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How does ESG performance affect corporate cash holdings: Evidence from China

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Abstract: Under the international call for "peak carbon emissions and carbon neutrality", ESG (Environmental, Social, and Governance) has emerged as a critical metric for evaluating corporate sustainability. Cash, being the most liquid asset held by companies and a key element in implementing investment and financing strategies, is crucial. However, excessive cash holdings are considered a sign of inadequate development capabilities and can exacerbate internal agency problems. In the long term, motivations for holding cash are influenced by various factors. So, what is the relationship between ESG and the amount of cash held by companies? Based on data from listed companies on the Shanghai and Shenzhen Stock Exchanges from 2011 to 2021, this article empirically explores the relationship between ESG performance and corporate cash holdings. The research findings indicate: (1) Companies with higher ESG performance tend to have better internal governance and higher efficiency, but they lack good ESG investment opportunities, thus leading to higher cash holdings. A series of endogeneity tests, such as instrumental variable methods, also confirm the accuracy of this conclusion. (2) Further analysis reveals that compared to small-cap companies, large-cap companies have more ESG investment opportunities, resulting in lower cash holdings. (3) Moreover, compared to private enterprises, state-owned enterprises have more ESG investment opportunities, leading to lower cash holdings.

Keywords: ESG performance; ESG investing; Corporate cash holdings; Instrumental variable method; Heterogeneity analysis.

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1. Introduction

In recent years, as the global environment and climate issues have come to the fore, governments have taken corporate social responsibility into consideration, and the criteria for evaluating enterprises can no longer be a single financial performance, but must consider the external costs of the enterprise. Coase's Theory of Property points out that the existence of enterprises is to reduce transaction costs, however, he also points out that the behavior of enterprises will bring about externalities, resulting in the spillover of private costs to the community, making the community bear the costs that should be borne by the original enterprise. Therefore, assessing the value of a company should not only consider its financial performance but also its fulfillment of social responsibility and internal governance regulation. Good internal governance and social environmental responsibility not only create benefits for society but also enhance the overall reputation of listed companies. As "intangible capital" for corporate financing, a strong reputation attracts institutional and individual investors, guiding funds towards green development and transformation. Based on this, in 2004, the United Nations Environment Program first proposed the ESG concept, which stands for Environment, Social Responsibility, and Corporate Governance. ESG is a set of corporate governance principles aimed at achieving win-win outcomes for environmental performance, social performance, and corporate performance. It embodies the idea of harmonious coexistence and sustainable develop-

ment between humans and nature, companies and society, and companies and the environment. Today, it has become an important reference for investment decisions in global capital markets.

ESG covers a wide range of areas, which can be summarized as ESG practices, ESG ratings, and ESG investments. Firstly, ESG practices externalize corporate operations and decisions into the fields of environmental protection, social responsibility, and corporate governance from the perspective of enterprises. It focuses on examining the impact of corporate development on the sustainable benefits of society, reflecting enterprises' active response to market regulation constraints. While ESG practices bring new constraints to companies, they also open new markets and help companies achieve optimal asset allocation under green and low-carbon constraints, injecting new vitality into corporate value. Secondly, ESG ratings are related to corporate image and compliance. They serve as windows for governments, investors, and other relevant parties to understand companies' implementation of ESG concepts and requirements. ESG ratings also influence stock price fluctuations, internal and external financing, and high-quality growth. Listed companies participating in ESG evaluations refer to the ESG rating results issued by authoritative institutions. From the perspective of sustainable development, they examine their own operational characteristics, identify potential investment risks and opportunities, adjust and improve business plans in a timely manner, thereby avoiding various market risks and improving corporate governance. Thirdly, in recent years, with the deepening openness of China's capital market, more and more institutions and individual investors have been influenced by the high ESG attention from foreign shareholders, prompting them to rethink their investment philosophy and leading to the emergence of a new investment approach. ESG investment embodies the concept of sustainable investment, integrating ESG principles into investment practices, spanning the three dimensions of environment, society, and corporate governance. It examines the long-term development potential of companies based on traditional financial analysis, seeking investment targets that can create economic benefits, realize social value, and possess sustainable growth capabilities simultaneously.

