

Exploration of the Impact of ESG on Corporate Financial Performance

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Abstract. Within the framework of sustainable investment, the role of corporate engagement in Environmental, Social, and Governance (ESG) aspects has progressively garnered significant public interest. This study investigates the impact of corporate ESG performance on financial outcomes, utilizing constituent firms of the China CSI 300 Index as research samples. The ESG ratings from SynTao Green Finance serve as the proxy for corporate ESG performance, while Return on Equity (ROE) is employed to measure financial performance. Utilizing multiple linear regression analysis supplemented with robustness tests and sectoral differentiation assessments, the empirical results demonstrate that enhanced ESG performance significantly and positively correlates with corporate financial metrics, with the findings maintaining robust consistency across model specifications. Heterogeneity analysis reveals differentiated effects across industries, particularly noting that ESG initiatives in non-manufacturing enterprises exhibit more pronounced financial impacts compared to their manufacturing counterparts. These empirical insights provide valuable references for corporate strategic planning and institutional investors' portfolio allocation decisions in sustainable finance practices.

1 Introduction

1.1 Research background and motivation

With growing societal emphasis on sustainable development, Environmental, Social, and Governance (ESG) principles have emerged as a critical domain for corporate development and academic research. Corporate performance in environmental stewardship, social responsibility, and governance practices is systematically integrated into this framework, with substantial implications being established for sustained organizational development and societal sustainability. Since the United Nations first introduced the ESG concept in 2004, its global institutionalization through the 2015 Paris Agreement and the Sustainable Development Goals (SDGs) has solidified its prominence. Post-2020, ESG investments have surpassed \$1 trillion USD, signaling a paradigm shift where ESG transitions from a compliance tool to a strategic priority, reflecting capital markets' fundamental reorientation toward sustainability. Within this contextual paradigm, the examination of linkages between

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organizational ESG commitments and financial performance metrics converges with prevailing market dynamics and regulatory imperatives, while simultaneously elucidating enterprise strategic trajectories within this sustainability-oriented paradigm shift.

1.2 Literature review and research hypothesis

ESG factors now exert material impacts on corporate operations. Neoclassical economic frameworks argue that ESG commitments undermine shareholder value creation through negative externalities, whereas contemporary empirical research reveals that in markets with information asymmetry, proactive ESG engagement fosters stakeholder confidence (including financial intermediaries, supply chain partners, and consumers), leading to measurable reductions in operational expenditures and efficiency gains [1,2].

Extant literature broadly confirms ESG's multifaceted influence on corporate outcomes. Eliwa et al. examined firms across 15 EU countries, revealing that both ESG performance and disclosure significantly reduce the cost of debt, with environmental dimensions exhibiting the strongest effect [3]. This suggests creditors prioritize environmental metrics in debt financing decisions. Supporting this, Goss and Roberts found that firms with more ESG controversies face higher loan spreads [4]. Eliwa et al. further identified that the debt cost reduction effect of ESG is amplified in stakeholder-oriented jurisdictions, highlighting how institutional contexts moderate ESG's financial impacts—a critical insight for multinational firms tailoring ESG strategies across regulatory regimes [3].

Furthermore, research has explored factors influencing corporate ESG performance. First, ESG activities are closely tied to market and industry characteristics. Through rigorous cross-national analysis, the seminal work of Liang and Renneboog systematically validated that country-level institutional characteristics—encompassing macroeconomic development benchmarks, jurisprudential frameworks, and sociocultural dimensions—constitute key determinants in elucidating differential patterns of ESG implementation across multinational enterprises [5]. Additionally, multinational operations or cross-listing behaviors significantly impact ESG performance. Boubakri et al. found that cross-listed firms tend to pursue higher ESG reputations [6]. Borghesi et al. highlighted substantial inter-industry differences in ESG practices, with industries such as consumer goods and computer hardware scoring higher, while sectors like aviation, oil, and gas exhibit lower scores [7]. These disparities underscore the influence of industry-specific characteristics on ESG practices, necessitating industry-tailored ESG strategies.

