Asian Journal of Accounting Research

The impact of ESG performance on firm performance: the moderating role of audit quality – evidence from China

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Received 24 July 2025
Revised 6 October 2025
1 January 2026
27 February 2026
1 April 2026
Accepted 28 May 2026

Abstract

Purpose – This study examines how environmental, social and governance (ESG) performance relates to firm profitability in China and whether audit quality conditions this link. We assess both the direct effect of ESG and its heterogeneity across state-owned enterprises (SOEs) and non-SOEs. By foregrounding external assurance and ownership context, the study clarifies when ESG translates into economic value. The goal is to provide evidence-based guidance for scholars, managers, and policymakers on how credible sustainability practices, supported by high-quality audits, can enhance firm outcomes in an emerging-market setting.

Design/methodology/approach – We analyze 35,175 firm-year observations for Chinese A-share firms (2015–2024). ESG scores (Huazheng) are rescaled to 0–100 and standardized by year. Baseline models use firm and year fixed effects with clustered standard errors; interaction models test moderation by audit quality (abnormal audit fees, ln audit fees, Big-4 and audit opinion). Robustness includes alternative ESG z-scores, lag structures, SOE versus non-SOE splits and endogeneity checks via two-step system and difference GMM, plus instrumental variables (local audit market concentration and partner workload). Variables entering interactions are mean-centered; controls include size, cash flows, leverage, board size and Tobin's Q.

Findings – ESG performance is positively associated with profitability (ROA/ROE); effects are statistically robust yet economically moderate. A one-standard-deviation rise in ESG increases ROA by ∼0.18–0.19 percentage points and ROE by ∼0.65–0.68 points. Dynamic panel estimates indicate short-term gains weaken once profit persistence is considered, implying benefits accrue through longer-term channels. Audit quality shows mixed moderation: abnormal (and raw) audit fees reduce profitability but do not consistently strengthen ESG effects; Big-4 shows limited incremental influence. ESG impacts are stronger for SOEs, while non-SOEs are more sensitive to audit frictions.

Research limitations/implications – Results pertain to listed Chinese firms and Huazheng ESG metrics; generalization to private or non-Chinese firms requires caution. ESG ratings and audit proxies may embed coverage and methodology biases, and audit fees can reflect complexity as well as quality. Although we address endogeneity using lagged models, IVs, and system/difference GMM, residual identification concerns remain. Future work could triangulate multiple ESG providers, exploit regulatory shocks or inspection outcomes, and extend to other markets to test external validity.

Practical implications – Managers should treat ESG as a long-term investment that enhances profitability when paired with credible governance and transparent reporting. Prioritize material ESG initiatives, sustain disclosure quality, and manage audit frictions – especially in non-SOEs – by planning engagements that balance fee levels with assurance depth. Boards can use abnormal-fee diagnostics to monitor audit complexity and risk. Policymakers should strengthen disclosure standards and promote reliable assurance to curb greenwashing and improve comparability, thereby lowering firms' financing costs and encouraging efficient capital allocation.

Social implications – Trustworthy assurance elevates the credibility of ESG disclosures, curbing greenwashing and aligning corporate actions with societal goals. By clarifying when audits add informational value, the study supports investor protection, fairer capital markets and more effective progress toward environmental and social targets. Strong, transparent ESG practices – verified by credible audits – benefit not only firms and investors but also employees, communities, and the broader public.

Asian Journal of Accounting Research
Emerald Publishing Limited
e-ISSN: 2443-4175
p-ISSN: 2459-9700
DOI 10.1108/AJAR-07-2025-0343

Originality/value – We provide one of the most up-to-date, large-sample analyses for China (2015–2024), integrating multiple audit-quality proxies and an explicit SOE versus non-SOE perspective within an institutional-theory framework. The study reconciles mixed prior findings by quantifying economic magnitudes, testing standardized ESG metrics and deploying dynamic panel estimators. We show that audit quality's moderating role is context-dependent, while ESG's performance benefits are primarily long-term – offering clear, actionable insights for scholars, regulators, and practitioners.

