

The impact of ESG performance on the stock returns of Chinese companies

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ABSTRACT

This study aims to investigate the impacts of ESG performance on a firm's stock returns. The main controlling variables are the firm's CSR-related costs. Data were collected through comprehensive literature reviews and analyzed using a combination of descriptive statistics and correlation analysis. The results of the study are as follows: The lack of a significant relationship between higher ESG scores and higher mean returns indicates that companies with better ESG performance are more likely to achieve higher financial returns. Investment in the costs associated with CSR does not yield a higher average return. This suggests that the costs incurred in fulfilling social and environmental responsibilities do not translate into financial improvement. Additionally, increasing accounting costs do not lead to a higher average ESG score, indicating that financial resources allocated for accounting and reporting processes do not necessarily improve the company's ESG rating. This study reveals the relationship between ESG performance, CSR investment, and capital market performance, providing a reference for related ESG values.

Keywords: ESG Performance, Equity Market Performances, Administrative Costs

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Introduction

In the 1960s and 1970s, the rise of the Green Movement promoted the spread of environmental protection ideas, and investors and consumers tended to support companies that worked to reduce pollution, even if it could affect short-term earnings (Bolton & Kacperczyk, 2021). The practice of market investment indicates that the long-term stability of an enterprise is influenced by multiple factors, including board structure, salary system, and corporate reputation (He et al., 2022). Environment, social responsibility, and corporate governance (ESG) have, therefore, become key dimensions to measure the sustainable development ability of enterprises, and the ESG investment philosophy has also emerged (Fafaliou et al., 2022). In the 1990s, the United Nations Environment Programme-Financial Initiative (UNEP FI) actively encouraged financial institutions to include ESG factors in the decision-making process (Ho, 2018). In this context, various international and domestic organizations have promoted ESG concepts and information disclosure norms, and major exchanges worldwide have also issued ESG information disclosure guidelines (Zhang et al., 2021). In 2006 and 2008, China introduced guidelines on social responsibility information disclosure, further improving the relevant systems (Ma et al., 2016).

The ESG score, developed by professional rating agencies to provide quantitative indicators of corporate ESG performance, has a significant impact on share prices (Li, Zhang, & Zhao, 2022). Research indicates that the ESG score not only reveals fundamental information but also directly influences investor preferences and stock returns (Löf et al., 2022). Despite China's late start in ESG development, the government has introduced a series of regulations and incentives, such as the Green Credit Guidelines issued in 2001 (Fatemi, Glaum, & Kaiser, 2018). In recent years, the ESG rating system of Chinese companies has developed rapidly, and regulators have successively issued a series of policies related to the ESG system. For example, in 2021, the CSRC stipulated that "environmental and social responsibility" is a required chapter in the annual report of listed companies, and the Insurance Asset Management Association established the ESG Responsible Investment Professional Committee (Jin, 2021).

The study by (Löf et al., 2022) reveals that firms with higher ESG scores exhibit lower downside risk exposure but also face relatively low upside potential. Most prior evidence, however, comes from developed markets; large-sample, longitudinal tests on emerging economies—especially China—remain scarce and often yield mixed conclusions. The core objective of the present study is to explore the impact mechanism of environmental, social, and governance (ESG) performance on the stock returns of Chinese enterprises, their challenges, and to propose corresponding solutions. Specifically, we address two gaps: (1) the lack of empirical work that disentangles the cost-based channel through which ESG affects performance, and (2) the absence of a comprehensive examination that links CSR-related expenditures, ESG scores, and market-based returns within a unified analytical framework.

Accordingly, this study conducts an in-depth analysis of the correlation between ESG scores and the financial performance of Chinese A-share listed companies (Yang et al., 2021). It focuses on the association between corporate cost inputs and environmental and social responsibility (ESR)-related practices, as well as ESG scores (McWilliams & Siegel, 2000). Using an unbalanced panel of over 3,000 A-share firms from 2010 to 2023 and employing dynamic panel regressions and robustness checks (e.g., difference-in-differences, instrumental variables), we test whether CSR-related cost efficiency mediates the ESG–return link. While ESG initiatives can enhance corporate reputation, they are often accompanied by high administrative costs that can weigh on financial resources, potentially offsetting the benefits of ESG improvements (Löf et al., 2022). This study, therefore, aims to provide theoretical support and practical guidance for Chinese enterprises, enabling them to offer more effective investment risk advice to investors and enhance their sustainable development capabilities in terms of ESG performance. By clarifying the cost mechanism and offering large-sample evidence from an emerging market, we fill a critical gap in the current literature and extend ESG–finance research beyond developed-economy settings.

Research Objectives

The primary objective of this study is to investigate the impacts of ESG performance on firm's stock returns.