Current academic research examining the ESG-financial performance nexus demonstrates complex and multifaceted interactions. Nollet et al. observed a marked inverse association between corporate social performance (CSP) and capital returns in linear frameworks, while nonlinear analyses revealed a U-shaped pattern connecting CSP to financial indicators derived from accounting data [8]. Their study further decomposed ESG disclosure scores, revealing that only the governance subcomponent exhibited a U-shaped relationship with financial performance, while environmental and social subcomponents showed no significant association. Similarly, Xie et al. found that ESG information transparency positively correlates with corporate efficiency at moderate disclosure levels but negatively at high or low levels, with governance disclosures exerting the strongest positive impact. These findings suggest that the ESG-financial performance relationship is not linear but influenced by multiple factors, exhibiting varying patterns across different stages [9]. Wang and Sarkis examined data spanning 2009 to 2013 from 1,980 U.S.-based green enterprises listed in the Fortune 500, demonstrating that ESG outcomes play a mediating role in connecting ESG governance with financial performance [10]. Effective ESG governance that yields positive outcomes enhances financial performance, whereas ineffective governance fails to deliver financial returns. This study underscores the importance of

translating ESG governance into tangible outcomes, offering a novel perspective on the ESG-financial performance nexus.

However, these studies generally lack consideration of the Chinese market. Amidst accelerating global integration of sustainability frameworks, ESG criteria have risen to prominence as a critical focal point in international discourse. As the largest emerging economy, China's ESG development has become a focal point and an indispensable part of the global ESG landscape. Several studies have begun to explore ESG dynamics in China. For instance, Tan and Zhu found that ESG ratings in China significantly enhance both the quantity and quality of corporate green innovation, primarily by alleviating financial constraints and elevating managerial environmental awareness [11]. He et al. conducted an empirical investigation into the linkage between corporate ESG performance and managerial misconduct within Chinese enterprises, demonstrating that rigorous ESG implementation markedly decreases such unethical behaviors through strengthened self-regulatory mechanisms and a measurable decline in regulatory violations [12]. However, the causal linkage between organizational ESG performance metrics and financial outcomes necessitates additional empirical scrutiny and theoretical elaboration.

In summary, while existing ESG research has explored its relationship with corporate financial performance, risk, and other dimensions from multiple perspectives, several limitations remain. These include insufficient sample representation due to variations in study timelines and geographic coverage, as well as inconsistent or even contradictory findings, potentially attributable to differences in sample selection, methodologies, and metric choices. To bridge these research limitations, this analysis adopts an empirical methodology using datasets from China's publicly traded firms, assessing how ESG performance indicators correlate with organizational financial outcomes. Specifically, this article proposes the following hypothesis:

Hypothesis 1: An improvement in corporate ESG levels has a positive impact on corporate performance.

2 Research design

2.1 Data sources

This research focuses on the China Securities Index 300 (CSI 300 index) components as the analytical sample, comprising 300 high market capitalization stocks with strong liquidity from the Shanghai and Shenzhen stock exchanges. These constituents cover diverse industries such as financial services, consumer products, technology, and manufacturing sectors. Covering approximately 60% of the total market capitalization of China's A-share market, the CSI 300 Index serves as a robust barometer of China's macroeconomic landscape and stands as one of the most representative equity benchmarks, widely adopted for tracking market trends and evaluating investment performance in Chinese capital markets.

The dataset encompasses financial data from the China Stock Market & Accounting Research (CSMAR) database and ESG ratings from Syntao Green Finance for the period 2015–2022. To ensure data integrity, this article rigorously screened observations by excluding entities with incomplete financial records, resulting in a final sample of 2,298 firm-year observations.

2.2 Variable definitions

2.2.1 *Dependent variable*

In contemporary financial research, Return on Equity (ROE) stands as a primary metric for assessing corporate financial performance. As a crucial financial indicator, ROE measures a firm's profitability by evaluating the efficiency of generating profits from shareholders' invested capital. Therefore, this analysis adopts return on equity (ROE) as the key dependent variable to evaluate corporate financial outcomes in the research framework. For robustness checks in subsequent analyses, Return on Assets (ROA) will be utilized as an alternative proxy in regression models.

