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PROFITS WITH PURPOSE: LINKING ESG, SUSTAINABILITY, AND FINANCIAL PERFORMANCE IN CHINESE PUBLIC FIRMS

ПРИБУТКИ ЗІ СТАЛИМ СЕНСОМ: ВЗАЄМОЗВ'ЯЗОК ESG, СТАЛОГО РОЗВИТКУ ТА ФІНАНСОВИХ РЕЗУЛЬТАТІВ ПУБЛІЧНИХ КОМПАНІЙ КИТАЮ

Summary. This study investigates how environmental, social, and governance (ESG) performance shapes the financial performance of Chinese listed firms. Using a comprehensive ten-year panel dataset (2013–2023) covering 33,215 firm-year observations from all A-share companies on the Shanghai and Shenzhen stock exchanges, the analysis shows that environmental, social, and governance dimensions each have significant and positive effects on return on assets (ROA) and return on equity (ROE), with overall ESG performance showing the strongest impact. The findings reveal important regional variation: ESG effects are strongest in China's western regions, moderate in the east, and negligible in the central regions, highlighting how local institutional and market conditions shape the ESG-profitability link. This research makes three key contributions: it provides robust empirical evidence from an emerging market context, offers actionable insights for firms and investors on integrating ESG into strategy, and delivers policy-relevant guidance for designing regionally tailored ESG initiatives. The findings will be valuable to corporate managers seeking to align sustainability with profitability, investors evaluating ESG-driven financial performance, and policymakers aiming to strengthen ESG frameworks across diverse regional settings.

Keywords: ESG performance, financial performance, corporate social responsibility, Chinese listed firms, return on assets (ROA), return on equity (ROE), regional heterogeneity, emerging markets.

1. Introduction. In recent years, environmental, social, and corporate governance (ESG) has become a key driver of corporate strategy, investment decisions, and policy debates worldwide (N. Wang et al., 2024a). Global investors, consumers, and regulators increasingly recognize that corporate success cannot be measured by financial performance alone. Firms are now expected to address broader environmental and social responsibilities, ensuring that their governance structures align with sustainable and ethical standards (Pasko, Kharchenko, et al., 2024; Zhu et al., 2024). As ESG moves from being a voluntary practice to an integral part of corporate identity, questions arise about whether these efforts deliver tangible financial benefits (Chi et al., 2024; Pasko et al., 2023).

China presents a particularly compelling context for examining these questions. As the world's second-largest economy, China has experienced rapid industrialization, urbanization, and financial market development over the past two decades.

This growth has come with complex environmental and social challenges, from air and water pollution to labor conditions and governance reforms. In response, the Chinese government has introduced a series of regulatory initiatives aimed at promoting corporate social responsibility and sustainability (W. Liu & Yan, 2025). At the same time, institutional investors and other market participants have begun to prioritize ESG performance in their assessments of corporate value. Yet despite these shifts, empirical research on the financial impact of ESG practices in China remains limited.

While a robust body of literature has examined ESG and firm performance in developed markets, emerging markets present distinct dynamics. Firms in China face different institutional pressures, regulatory environments, and stakeholder expectations compared to their Western counterparts (Chen et al., 2024; Kuai et al., 2025; Yu & Xiao, 2022). For example, state ownership, market transitions, and regional disparities introduce complexities that may alter the ESG-performance link. As such, it is critical to assess whether the positive correlations found in Western studies hold in China or whether the relationship follows a different pattern. This study aims to fill that gap by providing a comprehensive empirical analysis of ESG performance and firm profitability in the Chinese context.

Specifically, this paper examines all A-share listed companies in China's Shanghai and Shenzhen stock markets over a ten-year period (2013–2023). We explore how firms' ESG ratings, as measured by the Huazheng ESG system, relate to their financial outcomes, focusing on key performance indicators such as return on assets (ROA) and return on equity (ROE). We also investigate the individual contributions of environmental, social, and governance components, recognizing that each dimension may affect firm performance in distinct ways. Moreover, the study accounts for firm-level control variables, such as size, leverage, board structure, and age, to isolate the unique effects of ESG factors.

Beyond the general ESG-performance relationship, we conduct a heterogeneity analysis to explore whether the impact of ESG differs across China's eastern, central, and western regions. Given the country's vast geographic and economic diversity, regional variations can offer important insights into how local contexts shape the value of ESG practices. For instance, firms in the more developed eastern provinces may face greater stakeholder scrutiny and stronger market incentives to pursue sustainability, while firms in central and western regions may operate under different pressures and constraints.

The contributions of this paper are threefold. First, it enriches the empirical literature on ESG by focusing on China, an emerging market with unique institutional characteristics. Second, it offers robust evidence on the financial effects of ESG practices, helping firms and investors make informed decisions about resource allocation and strategy. Third, it provides policy-relevant insights, highlighting the areas where ESG can play a meaningful role in supporting China's broader sustainability goals.

