The Impact of Corporate ESG Fund Ownership on Financial Performance: A Shareholding Proportion Analysis

Chunying Huang*

School of Economics, Shandong University, Shandong, China

*huangmy17@163.com

Abstract. As the concept of sustainable development gains widespread acceptance, Environmental, Social, and Governance (ESG) investing has gradually emerged as a dominant trend within the global investment landscape. This ascension is particularly notable in the Chinese market, where ESG funds have witnessed substantial expansion. This paper aims to investigate the relationship between ESG fund ownership and the financial performance of firms, offering insights pertinent to investment strategies in ESG funds. Focusing on A-share listed companies from 2018 to 2022, a two-factor fixed-effects model was employed for empirical analysis. The findings reveal a statistically significant positive correlation between the proportion of ESG fund holdings and firm's financial performance. Further analysis uncovers that the positive influence of ESG fund ownership on financial performance is more pronounced in state-owned enterprises. Additionally, variations are noted in the impact of ESG fund holdings on financial performance in periods pre- and post-pandemic onset.

Keywords: ESG fund ownership; Financial performance; State-owned enterprise; Pandemic

1 Introduction

In recent epochs, the investment community has increasingly acknowledged the salience of integrating environmental, social, and governance (ESG) criteria into the evaluation of enterprises and their consequential investment appeal (Boffo & Patalano, 2020) [1]. This shift bespeaks a burgeoning cognizance of the imperatives for enduring sustainable development and a recognition of non-financial determinants as pivotal to risk assessment within financial markets (Ibid). ESG-focused funds have emerged as a pivotal mechanism for operationalizing this paradigm, channeling capital into corporations that exemplify commendable adherence to environmental stewardship, social responsibility, and robust corporate governance. The objective underpinning these investment vehicles is to catalyze the redirection of financial resources into domains that support sustainable development, whilst concurrently striving to fulfill the dual objectives

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of securing financial returns and engendering positive societal impacts (Kalyani & Mondal, 2024) [2].

However, the precise influence of ESG fund investments on corporate financial outcomes remains a subject of fervent debate, with proponents highlighting potential benefits like reduced risk and innovation-driven growth, while critics underscore short-term complexities arising from a long-horizon focus and additional costs (Chen et al., 2023) [3].

To elucidate this relationship, this study employs a rigorous panel data analysis methodology, examining Chinese A-share listed firms between 2018 and 2022. Through a meticulously constructed two-factor fixed-effects regression model, the impact of ESG fund ownership on financial performance, measured via Return on Assets (ROA), controlling for variables such as firm scale and leverage ratio to ensure analytical rigor, can be precisely assessed. Findings reveal a positive correlation between ESG fund holdings and corporate financial health, with state-owned enterprises exhibiting a notable edge in harnessing ESG integration. Furthermore, the COVID-19 pandemic backdrop offers a dynamic lens, illustrating an initial downturn followed by a market reevaluation that underscores ESG's value in navigating uncertainties.

This research contributes to the current literature by empirically validating ESG funds' enhancing effect on financial performance, shedding light on differential impacts across corporate characteristics and varying external contexts. It fills a gap in the Chinese context, where ESG fund investment studies are scarce compared to those on ESG performance or the ESG-investment-performance nexus. Thus, the study not only enriches the understanding of ESG fund implications but also furnishes a foundation for future scholarly endeavors and strategic decision-making in fostering sustainable economic progress.

2 Rational and Research Hypotheses

In recent times, ESG investment has emerged as a focal point in global finance, advocating for the integration of environmental, social, and governance considerations to balance economic prosperity with societal and ecological welfare (Boffo & Patalano, 2020) [1]. Theoretical frameworks suggest ESG investments facilitate corporate image enhancement, bolster investor trust, and potentially improve financial performance through internal management optimization and risk mitigation (Li et al., 2021) [4].

Within the Chinese economic landscape, SOEs play a pivotal role and are characteristically equipped with established mechanisms for fulfilling social responsibilities (Zhang et al., 2013) [5]. Since the 2007 SASAC guidelines, SOEs have witnessed marked advancements in ESG implementation, rendering them attractive propositions for ESG funds (Chen, 2024) [6]. The "dual-carbon" initiative, coupled with intensified oversight, further fosters a synergistic relationship between SOEs and ESG-focused investments (Han & Zhou, 2022) [7].

The COVID-19 pandemic's economic disruptions highlight ESG funds' resilience, with their commitment to sustainable investing potentially shielding compliant firms amidst short-term adversities (Zhu et al., 2020) [8]. Meanwhile, the pandemic prompted a market realignment, elevating ESG's significance and triggering supportive policies, which are posited to augment the benefits of ESG fund involvement, particularly as the pandemic evolves (Zheng & Liu, 2021) [9].