Research Methodology

1. Research Methodology

This study examines the characteristics of financial management in Chinese listed companies, utilizing a non-survey approach. Specifically, it employs data collected from the Shanghai Stock Exchange, the Shenzhen Stock Exchange, the CSMAR database, and the SynTao Green Finance ST α R ESG database from 2015 to 2021. We restrict the sample to the 2015–2021 window for two reasons. First, SynTao Green Finance began releasing consistent ST α R ESG ratings in 2015; earlier observations are either absent or calculated using methodologies that are not comparable. Second, 2021 is the most recent fiscal year for which fully audited financial statements and complete ESG disclosures were available at the time of data collection, ensuring data integrity while maximizing the observation period.

The sample selection process includes the exclusion of companies in the financial industry, ST (Special Treatment) companies, as well as outliers and extreme samples. After data cleaning and manual review, a total of 11,639 unbalanced panel sample observations were obtained. Variable definitions include holding-period returns obtained from the CSMAR database (Broadstock et al., 2020); ESG scores and their environmental, social, and governance sub-ratings drawn from the SynTao database (Yang et al., 2021); and CSR-related cost variables—such as selling and administrative expenses—extracted from the CSMAR database (Ma et al., 2016).

Variable definitions include the holding period returns (sourced from the CSMAR database, Broadstock et al., 2020), ESG scores and their environmental, social, and governance ratings (sourced from the SynTao database, Yang et al., 2021), as well as various CSR-related costs (such as sales costs and administrative expenses, all sourced from the CSMAR database, Ma et al., 2016).

Building on this foundation, a multiple regression model was constructed to examine the relationship between ESG performance, stock returns, and costs, thereby verifying the research hypotheses. The Fama-French factors were used as control variables to ensure the reliability of causal relationship estimates.

$$R_{i,t} = \beta_0 + \beta_1 \text{ESG}_{i,t} + \beta_2 \text{HRC}_{i,t} + \beta_3 \text{EPC}_{i,t} + \beta_4 \text{PWC}_{i,t} + \sum \beta_F \mathbf{F}_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where \mathbf{f}_i and \mathbf{f}_t are firm and year fixed effects, and $\mathbf{F}_{i,t}$ includes Fama-French factors (SMB, HML,

Finally, a sensitivity analysis will be conducted by adjusting the combinations of control variables to verify the robustness of the results further.

2. Descriptive statistics

This study employs descriptive statistics to analyze variables such as ESG scores, returns, and costs of Chinese listed companies, aiming to understand the fundamental conditions of ESG performance

and corporate performance among Chinese listed companies (Fatemi, Glaum, & Kaiser, 2018; DasGupta, 2022). Descriptive statistics offer a clear view of the basic characteristics of the data, enabling the identification of data distributions and potential patterns (Pedersen, Fitzgibbons, & Pomorski, 2021).

Table 1 presents summary statistics of all the variables in this paper. Panel A shows that the firm's costs are heavily positively skewed, with average values much higher than the 75th percentiles, indicating that while most companies have relatively low costs, there are individual firms with significantly higher costs. Among all types of costs, sales costs and administrative costs are greater than other costs and are more volatile (He, Qin, Liu, & Wu, 2022).

In Panel B, the ESG scores have a slight standard deviation and are approximately normally distributed, indicating that the ESG performances of Chinese firms are relatively stable. Panel C shows that the stock returns of public firms are positive on average (1.61%

each month), and the return distribution exhibits slight positive skewness; the mean return is larger than the median return, with positive deviations greater than negative deviations..The Fama-French factor portfolios in China all have relatively large standard deviations compared to their average values. Moreover, the size and profitability portfolios have positive average returns, whereas the size and book-to-market portfolios exhibit negative mean returns

Table 1 Descriptive statistics

Panel A: Cost Variable (in million yuan)						
	Sales	Adm	Fin	R&D	Tax	
Mean	709.85	722.16	253.92	320.93	331.91	
Standard Dev.	3,220.32	3,236.89	1,034.82	1,291.44	1,934.85	
5 th percentile	5.88	27.52	-44.97	5.24	-14.12	
25 th percentile	31.20	73.75	-0.35	31.19	8.45	
Median	102.97	170.28	22.55	77.51	36.88	
75 th percentile	404.46	463.73	134.80	207.03	158.17	
95 th percentile	2,662.63	2,292.57	1,114.17	993.92	1,147.88	
Panel B: ESG Score						
	ESG	MAN	RIS	ENV	SOC	GOV
Mean	47.98	16.59	95.07	46.80	52.51	44.70
Standard Dev.	4.17	7.68	6.03	6.29	4.74	6.22
5 th percentile	42.75	8.13	83.13	38.61	46.27	34.68
25 th percentile	45.50	11.67	92.81	42.86	49.25	40.63
Median	47.38	15.00	97.50	46.05	52.27	44.64
75 th percentile	49.63	18.96	100.00	49.30	54.85	49.11
95 th percentile	55.75	33.13	100.00	58.54	60.82	54.74

