency of ESG investments by reducing the proportion of funds occupied by major shareholders, alleviating financing constraints, and enhancing the ability to obtain government subsidies. This provides a stable financial guarantee for firms' long-term ESG practices.

Third, concerning the management effect, RMOR significantly improves corporate governance structures by increasing average employee compensation, raising the proportion of independent directors, and optimizing internal control quality. This leads to more scientific strategic decision-making, thereby enhancing corporate ESG performance.

6.2. Policy Suggestions

Based on the above conclusions, this study proposes the following policy recommendations to help firms better achieve sustainable development:

First, establish differentiated mixed-ownership reform mechanisms. Private enterprises should develop distinct RMOR strategies based on their own characteristics and the industries they are in. For example, in emerging industries, private firms can leverage the resource advantages and policy support of state-owned capital to drive industrial innovation and development. In traditional manufacturing, guiding cooperation between state-owned and private capital can promote industrial upgrading and transformation, optimize resource allocation, and jointly advance corporate environmental protection, social responsibility, and good governance.

Second, fully utilize the resources and policy advantages brought by state-owned capital. Private enterprises should seize the policy opportunities of mixed-ownership reform, using the capital, technology, and talent resources introduced by state-owned capital to further alleviate financing constraints and reduce investment costs and risks. With the support and protection of state-owned capital, they can also take advantage of tax preferences and other related policies to enhance the efficiency of fund utilization, thereby providing security and long-term support for sustainable development.

Third, strengthen management supervision and incentive mechanisms. Private enterprises can reinforce management supervision and increase the transparency of corporate decision-making by narrowing the pay gap between management and employees, optimizing governance structures, and improving internal control quality. At the same time, it is essential to ensure that financing funds are directed to ESG-related areas to effectively improve corporate ESG performance.

Fourth, balance the interests of state-owned capital and private shareholders. In the process of implementing RMOR, agreements can be drafted to specify the upper limit of state-owned capital's equity holdings and to retain private shareholders' decision-making dominance in day-to-day operations. This can ensure that policy resources effectively contribute to corporate development, unleash the innovative potential and vitality of private capital, and systematically enhance corporate ESG performance through governance checks and strategic coordination.

References

- [1] Avramov, D., Cheng, S., Lioui, A., et al. (2022). Sustainable investing with ESG rating uncertainty. *Journal of Financial Economics*, 145(2), 642-664. <https://doi.org/10.1016/j.jfineco.2022.03.005>
- [2] Cao, M., Gan, Z., & Cheng, J. (2024). The impact of RMOR on inefficient investment in private enterprises: Based on corporate governance perspective. *Journal of Jilin Business and Technology College*, 40(5), 58-66. [In Chinese]
- [3] Chen, C., & He, X. (2024). RMOR and "greenwashing" behavior of private enterprises. *Technology Economics*, 43(10), 69-82. [In Chinese]
- [4] Cui, Y. (2023). Research on coordination problems of "RMOR" in manufacturing private enterprises. *Communication of Finance and Accounting*, 18, 105-109. [In Chinese]
- [5] Chen, L., Huang, J., & Chen, X. (2021). Does mixed-ownership reform increase internal pay gap in state-owned enterprises? *Nankai Business Review*, 24(5), 150-162. [In Chinese]