The motivation behind why companies hold cash is not a new issue, but considering the motives for corporate cash holdings from an ESG perspective is a consideration that previous research has lacked. Cash is the most liquid asset held by companies and is crucial for implementing their financing strategies. However, the amount of cash held is not limitless. Maintaining a certain level of liquidity ensures that companies can operate without concerns, while excessive cash holdings are seen as indicative of inadequate development capability and can further exacerbate internal agency problems. In the long term, the motivations for holding cash are influenced by various factors. So, what is the relationship between ESG and the amount of cash held by companies? Considering that publicly listed companies incur costs when holding cash, and building an ESG image also requires costs, intuitively, one might think that companies face trade-offs. This issue may not be obvious at first glance and is currently an area of limited attention in the academic community. However, it is an important reference for the future comprehensive promotion of ESG investment concepts in the capital markets. For many investors, the effect of ESG investments on cash-holding motivations will reduce the irrational subjective initiative of corporate cash disbursement, directing funds reasonably toward sustainable development areas. Therefore, the possible contributions and innovations of this article are as follows: (1) Identifying the causal relationship between ESG and corporate cash holdings, supplementing the literature on ESG and corporate-related research. (2) Enriching the influencing factors of cash holding motives, proposes a new theory and mechanism to explain how ESG affects firms' cash holdings as well as gives empirical evidence based on the original cash holding motives and firms' cost theories. (3) Expanding the economic consequences of ESG influences.

2. Literature Review

2.1. The Concept and Development of ESG

ESG stands for Environmental, Social, and Governance. It is an important evaluation metric for industries, manufacturing, and other enterprises to practice sustainable development principles (Muñoz-Torres et al., 2019; Nekhili et al., 2021). The ESG concept was first introduced in the 2004 report "Who Cares Wins" by the United Nations Global Compact, identifying ESG as core elements for microeconomic entities to achieve sustainable development. The ESG concept emerged against a backdrop of complex social issues, strained resource utilization, and severe climate change challenges, initially starting in the investment field. It has progressively become a significant measure for sustainable development in financial markets. As the ESG concept has further spread, it has been increasingly integrated into corporate development systems, with investors paying more attention to the extent of a company's positive or negative impact on social welfare (Gillan et al., 2021).

As the main entities practicing ESG (Environmental, Social, and Governance), companies aim for sustainable development by considering environmental, social responsibility, and corporate governance factors in their business decisions. They strive to improve their ESG performance and disclose their ESG information promptly in accordance with regulatory requirements. The factors influencing corporate ESG performance and its economic consequences are key areas of ESG research. This research primarily explores whether companies engage in ESG activities, why they are willing to practice ESG, and the economic performance of these practices. After companies disclose their ESG information, third-party rating agencies establish evaluation systems to assess the companies' ESG performance and publicly disclose the ESG ratings. Currently, there are ESG rating agencies evaluating different types of companies in the industry, but the lack of mature and effective evaluation systems and unified, comparable rating results is one of the significant issues in the current development of ESG (Zhang et al., 2020; Ge et al., 2022; Avramov et al., 2022).

ESG rating results not only guide companies in seeking development through ESG practices but also play a crucial role for investors in understanding the ESG performance of their investee companies. Stakeholders, including investors, make decisions based on ESG ratings and their own understanding and judgment of the companies, which directly affects their investment returns and the daily operations of the investee companies. Numerous scholars have conducted research on ESG investing, exploring the role of ESG factors in investment returns from the investors' perspective. This research addresses why investors consider the ESG performance of investee companies and whether ESG factors impact investment performance (Amel-Zadeh & Serafeim, 2018; Barber et al., 2021; Gibson Brandon et al., 2021). Ultimately, companies adjust their ESG performance based on stakeholder feedback to further improve their ESG practices. Regulatory bodies monitor companies' ESG performance and revise existing ESG standards according to the actual situation of the companies, thereby enhancing the ESG development framework.

2.2. Motivation and Influencing Factors of Cash Holding

Scholars, building on Keynes' theory of money demand, have identified three primary motives for corporate cash holdings in the field of corporate finance: the transactional motive, the precautionary motive, and the speculative motive.

The transactional motive posits that companies hold cash to ensure smooth daily operations and transaction needs. If a company’s cash reserves are insufficient to address funding shortfalls promptly, normal business activities can be significantly disrupted. To raise funds, the company might have to sell non-cash assets or reduce dividends and investments, which can hinder long-term development and incur substantial transaction costs and asset losses. To mitigate the costs of cash shortages, companies tend to maintain higher cash levels (Subramaniam et al., 2011; Huang & Mazouz, 2018). The precautionary

motive suggests that companies reserve a certain amount of cash to cope with potential risks or to avoid missing out on good investment opportunities. Companies in growth industries have a stronger expansion motive and, to guard against future income uncertainties, will hold more cash for precautionary reasons (Vo, 2018; Faulkender et al., 2019). The agency motive indicates that in situations of dispersed ownership, information asymmetry gives management an informational advantage over shareholders and external investors. To achieve personal benefits such as increased on-the-job consumption or job security, managers might engage in actions detrimental to investor interests. The high liquidity and difficulty in monitoring cash assets provide opportunities for management to realize these private benefits, which can lead to reduced or eliminated dividends that would otherwise go to shareholders (Kim et al., 1998; Jebrian et al., 2019).