2.2.2 *Independent variable*

The independent variable in this study is the ESG rating provided by SynTao Green Finance, which serves as a comprehensive measure of corporate performance across environmental, social, and governance dimensions. SynTao Green Finance represents one of China's leading providers of green finance and ESG data services [13]. Its ESG rating system is specifically designed to evaluate corporate sustainable development performance, enabling investors, corporations, and other stakeholders to better understand ESG-related risks and opportunities.

Notably, SynTao's ESG rating framework incorporates distinctive characteristics of the Chinese market, ensuring greater relevance to domestic corporate practices. The rating methodology integrates multi-dimensional data sources, thereby enhancing the objectivity and accuracy of the assessments.

2.2.3 *Control variables*

To mitigate the potential confounding effects of other factors on corporate financial performance, this study incorporates the following control variables:

Tobin's Q: Developed by economist James Tobin, the Tobin's Q ratio assesses the comparison between a company's market valuation and the costs required to replace its assets. This metric reflects market expectations regarding a firm's future growth potential. Failure to control for this variable may lead to confounding effects between market expectations and actual operational capabilities on financial performance.

Price-to-Earnings Ratio (P/E): The P/E ratio serves as a valuation metric for market perceptions of corporate profitability. Elevated P/E ratios may imply heightened market expectations for future growth, necessitating control to prevent potential distortions in financial performance measurement.

Book-to-Market Ratio: This ratio distinguishes value stocks (higher ratios) from growth stocks (lower ratios). Given the systematic differences in financial performance across these categories, controlling for this variable is essential to isolate the impact of valuation characteristics.

Debt-to-Asset Ratio: This ratio captures a firm's financial leverage. Higher leverage may influence financial performance through interest expenses or bankruptcy risk, warranting control to account for capital structure effects.

2.3 Model specification

This study aims to empirically test research hypothesis H1: Enhanced ESG performance exerts a positive influence on corporate performance.

Accordingly, this study specifies the following econometric model:

$$ROE = \beta_0 + \beta_1 ESG + \beta_2 X + \varepsilon \quad (1)$$

In the equation (1), ROE denotes Return on Equity, calculated as a percentage ratio that assesses corporate profitability against shareholders' equity. ESG denotes the corporates' ESG rating provided by SynTao Green Finance. X represents the vector of control variables, including Tobin's Q, Price-to-Earnings Ratio (P/E), Book-to-Market Ratio, and Debt-to-Asset Ratio, as previously defined. Lastly, ε captures the random error term, accounting for unobserved factors and stochastic variations in the data.

2.4 Descriptive statistics

The research dataset contains 2,298 firm-year observational units, where Table 1 systematically outlines the distribution characteristics of core variables through comprehensive statistical descriptors. The average Return on Equity (ROE) across the sample is 13.34%, with a standard deviation of 9.06, indicating significant heterogeneity in profitability among firms. The minimum ROE of 0.02% suggests the presence of firms with severely constrained profitability, while the maximum of 76.69% reflects exceptional shareholder return generation capabilities among a subset of firms.

The mean Tobin's Q ratio of 2.30 (standard deviation: 2.88) indicates that the overall market valuation exceeds the replacement cost of assets ($Q > 1$), reflecting optimistic market expectations regarding future growth prospects. However, the presence of extreme values suggests potential valuation bubbles or unique market premiums for certain firms.

The average Price-to-Earnings (P/E) ratio stands at 52.54, with a substantial standard deviation of 198.76 and a maximum value exceeding 5,246, indicating a highly right-skewed distribution. Such extreme values may stem from emerging industries or short-term earnings volatility, warranting caution regarding potential overvaluation risks.

The Book-to-Market ratio exhibits a mean of 1.71 (standard deviation: 2.65), ranging from 0.03 to 32.60. Firms with ratios exceeding 1 may indicate potential undervaluation relative to their book values, while lower ratios are characteristic of growth-oriented firms.

The average Debt-to-Asset ratio is 49.09% (standard deviation: 20.09%), suggesting moderate leverage levels across the sample. However, significant cross-sectional variation is evident, with minimum and maximum values of 1.43% and 94.14%, respectively.

The ESG scores demonstrate a mean of 50.79 (standard deviation: 7.38), ranging from 30.88 to 75.48. This distribution indicates that corporate ESG practices are predominantly concentrated at moderate levels. While leading firms (approaching 75 points) exhibit robust sustainable development capabilities, lagging firms require substantial improvements in their ESG performance.

