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Article

Public Fund Holdings Improve Corporate ESG Performance – Taking the Chinese A-Share Market as an Example

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Abstract

ESG performance is an important lever for promoting sustainable development of enterprises. To investigate the impact of fund holdings on corporate ESG performance, this paper uses the dynamic panel data GMM method to conduct empirical analysis based on China's A-share listing data from 2009 to 2024. The results indicate that public fund holdings can improve corporate ESG performance. The analysis of the impact mechanism shows that the improvement effect of public fund holdings on corporate ESG performance is mainly achieved through four channels: increasing information transparency, reducing earnings management, increasing corporate innovation investment, and reducing corporate debt financing costs. Heterogeneity analysis shows that the improvement effect of public fund holdings on corporate ESG performance is more significant in high-tech enterprises, heavily polluting industry enterprises, and enterprises with high analyst attention. Further analysis reveals that different types of institutional holdings have a positive impact on corporate ESG performance. Public fund holdings not only promote corporate ESG performance, but also enhance corporate efficiency and reduce operational risks. The research conclusion provides empirical evidence from fund investors on the impact of public fund holdings on corporate sustainable development.

Keywords: corporate ESG performance; public fund investors hold shares; the 'Dual Carbon' sustainable development goal

1. Introduction

The continuous escalation of global climate risks is profoundly reshaping the economic development paradigm. Under the dual pressure of frequent extreme weather events and tightening carbon constraints, green transformation has become an international consensus. As an important promoter of global ecological civilization construction, China innovatively proposed the "carbon peak and carbon neutrality" strategic framework in 2020, which systematically guides the low-carbon transformation of the economy and society. In this process, the Environmental, Social, and Governance (ESG) system, with its quantifiable, traceable, and embeddable characteristics, has gradually evolved into a core implementation path that connects macro strategies with micro practices. In the initial stage of comprehensive implementation of ESG in enterprises, it will lead to an increase in operating costs and a generally lagging investment payback period. This stage conflict with short-term financial indicators will weaken the willingness of enterprises to implement ESG. However, existing research has found that excellent ESG performance of companies can also bring positive returns to investors, so ESG performance of companies is gradually being incorporated into investment frameworks by investors.

According to market data, as of the end of the third quarter of 2024, there were over 5200 asset management institutions worldwide that have signed the Responsible Investment Principles (PRI), with Chinese funded institutions accounting for 2.46%. According to the GSIA Sustainable

Investment Panorama Report (2022 Edition), the global ESG asset management scale has exceeded the \$30 trillion mark, and non US markets have entered an accelerated growth channel since the pandemic, with a compound annual growth rate of 20% for ESG assets between 2020 and 2022. This trend confirms the systematic reallocation of ESG assets by capital factors, with a particularly significant increase in the allocation weight of public fund investors.

Against the backdrop of deepening reforms in China's capital market, regulatory authorities have continuously optimized the structure of market entities through a series of policy guidance such as the "Opinions on Accelerating the High Quality Development of the Public Fund Industry". According to Wind statistics, the concentration of holdings by domestic professional institutional investors has significantly increased. As of the end of the statistical period (Q2 2024), their weight in the A-share market value has risen to 18.76%, an increase of over 7 percentage points from five years ago, confirming substantial progress in the institutionalization reform of the capital market. In April 2022, the China Securities Regulatory Commission issued the "Guidelines for Investor Relations Management of Listed Companies", which clearly require listed companies to include environmental, social, and governance (ESG) related information in their work scope when carrying out investor relations management. This policy document provides a policy basis for investors to evaluate the effectiveness of corporate ESG practices through institutional arrangements, and helps guide investors to have a more comprehensive understanding of the implementation of environmental protection, social responsibility, and corporate governance through channels such as special research. Therefore, this article focuses on exploring four academic topics: firstly, as an important market participant, can the shareholding behavior of public funds substantially improve the ESG rating level of the invested companies? Secondly, if there is a positive correlation, is its path of action achieved through information transmission channels or governance supervision mechanisms? Thirdly, does the driving effect of public fund holdings on ESG performance also have economic effects on companies in terms of performance and operational risk? The answers to the above questions are of great value for improving the theoretical system of ESG investment.

From the perspective of ESG influencing factors, existing literature mainly explores the influencing factors of corporate ESG performance from the dimensions of policy regulation, technological innovation, organizational governance, stakeholder dimensions (such as external attention), and capital driven dimensions (such as ESG themed fund allocation). Among them, the literature that is more relevant to this article is the impact of institutional investors' shareholding behavior on corporate ESG performance. Specifically, various institutional investors can actively exert management effects, optimize internal governance, curb selfish and short-sighted behavior of corporate management and major shareholders, improve the quality of corporate information disclosure, and thus have a positive impact on corporate ESG performance during the shareholding process 1.

Regarding the research on public fund investors, existing literature on regulatory effectiveness based on information effects has found that public fund investors can suppress opportunistic motives in corporate management, thereby reducing speculative earnings management 5, improving the quality of corporate information disclosure 6, curbing inefficient investment, reducing mismatched investment and financing terms, inhibiting corporate detachment from reality to virtuality, promoting corporate development of green innovation 78, reducing corporate environmental violations, and promoting corporate social responsibility to fulfill responsibilities, which has a positive impact on corporate operations 910.

In summary, existing literature has thoroughly explored the influencing factors of corporate ESG performance and the economic effects of institutional investors, providing solid literature support for this article. However, there is relatively little research focusing on the relationship between the two. In view of this, this article examines the impact and mechanism of public fund investors on corporate ESG performance based on data from Chinese A-share listed companies from 2013 to 2024. Firstly, examine the impact of public fund investors on corporate ESG performance; Secondly, examine the

impact mechanism of public fund investors on corporate ESG performance; Again, examine the heterogeneity of public fund investors' perceptions of corporate ESG performance.

Compared to previous literature, the contribution of this article is as follows.

Firstly, existing literature has examined the impact of institutional investors' shareholdings on corporate ESG performance, while existing literature uses static panel data methods to focus on the impact of public fund investors' shareholdings on corporate ESG performance. This article is based on the behavior of public fund investors and uses the dynamic panel GMM method to examine the influencing factors of corporate ESG performance. From the perspective of dynamic adjustment, this article analyzes that the shareholding of public fund investors is an important channel for institutional investors to participate in corporate governance. It not only plays a role in corporate governance, but also generates information disclosure effects, thus having a profound impact on the ESG performance of enterprises.