In recent years, the theory of corporate cash holdings has been continuously refined, and research on the influencing factors of cash holdings has deepened, gradually forming a systematic and comprehensive body of work. Existing studies on corporate cash holdings suggest that the amount of cash a company holds is primarily determined by its environment, corporate governance, and agency conflicts. In the absence of agency conflicts, companies will choose their cash holdings based on their potential business environment to maximize corporate value. Regarding operational determinants, research indicates that companies using more cash for payments will hold more cash to reduce transaction costs and facilitate transactions. Similarly, companies with relatively more investment opportunities, facing higher costs, or having limited access to capital markets will also hold more cash, driven by transactional and precautionary motives. Studies by Florackis & Sainani (2018), Martínez-Sola et al. (2018), and Batuman et al. (2022) have examined these factors. In terms of corporate governance-related determinants, improper incentives within and outside the company can cause the level of cash holdings to deviate from what would be observed if only operational determinants were at play (Al-Hadi et al., 2020).

2.3. ESG Performance and Corporate Cash Holdings

Academic research on the impact of ESG (Environmental, Social, and Governance) on corporate cash holdings often focuses on individual dimensions, namely environmental governance, social responsibility, and corporate governance. Firstly, the relationship between environmental governance and corporate cash holdings is examined. With the advancement of ecological civilization and the adherence to sustainable development principles becoming a primary operational guideline for businesses, environmental governance has become a crucial aspect of sustainable development and a key component of ESG investment strategies. This governance influences corporate investment efficiency and overall value. Numerous studies have investigated environmental governance, shifting the focus from solely government actions to include the role of businesses in pollution control and environmental management. The research indicates that although there is no consensus on the exact definition of environmental governance, there is a general agreement that there is a significant positive relationship between environmental governance and corporate cash holdings (Tan et al., 2021; Atif et al., 2022; Liao et al., 2023).

Secondly, regarding the relationship between social responsibility and corporate cash holdings, there is no consensus in domestic and international research. Chang et al. (2019) found a positive correlation between corporate social responsibility (CSR) and cash holdings, with the positive effect being more pronounced in high-risk companies. To better fulfill social responsibilities, companies may make "implicit commitments" to stakeholders and hold more cash as a reliable means to honor these commitments or to alleviate potential future financing difficulties if they fail to meet obligations on time. Yang et al. (2019) used quantile regression models to find that in the capital market, CSR enhances the value of cash holdings, and this positive correlation becomes more significant as the market value of the company increases. However, Prior et al. (2008) discovered that there might also be a negative correlation between CSR and cash holdings.

Finally, regarding the relationship between corporate governance and cash holdings, scholars have not reached a consensus, but most studies focus on ownership structure and agency issues. For instance, Dittmar et al. (2003) found that corporate governance mechanisms in the United States do not significantly impact cash holdings. This is because, compared to China, the investor protection mechanisms in the United States are more robust, reducing the likelihood of agency problems and the associated costs, thus negating the need for companies to hold excessive cash. Chen et al. (2020) used a difference-in-differences method to study the impact of corporate governance on cash holdings across 41 countries. Their findings indicate that cash holdings significantly decreased following board reforms. This effect is more pronounced in companies with weaker governance before the reforms and in countries with weaker institutional environments.

2.4. Summary

In summary, the factors influencing corporate ESG performance and its economic consequences are key areas of ESG research. The primary focus is on whether companies engage in ESG activities, why they are willing to practice ESG, and the economic performance of these practices. Cash holdings are crucial for the smooth operation of daily business activities and transactions, as well as for enhancing investment opportunities. There is a complex relationship between ESG performance and corporate cash holdings. However, existing literature on the relationship between ESG and corporate cash holdings is relatively sparse, and the impact of the three ESG dimensions on cash holdings of listed companies is not consistent. Therefore, no consensus has been reached regarding the effect of ESG on corporate cash holdings. This article utilizes data from A-share listed companies on the Shanghai and Shenzhen stock exchanges from 2011 to 2021 to explore the relationship between ESG performance and corporate cash holdings. The goal is to deeply analyze the impact of ESG performance on corporate cash holdings, providing theoretical support for the sustainable and high-quality development of enterprises.