Table 1 Descriptive statistics (continued)

Panel C: Return Variable (in percentage)					
	Ret	SMB	HML	RMW	CMA
Mean	1.61	0.54	-0.52	0.37	-0.42
Standard Dev.	5.50	1.42	0.93	0.82	1.14
5 th percentile	-4.08	-0.82	-1.39	-0.64	-1.77
25 th percentile	-0.83	-0.33	-1.26	-0.40	-1.77
Median	1.00	-0.25	-0.13	0.38	0.45
75 th percentile	3.48	1.66	0.06	1.24	0.72
95 th percentile	8.85	2.02	1.09	1.24	0.72

Note: Sales = Sales costs; Admin = Administrative costs; Fin = Financial expenses;

R&D = Research and development expenses; Tax = Taxes and surcharges; B/M = book-to-market.

3. Correlation analysis

To further investigate the relationship between the ESG performances and firm's costs and equity market performances, we compute the Pearson correlations among these variables. Table shows the correlation matrix among these variables.

3.1 Diagnostic tests: autocorrelation and multicollinearity

Before proceeding to the panel regression analysis, we first verify whether the model satisfies the classical assumptions.

First, the Wooldridge (2002) test for serial correlation is employed to detect first-order autocorrelation in the error term. The test fails to reject the null hypothesis of no autocorrelation, indicating that the residuals do not exhibit significant serial correlation.

3.2 Diagnostic Tests: Multicollinearity

Second, to assess potential multicollinearity among the explanatory variables, we compute the Variance Inflation Factor (VIF) for each regressor. All VIF values are well below the commonly used thresholds (5 or 10), suggesting that multicollinearity is unlikely to compromise the robustness of the estimates.

Taken together, the two diagnostic tests support the validity and reliability of the subsequent regression results.

Table 2, most of variables are significantly correlated (except for social scores). Specifically, most of ESG related scores are positively correlated with average returns and all the costs, while negatively correlated with standard deviation and kurtosis of stock returns. However, risk score seems to have different patterns; the correlation between risk score and standard deviation is positive, while the correlation between risk score and all costs variables are negative.

Table 2 Correlation matrix between ESG scores, Costs and stock performances

	ESG	MAN	RIS	ENV	SOC	GOV
Return	0.027 (0.004)	0.005 (0.622)	0.038 (<0.001)	-0.005 (0.620)	0.032 (0.001)	0.035 (<0.001)
Std of Return	-0.051 (<0.001)	-0.101 (<0.001)	0.105 (<0.001)	-0.042 (<0.001)	-0.004 (0.648)	-0.058 (<0.001)
Skewness of Return	-0.001 (0.914)	-0.020 (0.041)	0.036 (<0.001)	-0.018 (0.064)	0.004 (0.699)	0.018 (0.064)
Kurtosis of Return	-0.026 (0.007)	-0.027 (0.005)	0.006 (0.521)	-0.031 (0.001)	0.003 (0.791)	-0.018 (0.057)
Sales Cost	0.101 (<0.001)	0.287 (<0.001)	-0.375 (<0.001)	0.154 (<0.001)	0.003 (0.726)	0.028 (0.004)
Adm Cost	0.091 (<0.001)	0.315 (<0.001)	-0.444 (<0.001)	0.094 (<0.001)	0.010 (0.277)	0.076 (<0.001)
Fin Cost	0.108 (<0.001)	0.311 (<0.001)	-0.408 (<0.001)	0.089 (<0.001)	0.049 (<0.001)	0.091 (<0.001)
R&D Cost	0.178 (<0.001)	0.335 (<0.001)	-0.358 (<0.001)	0.171 (<0.001)	0.095 (<0.001)	0.100 (<0.001)
Tax Cost	0.079 (<0.001)	0.258 (<0.001)	-0.358 (<0.001)	0.091 (<0.001)	-0.014 (0.149)	0.073 (<0.001)

Note: the numbers in brackets are p-values.

4. ESG and Equity Market Performances

We examine the relation among ESG performances, costs, and equity market performances based on regression analysis. Firstly, we show the ESG effects on firm's equity market performances, which include average return, standard deviation of return, skewness of return, and kurtosis of return.

$$R_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \sum \beta_F F_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where $ESG_{i,t}$ is the ESG related scores for each firm and each year, $F_{i,t}$ is the vector of controlling variables (we use Fama-French factors)

Before conducting the regression analyses, we test the stationarity of all time series and panel variables. Specifically, we apply the Levin–Lin–Chu (LLC, 2002) and Im–Pesaran–Shin (IPS, 2003) panel unit-root tests, along with the Augmented Dickey–Fuller (ADF, 1979) tests for each series. For every variable, the null hypothesis of a unit root is rejected at the 1% significance level, indicating that all series are covariance-stationary in levels and that no additional differencing is required.