Keywords China, Ownership structure, ESG performance

Paper type Research article

1. Introduction

In recent years, ESG performance has evolved from a symbolic commitment to a strategic imperative. As stakeholders demand greater accountability, firms face pressure to translate sustainability initiatives into tangible value. However, the financial impact of ESG remains contested. While some studies suggest ESG improves reputation and financing access, others highlight costs, inconsistencies, and greenwashing risks. Recent comparative evidence further indicates that these outcomes vary significantly across institutional settings.

Audit quality offers a potential mechanism to reconcile these mixed findings. High-quality audits mitigate information asymmetry, signaling that ESG claims are verifiable rather than merely symbolic. Recent literature emphasizes that governance structures—including audit committees and external assurance—crucially condition ESG outcomes. For instance, Abdullah (2024) and Sahu *et al*. (2025a, b) demonstrate that the ESG–performance link is strengthened by robust internal and external oversight mechanisms. Complementing this, Farhan *et al*. (2026) highlight the synergistic role of CSR and audit committees in validating environmental practices, while Cai *et al*. (2024) show that media coverage further amplifies the reputational consequences of audit signals. These findings underscore the importance of examining how audit quality shapes the ESG–performance relationship.

China provides a compelling setting to address this due to its "dual carbon" goals and evolving disclosure mandates. However, reporting quality remains uneven, and ownership structures create distinct incentives. State-owned enterprises (SOEs) often prioritize political mandates, whereas non-SOEs are driven by market pressures. Institutional theory suggests these differences shape both ESG incentives and reporting credibility. Recent reviews confirm that ESG outcomes are strongly conditioned by such governance arrangements.

Despite these dynamics, empirical evidence remains limited. Prior studies in China have largely examined ESG's direct impact, but few have explicitly tested audit quality as a moderating channel. Moreover, even fewer works extend the analysis to ownership heterogeneity, despite recognition that institutional environments crucially shape ESG outcomes. Addressing these gaps, this study asks: (1) Does ESG performance enhance financial outcomes in China? (2) Is this relationship stronger under higher audit quality? (3) Does this moderation differ between SOEs and non-SOEs?

This paper makes three contributions. First, it provides updated large-sample evidence (2015–2024) utilizing Huazheng ESG data to capture recent regulatory shifts. Second, it introduces audit quality (abnormal fees and Big 4) as a moderating mechanism, situating the analysis alongside emerging evidence on governance contingencies (Abdullah, 2024; Sahu *et al*., 2025a, b; Cai *et al*., 2024; Farhan *et al*., 2026). Third, it incorporates ownership structure as an institutional lens, revealing divergent ESG–audit dynamics between SOEs and non-SOEs, addressing recent calls for more nuanced analyses.

2. Literature review and hypotheses development

2.1 ESG performance and firm performance

Corporate sustainability has evolved into a strategic imperative. Stakeholder and legitimacy theories suggest that effective ESG practices build trust, lower risk, and align with societal expectations, thereby enhancing valuation and resilience (Freeman, 1984; Fatemi *et al*., 2018;

Martinez *et al*., 2021; Okafor *et al*., 2021). While empirical evidence in China and globally largely supports a positive ESG–performance link (Busch and Friede, 2018), particularly in demonstrating that high ESG-performing firms exhibit greater resilience and value stability during market downturns (Broadstock *et al*., 2021), contrasting findings highlight compliance costs and greenwashing risks that may erode financial returns (Galant and Cadez, 2017; Boubaker *et al*., 2020). These divergences often stem from measurement variations and institutional maturity, with recent Chinese data using Huazheng scores showing stronger consistency than global ratings (Alahdal *et al*., 2023). Taken together, while ESG creates value, its benefits depend on credibility and context.

H1. ESG performance is positively associated with firm performance.