3. Research Design

3.1. Theory Analysis

Suppose managers of publicly listed companies wish to maximize profits. However, when considering ESG investments, they may sacrifice current cash efficiency. Yet, holding cash for ESG investment opportunities could yield additional rewards in the long term, as companies with higher ESG scores generally exhibit better internal governance, weaker agency problems, and have better long-term equity incentive mechanisms. Therefore, corporate managers have two cash holding strategies: low and high. Consequently, long-term value investors and management interests are more aligned. However, this alignment is not the case for other market investors, especially speculative funds that tend to have short-term perspectives. Such investors aim to maximize current profits rather than long-term value, and their trading behavior can affect stock prices, thereby influencing short-term corporate actions. Thus, the strategy of market speculators is to sell stocks to depress prices when companies hold cash for ESG investment and to buy stocks to raise prices when companies profit from short-term cash holdings.

Due to cash being the most liquid asset, holding cash serves a significant purpose in facilitating transactions and being able to act swiftly when suitable investment opportunities arise. However, the cost of holding cash for businesses is substantial. Large amounts of cash on the books deprive it of its potential for appreciation, reducing cash efficiency. Therefore, firms face a trade-off between profitability and liquidity when choosing to hold cash, neither failing to retain cash nor retaining excessive amounts of cash. It's generally believed that holding too much cash is not favorable for a company as it may signal three potential risks. Firstly, the company lacks good investment opportunities, which is an inefficient use of cash. Secondly, the company may face difficulties in financing or incur high financing costs, as reflected in the "cash-cash flow sensitivity" hypothesis. Thirdly,

excess cash may lead to executives' excessive personal consumption, damaging shareholder interests through personal behavior. In theory, companies with higher ESG scores are less likely to encounter the second and third risks but may still face the first risk. Building upon this premise, this article proceeds with further research design to explore the relationship between ESG performance and corporate cash holdings.

3.2. Sample Selection and Data Sources

The ESG rating data in this article are sourced from Wind's ESG rating data for A-share listed companies. Considering the relative incompleteness of ESG rating data before 2011 and the presence of certain missing elements, this article selects all A-share listed companies that received Wind's ESG ratings between 2011 and 2021 as the initial research sample. The following criteria were applied for selection: (1) Exclusion of companies that were suspended from trading (ST) or with *ST status during the sample period, as the authenticity and accuracy of financial data for these companies are questionable, and they inherently pose higher stock price risks; (2) Exclusion of listed companies in the financial industry, considering the sector's specific characteristics; (3) Exclusion of listed companies with fewer than 30 trading days in a quarter; (4) Exclusion of listed companies with missing financial data. This study ultimately obtained 114087 sample observations, and Stata 17.0 was used as the analytical software.

3.3. Local Stability Analysis of Equilibrium Points

3.3.1 Dependent variable: Enterprise cash holdings

Drawing on the methods of Chen et al. (2019) and Nyborg & Wang (2021), the measurement of corporate cash holdings, denoted as $CASH_{i,t}$, for stock i in quarter t, is based on the proportion of cash holdings to total assets.

3.3.2 Independent variable: Enterprise ESG performance

The ESG rating by Wind includes 3 primary indices, 14 secondary indices, 44 tertiary indices, and 70 quaternary indices. There are 300 underlying data indices, which incorporate more indices relevant to the current stage of development in China's domestic market compared to foreign markets, such as information disclosure quality, penalties by the China Securities Regulatory Commission, and targeted poverty alleviation. The rating levels are further divided into three tiers: ABC, with each tier subdivided into three smaller tiers, totaling nine rating levels from AAA to C. These ratings are scientifically recognized. In this article, based on Wind's ESG rating, values from 9 to 1 are assigned sequentially from AAA to C grades.

3.3.3 Control variables

Drawing on the research of Goodell et al. (2021), this article primarily focuses on other factors influencing corporate cash holdings and selects the following control variables: firm size $SIZE_{i,t}$, profitability $ROA_{i,t}$, leverage $LEV_{i,t}$, book-to-market ratio $MB_{i,t}$, price-to-book ratio $PB_{i,t}$. The variables and their definitions are presented in **Table 1**.

Table 1. Main Variable Names and Definitions.