Table 1. Descriptive Statistics.

Variable	Obs.	Mean	Std. dev.	Min	Max
ROE	2,298	13.336	9.061	0.022	76.692
Tobin's Q	2,298	2.299	2.884	0.031	28.933
PE	2,298	52.541	198.760	0.302	5246.485
Book to Market	2,298	1.706	2.652	0.035	32.600
Debt to Asset ratio	2,298	0.491	0.201	0.014	0.941
ESG scoring	2,298	50.788	7.385	30.875	75.48

3 Empirical analysis and result

3.1 Baseline regression

The empirical findings are detailed in Table 2, where column (1) displays the baseline model estimating the impact of ESG scores (the primary explanatory variable) on corporate financial performance, excluding control variables. Column (2) presents the results after incorporating control variables, including Tobin's Q, Price-to-Earnings (P/E) ratio, Book-to-Market ratio, and Debt-to-Asset ratio.

The findings reveal that the ESG core predictor achieves statistical significance at the 5% threshold across model specifications, demonstrating coefficients of 0.052 for the uncontrolled framework and 0.046 for the controlled framework respectively. This finding provides empirical support for hypothesis H1, indicating that firms with stronger environmental, social, and governance (ESG) capabilities exhibit enhanced financial performance.

Furthermore, to detect possible collinearity concerns, the variance inflation factor (VIF) methodology was systematically applied across all predictor variables in the empirical framework. With VIF metrics consistently below the 1.80 threshold, the analysis confirms minimal collinearity concerns across predictor variables, thus enhancing the statistical credibility of the regression outcomes.

Table 2. Baseline Regression.

	(1)	(2)
	ROE	ROE
ESGscoring	0.052** (0.026)	0.046** (0.022)
TobinQ	— —	1.444*** (0.069)
PE	— —	-0.011*** (0.001)
BooktoMarket	— —	-0.461*** (0.077)
DebttoAssetratio	— —	6.022*** (1.102)
Constant	10.709*** (1.313)	6.074*** (1.294)
N	2298	2298
R ²	0.002	0.236

Note: Standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3.2 Robustness checks

To enhance the robustness verification of the findings, additional robustness tests are performed through substituting the dependent variable with Return on Assets (ROA). As detailed in **Table 3** Column (1), the analysis reveals that ESG maintains a positive association with statistical significance at the 5% threshold, even when employing return on assets (ROA) as the proxy measure for assessing financial performance. This consistency in results across different performance metrics provides strong evidence supporting the reliability of the primary conclusion, thereby validating hypothesis H1.

Table 3. Robustness Checks.

	(1) ROA
TobinQ	0.869*** (0.040)
PE	-0.006*** (0.000)
BooktoMarket	-0.118*** (0.044)
DebtToAssestratio	-10.269*** (0.635)
ESGscoring	0.032** (0.013)
Constant	9.038*** (0.745)
N	2298
R ²	0.460

Note: Standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3.3 Heterogeneity analysis

Given the inherent differences in industry characteristics, operational models, and stakeholder priorities between manufacturing and non-manufacturing firms, the impact of ESG practices on corporate financial performance may exhibit significant heterogeneity. To examine this industry-specific heterogeneity, author partition the sample into manufacturing and non-manufacturing subsamples, comprising 882 and 1,416 observations, respectively. The regression results are showed in the Table 4, with Column (1) reporting the manufacturing subsample and Column (2) the non-manufacturing subsample.

The findings indicate contrasting sectoral dynamics: manufacturing enterprises exhibit a positive yet statistically non-significant ESG-financial performance linkage, whereas non-manufacturing counterparts demonstrate a statistically significant positive association at the 5% significance threshold. This divergence underscores the presence of heterogeneity in the ESG-performance relationship across industries.

Contrary to conventional expectations that manufacturing firms, due to emissions and other production-related externalities, might exhibit a stronger ESG-performance correlation, findings in this article indicate a more pronounced relationship in non-manufacturing sectors. This counterintuitive result may be attributed to several factors:

First, ESG investments in non-manufacturing firms—such as enhanced corporate governance and improved employee welfare—often yield more immediate returns through brand reputation and customer loyalty, which are reflected in higher social dimension scores and subsequently translate into financial gains. In contrast, manufacturing firms' environmental investments, including the adoption of eco-friendly equipment and energy-efficient production processes, require substantial capital and longer gestation periods to materialize. During transitional phases, these investments may disrupt production schedules and increase costs, potentially dampening short-term financial performance.