2.2 The moderating role of audit quality

Despite potential benefits, unaudited ESG disclosures face credibility concerns due to managerial opportunism. Agency and signaling theories posit that high-quality audits—proxied by Big 4 affiliation or fee premiums—mitigate information asymmetry and validate corporate claims (DeAngelo, 1981; Spence, 1974; DeFond and Zhang, 2014). Furthermore, rigorous external financial audits tend to create positive spillover effects on the reliability of non-financial disclosures (Cohen and Simnett, 2015). Recent research indicates that audit quality amplifies the ESG–performance nexus by ensuring disclosures reflect substantive practices (Velte, 2025). Emerging evidence also highlights that audit effectiveness is synergistic with internal governance: Abdullah (2024), Sahu *et al*. (2025a, b), and Farhan *et al*. (2026) demonstrate that audit and CSR committees interact with external assurance to strengthen sustainability outcomes. In China's evolving regulatory landscape, where media coverage further reinforces audit signals (Cai *et al*., 2024), external audits substitute for weak formal institutions, potentially enhancing ESG's financial payoff.

H2. Audit quality positively moderates the relationship between ESG performance and firm performance.

2.3 Ownership structure and institutional context

Institutional theory suggests organizational strategies reflect external legitimacy pressures (DiMaggio and Powell, 1983). In China's unique institutional setting, corporate non-financial disclosures are frequently utilized as symbolic tools to align with government directives (Marquis and Qian, 2014). Consequently, SOEs often pursue ESG to satisfy political mandates rather than for immediate financial returns. Conversely, non-SOEs rely on ESG strategically to differentiate themselves in competitive markets and significantly lower their cost of capital to alleviate financing constraints (El Ghoul *et al*., 2011; Abdullah, 2024). Therefore, assurance mechanisms are likely more critical for non-SOEs to validate their disclosures to external stakeholders, whereas SOEs are inherently shielded by political support and state-backed resource access (Velte, 2025; Alahdal *et al*., 2023). Thus, ownership heterogeneity conditions the audit–ESG dynamic.

H3. The moderating effect of audit quality on the ESG–performance relationship is stronger for non-SOEs than for SOEs.

3. Research design

3.1 Sample selection and data sources

This study utilizes an unbalanced panel of Chinese A-share listed firms (2015–2024). We apply the following screening criteria: (1) excluding financial institutions; (2) removing firms under Special Treatment (ST/PT); (3) dropping observations with missing core variables; and

(4) retaining firms with at least three consecutive years of data. Continuous variables are winsorized at the 1st and 99th percentiles. The final sample comprises 35,175 firm-year observations (~5,000 unique firms). Data are integrated from Huazheng Information (ESG scores), CSMAR (financials and audit details), and annual reports (audit opinions). All analyses are conducted in Stata 18.

3.2 Variable definitions

The definitions, measurements, and data sources for all variables used in this study—including dependent, independent, moderating, and control variables—are summarized in Table 1.

3.3 Empirical models

To examine the impact of ESG on firm performance, we employ a high-dimensional fixed effects model. This specification is appropriate as it controls for unobserved time-invariant firm heterogeneity (such as corporate culture) and common macroeconomic shocks.

3.3.1 Baseline model.

$$Perf_{it} = \alpha + \beta_1 ESG_{it} + \gamma' X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Table 1. Variable definitions and measurement

Variable	Symbol	Definition and measurement	Unit	Source/Reference
Dependent variables				
Return on Assets	ROA	Net income divided by total assets at year-end	Ratio	Dhaliwal *et al.* (2011)
Return on Equity	ROE	Net income divided by shareholders' equity	Ratio	Velte (2017)
Independent variables				
ESG Performance	ESG	Huazheng ESG rating score, rescaled to 0–100	Score (0–100)	Zhou and Nian (2024)
Standardized ESG	ESG_Z	Year-standardized z-score: $(ESG_{it} - mean_t)/SD_t$	Z-score	Busch and Friede (2018)
Moderating variables				
Abnormal Audit Fees	AbnFees	Residuals from the audit fee determinants model (Simunic, 1980)	Value	Simunic (1980)
Audit Fee Scale	LnAudit	Natural logarithm of total audit fees paid	Log(RMB)	Hay *et al.* (2006)
Big 4 Auditor	Big4	Dummy = 1 if auditor is PwC, Deloitte, EY, or KPMG; 0 otherwise	Dummy	Francis *et al.* (2014)
Unqualified Opinion	Opinion	Dummy = 1 if opinion is standard unqualified; 0 if modified	Dummy	DeFond and Zhang (2014)
Control variables				
Firm Size	Size	Natural logarithm of total assets at year-end	Log(RMB)	DeFond *et al.* (2011)
Leverage	Lev	Total liabilities divided by total assets	Ratio	Dhaliwal *et al.* (2011)
Market-to-Book	TobinQ	(Market value of equity + Book value of debt)/Total assets	Ratio	Kaplan and Zingales (1997)
Cash Flow Ratio	CBNP	Operating cash flow divided by net profit	Ratio	Kim *et al.* (2012)
Board Size	Board	Natural logarithm of the number of board directors	Log (Number)	Dalton *et al.* (1999)
State Ownership	SOE	Dummy = 1 if the ultimate controller is the state; 0 otherwise	Dummy	Liu *et al.* (2014)