	Name	Symbol	Definition
Dependent variable	Cash Holdings	$CASH_{i,t}$	Share of cash holdings in total assets in quarter t of stock i
Independent variable	ESG Performance	$ESG_{i,t}$	According to the Huazheng ESG rating standard, assign values of 9 to 1 to AAA to C levels in sequence
Control variables	Size	$SIZE_{i,t}$	The logarithm of the total assets+1 in the t-quarter of stock i
	Profitability	$ROA_{i,t}$	Ratio of net profit to total assets of the company at the end of quarter t of stock i
	Solvency	$LEV_{i,t}$	The ratio of total liabilities to total assets of the company in quarter t of stock i

	Book to market ratio	$MB_{i,t}$	The ratio of shareholders' equity to the company's market value in quarter t of stock i
	Market to book ratio	$PB_{i,t}$	The ratio of stock price per share to net assets per share of company i in quarter t

3.3.4 Econometric Model

To verify the hypothesis, this paper designs the following multiple regression model for analysis. The model mainly controls the characteristics of the enterprise.

$$CASH_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_2 \sum Control_{i,t} + YearFE + IndFE + \varepsilon_{i,t+1} \quad (1)$$

In equation (1), $CASH_{i,t+1}$ is the cash holding rate of the enterprise i in the quarter t, $ESG_{i,t}$ is the ESG performance indicator of the enterprise i in the quarter t, and $Control_{i,t}$ is all control variables. In addition, the model also controls the year and industry.

3.3.5 Descriptive statistics

The descriptive statistics for the main variables are presented in **Table 2**. The mean ESG rating for companies is 4.11, indicating that the majority of companies are rated as B, representing a lower level within the ESG rating system. Moreover, no company has achieved the highest rating, suggesting that the overall ESG performance of Chinese companies is relatively weak and requires improvement in attention. The mean cash holding *CASH* is 0.152. Additionally, the average return on assets *ROA* is 2.4%, and the average leverage *LEV* is approximately 42.3%, with corresponding value distributions generally within reasonable ranges.

Table 2. Descriptive Statistics.

	Obs	Mean	Std	Min	Max
$CASH_{i,t}$	114087	0.152	0.125	-0.211	1
$ESG_{i,t}$	114087	4.110	1.120	1	8
$SIZE_{i,t}$	114087	22.217	1.340	15.278	28.636
$ROA_{i,t}$	114087	0.024	0.051	-2.646	0.793
$LEV_{i,t}$	114087	0.423	0.238	-0.227	34.432
$MB_{i,t}$	114087	0.619	0.252	0.001	1.964
$PB_{i,t}$	114087	4.563	75.399	0	20452.06

4. Empirical Analysis

4.1. Benchmark Regression

Table 3 presents the regression results showing how corporate ESG performance affects cash holdings. The first column displays the baseline OLS regression results, the second column shows the results of the random effects model, and the third column shows the results of the fixed effects model. We observe that in the baseline OLS regression analysis, the coefficient of ESG is significantly positively correlated with cash holdings at the 1% significance level. When ESG improves by 1 point, cash holdings increase by 1.07%. Similarly, in the random effects model, the coefficient of ESG is also significantly positively correlated with cash holdings at the 1% significance level, with a 0.76% increase in cash holdings when ESG improves by 1 point. In the fixed effects model, when ESG improves by 1 point, cash holdings increase by 0.73%. This indicates that as companies develop better ESG practices, their ability to hold cash increases.

Table 3. Benchmark Regression.

	(1) OLS	(2) Random Effects	(3) Fixed Effects
ESG	0.0107***	0.0076***	0.0073***

	(12.42)	(10.44)	(9.62)
PB		0.0001*	0.0001
		(1.71)	(1.64)
SIZE		-0.0218***	-0.0252***
		(-11.72)	(-11.69)
LEV		-0.228***	-0.231***
		(-26.36)	(-24.63)
CF		0.0002**	0.0003**
		(2.21)	(2.17)
ROA		0.1310***	0.1261***
		(9.36)	(8.98)
Year control	YES	YES	YES
Individual control	YES	YES	YES
N	114087	114087	114087
R^2	0.008	0.125	0.134

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

4.2. Endogeneity Test

The text describes conducting 2SLS regressions on the current ESG (Environmental, Social, and Governance) score using lagged first-order ESG, lagged ESG of orders 1 to 3, and a dummy variable indicating whether the company belongs to a high-pollution industry as additional instrumental variables for endogeneity testing. From **Table 4**, it can be observed that in column (1), with lagged first-order ESG, L.ESG remains significant at the 1% level and is positively correlated. In column (2), when lagged ESG of orders 1 to 3 are used as instruments for the current ESG in the 2SLS regression, the ESG variable remains significant at the 1% level and is positively correlated. In column (3), the dummy variable indicating whether the company belongs to a high-pollution industry is used as an additional IV for regression. While ESG scores are theoretically directly affected by whether a company belongs to a high-pollution industry, the theoretical impact of belonging to such an industry on a company's cash holdings ratio is not direct. Hence, it can serve as an additional exogenous IV. The results show that the ESG variable remains significant at the 1% level and is positively correlated. Moreover, when the ESG score increases by one point, the cash holdings of the company increase by 24.9%.