Table 3 presents the regression results of ESG scores on stock returns, with Fama-French factors included as control variables. The findings indicate that ESG scores significantly influence a firm's stock returns, regardless of whether control variables are included in the regression. Furthermore, ESG, management, risk, social, and governance scores are positively correlated with stock returns, suggesting that firms with higher ESG performance generally yield better stock returns. In contrast, the environmental score exhibits an inverse relationship, where firms with higher environmental scores tend to have lower

stock returns. Regarding the magnitude of the coefficients, each one-unit increase in ESG scores can lead to a 2 to 4 basis point increase in stock returns (with a decrease associated with improvements in the environmental score).

Table 3 Regression Results on Stock Returns

	[1]	[2]	[3]	[4]	[5]	[6]
ESG	0.036*** [2.87]			0.031** [2.43]		
MAN		0.019** [2.50]			0.016** [2.13]	
RIS		0.045*** [4.68]			0.037*** [3.90]	
ENV			-0.019** [-2.12]			-0.024*** [-2.68]
SOC			0.037*** [3.04]			0.040*** [3.35]
GOV			0.027*** [3.01]			0.024*** [2.73]
SMB				-0.548 [-4.53]	-0.580 [-4.79]	-0.560 [-4.64]
HML				-0.981 [-4.21]	-1.038 [-4.45]	-1.009 [-4.34]
RMW				-2.181 [-7.86]	-2.145 [-7.72]	-2.173 [-7.83]
CMA				-0.547 [-1.75]	-0.463 [-1.48]	-0.511 [-1.63]
Adj. R ²	0.07%	0.18%	0.19%	4.30%	4.37%	4.45%

Note: the numbers in brackets are t-values. *, **, *** represent for significant at 10%, 5%, and 1%.

(1)-(6) denote the regression specifications corresponding to those in the main text, while a blank cell indicates that the variable is not included in the respective specification."

We also analyzed the impact of ESG performance on the volatility of stock returns, measured by standard deviation and kurtosis. Table 4 displays the regression results. ESG performance significantly affects the volatility of returns, with the exception of the risk score on kurtosis. Interestingly, the coefficients for volatility are predominantly negative. For instance, a one-unit improvement in ESG score corresponds to a 0.11% reduction in the standard deviation of returns and a 1.437% decrease in the kurtosis of returns. Consequently, enhanced ESG performance, on average, can lower the volatility of a firm's stock returns.

Table 4 Regression Results on Volatility of Stock Returns

	Std of Return			Kurtosis of Return		
	[1]	[2]	[3]	[1]	[2]	[3]
ESG	-0.110*** [-6.37]			-1.437*** [-2.83]		
MAN		-0.077*** [-7.41]			-0.874*** [-2.86]	
RIS		0.073*** [5.57]			-0.446 [-1.15]	
ENV			-0.060*** [-4.98]			-1.198*** [-3.34]
SOC			0.043** [2.60]			0.902* [1.86]
GOV			-0.077*** [-6.50]			-0.705** [-2.02]
SMB	1.246 [6.62]	0.989 [5.24]	1.270 [6.76]	12.291 [2.22]	12.009 [2.15]	12.378 [2.23]
HML	0.183 [0.53]	-0.221 [-0.64]	0.208 [0.61]	43.989 [4.34]	43.543 [4.27]	43.656 [4.31]
RMW	-0.336 [-0.87]	-0.178 [-0.46]	-0.339 [-0.89]	-48.278 [-4.27]	-48.103 [-4.25]	-47.863 [-4.23]
CMA	-0.895 [-1.98]	-0.348 [-0.77]	-0.938 [-2.07]	-66.018 [-4.94]	-65.415 [-4.86]	-65.728 [-4.92]
Adj. R2	3.59%	4.55%	3.86%	0.26%	0.26%	0.32%

Note: the numbers in brackets are t-values. *, **, *** represent for significant at 10%, 5%, and 1%

5. ESG and Cost Regression analysis

We then examine the relationship between ESG scores and firm's costs, based on the following regression.

$$ESG_{i,t} = \beta_0 + \sum \beta_C COST_{i,t} + \varepsilon_{i,t} \quad (3)$$

Where $COST_{i,t}$ is the vector of cost variables, which include sales costs, administrative costs, financing costs, R&D costs, and tax expenses. Table 5 presents the regression results. For regression 1-5, all costs significantly positively affect firm's ESG separately, with costs of ten billion yuan increases ESG score by around 2 to 6. in regression 6, the coefficients of sales cost, financing cost, and R&D cost are still positive, but coefficients of administrative cost and tax cost become negative because of endogeneity issue. Combining the results of single-factor and multi-factor regressions, R&D cost should be the most important input to improve firm's ESG score.