The remainder of the paper is structured as follows. Section 2 develops the hypotheses, drawing on prior theoretical and empirical work to motivate the expected relationships between ESG and firm performance. Section 3 presents the research design, including sample selection, variable measurement, and econometric models. Section 4 reports the empirical results, including descriptive statistics, regression findings, robustness checks, and heterogeneity analysis. Section 5 discusses the implications of the results, situating them within the broader literature and offering practical recommendations. Finally, Section 6 concludes the paper, summarizing the key findings and outlining directions for future research.

2. Literature review and Hypotheses Development. The integration of environmental, social, and corporate governance (ESG) practices into firm strategy has become an essential factor for evaluating corporate sustainability and long-term performance, especially in emerging markets like China. Recent studies emphasize that Chinese listed firms increasingly face stakeholder pressure and regulatory requirements to strengthen ESG disclosure, making the relationship between ESG and financial performance both timely and significant (E. X. Liu & Song, 2025; Ruan & Liu, 2021).

Environmental Performance. Environmental performance refers to a firm's actions to reduce environmental harm, such as minimizing carbon emissions, improving energy efficiency, or adhering to pollution control standards. Scholars argue that firms engaging in proactive environmental management can achieve cost savings and reduce regulatory risks (Li et al., 2024; E. X. Liu & Song, 2025; X. Wang et al., 2024). Moreover, environmental responsibility may improve brand reputation and attract environmentally conscious investors, enhancing long-term financial stability (Ruan & Liu, 2021). However, critics point to potential downsides, such as high up-front investment costs and uncertain financial returns,

especially in heavy industries where environmental reforms are capital intensive (Lu & Gong, 2024). Based on these contrasting views, the first hypothesis is formulated as:

H1: Environmental performance is positively correlated with listed firm performance.

Social Performance. Social performance includes how firms engage with employees, customers, suppliers, and communities. Strong social practices – such as fair labor policies, customer protection, and community support – are believed to enhance stakeholder trust and loyalty, which can translate into improved financial outcomes (Chi et al., 2024; Pasko, Chen, et al., 2021; Pasko, Zhang, et al., 2021; Pasko, Zhang, Proskurina, Sapych, et al., 2024; Shu & Tan, 2023; N. Wang et al., 2024b; X. Wang, 2024). Empirical research from China shows that socially responsible firms often experience lower employee turnover and stronger customer satisfaction, both of which contribute to profitability (Pasko, Zhang, Proskurina, Ryzhikova, et al., 2024; Zhu et al., 2024). On the other hand, some studies highlight that social initiatives may dilute managerial focus and divert resources from core operational areas, potentially reducing short-term profits (Barman & Mahakud, 2025; Deb et al., 2024; Liang et al., 2024; Ruan & Liu, 2021). This debate leads to the second hypothesis:

H2: Social performance is positively correlated with listed firm performance.

Corporate Governance. Corporate governance relates to the structures, policies, and mechanisms that ensure accountability, transparency, and alignment of management decisions with shareholder interests. Prior Chinese studies show that good governance improves resource allocation, reduces agency conflicts, and limits managerial opportunism, thus enhancing financial outcomes (Feng et al., 2025; Guo, 2024; Lu & Gong, 2024; Pasko et al., 2023; Pasko, Kharchenko, et al., 2024; Pasko, Zhang, Markwei Martey, et al., 2024; Pasko, Zhang, Proskurina, Ryzhikova, et al., 2024; Zhu et al., 2024). Governance practices such as board independence, audit committee strength, and clear shareholder rights have been found to improve firm valuation (Li et al., 2024; Ruan & Liu, 2021). Yet, critics note that formal governance reforms may be symbolic or superficial, particularly in state-owned enterprises where political influences persist, reducing the expected performance gains (Feng et al., 2025; Makridou et al., 2024). Therefore, the third hypothesis is stated as:

H3: Corporate governance is positively correlated with listed firm performance.

Overall ESG Performance. Overall ESG performance integrates the environmental, social, and governance dimensions into a holistic assessment of a firm's sustainability orientation. Recent research indicates that companies with high overall ESG scores outperform peers on several financial indicators, including return on assets (ROA) and return on equity (ROE), due to their ability to reduce risks, access capital more efficiently, and strengthen stakeholder relationships (Kuai et al., 2025; Li et al., 2024; Yu & Xiao, 2022). However, concerns about ESG "greenwashing"– where firms inflate their ESG claims without making substantial improvements – raise questions about the consistency of this positive relationship (Chen et al., 2024; Ma et al., 2024). (Cherian & Seranmadevi, 2024; X. Wang et al., 2024; Zhang & Liu, 2022) This leads to the fourth hypothesis:

H4: ESG performance is positively correlated with listed firm performance.