Based on the above research background and viewpoint summary, this study proposes the following hypotheses:

H1: A positive correlation exists between the level of ESG fund ownership and corporate financial performance.

H2: The financial performance boost from ESG fund investment is anticipated to be more substantial in state-owned enterprises compared to non-state-owned counterparts.

H3: Firms with higher ESG fund investment proportions demonstrate enhanced resilience throughout the pandemic, suggesting a greater likelihood of successfully navigating the crisis.

3 Empirical Tests

3.1 Sample Selection and Data Sources

The study narrows down its dataset to encompass all A-share listed firms that disclosed ESG fund holding details from 2018 to 2022. To refine the sample and ensure data integrity, several filters were applied: (1) elimination of entries with missing data across the specified years; (2) exclusion of financial sector companies; (3) avoidance of samples subjected to ST or *ST designation during the period, indicative of abnormal conditions; and (4) winsorization of continuous variables at the 1st and 99th percentiles to mitigate outliers' impact. Post-processing, a final cohort of 17,615 companies was derived for analysis. Data extraction primarily utilized databases from *CSMAR*, *Wind Financial Terminal*, and *CHOICE Financial Terminal*.

3.2 Variable Definition and Measurement

3.2.1 Explained Variable – Corporate Financial Performance (ROA)

This study employs corporate financial performance as the dependent variable. Drawing on the research of Duque-Grisales & Aguilera-Caracuel (2021), this study adopts the most widely used measure of Return on Assets (ROA) as the measure of financial performance [10]. ROA gauges the efficacy of a firm's asset base in yielding net earnings, with a higher ROA reflecting superior profitability. Its formula is as follows:

$$\text{ROA} = \text{Net Income} \div \text{Total Asset} \times 100\% \tag{1}$$

3.2.2 Explanatory Variable - ESG Fund Shareholding (PRO)

The explanatory variable investigated is the ESG fund shareholding proportion (PRO). Following Luo and Zhang's (2023) methodology, an ESG fund listing can be compiled utilizing data from the 'Annual Report on Responsible Investment in China' (2018-2022) by *SynTao Green* [11]. PRO is calculated as the ratio of ESG fund-held shares to total outstanding shares, sourced from *CSI*, *Cathay Pacific* databases, and annual corporate disclosures.

3.2.3 Control Variables

This paper refers to other related studies on ESG investment and considers the impact of factors other than the shareholding ratio of ESG funds on the financial performance of enterprises, and introduces control variables including enterprise size ($Size$), gearing ratio (Lev), cashflow ratio ($Cashflow$), price-to-book ratio (PB), shareholding concentration (Ratio of number of shares held by the largest shareholder to the total number of shares) ($Top1$), proportion of independent directors (Dir), percentage of female executives ($Female$) and firm age (AGE).

3.3 Empirical Modelling

To account for the lagged effect of ESG performance on financial outcomes, this study incorporates one-period lagged explanatory variables. A two-factor fixed-effects regression framework, encompassing both individual and time dimensions, was employed to assess the influence of ESG fund ownership percentages on corporate financial performance. The model is specified as follows:

$$ROA_{i,t} = \beta_0 + \beta_1 PRO_{i,t-1} + \beta_i \sum Controls_{i,t-1} + \lambda_i + \mu_t + \varepsilon_{i,t} \tag{2}$$

4 Findings and Analyses

4.1 Descriptive Statistics

In order to count the basic descriptive characteristics of each variable, descriptive statistics analysis is performed. Table 1 shows the descriptive statistics results of the main variables, from which it can be seen that: (1) the mean and standard deviation of the proportion of shares held by ESG funds (PRO) are 0.031 and 0.077 respectively, which indicates that the proportion of ESG fund inputs to the outstanding shares in the sample companies is small, and that there is a large gap between different companies; (2) the minimum value of the company's financial performance (ROA) is -0.373, the maximum value is 0.247, the mean value is 0.038, and the standard deviation is 0.075, indicating that there is a large gap between the financial performance of different companies in China, and some of them are facing serious losses; (3) the distribution of other variables is within a reasonable range, with no major anomalies.