Secondly, it enriches the research on the economic consequences of public fund investors' shareholding. Public fund investors have always been an important investment force in society and a focus of academic research. Many scholars have examined the economic consequences of public fund investors' holdings from multiple aspects, including external supervision of listed companies, short-sighted behavior of corporate management, investment and financing decisions, and capital market volatility. A small number of literature has examined the impact of public fund investors' holdings on corporate social responsibility performance and environmental violations, but few have examined the impact of public fund investors' holdings on corporate ESG performance from the perspective of sustainable development.

Thirdly, this article examines the mechanism by which public fund investors' shareholdings promote corporate ESG performance from three aspects: information transparency, earnings management, and innovation investment. It further reveals the relationship between public fund investors' shareholdings and corporate ESG performance, providing new experiential references for improving corporate ESG performance.

2. Mechanism Analysis and Research Hypothesis

2.1. Public Fund Investors' Shareholding and Corporate ESG Performance

As important institutional investors, public funds often have a positive impact on corporate ESG performance. Firstly, as an important participant in the capital market, public funds shoulder the dual mission of maintaining the smooth operation of the market and serving the development of the real economy. The industry always adheres to the core concept of long-term investment and value investment, and strives to reduce the impact of short-term price difference games on the market through scientific asset allocation and prudent investment decisions. This stable investment style is not only conducive to stabilizing abnormal stock price fluctuations, but also promotes industrial structure upgrading by guiding capital flow to high-quality assets, and continues to play an important role as a "ballast stone" and "value discovery" in the capital market [11]. Secondly, public funds can rely on their professional investment research capabilities and resource integration advantages to achieve long-term stable appreciation of fund assets. In the context of sustainable development becoming a global consensus, ESG integration has evolved from a strategic option for enterprises to an endogenous requirement for high-quality development. As the core entity practicing responsible investment, public funds rely on ESG evaluation frameworks and shareholder activism practices to form multidimensional interventions in enterprises through the pricing transmission mechanism of the capital market. This article is based on the theoretical paradigm of institutional investors' participation in corporate governance, and argues that public funds can effectively enhance the ESG governance level and sustainable development performance of invested enterprises through exercising shareholder rights, optimizing resource allocation, and strengthening information disclosure.

Public funds can enhance the ESG performance of listed companies through their professional advantages. As shareholders participating in the business activities of enterprises, public funds have accumulated a large amount of decision-making governance, supervision and management, and industry experience. Through the entry of public fund investments, these industry experiences and management expertise have established transmission channels in the enterprise, thereby promoting the dissemination and imitation of advanced experience and knowledge in the holding enterprises, and achieving the sharing of experience and knowledge [12]. In the field of environmental governance, relying on the strategic construction of a clean technology innovation system to reduce environmental pollution; In the field of social responsibility, not only can the influence on the company's shareholders' meeting and board of directors be utilized to spread the concept of social responsibility, but also by promoting the company's fulfillment of social responsibility, responding to the expectations and demands of stakeholders, and enriching the company's social capital; In terms of corporate governance, by imparting advanced management experience and governance models, the level of corporate governance can be improved, and the quality and efficiency of management can be enhanced [14].

Public funds can enhance the ESG performance of listed companies through their own information resource advantages. Public funds invest in numerous enterprises and have access to important information on industry changes and profit models across the entire industry. The information resources they possess are conducive to forming synergies between upstream and downstream of the industry chain, thereby achieving a "win-win" situation among enterprises [15].

Public funds can enhance the ESG performance of listed companies through their own reputation advantages. Public funds, relying on the excess returns of their investment portfolios, trigger the capital market valuation reassessment mechanism, resulting in significant market response effects [16]. The transmission of the synergistic effect of public fund capital helps invested companies break through the boundaries of financing constraints, thereby enhancing their determination to undertake ESG projects.

Public funds can enhance the ESG performance of listed companies through their own reputation advantages. Public funds, relying on the excess returns of their investment portfolios, trigger the capital market valuation reassessment mechanism, resulting in significant market response effects. The transmission of the synergistic effect of public fund capital helps invested companies break through the boundaries of financing constraints, thereby enhancing their determination to undertake ESG projects. To control risks, public funds must strengthen supervision over listed companies, and their strict post investment management standards are interpreted as implicit certification of corporate governance capabilities, making equity financing more easily accepted by the capital market. At the same time, fund investors have accelerated the accumulation of corporate reputation capital, and companies will also improve their ESG performance in order to further enhance their reputation capital. In summary, this article proposes research hypothesis 1.

Hypothesis 1: *Public fund investments promote corporate ESG performance and drive sustainable development.*

2.2. Research on the Impact Mechanism of Public Fund Investment on Corporate ESG Performance

Public fund investment can promote innovative research and development of enterprises, thereby improving their ESG performance. Innovation in environmental protection and energy-saving technologies is the foundation of corporate environmental governance, which can promote the operation and cost reduction of goods, and enable enterprises to invest more funds in sustainable development. However, technological innovation investment has the characteristics of long investment cycles and unstable returns [17], making it difficult to obtain external financing, which weakens the determination of enterprises to invest in innovation [18]. As investors with sustainable development concepts, public funds actively participate in company decision-making and management, increase investment in innovative research and development, and prevent short-

sighted behavior of executives through sustainable development concepts; On the other hand, the leading role of public fund investment can promote the entry of social capital and assist enterprises in research and innovation. In summary, this article proposes Hypothesis 2.

Hypothesis 2: *Public fund investment drives corporate ESG performance by increasing R&D innovation investment.*

Public fund investment can help improve corporate earnings levels, promote external regulatory effects, and ultimately enhance corporate ESG performance. Public funds have a complete investment management team and advanced investment skills, with stronger discernment and lower regulatory costs for corporate earnings management, and will not easily collude with companies. To achieve the preservation and appreciation of the market value of the invested enterprises, public funds have a strong motivation to strengthen the supervision of listed companies and improve their earnings quality. In addition, a good level of earnings can bring a good reputation to a company, thereby relying on a good reputation to obtain more resource support. Therefore, companies may improve their reputation by enhancing their ESG performance. In summary, this article proposes research hypothesis 3.