3. Methods

3.1 Sample Selection and Data Sources. This study uses all A-share listed companies on China's Shanghai and Shenzhen stock exchanges from 2013 to 2023 to investigate the impact of ESG on the financial performance of Chinese listed firms. Industries are classified based on the industry codes and category codes set by the China Securities Regulatory Commission's Guidelines for the Classification of Listed Companies' Industries (2012 Revision).

The sample is refined through the following steps:

(1) Excluding companies labeled as ST;

(2) Excluding companies with missing financial data;

(3) Excluding delisted companies;

(4) Excluding firms from the financial sector, including banks, insurance companies, and similar.

All continuous variables are winsorized at the 1% and 99% levels to minimize the influence of outliers. After applying these criteria, the final dataset includes 33,215 firm-year observations. Financial data are drawn from the CSMAR database, while ESG ratings come from the Wind database. Stata 18 and Excel 2021 are used to organize and analyze the panel dataset.

3.2 Variable Design and Measurement. This study uses static panel regression to analyze the relationships among the variables. The dependent variable is return on assets (ROA), a widely accepted measure of corporate financial performance in empirical research. ROA serves as a comprehensive indicator, reflecting the overall operational

performance of a firm. A higher ROA signals that the company has generated more profit within a given period, indicating stronger profitability (Wu & Huang, 2022).

The independent variable is ESG performance (ESG), measured using the Huazheng ESG rating system. This system includes nine levels, ranked from lowest to highest: C, CC, CCC, B, BB, BBB, A, AA, and AAA. For analysis, these are converted into scores from 1 to 9, with higher scores indicating better ESG performance.

Control variables include firm size (SIZE), leverage ratio (LEV), growth rate of operating revenue (GRO), number of board members (BOA), and firm age (AGE). These were selected to capture key firm characteristics, as they represent major internal factors that may influence corporate performance. The inclusion of control variables helps isolate the effect of ESG performance on ROA by minimizing the influence of unrelated factors.

The definitions and details of all variables are provided in Table 1 Variables Definition.

3.3 Regression Model. This study posits that ESG in China has a significantly positive impact on the financial performance of listed companies. To test this hypothesis, this study will conduct an estimation analysis using a panel regression model.

$$ROA_{it} = \alpha_0 + \alpha_1 E_{Rit} + \alpha_2 \mathrm{SIZE}_{it} + \alpha_3 \mathrm{LEV}_{it} + \\ + \alpha_4 \mathrm{GRO}_{it} + \pm_5 \mathrm{BOA}_{it} + \pm_6 \mathrm{AGE}_{it} + \pm_7 \mathrm{TOP1}_{it} + \\ + \pm_8 \mathrm{CASH}_{it} + \sum \mathrm{year} + \sum \mathrm{ind} + \mu_{it} \quad \text{(Eq1)}$$

$$\mathrm{ROA}_{it} = \pm_0 + \pm_1 \mathrm{S}_{\mathrm{R}it} + \pm_2 \mathrm{SIZE}_{it} + \pm_3 \mathrm{LEV}_{it} + \\ + \pm_4 \mathrm{GRO}_{it} + \pm_5 \mathrm{BOA}_{it} + \pm_6 \mathrm{AGE}_{it} + \pm_7 \mathrm{TOP1}_{it} \\ + + \pm_8 \mathrm{CASH}_{it} + \sum \mathrm{year} + \sum \mathrm{ind} + \mu_{it} \quad \text{(Eq2)}$$

$$\mathrm{ROA}_{it} = \pm_0 + \pm_1 \mathrm{G}_{\mathrm{R}it} + \pm_2 \mathrm{SIZE}_{it} + \pm_3 \mathrm{LEV}_{it} + \\ + \pm_4 \mathrm{GRO}_{it} + \pm_5 \mathrm{BOA}_{it} + \pm_6 \mathrm{AGE}_{it} + \pm_7 \mathrm{TOP1}_{it} + \\ + \pm_8 \mathrm{CASH}_{it} + \sum \mathrm{year} + \sum \mathrm{ind} + \mu_{it} \quad \text{(Eq3)}$$

$$\mathrm{ROA}_{it} = \pm_0 + \pm_1 \mathrm{ESG}_{it} + \pm_2 \mathrm{SIZE}_{it} + \pm_3 \mathrm{LEV}_{it} + \\ + \pm_4 \mathrm{GRO}_{it} + \pm_5 \mathrm{BOA}_{it} + \pm_6 \mathrm{AGE}_{it} + \pm_7 \mathrm{TOP1}_{it} + \\ + \pm_8 \mathrm{CASH}_{it} + \sum \mathrm{year} + \sum \mathrm{ind} + \mu_{it} \quad \text{(Eq4)}$$

i is the ith firm. t is the tth year. ROA_{it} is the financial performance of the ith firm in year t. E_R_{it}