Table 1. Descriptive statistics

VarName	Obs	Mean	SD	Min	Median	Max
ROA	17615	0.038	0.075	-0.373	0.039	0.247
PRO	17615	0.031	0.077	0.000	0.000	2.814
Size	17615	22.395	1.314	19.807	22.201	26.452
Lev	17615	0.418	0.197	0.051	0.411	0.902

Cashflow	17615	0.053	0.067	-0.167	0.051	0.267
PB	17615	3.135	2.865	0.413	2.310	21.688
Dir	17615	0.379	0.054	0.286	0.364	0.571
Top1	17615	0.329	0.145	0.080	0.304	0.740
Female	17615	0.212	0.117	0.000	0.200	0.562
Age	17615	3.034	0.280	2.079	3.045	3.611

4.2 Correlation Analysis

The correlation coefficient between the percentage of ESG fund ownership and financial performance of the firm is 0.254, which preliminary indicates that there is a positive correlation between the percentage of ESG fund ownership and financial performance of the firm, consistent with the hypothesis 1. Among the control variables, financial performance is positively correlated with company size, cashflow ratio, price-to-book ratio, and shareholding ratio of the first largest shareholder. The correlation coefficients between the gearing ratio, the proportion of female executives and financial performance are significantly negative, indicating that the more debt a firm incurs, the higher the proportion of female executives, the lower the firm's financial performance. Meanwhile, the VIF test results show that the detection of each factor is less than 2, so the multi-col linearity has less effect on this model.

4.3 Benchmark Model Regression Results

The benchmark model is a two-factor fixed effects model with individual and time factors, and the specific results are shown in Table 2, where column (1) indicates the regression results with the addition of control variables, and column (2) indicates the regression results without the addition of control variables.

From both columns (1) and (2) in the table, it can be seen that the proportion of ESG fund ownership is positively proportional to corporate financial performance (ROA). In the regression by adding control variables, the coefficient of ESG fund shareholding ratio and corporate financial performance in the regression result of column (1) is 0.060, which is lower than the coefficient of 0.137 in the direct regression of column (2), and all of them are significant at 1% confidence level, indicating that the shareholding of ESG fund can indeed increase the financial performance of the companies that are being held and after adding control variables, it can be seen that the true impact of ESG fund shareholding ratio on corporate ROA is more conservative than previous estimates. Hypothesis 1 holds.

Table 2. Benchmark model regression results

	(1)	(2)
VARIABLES	ROA	ROA
PRO	0.060***	0.137***
Size	0.047***	
Lev	-0.261***	

Cashflow	0.220***	
PB	0.005***	
Dir	-0.006	
Top1	0.069***	
Female	-0.000	
2019.year	-0.009***	-0.003**
2020.year	-0.016***	-0.007***
2021.year	-0.015***	-0.007***
2022.year	-0.024***	-0.019***
Constant	-0.944***	0.041***
Observations	17,615	17,615
R^2	0.198	0.028
Number of stkcd	4,560	4,560

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.4 Heterogeneity Analysis

4.4.1 State-Owned Enterprises or Non-State-Owned Enterprises

This study, acknowledging the differential responsiveness of firms with varying ownership structures and industries to market forces, introduces variables for state-ownership, high pollution, and high-tech status into the model. To explore heterogeneous mediation effects, the Sobel test was employed, revealing a significant mediation effect for state-owned enterprises at the 10% level (p=0.06441455), whereas pollution and tech variables showed insignificant results.

Heterogeneity analyses, specifically for SOEs, are detailed in Table 3. Columns (1) and (2) segregate results based on enterprise ownership, demonstrating a consistently positive and statistically significant (1% level) association between ESG fund holdings and financial performance (ROA), with SOEs experiencing a more pronounced effect. Hypothesis 2 holds.

This outcome may stem from two main reasons: SOEs' prolonged integration of ESG principles into operations, exemplified by SASAC's 2007 initiative leading to notable ESG progress among central enterprises (Zhang et al., 2013) [5]. Secondly, SOEs benefit from richer ESG implementation experiences and supportive policies, enhancing their capacity to convert ESG investments into financial gains (Chen, 2024) [6].

Recent acceleration in China's ESG landscape, driven by the "dual carbon" goal, has intensified ESG oversight, particularly benefiting SOEs. Policy-driven advantages are evident through initiatives like the "Social Responsibility Bureau" within SASAC and the "Work Programme" aimed at elevating ESG governance among central enterprises, contributing to the optimized capital efficiency of SOEs and reinforcing the observed positive influence of ESG fund ownership on their financial outcomes (Ibid).

Table 3. Heterogeneity analysis results（SOE & Non-SOE)

VARIABLES	(1) State-owned Enterprise	(2) Non-state-owned Enterprise
PRO	0.075***	0.052***
Size	0.042***	0.053***
Lev	-0.228***	-0.265***
Cashflow	0.181***	0.243***
PB	0.003***	0.005***
Dir	-0.010	0.002
Top1	0.017	0.104***
Female	-0.000	-0.000
Constant	-0.842***	-1.086***
N	5189	11303
R^2	0.727	0.681
R^2_adj.	0.646	0.576
F	52.422	145.105

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.4.2 Heterogeneity Analysis Before and After the Epidemic

This study investigates the economic impact of the pandemic, a global health crisis, on firms, comparing pre-epidemic (2018-2019) and post-epidemic (2020-2022) periods. Analysis divides the dataset accordingly, with 2022 highlighted separately due to distinct findings. Results indicate that the relationship between PRO and ROA was consistently positive pre-epidemic, showing in Table 4 (significant at 5% significance level). Post-epidemic, specifically in 2020-2021, this link weakened and turned nonsignificant, possibly reflecting altered market priorities. However, by including 2022, the positive correlation not only reemerges but strengthens significantly, surpassing pre-epidemic levels (significant at 1% significance level).