Hypothesis 3: *Public fund investment improves corporate ESG performance by enhancing the quality of earnings.*

Public fund investment can improve the information transparency of listed companies, thereby enhancing their ESG performance. Public funds will convey characteristic information to external investors after investing in listed companies. If public fund investors increase their holdings, it indicates that the operating decisions of the listed company are in line with the strategic orientation of investors; If public fund investors reduce or withdraw their holdings, it indicates that the operating decisions of the listed company do not conform to the strategic orientation of investors. On the one hand, the improvement of information transparency helps alleviate the problem of information asymmetry between listed companies and the outside world, alleviate conflicts of interest between shareholders and executives, and encourage executives to pay more attention to the interests of investors in business operations, thereby promoting the sustainable development of listed companies. On the other hand, the improvement of information transparency can reduce the information asymmetry among external stakeholders of enterprises, promote the fulfillment of environmental governance and social responsibility obligations by enterprises, and enable external stakeholders to exert better regulatory effects. In summary, this article proposes research hypothesis 4.

Hypothesis 4: *Public fund investors improve corporate ESG performance by increasing information transparency.*

3. Empirical Design

3.1. Sample Selection and Data Sources

This article selects data from A-share listed companies in Shanghai and Shenzhen from the first quarter of 2008 to the fourth quarter of 2024. The specific processing method is as follows: exclude listed companies in the financial industry; Exclude ST listed companies; By deleting samples with missing values in the relevant data, quarterly observations of 27654 listed companies were obtained. For the impact of extreme values, this article has performed a 1% truncation process on all continuous variables. The data in this article is sourced from the CAMAR database and the WIND database.

3.2. Variable Definition

3.2.1. The Dependent Variable

This article takes the ESG rating of Huazhong Securities as the dependent variable, which has a total of nine levels, including C, CC, CCC, B, BB, BBB, A, AA, AAA, assigned values from 1 to 9 in order of rating. The Huazhong ESG Index has been conducting ESG ratings on A-share listed companies since 2009. Compared to other ESG ratings, its rating period is longer and covers all listed companies. Its indicator construction is also more in line with Chinese characteristics, and has been highly recognized by the academic community.

3.2.2. Control Variables

The control variables involved in this article are as follows: the Age indicator of the enterprise, which represents the natural logarithm of the enterprise's length of existence, represents the age of the enterprise (Age); The ratio of the difference between the current year's operating profit and the previous year's operating profit to the current year's operating profit represents the growth ability of the enterprise (Growth); The natural logarithm of a company's total assets represents its size (Size); The ratio of net profit to total assets of a company represents the asset liability ratio (Lev); The ratio of enterprise market value to shareholder equity face value represents the book to market ratio (BM); When the same person serves as both chairman and general manager, the value is 1, otherwise, the value is 0, representing dual roles (Dual); The shareholding ratio of the largest shareholder represents the concentration of equity (BIG1); The ratio of net cash flow generated from business activities to total assets represents the cash level of the enterprise (Cash); The natural logarithm of the number of board members in a company represents the size of the board (Board); The ratio of net profit to total assets of a company represents the return on assets (Roa); When the enterprise is state-owned, the value is 1, otherwise, the value is 0, representing the nature of the enterprise's property rights (SOE); The shareholding ratio of the enterprise management represents the shareholding of the enterprise management (Manager); The ratio of the increase in regional GDP for this year to the previous year represents the regional GDP productivity (GDP); The ratio of the sum of the shareholding ratios of the second to fifth largest shareholders to the shareholding ratio of the first largest shareholder represents the balance of equity (Balance).

3.2.3. Explanatory Variables

Referring to the research of Qinglu Jin et al. (2016) and Desheng Zhu et al. (2022) [19,20], the shareholding ratio of public funds in A-share listed companies is used as a measure of public fund investment.

3.2.4. Mediating Variables

This article selects enterprise research and development investment (R&D), earnings quality (Restate), and information transparency (Trans) as mediating variables. This article refers to the practices of some scholars, and based on the quality rating of information disclosure of listed companies disclosed by the Shenzhen Stock Exchange, it is divided into four levels from high to low: A, B, C, and D, with values ranging from 1 to 4, in order to measure information transparency. This article uses the ratio of R&D investment to main business revenue of listed companies in the current quarter as a measure of their R&D innovation investment. Meanwhile, following the approach of Xuan Zhang et al. (2016) [21], this article considers whether a listed company has issued financial restatements as a negative indicator of earnings management. If a listed company has issued financial restatements, its earnings quality value is 1, otherwise it is 0.

3.3. Model Settings

3.3.1. Benchmark Regression Model

1. Benchmark regression model

To investigate the impact of public fund investment on corporate ESG performance, this paper uses the dynamic panel GMM method to regress the benchmark regression model:

$$ESG_{i,t} = \beta_0 + \beta_1 ESG_{i,t-1} + \beta_2 Inv_{i,t} + \beta_3 Controls_{i,t} + \sum Time + \sum Industry + \varepsilon_{i,t} \quad (1)$$

Among them, i represents the sample individual, and t represents the sample quarter. $Inv_{i,t}$ represents the public fund investment of individual i at time t ; $ESG_{i,t}$ represents the ESG performance of individual i at time t for the company; $Controls_{i,t}$ represents the control variable; $\sum Time$ and $\sum Industry$ represent time fixed effects and industry fixed effects, respectively. The standard error clustering of the regression results in this article is at the company level.

3.3.2. Impact Mechanism Model

To verify the theoretical mechanism hypothesis of this article, we examine the impact mechanism of public fund investment on corporate ESG from three aspects: R&D innovation investment (RD), earnings quality (RESTATE), and information transparency (TRANS).

$$ESG_{i,t} = \beta_0 + \beta_1 Inv_{i,t} + \beta_2 Controls_{i,t} + \beta_3 RD_{i,t} + \beta_4 RD_{i,t} \times Inv_{i,t} + \beta_5 ESG_{i,t-1} + \sum Time + \sum Industry + \varepsilon_{i,t} \quad (2)$$

$$ESG_{i,t} = \beta_0 + \beta_1 Inv_{i,t} + \beta_2 Control_{i,t} + \beta_3 RESTATE_{i,t} + \beta_4 RESTATE_{i,t} \times Inv_{i,t} + \beta_5 ESG_{i,t-1} + \sum Time + \sum Industry + \varepsilon_{i,t} \quad (3)$$

$$ESG_{i,t} = \beta_0 + \beta_1 Inv_{i,t} + \beta_2 Control_{i,t} + \beta_3 TRANS_{i,t} + \beta_4 TRANS_{i,t} \times Inv_{i,t} + \beta_5 ESG_{i,t-1} + \sum Time + \sum Industry + \varepsilon_{i,t} \quad (4)$$

The definitions of other variables are consistent with Model (1). Building upon Model (1), this paper incorporates three mediating variables—R&D investment (RD), earnings quality (RESTATE), and information transparency (TRANS)—along with their respective interaction terms with public fund investment (Inv), resulting in Models (2), (3), and (4). These models are used to examine the mechanisms and channels through which public fund investment enhances corporate ESG performance.