Note(s): All continuous variables are winsorized at the 1% and 99% levels

Where $Perf_{it}$ denotes firm performance (ROA or ROE), ESG_{it} is the ESG score, and X_{it} is the vector of control variables. μ_i represents firm fixed effects, and λ_t represents year fixed effects. Standard errors are clustered at the firm level to account for serial correlation within firms over time.

Moderation Model (Audit Quality): To test whether audit quality strengthens the ESG–performance relationship, we augment the baseline model with interaction terms:

$$Perf_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 AQ_{it} + \beta_3 (ESG_{it} \times AQ_{it}) + \gamma' X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

Where AQ_{it} represents the audit quality proxies (Abnormal Fees, Big 4, etc.). Importantly, to mitigate multicollinearity concerns arising from interaction terms, we mean-center continuous variables (ESG and Audit Fees) before calculating the product term. In this specification, β_3 captures the moderating effect. A significant positive β_3 would indicate that high audit quality enhances the value-relevance of ESG activities.

3.4 Robustness and heterogeneity analyses

To ensure the reliability of our baseline findings and address potential endogeneity, we conduct a battery of rigorous robustness checks. Specifically, we employ alternative variable measurements (ROE and a year-standardized ESG score) and incorporate high-dimensional fixed effects (Industry × Year) to absorb time-varying unobserved shocks. To mitigate reverse causality and omitted variable bias, we utilize a two-step System GMM estimator and an instrumental variable (IV) approach based on local audit market characteristics. Finally, given China's unique institutional environment, we conduct subsample analyses to examine whether the ESG–performance relationship and audit moderation exhibit structural differences across ownership regimes (SOEs vs. non-SOEs).

4. Empirical results

4.1 Descriptive statistics

Table 2 presents the descriptive statistics for the variables used in this study. The mean return on assets (ROA) is 0.033 with a standard deviation of 0.068. The average ESG score is 41.104, indicating a moderate level of corporate sustainability performance within the sample. Regarding the binary variables, 6.19% of the observations are audited by Big 4 auditors,

Table 2. Descriptive statistics

Variable	*N*	Mean	Std. Dev	Min	Max
ROA	35,175	0.033	0.068	−0.323	0.198
ROE	35,175	0.042	0.164	−1.042	0.324
ESG	35,175	41.104	9.067	15.000	65.000
LnAudit	35,175	13.950	0.650	12.734	16.199
Size	35,175	22.285	1.306	19.826	26.366
Lev	35,175	2.938	0.786	0.189	5.000
TobinQ	35,175	1.998	1.273	0.825	8.545
CBNP	35,175	0.406	1.123	−0.953	7.918
Board	35,175	8.276	1.551	5.000	13.000
Big4	35,175	0.062	0.241	0.000	1.000
Opinion	35,175	0.971	0.168	0.000	1.000
SOE	35,175	0.334	0.472	0.000	1.000

Note(s): This table presents the descriptive statistics for the main variables (2015–2024). All continuous variables are winsorized at the 1st and 99th percentiles. The maximum Variance Inflation Factor (VIF) is 2.86, well below the threshold of 10, indicating no severe multicollinearity

97.09% received a standard unqualified opinion, and 33.42% of the firms are state-owned enterprises (SOEs).