Table 1

Variables Definition

Variable	Abbreviation	Variable Definition
Dependent Variable: Corporate Performance		
Return on Assets	ROA	The ratio of net profit to total assets
Return on Equity	ROE	Return on equity
Independent Variable: ESG		
ESG	ESG	Evaluation indicator is sourced from the *Social Responsibility Report* released by the Wind database
Environment Performance	E_R	Evaluation indicator is sourced from the *Social Responsibility Report* released by the Wind database
Society Performance	S_R	Evaluation indicator is sourced from the *Social Responsibility Report* released by the Wind database
Corporate Governance	G_R	Evaluation indicator is sourced from the *Social Responsibility Report* released by the Wind database
Control Variables		
Firm Size	SIZE	The natural logarithm of the firm's total assets
Leverage Ratio	LEV	Total liabilities divided by total assets
Growth Rate of Operating Revenue	GRO	(Current period operating revenue- Previous period operating revenue) / Previous period operating revenue
Number of Board Members	BOA	The natural logarithm of the total number of board members
Firm Age	AGE	The natural logarithm of the value obtained by subtracting the establishment year of the firm from the reporting period of the firm
Ownership Concentration	TOP1	The number of shares held by the largest shareholder divided by the total number of shares
Cash Ratio	CASH	The ratio of cash and cash equivalents to total assets

denotes environment. S_R_{it} denotes social. G_R_{it} denotes corporate governance. α_0 is the constant term. α_i is the coefficient of independent variables, which can judge the positive and negative direction of the influence of the variable. ε_{it} represents the error term. Among them, *ind* represents industry fixed effects, and *year* represents year fixed effects.

4. Result

4.1 Descriptive Statistics. We conducted descriptive statistics for all variables over the period 2013–2023, summarizing the minimum, maximum, mean, and standard deviation for each variable. This provides an initial overview of the dataset. To limit the influence of outliers that could distort the model results, we applied winsorization. By setting appropriate upper and lower bounds, we adjusted extreme values to fall within a reasonable range, ensuring the robustness of the analysis. The summary of these statistics is presented in Table 2.

As shown in Table 2, the descriptive statistics indicate that the dataset includes 33,215 observations, with no missing values across any variables. The dependent variable, return on assets (ROA), has a mean of 0.034, meaning the average profitability across the sampled firms is 3.4%, which suggests an overall acceptable performance. However, the standard deviation of 0.063 points to significant variation in ROA among firms. The minimum value of ROA is -0.245, highlighting that some firms are operating at a considerable loss, while the maximum value of 0.199 reflects notable differences in profitability across the sample.

The ESG (Environmental, Social, and Governance) score has a mean of 4.147, indicating that, on average, firms perform at a moderately high level in these areas. Its standard deviation of 1.017 suggests a moderate spread in ESG performance. Breaking this down, the average environmental score (E_R) is 2.016, the average social score (S_R) is 4.601, and the average governance score (G_R) is 5.256. The differing standard deviations across these dimensions indicate that variation is especially pronounced in the social category.

Overall, the data distribution appears sound and provides a solid basis for further statistical analysis.

4.2 Multicollinearity Test

To address potential multicollinearity in the analysis of ESG performance and corporate financial performance, a pairwise correlation analysis was conducted (Table 3). The correlation coefficients among the key variables are all below the conventional multicollinearity threshold of 0.80, indicating that multicollinearity is not a concern in this study.

The results show that ROA is significantly and positively correlated with overall ESG performance (0.201, $p < 0.01$), suggesting that stronger ESG practices are associated with higher returns on assets. Moreover, ROA is positively linked to the environmental (E_R), social (S_R), and governance (G_R) dimensions, with coefficients of 0.025, 0.092, and 0.259, respectively (all significant at the 1% level). Among these, the correlation between ROA and governance performance is the strongest, underscoring the importance of governance factors in driving financial outcomes, as expected by the study's hypotheses.

Overall, these findings confirm that each ESG dimension contributes to enhancing firm performance and that the selected variables pose minimal risk of distorting the regression analysis due to multicollinearity.

Table 2

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	33215	0.034	0.063	-0.245	0.199
ESG	33215	4.147	1.017	1.000	6.000
E_R	33215	2.016	1.168	1.000	6.000
S_R	33215	4.601	1.650	1.000	9.000
G_R	33215	5.256	1.320	1.000	8.000
SIZE	33215	22.309	1.302	19.940	26.370
GRO	33215	0.148	0.384	-0.554	2.311
LEV	33215	0.420	0.201	0.059	0.893
BOA	33215	2.109	0.196	1.609	2.639
AGE	33215	2.016	0.963	0.000	3.367
TOP1	33215	33.453	14.729	8.260	73.560
CASH	33215	0.205	0.142	0.018	0.683