4. Empirical Results and Analysis

4.1. Descriptive Statistical Analysis

Table 1 presents descriptive statistics of the main variables. The maximum value of corporate ESG performance is 8, the minimum value is 1, and the standard deviation is 1.02, indicating significant differences in ESG performance among different listed companies. The maximum value of public fund investment is 28.56, the minimum value is 0.01, and the standard deviation is 1.63, indicating that there are significant differences in public fund holdings among different listed companies (mean 3.58). The average proportion of public fund holdings is 3.58%, indicating that there is still room for improvement. The statistical results of the remaining variables are basically the same as those in existing literature.

Table 1. Descriptive Statistics.

Variable	Mean	Median	SD	Min	Max	ESG correlation coefficient
ESG	4.36	4.02	1.02	1	8	--
Inv	3.58	3.26	1.63	0.01	28.56	0.15***
TRANS	2.32	2.04	1.38	1.00	4.00	0.52***

RD	0.04	0.03	0.04	0.00	0.56	0.02*
RESTATE	0.12	0.00	0.34	0.00	1.00	-0.04***
SIZE	22.76	22.20	1.36	20.18	26.76	0.20***
LEV	0.42	0.40	0.20	0.05	0.85	-0.00
ROA	0.05	0.04	0.04	-0.03	0.21	0.07***
SOE	0.42	0.00	0.48	0.00	1.00	0.06***
BM	53.14	58.60	23.56	3.62	112.06	0.07***
DUAL	0.26	0.00	0.46	0.00	1.00	-0.04***
BOARD	2.16	2.22	0.18	1.61	2.72	0.02***
MANAGER	19.56	12.36	21.06	0.00	69.44	0.01***
GDP	6.78	6.86	3.54	-6.90	18.30	-0.03***
BALANCE	0.81	0.68	0.62	0.05	2.82	0.02***
BIG1	36.76	36.20	14.86	10.26	75.16	0.07***
AGE	2.86	2.88	0.34	1.95	3.56	0.03***
GROWTH	-0.52	-0.13	6.18	-42.64	22.56	-0.02***
CASH	0.02	0.004	0.08	-0.16	0.52	0.11***

Note: ***, **, and * respectively indicate significance at the 1%, 5%, and 10% levels.

4.2. Benchmark Regression Analysis

Table 2 reports the regression results of the impact of public fund investments on corporate ESG. All models have passed the first-order residual sequence correlation (AR (1)) and second-order residual no sequence correlation (AR (2)) tests. The P-value of the Hansen statistic shows that there is no over identification problem and the instrumental variable selection is appropriate. Therefore, the GMM model setting of the system is reasonable.

Among them, column (1) represents the regression results between public fund investment and corporate ESG performance when only control variables are included. The results show that the regression coefficient between public fund investment and corporate ESG performance is 0.36, and there is a significant positive correlation at the 1% level. The second column is an estimated result that controls for time and industry fixed effects based on the first column. It can be found that the regression coefficient between public fund investment and corporate ESG performance is 0.42, and there is a significant positive correlation at the 1% level. This indicates that public fund investment has a significant promoting effect on corporate ESG performance, verifying research hypothesis 1.

Table 2. Benchmark Regression Results of Public Fund Investment and Corporate ESG Performance.

Variable	(1)	(2)
	ESG _{i,t}	ESG _{i,t}
Inv _{i,t}	0.36*** (3.65)	0.42*** (5.36)
ESG _{i,t-1}	0.52** (1.76)	0.46** (1.86)
SIZE _{i,t}	0.24*** (9.24)	0.23*** (6.16)
LEV _{i,t}	-0.92*** (-4.53)	-1.06*** (-8.62)
ROA _{i,t}	1.04*** (3.26)	1.34*** (4.26)
SOE _{i,t}	0.04 (0.80)	0.03* (2.04)
BM _{i,t}	-0.03 (-0.80)	-0.04 (-0.84)
DUAL _{i,t}	-0.01 (-1.31)	-0.02 (-1.06)

CASH _{i,t}	-0.16 (-0.70)	0.24 (1.34)
BIG1 _{i,t}	0.06*** (2.86)	0.05*** (3.76)
BOARD _{i,t}	0.06 (0.53)	0.2* (1.80)
GDP _{i,t}	-0.00 (-1.42)	-0.14*** (-3.67)
MANAGER _{i,t}	0.01*** (4.62)	0.02*** (3.72)
GROWTH _{i,t}	-0.02*** (-4.67)	-0.03*** (-3.86)
BALANCE _{i,t}	0.02*** (4.36)	0.03*** (5.62)
AGE _{i,t}	0.03*** (4.35)	0.04*** (5.53)
Constant term	-1.36*** (-6.34)	-1.24*** (-3.14)
AR(1)	0.00	0.00
AR(2)	0.173	0.168
Hansen	0.185	0.194
Fixed effects of time and industry	NO	YES
sample size	27654	27654
Adjusted R ²	0.083	0.194

Note: ***, **, and * respectively indicate significance at the 1%, 5%, and 10% levels.

4.3. Robustness Test and Endogeneity Test

4.3.1. Use Annual Data

Perform regression again using annual data, and the test results are shown in column (1) of Table 3. Among them, the regression coefficient of public fund investment is significantly positive, which verifies the robustness of the empirical results in this paper.

4.3.2. Increase Fixed Effects

Considering that unobserved factors at the individual level may also have an impact on the regression results, this study added individual fixed effects to the baseline regression model (1), while using the settings of model (1) for the rest. The empirical results are shown in column (2) of Table 3. The empirical results have verified the robustness of the conclusions in this article.

4.3.3. Placebo Test

This article advances the time for public funds to invest in listed companies by one quarter, that is, when public funds enter the current quarter, they become the t-1 period; when public funds enter the previous quarter, they become the t-2 period; and when public funds enter the second quarter, they become the t period. The test results indicate that public fund investment does indeed promote corporate ESG performance.

4.3.4. Change the Dependent Variable

To avoid ESG performance errors caused by subjective factors of rating agencies, this article replaces the dependent variable with Bloomberg ESG rating data, and re estimates it by substituting it into model (1). Table 3 (3) shows that the regression results remain unchanged.