The observed inconsistency in ESG fund ownership impact post-epidemic might stem from varying theoretical standpoints. Stakeholder theory suggests a long-term positive association, yet short-term dynamics could diverge (Ramoglou et al., 2023) [12]. Property rights theory posits a variable effect across state-owned and non-state-owned entities (Davies & Brucato, 1987) [13]. Amidst the pandemic, market emphasis on ESG aspects possibly shifted, with investors prioritizing governance and crisis management capabilities over environmental or social metrics, as illustrated by Zheng and Liu's (2021) emphasis on internal control quality [9]. ESG-focused firms, burdened by elevated operating costs tied to sustainability standards, experienced a temporary financial strain, as Zhu et al. (2020) documented through empirical surveys [8].

However, in 2022, ESG fund ownership's positive influence on financial performance intensified, aligning with stakeholder theory. The pandemic underscored the resilience bestowed by robust ESG practices, elevating the market's appreciation for such firms post-crisis. Enhanced investor focuses on long-term sustainability and the recuperation of economies led to heightened interest in ESG funds, boosting the share prices and financial outcomes of the firms they hold. Consequently, entities with a significant ESG fund presence demonstrated a more vigorous recovery, manifesting in superior market and financial performance for 2022. This trajectory underscores a nuanced understanding of ESG's evolving role amidst and following unprecedented disruptions. Hypothesis 3 holds.

Table 4. Results of heterogeneity analyses (outbreaks)

	(1)	(2)	(3)	(4)
	2018-2019 pre-epidemic	2020-2021 post-epidemic	2020-2022 post-epidemic	2022
VARIABLES	ROA	ROA	ROA	ROA
PRO	0.0621**	-0.0090	0.0225**	0.130***
Size	0.0978***	0.0766***	0.0742***	0.008***
Lev	-0.4516***	-0.2803***	-0.2458***	-0.118***
Cashflow	0.1152***	0.2153***	0.2181***	0.425***
PB	0.0020	0.0056***	0.0052***	0.002***
Dir	-0.0035	0.0112	0.0182	-0.047***
Top1	0.1534***	0.0514	0.0402**	0.050***
Female	-0.0000	0.0003	-0.0001	-0.000
Constant	-2.0245***	-1.6265***	-1.5722***	-0.132***
Observations	6,066	6,120	10,604	4,310
R^2	0.7901	0.8286	0.7957	0.404

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5 Conclusion

This study delves into the relationship between ESG fund shareholdings and firms' financial performance through empirical analyses of Chinese A-share listed companies, taking into account the heterogeneous effects of different contexts, especially the differences before and after the epidemic and between state-owned and non-state-owned firms. It is found that ESG fund shareholding has a positive effect on firms' financial performance and is particularly significant for state-owned enterprises. This finding holds after controlling for a variety of factors such as firm size, gearing ratio, cash flow ratio, price-to-book ratio, shareholding concentration, and proportion of independent directors, highlighting the important role of ESG investment in driving firms' financial performance.

During the epidemic period, despite a transient non-significant relationship between the proportion of ESG fund holdings and corporate financial performance, this relationship not only turns positive by 2022, but also has an impact coefficient that exceeds the pre-epidemic level, suggesting that the market's perception of the value of ESG and the improvement of the policy environment have significantly enhanced the positive role of ESG fund holdings. This may be due to factors such as the market's reassessment of the long-term value of ESG and the improvement of brand reputation, which are left to be studied later.

Combining China's reality with the research findings, the following policy insights can be obtained:

1. Strengthen ESG policy framework and incentives: the government should further improve ESG-related policies and encourage enterprises to improve their ESG performance through incentives such as tax incentives and special subsidies, especially by increasing support for green investment, low-carbon technology and other areas to promote green transformation of the economy.

2. Optimize the demonstration role of state-owned enterprises in the field of ESG: in view of the remarkable effectiveness of SOEs in ESG practice, standardization and transparency of SOEs in ESG governance, information disclosure, etc. should be further promoted to set up industry benchmarks and guide more enterprises to align themselves with the high ESG standards.

3. Enhance market recognition of and participation in ESG investment: through education and publicity to enhance investor awareness of the value of ESG investment, guide the flow of funds to enterprises with good ESG performance, forming a positive cycle, while encouraging financial institutions to develop more ESG investment products and broaden investment channels.

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