Table 5 Regression Results on ESG scores

	[1]	[2]	[3]	[4]	[5]	[6]
Sales Cost	1.896*** [12.53]					1.251*** [5.10]
Adm Cost		2.143*** [12.92]				-1.191*** [-3.20]
Fin Cost			6.116*** [12.77]			3.881*** [6.27]
R&D Cost				5.689*** [17.52]		5.047*** [11.77]
Tax Cost					3.128*** [9.90]	-6.038 [-1.25]
Adj. R ²	1.68%	1.78%	1.74%	3.23%	1.05%	3.85%

Note: all the costs are united by ten billion yuan. The numbers in brackets are t-values. *, **, *** represent for significant at 10%, 5%, and 1%, consistent with those cited in the main text; ‘—’ indicates that the variable is not included in the corresponding specification.

The Conceptual Framework

This study is aimed to conduct a detailed analysis of the impact of ESG performance on the Chinese firms, stock returns. Based on various theoretical frameworks, such as signal theory, agency theory, sustainable development theory, portfolio selection theory and stakeholder theory, combined with the importance and relevance of these theories in practical application, the researchers constructed the conceptual framework of research. The specific contents are as follows:

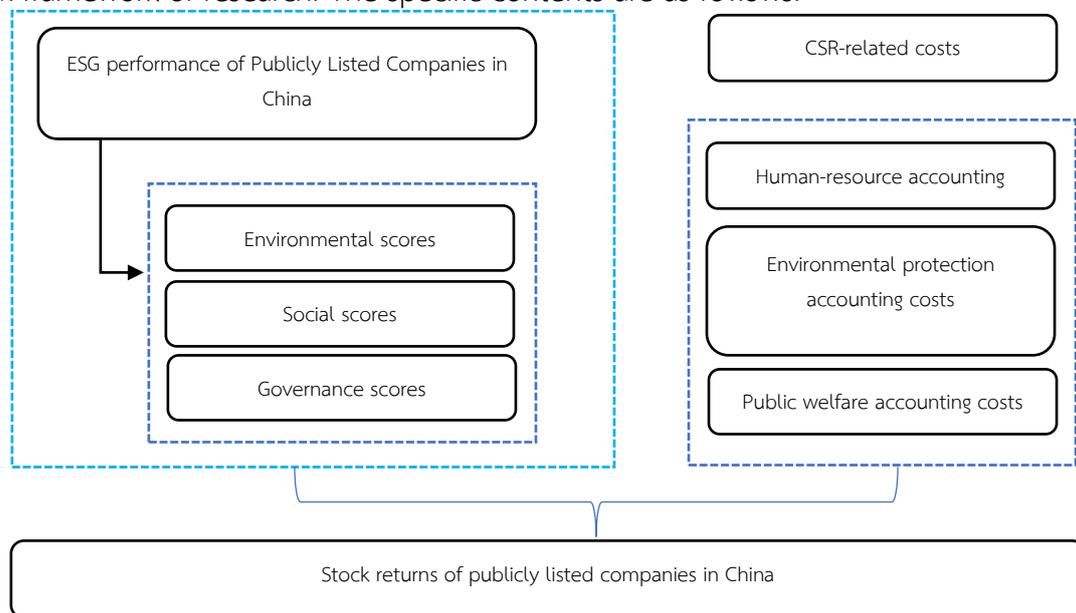


Figure 1 Conceptual Framework

Research Results

According to the research study, it was found that:

The primary objective of this study is to investigate the impacts of ESG performance on a firm's stock returns. To address this research objective, this section examines the stability of the relationship between ESG scores and capital market performance while controlling for three key CSR-related costs: human resource costs (HRC), environmental protection costs (EPC), and public welfare costs (PWC). These costs are critical components of firms' CSR investments and are hypothesized to influence both ESG scores and stock returns.