4.3.5. Detection of Changes in the Shareholding Ratio of Public Funds

Following Shangkun Liang's approach [22], decompose the current quarter's public fund shareholding ratio into the previous quarter's public fund shareholding ratio and the changed public fund shareholding ratio, and re estimate model (1). The regression results in column (4) of Table 3 show that while the shareholding ratio of public funds affected ESG performance in the previous quarter, the changing shareholding ratio of public funds also affected the ESG performance of enterprises, enhancing the inference of the causal relationship between public fund investment and enterprise ESG performance.

4.3.6. Heckman Two-stage Method

Due to the issue of self selection in the sample, this article refers to the research of Shangkun Liang and uses the Heckman two-stage method for testing. Among them, in the first stage, the dependent variable is set as a dummy variable for public fund investment. If the public fund's shareholding exceeds the median value, the value is set to 1; otherwise, it is set to 0. Considering that investors can only assess a company's financial condition through its financial statements from the previous quarter, the company level characteristic variables are lagged by one quarter. In the second stage, the inverse Mills ratio is added as a control variable to the model (1) for re estimation, as shown in column (5) of Table 3. The empirical results indicate that, while controlling for the inverse Mills ratio, the coefficient of public fund investment is significantly positive, verifying the robustness of the conclusions drawn in this paper.

Table 3. Robustness Test of the Impact of Public Fund Investment on Corporate ESG.

Variable	(1)	(2)	(3)	(4)	(5)
	ESG	ESG	ESG-Bloom	ESG	ESG
Inv	0.24*** (3.46)	0.35*** (3.57)	0.44*** (5.31)		0.38*** (4.28)
varInv				0.46*** (4.38)	
L.Inv	0.34*** (3.95)	0.46*** (3.38)	0.39*** (4.23)	0.44*** (5.36)	0.43*** (4.32)
Constant term	-1.06 (-1.26)		-2.63 (-0.68)	-1.68** (-2.52)	-0.53 (-0.96)
IMR					1.46** (2.48)
L.ESG	0.37*** (3.46)	0.57*** (4.52)	0.48** (1.88)	0.42*** (2.65)	0.51*** (3.84)
Controls	YES	YES	YES	YES	YES
AR(1)	0.00	0.00	0.00	0.00	0.00
AR(2)	0.156	0.178	0.183	0.195	0.169
Individual fixed effects	NO	YES	NO	NO	NO
Fixed effects of time and industry	YES	YES	YES	YES	YES
sample size	8825	24560	3654	17462	17368
Adjusted R^2	0.18	0.19	0.25	0.34	0.46

Note: ***, **, and * respectively indicate significance at the 1%, 5%, and 10% levels.

4.3.7. Instrumental Variable Method

For the possible impact of endogeneity issues on research conclusions, this article refers to the methods of Jun Wen, Genfu Feng [23], and Shangkun Liang, and selects the industry and quarterly mean of public fund holdings and the industry and quarterly median of public fund holdings as

instrumental variables. The regression results of the second stage are significantly positive, verifying the robustness of the conclusions in this paper.

4.3.8. Double Difference Model Under Propensity Score Matching

This study divided the sample group based on the standard of whether the shareholding of public funds exceeds 3%. The listed companies invested by public funds were set as the experimental group, and the nearest neighbor matching method was used to screen the control group. During the data filtering process, special attention should be paid to retaining observation samples with complete data for three consecutive years, with a time window covering three stages: the year before investment ($t-1$), the year of investment (t), and the year after investment ($t+1$). The research interval is set from 2009 to 2021, with corporate ESG performance as the dependent variable, and financial indicators and governance structure characteristics (company size, return on equity, proportion of independent directors, dual role integration, board size, and market value to book ratio) from the previous year ($t-1$) as covariates. Logit regression is conducted by year and industry. Based on the regression results, calculate the propensity score to screen the control group, and ultimately determine the matching sample with an absolute difference of no more than 0.02 in propensity score from the experimental group. After propensity score matching, the balance test showed that all variables in the treatment group and the control group passed the group t-test, confirming that the matching program effectively eliminated systematic differences in core financial characteristics between the treatment group and the control group.

After completing the propensity score matching between the experimental group and the control group, this study used the time point of the public fund holding event (t year) as the benchmark and extracted observation samples from the event window period [$t-1, t+1$] for dynamic processing effect evaluation. Based on the empirical strategy of double difference method, construct a bidirectional fixed effects double difference model as shown in equation (5):

$$ESG_{i,t} = \beta_0 + \beta_1 Treat \times After + \beta_2 After + \beta_3 Treat + \beta_4 Controls_{i,t} + \sum Time + \sum Industry + \varepsilon_{i,t} \quad (5)$$

In model (5), the dummy variable *Treat* is used to indicate that the listed company has sufficient public fund holdings (with a value of 1 for full holdings and 0 for others); *After* is used as a time marker variable (1 for the year after the public fund fully holds shares, and 0 for the year before entering). The regression coefficient represents the effect of public fund investment on corporate ESG performance. The other variables are consistent with model (1), and the estimated results are shown in Table 4.

Table 4 reports the empirical results of the double difference method. Among them, column (1) is the baseline regression with control variables included, and column (2) further introduces fixed effects of both time and industry dimensions based on the baseline model. The results showed that the estimated coefficients of the interaction term of *Treat* × *After* exhibited positive significance at the 5% statistical level. In addition, the results of the parallel trend hypothesis test indicate that the model setting conforms to the applicability premise of the difference in differences method. Research has shown that compared to listed companies that have not received funding from public funds, target companies exhibit significant improvements in ESG performance after entering public funds. This differentiated trend effectively validates the robustness of the research findings.

Table 4. Endogeneity Test of the Impact of Public Fund Investment on Corporate ESG: Difference in Differences Model.

Variable	(1)	(2)
	ESG	ESG
Treat×After	0.18*** (2.73)	0.18*** (3.97)
Treat	-0.06	0.06

	(-1.08)	(0.68)
After	-0.02	0.04
	(-0.46)	(0.87)
Constant term	-1.36**	-1.82***
	(-2.14)	(-2.86)
Controls	YES	YES
Fixed effects of time and industry	NO	YES
sample size	1568	1536
Adjusted R^2	0.14	0.32

Note: ***, **, and * respectively indicate significance at the 1%, 5%, and 10% levels.