Table 3

Pairwise correlations

Variables	ROA	ESG	E_R	S_R	G_R	SIZE	GRO	LEV	BOA	AGE	TOP1	CASH
ROA	1											
ESG	0.201***	1										
E_R	0.025***	0.496***	1									
S_R	0.092***	0.609***	0.286***	1								
G_R	0.259***	0.641***	0.095***	0.062***	1							
SIZE	0.041***	0.217***	0.273***	0.190***	0.050***	1						
GRO	0.235***	-0.015***	-0.036***	0.017***	-0.016***	0.038***	1					
LEV	-0.329***	-0.101***	0.101***	0.072***	-0.282***	0.481***	0.041***	1				
BOA	0.019***	0.017***	0.048***	0.021***	-0.021***	0.266***	0.003	0.142***	1			
AGE	-0.169***	-0.101***	0.070***	-0.057***	-0.157***	0.406***	-0.062***	0.341***	0.170***	1		
TOP1	0.148***	0.096***	0.029***	-0.011**	0.153***	0.197***	-0.003	0.038***	0.022***	-0.065***	1	
CASH	0.236***	0.136***	-0.036***	0.038***	0.208***	-0.215***	-0.017***	-0.419***	-0.096***	-0.253***	0.025***	1

*Notes: This table reveals the correlation among variables of the current research. *** p<0.01, ** p<0.05, * p<0.1.*

4.3 Results. Table 4 presents the regression results. The study uses multiple linear regression to examine the effects of key variables on return on assets (ROA). Across Models (1)–(4), both year and industry effects are controlled, and each model includes 33,215 observations.

The models show good overall fit, with R-squared values between 0.2759 and 0.2847 and adjusted R-squared values between 0.2751 and 0.2839. All models report F-statistics above 210, significant at the 1% level ($p < 0.01$), confirming the joint explanatory power of the independent variables on ROA.

In Model (1), the coefficient for environmental performance (E_R) is 0.0010 ($t = 3.5357$, $p < 0.01$), indicating a significant positive relationship: a one-unit increase in environmental performance raises ROA by an average of 0.0010 units. Model (2) shows that social performance (S_R) has a coefficient of 0.0031 ($t = 15.0045$, $p < 0.01$), suggesting that improvements in the social dimension significantly boost ROA by about 0.0031 units per unit increase.

Model (3) highlights governance performance (G_R) with a coefficient of 0.0051 ($t = 17.3050$, $p < 0.01$), reflecting a strong positive effect where each one-unit gain in governance performance leads to an average ROA increase of 0.0051 units. Finally, Model (4) shows that overall ESG performance has the largest coefficient, 0.0061 ($t = 17.0371$, $p < 0.01$), meaning that each one-unit rise in the ESG score lifts ROA by an average of 0.0061 units.

The constant terms in all models are significantly negative ($p < 0.01$), indicating that other factors not included in the models exert a negative baseline influence on ROA.

Overall, the findings show a clear and significant link between environmental, social, governance, and combined ESG performance and firm profitability, offering strong empirical evidence on how ESG factors shape financial outcomes.

4.4 Robustness Tests. To ensure the robustness of the results, we conducted additional tests by replacing the dependent variable with ROE (Return on Equity). As shown in Table 5, all four models used 33,215 observations and controlled for both year and industry effects. The models showed solid explanatory power, with R-squared values ranging from 0.2037 to 0.2131 and adjusted R-squared values from 0.2028 to 0.2122. The F-statistics exceeded 94 in all cases and were significant at the 1% level, confirming the overall strength and fit of the models.

In Model (1), the environmental performance (E_R) coefficient was 0.0013, with a t-statistic of 2.0143, significant at the 5% level. This indicates that improvements in environmental performance have a positive and meaningful impact on ROE; specifically, each one-unit increase in E_R raises ROE by approximately 0.0013 units on average.

Model (2) focused on social performance (S_R), which had a coefficient of 0.0065 and a t-value of 12.6181, significant at the 1% level. This suggests that higher social performance significantly enhances ROE, with each one-unit increase linked to an average ROE rise of 0.0065 units.

In Model (3), the governance dimension (G_R) showed a coefficient of 0.0120 and a t-statistic of 15.8787, also significant at the 1% level. This result demonstrates that better governance performance has a strong positive effect, increasing ROE by about 0.0120 units per one-unit improvement.