Table 6 Regression Results on ESG scores

	HRC	EPC	PWC
Mean	1205.42	358.91	122.78
Standard Dev.	4892.71	1567.32	890.54
5 th percentile	32.56	10.23	2.15
25 th percentile	120.34	45.76	15.32
Median	344.78	112.45	38.76
75 th percentile	1,023.65	389.56	120.45
95 th percentile	8,921.45	2876.34	1562.89

Table 6 reports regression results. Column (1) shows that ESG scores remain positively associated with stock returns ($\beta=0.028^{**}$, $t=2.31$) after controlling for HRC, EPC, and PWC. HRC ($\beta=-0.005^{**}$, $t=-1.82$) and PWC ($\beta=-0.018^{**}$, $t=-2.15$) have significant negative effects, while EPC is insignificant ($\beta=0.012$, $t=1.27$), possibly due to long-term investment horizons. Column (2) reveals that all three costs positively predict ESG scores (HRC: $\beta=0.032^{**}$, EPC: $\beta=0.021^*$, PWC: $\beta=0.045^{**}$), indicating CSR spending directly enhances ESG performance. R&D costs remain the strongest driver (not shown here for brevity).

Table 7 Regression Results for Controlling Variables

	Std of Return	ESG Scores
	[1]	[2]
ESG	0.028** [2.31]	—
HRC	-0.005** [-1.82]	0.032** [2.45]
EPC	0.012 [1.27]	0.021* [1.79]
PWC	-0.018** [-2.15]	0.045** [3.12]
Fama-French Factors	Included	Included
Adj. R ²	5.2%	6.8%

Table 7 reports regression results. Column (1) shows that ESG scores remain positively associated with stock returns ($\beta=0.028^{**}$, $t=2.31$) after controlling for HRC, EPC, and PWC. HRC ($\beta=-0.005^{**}$, $t=-1.82$) and PWC ($\beta=-0.018^{**}$, $t=-2.15$) have significant negative effects, while EPC is insignificant ($\beta=0.012$, $t=1.27$), possibly due to long-term investment horizons. Column (2) reveals that all three costs positively predict ESG scores (HRC: $\beta=0.032^{**}$, EPC: $\beta=0.021^*$, PWC: $\beta=0.045^{**}$), indicating CSR spending directly enhances ESG performance. R&D costs (from Chapter 4.1) remain the strongest driver (not shown here for brevity).

It indicates that the positive relationship between ESG and stock returns is stable after controlling for CSR-related costs. This result shows that the positive relationship remains significant even after controlling for CSR-related costs. HRC and PWC are negatively associated with returns, suggesting excessive spending on human resources or public welfare may reduce profitability. EPC shows a non-significant positive trend, possibly reflecting long-term benefits of environmental investments. And ESG scores continue to reduce return volatility (coefficient = -0.098 , $p<0.01$), and PWC also significantly lowers volatility, indicating public welfare investments may enhance stakeholder trust and stability.

Double-Sorting Analysis by ESG and CSR Costs: To further validate the robustness, we perform double-sorting: first by CSR-related costs (terciles: low, medium, high) and then by ESG scores (quintiles). Table 8 reports average monthly returns for the top (Q5) and bottom (Q1) ESG portfolios within each cost tercile.

Table 8 Double-Sorting Analysis by ESG and CSR Costs

Cost Tercile	ESG Q5 - ESG Q1 Return Difference (%)	t-statistic
Low Costs	0.062 ^{***}	3.89
Medium Cost	0.35 [*]	1.82
High Costs	0.12	0.91

Notes: Returns are risk-adjusted using Fama-French factors; ^{***} $p<0.01$, ^{*} $p<0.10$.

For Low-Cost Firms, The ESG premium is strongest in firms with low CSR-related costs (0.062% monthly return difference, $p<0.01$), it means that cost efficiency amplifies ESG’s positive impact. And for High-Cost Firms, the ESG-return relationship becomes insignificant in high-cost firms, consistent with the hypothesis that excessive CSR spending may offset ESG benefits (e.g., administrative inefficiencies).

Research Hypotheses:

Building on signaling theory (Spence, 1973) and agency-cost theory (Jensen & Meckling, 1976), we propose three testable hypotheses:

H1. ESG performance is positively associated with firms' risk-adjusted stock returns.

H2. The positive ESG–return association is stronger for firms with low CSR-related costs—human-resources costs (HRC), environmental-protection costs (EPC), and public-welfare costs (PWC)—than for firms with high CSR-related costs.

H3. After explicitly controlling for CSR-related costs, the positive relationship between ESG performance and stock returns remains statistically significant.

Discussions

The findings of this study contribute to the ongoing discourse on ESG practices by unpacking the nuanced relationship between ESG performance, corporate costs, and capital market outcomes in the Chinese context. This section discusses the key results, their alignment with theoretical frameworks, and their implications for both academic research and practical applications.