4.4. Impact Mechanism Analysis

4.4.1. RD Innovation

Research and development innovation investment plays a mediating role in the relationship between public fund investment and corporate ESG performance. By strengthening investment in research and innovation, the company can promote low-carbon and renewable development of its business processes, thereby achieving higher overall ESG performance. Therefore, this article uses the ratio of RD investment to main business revenue of listed companies as a measure of their RD innovation investment. The results of the mediation effect test on RD innovation investment are reported in column (1) of Table 5. Table 5 (1) shows that the regression coefficient between public fund investment (Inv) and corporate ESG performance is significantly positive, and the regression coefficient of the interaction term between RD and public fund investment is significantly positive at the 1% level. This indicates that public fund investment can promote corporate RD innovation, achieve technological transformation, and improve corporate ESG performance.

4.4.2. Earnings Quality

Earnings quality plays a mediating role in the relationship between public fund investment and corporate ESG performance. Previous studies have used financial restatement as an indicator to measure the quality of corporate earnings (Zhang Xuan et al., 2016). Table 5 column (2) shows the results of the mediation effect test of earnings management (RESTATE). It shows that the regression coefficient of earnings management on corporate ESG performance is significantly negative, and the regression coefficient of the interaction term between earnings management (RESTATE) and public fund investment (Inv) is significantly negative at the 1% level. This indicates that public fund investment is beneficial for reducing financial errors, improving earnings quality, and promoting corporate ESG performance.

4.4.3. Information Transparency

Information transparency plays a mediating role in the relationship between public fund investment and corporate ESG performance. In order to verify whether information transparency plays a mechanistic role in promoting corporate ESG performance through public fund investment, this article refers to the practices of some scholars, and based on the quality rating of listed company information disclosure disclosed by the Shenzhen Stock Exchange, divides it into four levels from high to low: A, B, C, and D, with values ranging from 1 to 4, to measure information transparency (TRANS). Table 5 column (3) shows that the regression coefficient of information transparency on corporate ESG is significantly positive, and the regression coefficient of the interaction term between information transparency (TRANS) and public fund investment (Inv) is significantly positive at the 1% level. This indicates that public fund investment can improve corporate information transparency, thereby promoting corporate ESG performance.

Table 5. Mechanism Test of the Impact of Public Fund Investment on Corporate ESG.

Variable	(1)	(2)	(3)
	ESG	ESG	ESG
Inv	0.45*** (5.23)	0.36*** (3.77)	0.48*** (5.26)
L.Inv	0.45*** (4.23)	0.36*** (5.23)	0.44*** (3.16)
RD	1.36*** (3.64)		
RD× Inv	0.45*** (4.72)		
RESTATE		-0.12*** (-2.95)	
RESTATE× Inv		-0.35*** (-3.58)	
TRANS			0.22*** (3.83)
TRANS× Inv			0.45*** (4.68)
Constant term	-1.35** (-2.32)	-0.48*** (-3.72)	0.37*** (4.32)
Controls	YES	YES	YES
AR(1)	0.00	0.00	0.00
AR(2)	0.123	0.175	0.187
Fixed effects of time and industry	YES	YES	YES
sample size	7534	23692	25276
Adjusted R^2	0.24	0.21	0.39

Note: ***, **, and * respectively indicate significance at the 1%, 5%, and 10% levels.

4.5. Heterogeneity Test

How do public funds contribute to the ESG performance of different types of listed companies? This article specifically focuses on the impact of public fund investments on heterogeneous listed companies. Firstly, whether the listed company is a high polluting enterprise. The practice of ESG by high polluting listed companies is of great significance for protecting the ecology, preventing climate change, and achieving low-carbon transformation goals; Secondly, whether the listed company is a high-tech enterprise. The characteristics of high capital investment, high risk, and high return on investment of high-tech enterprises require them to undertake more ESG sustainable development responsibilities; Finally, whether the company is closely monitored by analysts. Analysts' attention to ESG practices has an external supervisory effect on companies and has a wide-ranging impact.

4.5.1. Scientific and Technological Levels

Heterogeneity based on scientific and technological levels. The relationship between public fund investment and company ESG performance will be influenced by the technological level of listed companies. Compared to non high-tech listed companies, high-tech listed companies require long-term investment in technological resources. Public fund investment can not only effectively improve information transparency, thereby alleviating the financing pressure of companies, but also leverage the herd effect of the capital market to bring capital and technology resources to companies, thereby promoting the ESG performance of high-tech enterprises. To verify the heterogeneity performance of listed companies at different technological levels, the value is set to 1 when the sample companies belong to high-tech enterprises, and 0 otherwise. In column (1) of Table 6, the regression coefficient

of public fund investment is significantly positive at the 1% level, while the coefficient in column (2) of Table 6 is not significant. This indicates that the impact of public fund investment on corporate ESG performance is more significant in high-tech enterprises.

4.5.2. Industry Pollution Levels

Heterogeneity based on industry pollution levels. The relationship between public fund investment and company ESG performance will be influenced by the industry nature of the listed company. Public fund investment can promote the comprehensive concept of sustainable development and corporate social responsibility of listed companies, thereby encouraging them to actively undertake environmental protection responsibilities, reduce pollution in heavily polluting enterprises, and enhance their ESG ratings. In addition, public fund investment can promote the alleviation of financing constraints for listed companies, facilitate financing restrictions for heavily polluting enterprises in environmental protection facilities and environmental governance technologies, and promote the implementation of environmental protection actions by listed companies. To test the above hypothesis, this article matches the industries in the "Guidelines for Industry Classification of Listed Companies" issued by the China Securities Regulatory Commission in 2012 and divides the sample companies into heavy pollution group (Pollute-H) and non heavy pollution group (Pollute-L) for estimation. In column (3) of Table 6, the regression coefficient of public fund investment is significantly positive at the 1% level. The results in column (4) of Table 6 are not significant, indicating that public fund investment has a more significant effect on improving ESG performance in heavily polluting enterprises.

4.5.3. Analyst Attention

Heterogeneity based on analyst attention. The relationship between public fund investment and company ESG performance will be influenced by the attention of analysts in listed companies. As an information intermediary, analysts can release reports on listed companies that can convey more information to the outside world and influence investment decisions in the capital market. When a company receives a large number of analysts' attention, the speed of information transmission will be faster, and the company will also face greater reputation pressure. The information effect of public fund investment can also be better utilized, thereby promoting the improvement of the company's ESG performance. This article uses the natural logarithm of the number of securities analysis reports of a company plus 1 as a measure of analyst attention. The sample of companies above the median is assigned a value of 1 as the high analyst attention group (Media-H), and vice versa is assigned a value of 0 as the low analyst attention group (Media-L). In column (5) of Table 6, the regression coefficient of public fund investment is significantly positive at the 10% level; The regression coefficient of the public fund investment in column (6) of Table 6 is significantly positive at the 1% level. Therefore, in companies with higher analyst attention, the promotion effect of public fund investment on corporate ESG performance may be more significant.