Finally, Model (4) examined the overall ESG score, which had a coefficient of 0.0142 and a t-value of 15.5415, again significant at the 1% level. This

Table 4

Regression Results

VARIABLES	(1) ROA	(2) ROA	(3) ROA	(4) ROA
E_R	0.0010***			
	(3.5357)			
S_R		0.0031***		
		(15.0045)		
G_R			0.0051***	
			(17.3050)	
ESG				0.0061***
				(17.0371)
SIZE	0.0128***	0.0120***	0.0116***	0.0111***
	(37.2495)	(35.6935)	(34.5976)	(32.3200)
GRO	0.0380***	0.0378***	0.0383***	0.0383***
	(34.3485)	(34.4787)	(34.8074)	(35.0391)
LEV	-0.1215***	-0.1208***	-0.1104***	-0.1148***
	(-51.6532)	(-51.4511)	(-46.0821)	(-48.6404)
BOA	0.0057***	0.0053***	0.0071***	0.0062***
	(3.4143)	(3.1761)	(4.2637)	(3.6986)
AGE	-0.0066***	-0.0057***	-0.0058***	-0.0055***
	(-18.4034)	(-15.6891)	(-16.2320)	(-15.4273)
TOP1	0.0004***	0.0004***	0.0003***	0.0004***
	(18.0185)	(18.7030)	(16.4948)	(17.6757)
CASH	0.0613***	0.0617***	0.0557***	0.0586***
	(22.1606)	(22.4379)	(20.1566)	(21.3063)
Constant	-0.2380***	-0.2287***	-0.2477***	-0.2266***
	(-31.0601)	(-30.2629)	(-32.6092)	(-30.0798)
Year effect	Yes	Yes	Yes	Yes
Ind effect	Yes	Yes	Yes	Yes
Observations	33,215	33,215	33,215	33,215
R-squared	0.2759	0.2808	0.2847	0.2835
r2_a	0.2751	0.2799	0.2839	0.2827
F	212.6901***	219.5182***	216.3298***	218.1331***

*Note: All variables are defined as in Table 1. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1*

confirms that stronger overall ESG performance meaningfully boosts ROE, with each one-unit increase in the ESG score associated with an average ROE gain of 0.0142 units.

Together, these robustness tests reinforce the conclusion that firms' environmental, social, governance, and overall ESG performance have significant and positive effects on their return on equity.

4.5 Heterogeneity Analysis. Table 6 presents the results of the heterogeneity analysis, where the sample is divided into eastern, central, and western regions to examine how the effects of various variables differ across regions.

In the eastern region, the ESG coefficient is 0.0008 with a t-value of 1.8941, significant at the 10% level ($p < 0.1$). This suggests that ESG performance has a positive, though relatively weak, impact on the outcome variable in the east.

In the central region, the ESG coefficient is 0.0003 with a t-value of 0.3096, which is not statistically significant. This indicates that ESG performance does not have a clear or meaningful effect on the outcome variable for firms in the central region.

In contrast, the western region shows a stronger relationship. Here, the ESG coefficient is 0.0031 with a t-value of 3.1999, significant at the 1% level ($p < 0.01$). This demonstrates that ESG performance has a significant and relatively large positive impact on the outcome variable among western firms, making it the strongest effect observed among the three regions.

These findings highlight the importance of accounting for regional differences when assessing the role of ESG performance, as its influence varies considerably across different parts of the country (see Table 6).

Table 5

Robustness Tests

VARIABLES	(1) ROE	(2) ROE	(3) ROE	(4) ROE
E_R	0.0013**			
	(2.0143)			
S_R		0.0065***		
		(12.6181)		
G_R			0.0120***	
			(15.8787)	
ESG				0.0142***
				(15.5415)
SIZE	0.0323***	0.0304***	0.0292***	0.0280***
	(33.0275)	(31.9812)	(31.0054)	(29.1694)
GRO	0.0844***	0.0840***	0.0851***	0.0852***
	(31.8021)	(31.9119)	(32.3111)	(32.4629)
LEV	-0.2293***	-0.2278***	-0.2031***	-0.2136***
	(-29.1111)	(-29.0033)	(-26.2693)	(-27.5455)
BOA	0.0100**	0.0091**	0.0133***	0.0111***
	(2.4524)	(2.2487)	(3.2767)	(2.7276)
AGE	-0.0129***	-0.0110***	-0.0110***	-0.0104***
	(-16.5509)	(-13.9508)	(-14.0596)	(-13.2291)
TOP1	0.0008***	0.0008***	0.0007***	0.0008***
	(15.8844)	(16.5000)	(14.3698)	(15.5596)
CASH	0.0966***	0.0976***	0.0836***	0.0905***
	(16.2983)	(16.5324)	(14.0436)	(15.3016)
Constant	-0.6393***	-0.6171***	-0.6585***	-0.6087***
	(-31.4021)	(-30.8254)	(-32.6408)	(-30.6154)
Year effect	Yes	Yes	Yes	Yes
Ind effect	Yes	Yes	Yes	Yes
Observations	33,215	33,215	33,215	33,215
R-squared	0.2037	0.2078	0.2131	0.2118
r2_a	0.2028	0.2069	0.2122	0.2109
F	94.6033***	98.3956***	96.3819***	97.3960***

*Note: All variables are defined as in Table 1. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1*

Regional Classifications and ESG Coefficients:

Eastern Region: Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan.