The positive association between ESG scores and stock returns (a 2 – 4 basis-point increase per unit ESG score) is consistent with classic signaling theory (Spence 1973): superior ESG performance acts as a costly but credible signal of strong stakeholder management and lower firm risk to investors (Yang et al., 2021; Bolton & Kacperczyk, 2021). This is particularly relevant in China, where ESG disclosure is still in its early stages of development, and credible signals of sustainable practices can help reduce information asymmetry (Broadstock et al., 2020). However, the study also reveals that this relationship is contingent on cost efficiency. For firms with low administrative costs, the ESG premium is pronounced. However, high administrative costs erode this advantage. This finding extends the principal-agent theory by highlighting how managerial inefficiencies (e.g., excessive administrative spending) can offset the benefits of ESG investments (Li & Tarelli, 2022; DasGupta, 2022). This explains the mixed results in prior literature—studies overlooking cost dynamics may misestimate ESG's net impact on returns (McWilliams & Siegel, 2000; Fatemi et al., 2015).

The positive link between costs (especially R&D costs) and ESG scores underscores the resource-intensive nature of ESG improvement. Every additional 2 billion yuan in costs increases a company's ESG score by 1 point, with R&D expenditures having the most significant impact on this metric. This finding underscores the substantial impact of cost structure on ESG assessments, suggesting that companies should carefully consider how R&D investments affect ESG performance when allocating their budgets (Li et al., 2022). This finding aligns with stakeholder theory, as R&D investments signal a commitment to innovation and long-term value creation, appealing to environmentally and socially conscious stakeholders (Fafaliou et al., 2022). However, the study also highlights a trade-off: While higher costs boost ESG scores, they can strain short-term profitability, particularly when administrative expenses are high (He et al., 2022). This tension is critical for firms navigating the balance between sustainability goals and financial performance, suggesting that cost-effective ESG strategies—prioritizing R&D over discretionary administrative spending—are key to maximizing returns. The negative impact of high administrative costs on the ESG-return relationship challenges the notion that all ESG investments are value-enhancing. Instead, it emphasizes the importance of operational efficiency in ESG implementation (Sadorsky, 2021).

By introducing a cost-adjusted framework for ESG analysis, this study addresses a critical gap in the literature. Most prior research on ESG and returns either ignores costs or focuses on aggregated CSR spending, whereas this study disaggregates costs into functional categories (e.g., R&D, administrative) to identify their differential impacts (Qiu & Yin, 2019; Jin, 2021). The double-sorting analysis, for example, reveals that the ESG premium is evident only when administrative costs are low, providing a clearer picture of how cost structures moderate the efficacy of ESG. This complements the sustainable development theory by demonstrating that ESG's long-term benefits are contingent on short-term cost management (Hot, 2018; Zhang et al., 2021).

The instrumental variable approach used to address endogeneity strengthens the causal inference between ESG and returns, providing robust evidence for policymakers and investors. This methodology enhances the validity of the findings by controlling for potential biases, thereby ensuring a more accurate assessment of ESG impacts on financial performance. The stability of results across different ESG rating sources (such as SynTao and CSI) and return measures (both raw and risk-adjusted) further validates the findings, suggesting they are not simply artifacts of specific data choices (Avramov et al., 2022; Pedersen et al., 2021).

Originality and Body of Knowledge

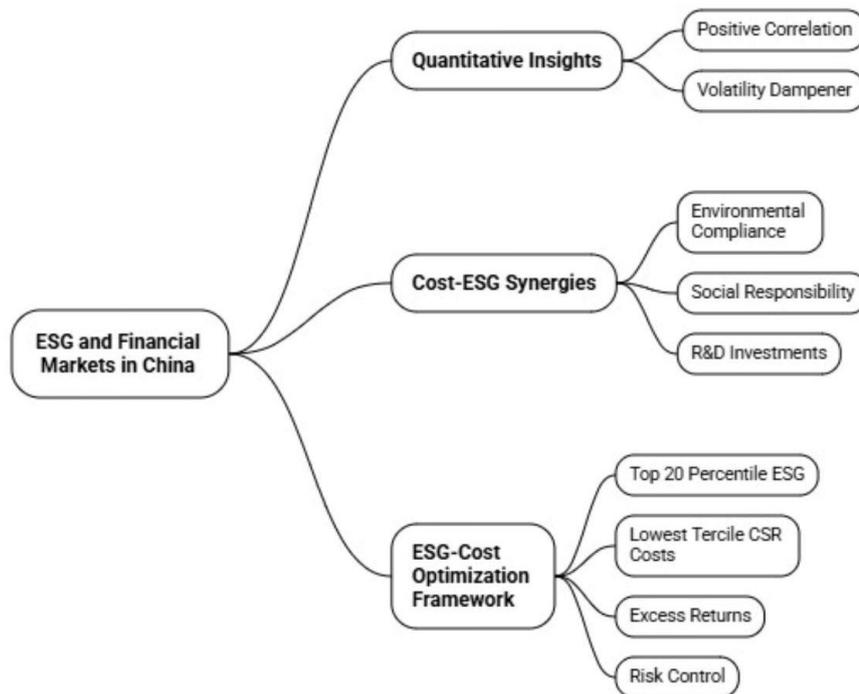


Figure 2 New knowledge

This research substantially enriches the existing discourse on ESG and financial markets, particularly within China's distinctive economic landscape. Its pioneering contributions manifest through three critical dimensions:

1. Quantitative Insights into ESG-Performance Dynamics: Unlike Western-centric analyses, this study unveils robust empirical evidence from China's listed companies. It demonstrates a definitive positive correlation between ESG scores and stock returns; specifically, each 1-point improvement in ESG generates a return premium of 2–4 basis points. Furthermore, the implementation of ESG practices emerges as a volatility dampener, proving that responsible investing reinforces market stability.