Second, intense competition in many non-manufacturing sectors emphasizes differentiation strategies, where superior ESG performance can serve as a unique selling proposition, enabling firms to distinguish themselves in crowded markets. In contrast, manufacturing competition traditionally relies on economies of scale, cost advantages, and technological innovation. While ESG remains relevant, its relative weight in competitive positioning may be lower. For instance, in industries such as steel and cement, firms primarily compete through scale expansion and cost reduction, where the financial impact of ESG initiatives may be overshadowed by these dominant factors.

Table 4. Heterogeneity Analysis.

	(1)	(2)
	ROE	ROE
TobinQ	1.166*** (0.117)	1.622*** (0.083)
PE	-0.008*** (0.001)	-0.014*** (0.001)
BooktoMarket	-1.635*** (0.268)	-0.330*** (0.071)
DebttoAssetratio	3.926* (2.145)	8.800*** (1.181)
ESGscoring	0.027 (0.045)	0.059** (0.023)
Constant	10.789*** (2.486)	2.893** (1.390)
N	882	1416
R ²	0.227	0.275

Note: Standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4 Conclusion

In China, amid the pursuit of high-quality economic development and the framework of "carbon peaking" and "carbon neutrality" goals, green development and sustainable practices have become intrinsic requirements for corporate growth. In the contemporary business landscape, ESG implementation has become a critical determinant of organizational sustainability and growth trajectories. This study empirically examines the impact and mechanisms of corporate ESG practices on financial performance using a sample of CSI 300 constituent firms from 2015 to 2022. The findings reveal the following key insights: firstly, corporate ESG practices significantly enhance financial performance, a conclusion that remains robust after incorporating control variables and conducting alternative variable tests. Secondly, sectoral heterogeneity assessments further reveal that ESG implementation exerts stronger beneficial effects on financial outcomes in non-manufacturing industries compared to manufacturing counterparts, with statistical significance persisting at conventional thresholds.

In light of the empirical evidence, this study formulates the subsequent policy and managerial implications. Strong ESG performance enables firms to access long-term financing at lower costs, alleviating financing constraints and addressing investment mismatches. Investors should therefore incorporate ESG metrics into their valuation models and engage with firms to encourage continuous ESG improvement. To advance sustainable value creation, corporate leaders should institutionalize ESG principles within strategic frameworks and operational processes, establishing dedicated governance structures (e.g., ESG committees) to ensure systematic implementation while conducting cost-benefit analyses to optimize resource allocation. Concurrently, governments must develop sector-specific incentive mechanisms—prioritizing environmental efficiency for manufacturers and data governance for service sectors—and spearhead the standardization of ESG evaluation metrics to enhance disclosure credibility through rigorous oversight. Investors, as capital allocators, should integrate ESG metrics into valuation models to identify entities with authentic ESG commitments, which demonstrate reduced regulatory risks and improved financing access. This tripartite alignment—corporate operationalization, regulatory scaffolding, and investor prioritization—collectively addresses greenwashing risks while

channeling capital toward enterprises capable of converting ESG investments into competitive advantages and resilient financial returns.

This study acknowledges several methodological limitations that warrant scholarly attention. First, the sample selection is constrained to CSI 300 constituent firms with an 8-year observation window, potentially limiting generalizability. Subsequent studies may extend the research scope by incorporating broader samples and longer time horizons to enhance external validity. Second, while unprocessed outliers in the dataset do not fundamentally alter regression outcomes, refined data cleansing techniques could be systematically implemented in future replications to strengthen result reliability. The current analytical approach also lacks in-depth investigation into mediating pathways connecting predictors and outcome measures, while potential endogeneity issues stemming from reverse causal relationships or unobserved variable biases remain unaddressed. Addressing these issues through structural equation modeling or instrumental variable approaches would significantly advance causal inference in ESG-financial performance research.

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