ESG Coefficient: 0.0008* ($p < 0.1$)

Central Region: Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, and Hunan.

ESG Coefficient: 0.0003 (not significant)

Western Region: Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet (Xizang), Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang.

ESG Coefficient: 0.0031*** ($p < 0.01$)

5. Discussion. This study adds to the growing evidence that ESG performance is not only an ethical or reputational matter but also a financial driver for firms in emerging markets. As summarized in Table 7, the positive and significant relationships between environmental, social, governance, and overall ESG performance and firm profitability confirm the study's hypotheses. These findings align with prior research showing that proactive environmental management can reduce costs and risks while improving brand image (Li et al., 2024; Liu & Song, 2025; X. Wang et al., 2024).

The results on social performance reinforce past work suggesting that employee engagement, customer loyalty, and community trust translate into financial advantages (Chi et al., 2024; Pasko, Zhang, Proskurina, Sapych, et al., 2024; Shu & Tan, 2023). Moreover, the strong influence of corporate governance echoes findings that board independence, accountability, and internal controls strengthen firm valuation and performance (Feng et al., 2025; Pasko, Kharchenko, et al., 2024; Ruan & Liu, 2021).

Importantly, this study's heterogeneity analysis reveals notable regional variation, where ESG performance in western regions has a stronger financial impact than in central or eastern areas. This finding supports the idea that local economic, institutional, and stakeholder environments shape

Table 6

The results of heterogeneity analysis

VARIABLES	(1) East	(2) Central	(3) West
ESG	0.0008*	0.0003	0.0031***
	(1.8941)	(0.3096)	(3.1999)
SIZE	0.0141***	0.0111***	0.0135***
	(15.9862)	(6.2616)	(7.0403)
GRO	0.0372***	0.0315***	0.0323***
	(41.6522)	(19.0066)	(18.2151)
LEV	-0.1537***	-0.1494***	-0.1441***
	(-41.4366)	(-20.1778)	(-19.0666)
BOA	0.0053	-0.0148**	0.0179**
	(1.5976)	(-2.3648)	(2.3897)
AGE	-0.0175***	-0.0096***	-0.0103***
	(-19.6047)	(-4.7018)	(-4.4823)
TOP1	0.0004***	0.0003***	0.0002
	(6.3330)	(2.6173)	(1.3473)
CASH	0.0419***	0.0775***	0.0597***
	(10.8114)	(9.6325)	(6.4557)
Constant	-0.2240***	-0.1258***	-0.2556***
	(-11.4777)	(-3.3669)	(-6.0012)
Year effect	Yes	Yes	Yes
Ind effect	Yes	Yes	Yes
Observations	23,144	5,046	4,143
R-squared	0.2104	0.1960	0.2070
Number of id	3,460	699	545
r2_a	0.0713	0.0652	0.0851
F	655.4567***	132.2394***	117.1439***

*Note: All variables are defined as in Table 1. t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1*

Table 7

Summary of Hypothesis Testing Results

Hypotheses	Description	Exp. Sign	Findings	Conclusion
H1	Environment performance is positively correlated with listed firm performance.	+	+	Supported
H2	Society performance is positively correlated with listed firm performance.	+	+	Supported
H3	Corporate governance is positively correlated with listed firm performance.	+	+	Supported
H4	ESG performance is positively correlated with listed firm performance.	+	+	Supported

the ESG–performance link (Kuai et al., 2025; Yu & Xiao, 2022). Firms in less developed regions may benefit more from ESG improvements because such efforts stand out more visibly, while in developed eastern markets, ESG may already be an established norm (Ma et al., 2024; Makridou et al., 2024).

The study also reinforces recent arguments that ESG efforts can improve access to capital, enhance innovation efficiency, and strengthen supply chain positioning (Guo, 2024; Wang, 2024; Zhu et al., 2024). However, it is essential to acknowledge concerns raised in the literature about ESG greenwashing and the uneven quality of ESG disclosures (Chen et al., 2024; Ma et al., 2024). These challenges highlight the need for future research to move beyond correlations and examine the causal mechanisms linking ESG practices to financial outcomes.

From a managerial perspective, the findings suggest that ESG integration should be seen not as a cost center but as a strategic investment aligned with firm performance (Barman & Mahakud, 2025; Deb et al., 2024). For investors, the study reinforces the financial materiality of ESG metrics in evaluating firm value (Pasko et al., 2023; Zhang & Liu, 2022). Policymakers should note the regional disparities and consider tailored regulatory approaches to

ensure that ESG-related benefits reach all areas equitably (Liu & Yan, 2025; Lu & Gong, 2024).

Overall, this study extends the empirical literature by offering evidence from China, a rapidly transforming market with unique institutional dynamics. While the positive correlations observed here are promising, future work should explore longitudinal effects, potential non-linear relationships, and sector-specific variations to provide deeper insight into how ESG creates value over time.