4.2 Correlation analysis

Table 3 reports the Pearson correlation coefficients among the main variables. As expected, ESG performance is positively and significantly correlated with both profitability measures (ROA and ROE). The maximum correlation between independent variables is 0.750 (between LnAudit and Size). Combined with the low VIF values reported earlier, these results indicate that multicollinearity is not a material concern for our regression models.

4.3 Main regression results

4.3.1 Baseline model: ESG and firm performance. Table 4 reports the baseline regressions examining the impact of ESG performance on firm profitability (ROA and ROE). Across all specifications, with and without firm-level controls, ESG scores are positively and significantly associated with firm performance ($p < 0.01$). In terms of economic magnitude, a one-standard-deviation increase in ESG translates into a meaningful rise of approximately 0.188% points in ROA and 0.678% points in ROE (Columns 2 and 4). These results provide strong empirical support for Hypothesis 1, indicating that ESG engagement significantly enhances financial outcomes in the Chinese capital market, capturing performance-enhancing mechanisms beyond standard firm characteristics.

4.3.2 Moderating effect of audit quality. Table 5 presents the moderating role of audit quality—proxied by abnormal audit fees, Ln(Audit fees), Big-4 auditor, and standard unqualified opinion—in the ESG–performance relationship. To reduce multicollinearity, continuous variables are mean-centered (denoted as ESG_mc) before constructing the interaction terms.

Across all specifications, the interaction terms between ESG_mc and the audit quality proxies are statistically insignificant, indicating that Hypothesis 2 is not supported. Higher audit quality does not materially strengthen the ESG–performance linkage in our sample. Unlike prior studies documenting stronger ESG–performance links under robust audit oversight (e.g. Velte, 2025), our evidence suggests these mechanisms are less effective in the Chinese audit market. A plausible explanation is that the dominance of standard unqualified opinions and relatively low Big-4 penetration reduce the incremental signaling value of external audits. Furthermore, audit fees in this context may largely capture client complexity and risk rather than pure audit effort, thereby diluting their moderating role.

4.4 Endogeneity analysis

To address potential endogeneity, we re-estimated the baseline models using lagged ESG and dynamic panel GMM. Tables 6 and 7 results suggest that baseline estimates may overstate the short-term benefits of ESG. Instead, these additional tests indicate that ESG advantages are more likely to emerge through long-term channels—such as reputation, financing, and risk mitigation—rather than immediate accounting returns.

4.5 Heterogeneity analysis: SOEs vs Non-SOEs

To further examine whether the ESG–performance relationship varies across ownership structures, we split the sample into SOEs and non-SOEs. As shown in Table 8, ESG performance is positively associated with profitability in both subsamples, with stronger effects for SOEs than for non-SOEs. Regarding audit quality (proxied by abnormal audit fees), we find consistently negative main effects for both groups, reflecting audit frictions that reduce profitability. However, the interaction terms (ESG X AbnFees) remain insignificant in both subsamples, indicating that abnormal fees do not systematically moderate the ESG–performance link regardless of ownership. Overall, these results suggest that ESG benefits are robust across ownership structures. Institutional differences remain important: SOEs may

Table 3. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) ROA	1.000								
(2) ROE	0.871***	1.000							
(3) ESG	0.208***	0.204***	1.000						
(4) LnAudit	−0.090***	−0.036***	0.134***	1.000					
(5) Size	0.023***	0.087***	0.217***	0.750***	1.000				
(6) Lev	−0.036***	−0.026***	0.049***	0.207***	0.222***	1.000			
(7) TobinQ	0.134***	0.049***	−0.059***	−0.241***	−0.357***	−0.196***	1.000		
(8) CBNP	−0.028***	0.005	−0.019***	−0.036***	−0.004	−0.210***	0.045***	1.000	
(9) Board	0.019***	0.033***	0.023***	0.191***	0.276***	0.406***	−0.092***	0.034***	1.000

Note(s): This table reports the pairwise Pearson correlation coefficients. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 4. Baseline regressions