- [6] Chen, D., Hu, X., & Liang, S. (2021). Does mixed-ownership reform of state-owned enterprises inhibit tunneling by major shareholders? *Economic Research Journal*, 56(3), 123-140. [In Chinese]
- [7] Dai, F., Chen, C., & He, X. (2025). RMOR, internal control quality and ESG performance of private enterprises: Based on the analysis of private listed companies in Shanghai and Shenzhen A-shares from 2013 to 2022. *Journal of Kunming University of Science and Technology (Natural Science Edition)*. Advance online publication. [In Chinese]
- [8] Dong, X., Sun, W., & Li, Z. (2021). Can introducing state-owned capital alleviate financing constraints of private enterprises? *Journal of Management*, 34(4), 92-108. [In Chinese]
- [9] Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics*, 101(3), 621-640. <https://doi.org/10.1016/j.jfineco.2011.03.021>
- [10] Li, X., Guo, F., Zhou, D., et al. (2022). State-owned capital participation and strategic risk-taking of private enterprises: Based on perspectives of executive incentives and opportunistic behavior. *Securities Market Herald*, 10, 14-25. [In Chinese]
- [11] Luo, F., Deng, D., & Tang, J. (2025). The impact and mechanism of environmental uncertainty on corporate ESG performance. *Modernization of Management*, 45(1), 171-181. [In Chinese]
- [12] Liao, H., & Li, X. (2024). "RMOR" and green transformation of private enterprises. *Study & Exploration*, 8, 143-153. [In Chinese]
- [13] Ren, G., Zhao, M., & Li, J. (2023). How does RMOR affect the resilience of private enterprises? From the perspective of director networks. *Finance & Economics*, 5, 92-110. [In Chinese]
- [14] Sun, L., & Liu, C. (2021). Why do private enterprises introduce state-owned shareholders? Evidence from downward earnings adjustments. *Journal of Finance and Economics*, 47(8), 109-122. [In Chinese]
- [15] Tan, B., & Cao, W. (2024). The impact of government subsidies on corporate ESG performance and the dual mediating effects. *Technology and Innovation Management*, 45(5), 532-544. [In Chinese]
- [16] Yin, H., & Liu, J. (2024). Can "RMOR" promote sustainable development of private enterprises? *Business Accounting*, 20, 62-67. [In Chinese]
- [17] Yan, M., Ma, Y., & Luo, M. (2024). The internal logic, implementation path and guarantee strategies of RMOR promoting private enterprises' participation in common prosperity. *Communication of Finance and Accounting*, 14, 16-22. [In Chinese]
- [18] Ye, L., & Wu, C. (2024). Research on the impact mechanism of RMOR on environmental enterprises' performance: Case study of Beijing Shenwu Environment & Energy Technology. *Communication of Finance and Accounting*, 8, 95-102. [In Chinese]
- [19] Yao, S., & Xu, Y. (2025). "RMOR" of private enterprises and financing constraint alleviation: Research on influence path and effect. *Journal of China University of Mining & Technology (Social Sciences)*. Advance online publication. [In Chinese]
- [20] Zhai, Y., & Li, A. (2024). Corporate ESG practice in the context of high-quality development: Motivation mechanism and practice path. *Development Research*, 6, 131-139. [In Chinese]
- [21] Zhou, Y., Jia, X., & Jia, Y. (2024). Research on the impact of climate risk on corporate ESG performance. *Financial Theory & Practice*, 12, 72-86. [In Chinese]
- [22] Zhang, Q., Chen, Y., & Wang, Y. (2025). The driving effect of "RMOR" on ESG of private enterprises. *On Economic Problems*, 2, 87-98. [In Chinese]
- [23] Zhang, L., Xu, Y., & Xu, P. (2025). Research on the impact of board independence on the quality of corporate ESG information disclosure. *Friends of Accounting*, 1, 80-86. [In Chinese]
- [24] Zhang, H., & Tong, X. (2023). Can digital finance reduce corporate debt default risk? Based on the moderating effects of corporate governance level and analyst attention. *Financial Theory & Practice*, 8, 65-74. [In Chinese]
- [25] Zhang, J., Chen, J., & Chai, T. (2023). The impact of "RMOR" on technological innovation in environmental protection private enterprises: Case study of CET Environmental Technology. *Communication of Finance and Accounting*, 12, 122-127. [In Chinese]
- [26] Zhang, X., Wang, X., & Wang, B. (2022). ESG performance and corporate financing constraints: Moderating effect based on green finance policy. *Management World*, 38(6), 89-104. [In Chinese]