6. **Conclusion.** The primary aim of this study was to examine whether environmental, social, and governance (ESG) performance positively affects the financial performance of Chinese listed firms. Using ten years of panel data from A-share companies, the study assessed how ESG ratings relate to key financial outcomes, specifically return on assets (ROA) and return on equity (ROE). It also explored how the individual ESG dimensions – environmental, social, and governance – contribute separately to firm performance and how these effects differ across China's eastern, central, and western regions.

The empirical results confirm that ESG performance is a significant and positive predictor of firm profitability. These findings align with prior research showing that sustainability practices strengthen stakeholder trust, improve efficiency, and reduce risk (Chi et al., 2024; Liu & Song, 2025; Pasko, Zhang, Proskurina, Ryzhikova, et al., 2024). The heterogeneity analysis further reveals that ESG practices have a stronger impact in western regions, suggesting that local economic and institutional factors shape ESG outcomes (Kuai et al., 2025; Yu & Xiao, 2022).

The study makes three key contributions. First, it enriches the empirical ESG literature by focusing on an emerging market context, providing insights complementary to findings from developed economies (Chen et al., 2024; Guo, 2024). Second, it offers practical guidance for managers and investors, showing that ESG integration can deliver measurable financial benefits, supporting earlier calls for stronger ESG adoption (Barman & Mahakud, 2025; Deb et al., 2024). Third, it presents policy-relevant evidence, underscoring the need for regionally tailored ESG strategies to maximize positive outcomes (Liu & Yan, 2025; Lu & Gong, 2024).

However, the study is not without limitations. While the study provides robust and meaningful evidence through regression analysis and robustness checks, future research could further strengthen understanding by exploring deeper causal mechanisms and longitudinal effects. Future research should explore longitudinal data, industry-level differences, and the durability of ESG effects over time. Additionally, researchers should assess the risks of ESG greenwashing and investigate how the quality of ESG disclosures moderates financial outcomes (Chen et al., 2024; Ma et al., 2024).

In sum, this study shows that ESG is not just a symbolic commitment or compliance requirement – it is a material factor shaping firm value. For firms, investors, and regulators in China's fast-changing economy, ESG represents both a challenge and an opportunity for long-term value creation.

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Анотація. У статті досліджено, як екологічні, соціальні та управлінські (ESG) показники впливають на фінансові результати публічних компаній Китаю. Автор використовує панельні дані за десять років (2013–2023), що охоплюють 33 215 спостережень для компаній класу А, зареєстрованих на Шанхайській та Шеньчженьській фондових біржах. Використано методи регресійного аналізу та робастних перевірок для оцінки впливу ESG на такі фінансові показники, як рентабельність активів (ROA) та рентабельність власного капіталу (ROE). Дослідження демонструє, що кожен компонент ESG – екологічний, соціальний та управлінський – має статистично значущий позитивний вплив на фінансові результати компаній. Найсильніший ефект виявлено для загального ESG-показника. Особливо важливою є гетерогенність результатів залежно від регіональних відмінностей. Аналіз показує, що в західних регіонах Китаю ESG має найбільш виражений вплив на прибутковість, тоді як у центральних регіонах вплив практично відсутній, а в східних – помірний. Цей факт підкреслює значення місцевого інституційного та ринкового середовища для формування взаємозв'язку між ESG та фінансовими показниками. Робота робить три ключові наукові внески. По-перше, вона збагачує емпіричну літературу, додаючи докази з ринку, що розвивається, – китайського. По-друге, надає практичні рекомендації для менеджерів та інвесторів щодо інтеграції ESG у корпоративну стратегію для досягнення фінансової вигоди. По-третє, дослідження формує політично значущі висновки, підкреслюючи потребу в регіонально адаптованих ESG-ініціативах для забезпечення справедливого розподілу вигод. Хоча дослідження має високу статистичну надійність, воно визнає необхідність подальших досліджень, зокрема щодо встановлення причинно-наслідкових механізмів, впливу галузевої специфіки та довгострокових ефектів ESG. Крім того, важливими залишаються питання якості ESG-звітності та ризиків «озеленення на папері» (greenwashing).

Результати статті будуть корисними для корпоративних менеджерів, які прагнуть поєднати стійкий розвиток із прибутковістю, інвесторів, що оцінюють фінансову ефективність ESG, а також для політиків, які розробляють ESG-стратегії на національному та регіональному рівнях. Дослідження демонструє, що ESG не є лише символічним або репутаційним інструментом – це реальний фактор створення вартості та довгострокового зростання компаній у мінливому економічному середовищі Китаю.

Ключові слова: показники ESG, фінансові результати, корпоративна соціальна відповідальність, публічні компанії Китаю, рентабельність активів (ROA), рентабельність власного капіталу (ROE), регіональні відмінності, ринки, що розвиваються.