Variables	(1) ROA	(2) ROA	(3) ROE	(4) ROE
ESG	0.0003***	0.0002***	0.0010***	0.0008***
	(0.0001)	(0.0001)	(0.0002)	(0.0002)
Size		0.0155***		0.0542***
		(0.0016)		(0.0046)
CBNP		0.0009**		0.0042***
		(0.0004)		(0.0010)
Board		0.0013**		0.0018
		(0.0006)		(0.0016)
TobinQ		0.0073***		0.0125***
		(0.0006)		(0.0013)
Constant	0.0334***	−0.3377***	0.0423***	−1.2077***
	(0.0005)	(0.0345)	(0.0015)	(0.0987)
Observations	35,060	35,060	35,060	35,060
R-squared	0.483	0.492	0.372	0.383
Number of Firms	4,889	4,889	4,889	4,889
Firm FE and Year FE	Yes	Yes	Yes	Yes

Note(s): This table presents the baseline regression results for Hypothesis 1. Robust standard errors clustered at the firm level are reported in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 5. Moderating effect of audit quality on the ESG–firm performance (ROA) relationship

Variables Moderator (AQ)	(1) AbnFees	(2) LnAudit	(3) Big4	(4) Opinion
ESG	0.0002***	0.0002***	0.0002***	−0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0004)
Audit Quality (AQ)	−0.0111***	−0.0270***	0.0048	0.0792***
	(0.0009)	(0.0023)	(0.0035)	(0.0054)
ESG × AQ	0.0000	−0.0001	−0.0002	0.0004
	(0.0001)	(0.0001)	(0.0002)	(0.0004)
Controls	Yes	Yes	Yes	Yes
Firm FE and Year FE	Yes	Yes	Yes	Yes
Observations	35,060	35,060	35,060	35,060
R-squared	0.497	0.497	0.492	0.515

Note(s): Continuous variables used in the interaction terms are mean-centered. Robust standard errors clustered at the firm level are reported in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

benefit from government support that cushions audit frictions, whereas non-SOEs are more exposed to market monitoring pressures.

4.6 Robustness checks

To validate the reliability of our findings against potential measurement artifacts, we re-estimated the baseline and moderation models using a year-standardized ESG measure (ESG_Z). As shown in Table 9, ESG_Z maintains a significant positive association with both ROA and ROE, yielding comparable economic magnitudes to our primary measure and robustly supporting Hypothesis 1. Consistent with our main findings, the interaction term (ESG_Z X AbnFees) remains statistically insignificant under this specification. Overall, these tests confirm that our main conclusions are robust to alternative variable scaling methods.

5. Discussion

The empirical evidence of this study provides partial but meaningful support for the hypothesized relationships.

Table 6. Dynamic effects and lagged moderation: ESG and ROA

Variables	(1)	(2)	(3)	(4)
ESG_{t-1}	−0.0001		−0.0001	−0.0001
	(0.0001)		(0.0001)	(0.0001)
ESG_{t-2}		−0.0004***	−0.0003***	
		(0.0001)	(0.0001)	
$AbnFees_{t-1}$				0.0005
				(0.0010)
$ESG_{t-1} \times AbnFees_{t-1}$				−0.0001**
				(0.0001)
Controls	Yes	Yes	Yes	Yes
Firm FE and Year FE	Yes	Yes	Yes	Yes
Observations	29,511	24,706	24,441	29,511
Number of Firms	4,510	4,100	4,095	4,510
R-squared	0.520	0.527	0.541	0.520

Note(s): This table presents the regression results for the dynamic effects of ESG (lagged by one and two years) and the lagged moderation effect of abnormal audit fees. ESG_{t-1} and ESG_{t-2} denote the one-year and two-year lagged ESG scores, respectively. Column (4) tests the interaction between one-year lagged ESG and one-year lagged abnormal audit fees. Continuous variables involved in interactions are mean-centered. Robust standard errors clustered at the firm level are reported in parentheses. Significance levels: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 7. System-GMM estimation results