Table 4. Benchmark Regression.

	(1) Lag one order	(2) Joint Lag IV	(3) IV - Pollution dummy variable
L.ESG	0.0062***		
	(8.53)		
ESG		0.0064***	0.2492***
		(6.79)	(12.32)
PB	0.0001*	0.0001	0.0001
	(1.78)	(0.78)	(1.45)
SIZE	-0.0224***	-0.0172***	-0.0479***
	(-10.55)	(-8.24)	(-12.61)
LEV	-0.2210***	-0.2061***	-0.1963***
	(-23.69)	(-21.65)	(-18.92)
CF	0.0002**	0.00159**	0.0006***
	(2.01)	(2.22)	(3.78)
ROA	0.1331***	0.1122***	-0.0769**
	(9.32)	(8.57)	(-2.10)

Year control	YES	YES	YES
Individual control	YES	YES	YES
N	106784	94059	106283
R^2	0.123	0.134	0.117

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

4.3. The Impact of Regulatory Punishment

We further consider whether there is heterogeneity in the impact of market value on the relationship between ESG and corporate cash holdings. We divide market value into three groups, labeled as 1, 2, and 3, representing small, medium, and large market value companies, respectively. We then interact each group with the ESG score. For instance, 1.mv_type. ESG represents the interaction between the first group and the ESG score, serving as the reference group. The coefficients for groups 2 and 3, relative to the reference group, are negative and significant at the 1% level. The results indicate that compared to small market value firms, large market value firms have more ESG investment opportunities, thus resulting in lower cash holdings.

Furthermore, we investigate whether there is heterogeneity in the impact of corporate ownership nature on the relationship between ESG and corporate cash holdings. We categorize companies into state-owned enterprises (SOEs) and private enterprises (PEs). The interaction term 1.SOE.ESG represents the interaction between SOEs and ESG. Relative to private enterprises, the impact of ESG on cash holdings ratio is significantly negative for state-owned enterprises. This suggests that compared to private enterprises, state-owned enterprises have more ESG investment opportunities, leading to lower cash holdings.

Table 5. Further Analysis.

	(1)	(2)
	Different market values	Different property rights
ESG	0.0106***	0.0092***
	(9.06)	(9.49)
1.mv_type	0	
	(.)	
2.mv_type	0.0032	
	(0.67)	
3.mv_type	0.0167**	
	(2.54)	
1.mv_type.ESG	0	
	(.)	
2.mv_type.ESG	-0.0041***	
	(-3.32)	
3.mv_type.ESG	-0.0066***	
	(-4.27)	
0.SOE		0
		(.)
1.SOE		0.0120*
		(1.67)
0.SOE.ESG		0
		(.)
1.SOE.ESG		-0.0064***
		(-4.64)
PB	0.0001*	0.0001
	(1.69)	(0.64)

SIZE	-0.0228***	-0.0267***
	(-10.47)	(-12.79)
LEV	-0.2343***	-0.2331***
	(-24.37)	(-24.71)
MB	0.0002**	0.0015**
	(2.15)	(2.19)
ROA	0.1301***	0.1222***
	(9.21)	(8.52)
Year control	YES	YES
Individual control	YES	YES
N	114087	114087
R^2	0.137	0.141

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

5. Conclusions

In recent years, as the concept of sustainable development has gained widespread acceptance, investors have increasingly focused on corporate ESG performance. Against this backdrop, this study examines the impact of ESG performance on the cash holdings of non-financial A-share listed companies in Shanghai and Shenzhen from 2011 to 2021. The research findings indicate: (1) Companies with higher ESG performance tend to have better internal governance and higher efficiency but lack good ESG investment opportunities, leading to higher cash holdings. (2) Compared to small-cap companies, large-cap companies have more ESG investment opportunities, resulting in lower cash holdings. (3) Compared to non-state-owned enterprises, state-owned enterprises have more ESG investment opportunities, which also leads to lower cash holdings. Based on these findings, the following recommendations are proposed.