Table 6. Heterogeneity Test.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	ESG	ESG	ESG	ESG	ESG	ESG
	HT-H	HT-L	Pollute-H	Pollute-L	Media-L	Media-H
Inv	0.04*** (5.38)	0.01 (0.42)	0.52*** (4.62)	-0.05 (-0.32)	0.02* (1.64)	0.05*** (4.36)
Constant term	-4.23*** (-2.91)	-3.36*** (-4.36)	-3.64*** (-6.23)	-3.32*** (-3.73)	-4.22*** (-3.21)	-4.75*** (-2.71)
Controls	YES	YES	YES	YES	YES	YES
Fixed effects of time and industry	YES	YES	YES	YES	YES	YES
sample size	10834	11245	8346	8548	12823	12925

Adjusted R^2	0.162	0.184	0.168	0.175	0.186	0.246
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Note: ***, **, and * respectively indicate significance at the 1%, 5%, and 10% levels.

5. Further Research

5.1. Heterogeneity of Institutional Investor Types

There are significant differences in investment strategies and information acquisition dimensions among various institutional investors, and this heterogeneity may lead to differentiation between their research focus and actual effects. Securities operating institutions rely on commission income and self operated business profit models, supported by specialized research teams, and have the dual driving force to conduct in-depth research to accurately evaluate enterprise value; Public fund managers conduct research driven by performance evaluation mechanisms, and their research dimensions are highly compatible with portfolio management styles; Insurance institutions adhere to the principle of prudent investment based on the requirement of asset liability matching, and focus on understanding the ESG practices of target companies through research; Equity investment institutions conduct targeted due diligence to pursue excess returns; Cross border investment institutions improve decision-making accuracy through in-depth research due to information asymmetry caused by regional cultural differences, while adhering to the global ESG assessment framework for target selection. In view of this, this study selected five types of entities including securities institutions, public funds, insurance asset management, PE/VC, and QFII, and included the natural logarithm of the number of institutions plus one as the core explanatory variable in the econometric model (1) to empirically test the differential impact of heterogeneous institution surveys on ESG performance. The relevant regression results are detailed in Table 7 Data Output.

The empirical results in Table 7 show that the regression coefficients of securities operating institutions (column 1), public funds (column 2), insurance asset management (column 3), equity investment institutions (column 4), and QFII (column 5) on corporate ESG performance are 0.36, 0.42, 0.32, 0.38, and 0.26, respectively, with statistical significance levels of 1%. This reveals that the five heterogeneous entities of securities firms, fund managers, insurance funds, private equity capital, and overseas qualified investors all have significant positive driving effects on corporate ESG performance.

Table 7. Public Fund Investments, Other Institutional Investors, and Corporate ESG Performance.

Variable	(1)	(2)	(3)	(4)	(5)
	ESG	ESG	ESG	ESG	ESG
VISECURITY	0.36*** (3.78)				
VIPUBLIC		0.42*** (5.26)			
VIINSURANCE			0.32*** (3.82)		
VIINVEST				0.38*** (3.26)	
VIQFII					0.26*** (2.95)
Constant term	-1.46** (-2.34)	-1.24*** (-3.14)	-1.35*** (-4.23)	-2.38** (-2.29)	-3.27*** (-3.94)
Fixed effects of time and industry	YES	YES	YES	YES	YES
sample size	26582	27856	26783	29846	28478
Adjusted R^2	0.184	0.194	0.252	0.195	0.273

Note: ***, **, and * respectively indicate significance at the 1%, 5%, and 10% levels.

5.2. The Economic Consequences of Public Security Fund Investment on Corporate ESG Performance

Policy makers in various countries continue to explore optimization paths for asset value management of public funds. On the basis of existing research focusing on the correlation between fund investment and corporate sustainable development, this article explores in depth whether public funds can simultaneously promote the value growth of fund assets in the process of improving corporate ESG performance. This study systematically analyzes the practical impact and comprehensive effects of public fund investment on corporate ESG performance from two dimensions: corporate performance level and risk management capability.

5.2.1. Market Value

The impact of public fund investment on the ESG performance of enterprises and their economic benefits. The core research topic is whether public funds can bring substantial improvements in economic benefits by guiding companies to practice ESG concepts and achieve sustainable development. This directly affects whether public funds can demonstrate their market value in terms of asset preservation and appreciation. Therefore, this article constructs an empirical model to verify and analyze the economic effects of improving enterprise efficiency:

$$Value_{i,t} = \beta_0 + \beta_1 ESG_{i,t} \times Inv_{i,t} + \beta_2 ESG_{i,t} + \beta_3 Inv_{i,t} + \beta_4 Controls_{i,t} + \sum Time + \sum Industry + \varepsilon_{i,t} \quad (6)$$

In model (6), Value represents the efficiency of the enterprise, which is measured using Tobin's Q (Q) and return on assets (ROA). Other variables are consistent with the settings of model (1).

Table 8 presents the empirical test results of the economic effects of public fund investments on corporate ESG performance. The data show that the interaction term ESG×Inv in columns (1) and (2) exhibits a significant positive association at the 1% statistical level. This indicates that public fund investments effectively drive high-quality corporate development while enhancing corporate performance, thereby achieving the goals of preserving and increasing the value of public fund assets.

5.2.2. Operational Risk

The focus of this section is whether public funds can simultaneously bring substantial improvements in mitigating business risks by guiding companies to practice ESG concepts and achieve sustainable development. This directly relates to whether public funds can demonstrate their market value in terms of asset preservation and appreciation. Therefore, this article constructs an empirical model to verify and analyze the economic effects of mitigating business risks:

$$RISK_{i,t}/RISK_{i,t+1} = \beta_0 + \beta_1 ESG \times Inv + \beta_2 ESG + \beta_3 Inv + \beta_4 Controls_{i,t} + \sum Time + \sum Industry + \varepsilon_{i,t} \quad (7)$$

Under the framework of model (7), this article draws on the empirical research design of Jianjun Li and Xun Han (2019) on identifying business risk. Business risk (RISK) is positively measured through the volatility of operating profit (RISK-ROA) and the 1: Z index (RISK-ZSCORE) [24]. The other variables are consistent with the settings of model (1). This study constructs a bidirectional regression model of operational risk between the current period (t) and the lagged period (t-1) to empirically test the cross period transmission characteristics and temporal dimension of policy effects.