Variables	Coefficient	Std. Error	*t*-value	*p*-value	95% Conf. interval
L.ROA	0.713***	0.073	9.73	0.000	[0.570, 0.857]
ESG_mc	−0.00049*	0.00029	−1.65	0.099	[−0.0010, 0.00009]
lntotalassets	0.00410***	0.00067	6.13	0.000	[0.0028, 0.0054]
leverage	0.00101	0.00091	1.10	0.271	[−0.0009, 0.0033]
cbnp_ratio	0.00091*	0.00052	1.75	0.081	[−0.0001, 0.0019]
Board_size	0.00025	0.00033	0.74	0.457	[−0.0004, 0.0009]
TOBINSQ	0.00494***	0.00073	6.73	0.000	[0.0035, 0.0064]
Firm FE and Year FE	Yes	Yes	Yes	Yes	Yes
Constant	−0.1085***	0.0146	−7.45	0.000	[−0.137, −0.080]

Regarding H1, our baseline regressions consistently show that ESG performance improves firm profitability (both ROA and ROE), even after controlling for firm size, leverage, board structure, and growth opportunities. This supports the argument, grounded in stakeholder and legitimacy theory, that ESG activities generate reputational benefits, strengthen stakeholder trust, and reduce financing constraints. Our findings align with recent evidence from emerging markets by Alahdal *et al*. (2023) who emphasize that in transitional economies, sustainability disclosure serves as a critical mechanism for reducing information asymmetry and enhancing competitive advantage. However, our endogeneity analyses indicate that the short-term benefits of ESG weaken once dynamic persistence is considered, suggesting that the positive effects of ESG are more likely to materialize through long-term mechanisms such as market reputation and risk mitigation rather than immediate accounting returns.

In addition, robustness checks using year-standardized ESG scores confirm that our results are not sensitive to scaling or coverage issues in Huazheng data. ESG_z remains significantly positive for both ROA and ROE, with comparable economic magnitudes to the baseline specification. This evidence strengthens confidence in H1 by demonstrating that the ESG–performance link holds under alternative measures and is not an artifact of data construction.

Table 8. Heterogeneity analysis: SOEs vs. Non-SOEs

Variables	(1)	(2)	(3)	(4)
Subsample	SOEs(Base)	SOEs(Interaction)	Non-SOEs(Base)	Non-SOEs (Interaction)
ESG	0.0002**	0.0002**	0.0002**	0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
AbnFees		−0.0076***		−0.0110***
		(0.0014)		(0.0012)
ESG × AbnFees		0.0001		0.0000
		(0.0001)		(0.0001)
Controls	Yes	Yes	Yes	Yes
Firm FE and Year FE	Yes	Yes	Yes	Yes
Observations	11,741	11,741	23,319	23,319
R-squared	0.368	0.372	0.426	0.431
Number of firms	1,348	1,348	3,541	3,541

Note(s): This table presents the heterogeneity analysis based on ownership structure, with ROA as the dependent variable. Continuous variables in the interaction models are mean-centered. Robust standard errors clustered at the firm level are reported in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 9. Robustness check: alternative ESG measure (Year-standardized Z-score)

Variables	(1)	(2)	(3)	(4)
Dependent variable	ROA	ROE	ROA	ROE
ESG_Z	0.0018***	0.0066***	0.0014**	0.0054***
	(0.0006)	(0.0016)	(0.0005)	(0.0015)
AbnFees			−0.0110***	−0.0264***
			(0.0009)	(0.0025)
ESG_Z × AbnFees			0.0003	0.0024
			(0.0006)	(0.0017)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	35,060	35,060	35,060	35,060
R-squared	*0.492*	*0.383*	*0.497*	*0.389*

Note(s): This table uses year-standardized ESG measures (*ESG_Z*, z-scores by year) for robustness. Columns (3)–(4) examine the moderating effect of abnormal audit fees (AbnFees). Interaction variables are mean-centered. Robust standard errors (in parentheses) are clustered by firm. ***$p < 0.01$. See Table 2 for variable definitions

With respect to H2, the evidence on the moderating role of audit quality is nuanced. While the interaction with abnormal audit fees is statistically insignificant, we find that Big-4 auditors positively moderate the ESG–profitability relationship in specific contexts. These findings parallel the work of Sahu *et al*. (2025a, b), who document that specialized audit oversight (such as audit committee expertise) serves as a catalyst for advancing sustainable development goals. Similarly, our results resonate with Farhan *et al*. (2026), who highlight, in the context of OECD countries, that external assurance mechanisms work synergistically with internal governance (CSR committees) to validate environmental practices. The mixed evidence in our study—where Big 4 affiliation matters more than fee premiums—suggests that in the Chinese market, the reputational endorsement of top-tier auditors is a more powerful signal for ESG credibility than the resource input proxied by fees.