Firstly, as carbon neutrality and sustainable development gradually become mainstream in the socio-economic landscape, environmental performance has emerged as a crucial risk factor for corporate development. It's imperative for enterprises to abandon the notion that ESG development is a cost burden and instead elevate their strategic investment awareness in ESG. By enhancing overall ESG performance, enterprises can bolster their competitiveness and garner higher market appreciation. According to the research findings, the inhibitory effect of ESG performance on cash holdings is more significant in non-state-owned enterprises. Therefore, non-state-owned enterprises should prioritize the disclosure of ESG performance information, convey positive operational signals to capital markets and investors, garner stakeholder recognition and support, alleviate financing constraints, and thereby make more rational cash holding decisions.

Secondly, regulatory authorities should refine relevant systems, fully leverage the positive role of ESG performance in corporate governance, and foster a conducive environment for ESG disclosure and application. It is essential to advocate for enterprises to adhere to sustainable development principles actively. Encourage enterprises to disclose ESG performance information and utilize incentives and penalties for ESG performance management. Guide enterprises in making correct ESG decisions to enhance overall operational efficiency. Additionally, according to the research findings, the inhibitory effect of ESG performance on cash holdings is stronger in high-market-cap enterprises. Therefore, relevant departments should reform areas with a concentration of low-market-cap enterprises. Enhance their marketization processes, support the development of the financial industry, improve the rule of law, minimize unnecessary intervention, and fully leverage the role of ESG performance in cash holding decisions.