The method for measuring the volatility of profits is to use the ratio of pre tax profit to total assets as the benchmark indicator, adjust for the industry annual average, and calculate the standard deviation of the current period (t), lagged period (t-1), and lagged period (t-2).

The operational risk RIDK-SCORE is a 1/Z index. The specific calculation method for Z-index is as follows:

Z-index = 1.2 × working capital/total assets + 1.4 × retained earnings/total assets + 3.3 pre tax profit/total assets + 0.6 × total market value of stocks/book value of liabilities + 0.999 sales revenue/total assets.

The regression analysis results of the RISK-ROA model are presented in columns (3) and (4) of Table 8. The data shows that the interaction coefficient between ESG and Inv in the current period does not show statistical significance. However, in the lagged one period business risk regression, the interaction coefficient is significant at the 5% confidence level. This result indicates that although public fund holdings can effectively promote high-quality development of enterprises, their ability to mitigate operational risks has a time delayed effect, meaning that the manifestation of risk prevention and control effectiveness requires a certain cycle of transmission. The empirical test results for RISK-ZSCORE are shown in columns (5) and (6) of Table 8, which indicate that the interaction coefficient between ESG and Inv is significant at the 1% statistical level. However, in the business risk regression with a lag of one period, this interaction term did not show significant characteristics. This indicates that public fund holdings can synchronously reduce the current operational risk level of enterprises in the process of driving sustainable development, and the risk mitigation effect has significant timeliness characteristics. The difference in empirical results may be due to the fact that RISK-ZSCORE has more sensitive characteristics in enterprise risk warning, while RISK-ROA indicators exhibit stronger robustness. Overall, public fund investment effectively suppresses operational risks by promoting sustainable development of enterprises, and this dual effect has a certain degree of sustainability.

Table 8. Empirical Analysis of Enterprise Benefits and Operational Risks.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Tobin's Q	ROA	RISK-ROA	L.RISK-ROA	RISK-ZSCORE	L.RISK-ZSCORE
ESG×Inv	0.06** (4.27)	0.01** (3.58)	-0.01 (-1.48)	-0.02** (2.24)	-0.02** (-2.84)	-0.04 (-1.04)
ESG	-0.04 (-1.54)	0.01 (1.36)	-0.01** (-2.28)	-0.01 (-0.56)	-0.06** (-2.16)	-0.04 (-0.56)
Inv	-0.04 (-1.51)	-0.02 (-1.36)	0.01 (0.93)	0.03** (2.26)	0.06** (3.96)	0.02 (1.26)
Constant term	5.65** (3.82)	0.26 (1.29)	0.08** (2.94)	0.06* (1.78)	-1.36** (-4.38)	-1.24** (-6.58)
Controls	YES	YES	YES	YES	YES	YES
Fixed effects of time	YES	YES	YES	YES	YES	YES
Fixed effects of industry	YES	YES	YES	YES	YES	YES
N	24636	24636	6748	3672	6482	3488
Adjusted R ²	0.387	0.368	0.195	0.274	0.189	0.453

Note: ***, **, and * respectively indicate significance at the 1%, 5%, and 10% levels.

6. Research Conclusions and Policy Recommendations

In recent years, with the increasing attention to sustainable social development and high-quality economic market development, public funds, as the cornerstone of market-oriented operation in the capital market, have taken on the responsibility of supporting the high-quality development of enterprises, attracting the attention of the government, the public, and other stakeholders. This paper examines the impact of public fund investments on corporate ESG performance and its underlying mechanisms using the dynamic panel GMM method, based on data from Chinese A-share listed companies from 2009 to 2024. This conclusion still holds true after endogeneity treatments such as instrumental variable method and propensity score matching, as well as a series of robustness tests such as changing the dependent variable, using annual data, adding fixed effects, placebo testing, and changing the clustering hierarchy, indicating the robustness of the results. Mechanism analysis shows that public fund investment mainly affects corporate ESG performance through three channels: increasing innovation investment, reducing earnings management, and improving

information transparency. Heterogeneity analysis shows that the promoting effect of public fund investment on corporate ESG performance is more prominent in heavily polluting industries, high-tech enterprises, and enterprises closely monitored by analysts. The promotion effect of public fund investment on corporate ESG performance reduces corporate risks and increases corporate returns. Based on the above conclusions, this article proposes the following suggestions.

Firstly, regulatory authorities need to guide public funds to deeply intervene in the governance of listed companies, by strengthening supervision and optimizing market ecology, effectively leveraging the market-oriented means of public fund investment to promote the high-quality development of listed companies. It is suggested that public funds exercise shareholder rights in accordance with the law, establish a regular communication mechanism with the media, leverage the power of public opinion supervision, flexibly use market-oriented means such as legal rights protection, share reduction, and joint voice, and build a new regulatory pattern of collaborative governance between institutional investors and external supervision forces. Secondly, it is recommended that regulatory authorities guide public funds to tilt their layout towards areas such as environmental governance, technological innovation, and insufficient market attention. By flexibly adjusting asset allocation strategies and optimizing key investment directions in a timely manner, long-term funds can effectively play a strategic supporting role in improving the regulatory efficiency of the capital market and assisting in the transformation and upgrading of the industrial structure. Consider guiding public funds to collaborate with industry entities to establish an enterprise ESG collaborative platform, relying on its information resource integration capabilities, and promoting high-quality development of ESG enterprises through benchmark enterprise experience transmission mechanisms, while simultaneously establishing assistance mechanisms to accelerate the transformation of ESG weak enterprises. This platform can establish an ESG training system, case sharing network, and resource docking hub, focusing on high energy consuming industries and areas with weak public attention. Through targeted capacity building and cross industry resource allocation, it systematically compensates for the ESG performance shortcomings of related enterprises. Once again, listed companies can deeply integrate public fund information data and industry experience resources, establish strategic synergy mechanisms, dynamically optimize enterprise development layouts, comprehensively stimulate innovation vitality, and build a foundation for sustainable development. At the same time, listed companies must improve the collaborative interaction mechanism with strategic investors such as public funds, deepen data integration and decision-making mutual trust, stimulate incremental investment by enhancing the attractiveness of long-term capital allocation, simultaneously enhance the stability of enterprise profits and risk prevention and control capabilities, and drive the transformation and upgrading of the national economy and the value leap of the industrial chain.

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