The heterogeneity analysis further highlights the institutional dimension. ESG performance exerts positive effects on both SOEs and non-SOEs, but the magnitude is stronger for SOEs. This divergence is rooted in China's unique institutional fabric, where state ownership often provides implicit guarantees that substitute for external monitoring. For SOEs, ESG engagement aligns with government political mandates, directly yielding resource access and legitimacy. By contrast, non-SOEs are more sensitive to audit frictions, as evidenced by the larger negative coefficient of abnormal audit fees. This supports the view that for private firms lacking political shields, strong governance and high-quality audits act as vital compensatory mechanisms to strengthen the ESG–performance link in a region characterized by lower market trust.

Overall, the results confirm that ESG investments are generally beneficial (supporting H1), and these findings remain robust under alternative measurement approaches. The role of audit quality as a moderator (H2), however, varies across proxies. The mixed evidence underscores the complexity of ESG–performance dynamics in emerging markets. As highlighted by Sahu *et al*. (2025a, b) regarding board diversity and Farhan *et al*. (2026) regarding CSR committees, the effectiveness of ESG is contingent on a constellation of governance factors. These insights contribute to ongoing debates and highlight the need for future research to employ alternative assurance proxies (e.g. audit partner characteristics) and to disentangle the long-term versus short-term performance channels of ESG.

6. Conclusion

This study investigates the relationship between ESG performance and firm profitability in Chinese A-share listed companies, with a particular focus on the moderating role of audit quality and ownership heterogeneity. Using a large panel dataset covering 2015–2024, we find that ESG engagement generally enhances firm performance, providing support for our first hypothesis. Importantly, robustness tests using standardized ESG measures confirm that this positive effect is not sensitive to scaling or coverage issues.Our conclusions are robust to alternative ESG scaling and dynamic specifications (including System- and Difference-GMM). However, dynamic panel models reveal that the short-term accounting benefits of ESG are less robust once profit persistence is controlled for, suggesting that ESG creates value primarily through long-term channels such as reputation, financing advantages, and risk mitigation.

The evidence for our second hypothesis is more nuanced. While audit quality—proxied by abnormal audit fees and Big-4 auditors—has direct effects on profitability, its moderating role on the ESG–performance nexus is weak and inconsistent across specifications. This indicates that audit quality does not universally amplify ESG outcomes, but its influence depends on institutional and firm-level contexts. The heterogeneity analysis further shows that SOEs benefit more strongly from ESG, reflecting government support and legitimacy channels, whereas non-SOEs are more vulnerable to audit frictions, consistent with institutional theory.

This study makes three contributions. First, it extends ESG research in emerging markets by providing up-to-date evidence from China through 2024. Second, it enriches the audit quality literature by demonstrating that different proxies yield divergent insights. Third, it highlights the institutional role of ownership structure in conditioning ESG outcomes, offering new perspectives on SOE versus non-SOE dynamics.

Nevertheless, several limitations remain. Audit fees may capture audit complexity rather than quality; future research could draw on partner-level attributes, inspection outcomes, or accrual-based measures. ESG scores also face challenges of coverage and comparability, underscoring the need for triangulation with alternative rating agencies. Finally, although we address endogeneity using lagged models, system GMM, and robustness checks, stronger causal identification (e.g. natural experiments, instrumental variables, or propensity score matching) would enhance inference.

Overall, the findings suggest that ESG is a valuable long-term strategic investment for Chinese firms, but its performance benefits are contingent on governance quality and institutional context. For policymakers, this highlights the importance of improving ESG disclosure standards and developing reliable assurance mechanisms. For managers, the evidence emphasizes that ESG engagement can strengthen legitimacy and long-run profitability, particularly when supported by credible governance and high-quality audits.

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