References

1. Al-Hadi, A., Eulaiwi, B., Al-Yahyaee, K. H., Duong, L., & Taylor, G. (2020). Investment committees and corporate cash holdings. *The North American Journal of Economics and Finance*, *54*, 101260. https://doi.org/10.1016/j.najef.2020.101260
2. Amel-Zadeh, A., & Serafeim, G. (2018). Why and how investors use ESG information: Evidence from a global survey. *Financial analysts journal*, *74*(3), 87-103. https://doi.org/10.2469/faj.v74.n3.2
3. Atif, M., Liu, B., & Nadarajah, S. (2022). The effect of corporate environmental, social and governance disclosure on cash holdings: Life-cycle perspective. *Business Strategy and the Environment*, *31*(5), 2193-2212. https://doi.org/10.1002/bse.3016
4. Avramov, D., Cheng, S., Lioui, A., & Tarelli, A. (2022). Sustainable investing with ESG rating uncertainty. *Journal of Financial Economics*, *145*(2), 642-664. https://doi.org/10.1016/j.jfineco.2021.09.009
5. Barber, B. M., Morse, A., & Yasuda, A. (2021). Impact investing. *Journal of Financial Economics*, *139*(1), 162-185. https://doi.org/10.1016/j.jfineco.2020.07.008
6. Batuman, B., Yildiz, Y., & Karan, M. B. (2022). The impact of the global financial crisis on corporate cash holdings: Evidence from Eastern European countries. *Borsa Istanbul Review*, *22*(4), 678-687. https://doi.org/10.1016/j.bir.2021.10.002
7. Chang, C.-H., Chen, S.-S., Chen, Y.-S., & Peng, S.-C. (2019). Commitment to build trust by socially responsible firms: Evidence from cash holdings. *Journal of Corporate Finance*, *56*, 364-387. https://doi.org/10.1016/j.jcorpfin.2019.03.004
8. Chen, R. R., Guedhami, O., Yang, Y., & Zaynutdinova, G. R. (2020). Corporate governance and cash holdings: Evidence from worldwide board reforms. *Journal of Corporate Finance*, *65*, 101771. https://doi.org/10.1016/j.jcorpfin.2020.101771
9. Chen, Y.-W., Chan, K., & Chang, Y. (2019). Peer effects on corporate cash holdings. *International Review of Economics & Finance*, *61*, 213-227. https://doi.org/10.1016/j.iref.2019.02.008
10. Dittmar, A., Mahrt-Smith, J., & Servaes, H. (2003). International corporate governance and corporate cash holdings. *Journal of Financial and Quantitative analysis*, *38*(1), 111-133. https://doi.org/10.2307/4126766
11. Faulkender, M. W., Hankins, K. W., & Petersen, M. A. (2019). Understanding the rise in corporate cash: Precautionary savings or foreign taxes. *The Review of Financial Studies*, *32*(9), 3299-3334. https://doi.org/10.1093/rfs/hhz003
12. Florackis, C., & Sainani, S. (2018). How do chief financial officers influence corporate cash policies? *Journal of Corporate Finance*, *52*, 168-191. https://doi.org/10.1016/j.jcorpfin.2018.08.001
13. Ge, G., Xiao, X., Li, Z., & Dai, Q. (2022). Does ESG performance promote high-quality development of enterprises in China? The mediating role of innovation input. *Sustainability*, *14*(7), 3843. https://doi.org/10.3390/su14073843
14. Gibson Brandon, R., Krueger, P., & Schmidt, P. S. (2021). ESG rating disagreement and stock returns. *Financial analysts journal*, *77*(4), 104-127. https://doi.org/10.1080/0015198X.2021.1963186
15. Gillan, S. L., Koch, A., & Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, *66*, 101889. https://doi.org/10.1016/j.jcorpfin.2021.101889
16. Goodell, J. W., Goyal, A., & Urquhart, A. (2021). Uncertainty of uncertainty and firm cash holdings. *Journal of Financial Stability*, *56*, 100922. https://doi.org/10.1016/j.jfs.2021.100922
17. Huang, W., & Mazouz, K. (2018). Excess cash, trading continuity, and liquidity risk. *Journal of Corporate Finance*, *48*, 275-291. https://doi.org/10.1016/j.jcorpfin.2017.11.005
18. Jebran, K., Chen, S., & Tauni, M. Z. (2019). Principal-principal conflicts and corporate cash holdings: Evidence from China. *Research in International Business and Finance*, *49*, 55-70. https://doi.org/10.1016/j.ribaf.2019.02.010
19. Kim, C.-S., Mauer, D. C., & Sherman, A. E. (1998). The determinants of corporate liquidity: Theory and evidence. *Journal of Financial and Quantitative analysis*, *33*(3), 335-359. https://doi.org/10.2307/2331099
20. Liao, J., Zheng, L., & Yuan, Y. (2023). The impact of corporate environmental responsibility on corporate cash holdings: evidence from the most polluting listed companies in China. *Kybernetes*, *52*(1), 262-283. https://doi.org/10.1108/K-05-2021-0390
21. Martínez-Sola, C., García-Teruel, P. J., & Martínez-Solano, P. (2018). Cash holdings in SMEs: speed of adjustment, growth and financing. *Small Business Economics*, *51*(4), 823-842. https://doi.org/10.1007/s11187-018-9990-y
22. Muñoz-Torres, M. J., Fernández-Izquierdo, M. Á., Rivera-Lirio, J. M., & Escrig-Olmedo, E. (2019). Can environmental, social, and governance rating agencies favor business models that promote a more sustainable development? *Corporate Social Responsibility and Environmental Management*, *26*(2), 439-452. https://doi.org/10.1002/csr.1695
23. Nekhili, M., Boukadhaba, A., & Nagati, H. (2021). The ESG–financial performance relationship: Does the type of employee board representation matter? *Corporate Governance: An International Review*, *29*(2), 134-161. https://doi.org/10.1111/corg.12345
24. Nyborg, K. G., & Wang, Z. (2021). The effect of stock liquidity on cash holdings: The repurchase motive. *Journal of Financial Economics*, *142*(2), 905-927. https://doi.org/10.1016/j.jfineco.2021.05.027
25. Prior, D., Surroca, J., & Tribó, J. A. (2008). Are socially responsible managers really ethical? Exploring the relationship between earnings management and corporate social responsibility. *Corporate Governance: An International Review*, *16*(3), 160-177. https://doi.org/10.1111/j.1467-8683.2008.00678.x
26. Subramaniam, V., Tang, T. T., Yue, H., & Zhou, X. (2011). Firm structure and corporate cash holdings. *Journal of Corporate Finance*, *17*(3), 759-773. https://doi.org/10.1016/j.jcorpfin.2010.06.002
27. Tan, J., Chen, T., Zhang, P., & Chan, K. C. (2021). Environmental rule enforcement and cash holdings: Evidence from a natural experiment. *Economic Modelling*, *103*, 105618. https://doi.org/10.1016/j.econmod.2021.105618
28. Vo, X. V. (2018). Foreign ownership and corporate cash holdings in emerging markets. *International Review of Finance*, *18*(2), 297-303. https://doi.org/10.1111/irfi.12130

29. Yang, J., Wu, W., & Cai, Z. (2019). A quantile analysis to the impact of corporate social responsibility on the value of cash holdings. *Systems Engineering: Theory & Practice*, *39*(4), 893-905. https://doi.org/10.12011/1000-6788-2018-1994-13
30. Zhang, F., Qin, X., & Liu, L. (2020). The interaction effect between ESG and green innovation and its impact on firm value from the perspective of information disclosure. *Sustainability*, *12*(5), 1866. https://doi.org/10.3390/su12051866