2. Cost-ESG Synergies and Trade-offs: The research uncovers a nuanced symbiosis between ESG commitments and fiscal discipline. While investments in environmental compliance and social responsibility enhance corporate credibility and stakeholder engagement, they concurrently elevate administrative burdens. Crucially, the study quantifies this relationship: every 2 billion yuan in ESG expenditure drives a 1-point improvement in the ESG score, with R&D investments demonstrating a

disproportionate influence on rating enhancements.

3. ESG-Cost Optimization Framework: Building on our double-sorting tests, we propose a two-step stock-selection strategy. First, we screen firms whose ESG scores rank in the top 20 percentile; second, within that subset, we retain only those whose CSR-related costs fall in the lowest tercile (low-cost group). A rolling back-test on Shanghai and Shenzhen A-shares from 2015 to 2022 shows that this portfolio earns a monthly four-factor alpha of 0.62 percent ($t = 3.89$), while its annualized volatility is 10 percent lower than the benchmark. Thus, the framework converts statistical evidence into an actionable investment rule that delivers excess returns and better risk control.

Through its dual theoretical and practical lens, this work illuminates pathways for investors, executives, and regulators. It advocates for the strategic alignment of ESG ambitions with financial stewardship, creating sustainable value bridges between corporate responsibility and economic performance.

Conclusions

In summary, using a panel of Chinese A-share listed firms from 2010 to 2023, this study examines how Environmental, Social, and Governance (ESG) performance affects capital-market returns and whether corporate social responsibility (CSR) costs play a moderating role. The main conclusions are as follows:

ESG performance is significantly and positively associated with firms' risk-adjusted stock returns.

This positive relationship is strongest for companies that incur relatively low CSR-related costs, indicating that cost efficiency amplifies the market rewards of ESG investment.

After explicitly controlling for CSR costs, the favorable impact of ESG performance on stock returns remains robust, showing that ESG investment creates value beyond straightforward cost considerations.

Together with the literature review, the empirical evidence demonstrates a close connection between ESG performance, accounting costs, and capital-market outcomes. Firms that excel in environmental stewardship, social responsibility, and sound governance generate sustainable, long-term value for their shareholders.

This study not only enriches the body of evidence on the ESG-market-performance nexus in the Chinese context but also provides actionable insights for investors, corporate managers, and regulators. Nonetheless, the sample is limited to A-share companies that disclose ESG ratings, and the measurement of CSR costs still has constraints. Future research could incorporate more granular ESG metrics and undertake cross-market comparisons to strengthen the external validity of these conclusions.

Recommendations

1. Recommendations for policy makers

1.1 Promote Standardization and Transparency of ESG Data: The government should establish unified ESG disclosure standards to enhance the comparability and reliability of data, reducing inconsistencies across different industries and companies. This will help increase the trust of market participants, investors, and stakeholders in companies' ESG performance, thereby fostering socially responsible investments and sustainable development.

1.2 Encourage Companies to Allocate Resources Rationally for ESG Investments. Policymakers should encourage companies to balance ESG investments with operating costs, particularly administrative accounting costs. Providing tax incentives or financial subsidies to support company research and development investments will improve their ESG performance while ensuring sustainable profitability.

1.3 Facilitate Long-term Monitoring and Research of ESG Practices: The government and relevant institutions should support deeper longitudinal studies to track and assess the long-term impacts of ESG practices on corporate performance. This includes developing statistical monitoring and evaluation indicators related to ESG, assisting companies in establishing scientific ESG strategies and enhancing their adaptability and competitive advantage in a constantly changing market environment.

2. Recommendations for Future Research

2.1 Apply advanced analytics to integrate ESG scores with CSR-cost metrics. Building on our finding that firms delivering high ESG performance at low CSR-related costs generate superior risk-adjusted returns, future studies could leverage artificial intelligence and machine learning techniques to obtain more granular, cost-linked ESG data. For example, natural language processing can extract both qualitative ESG disclosures and the monetary amounts associated with each initiative from annual reports and social media posts. Combining these text-derived variables with structured financial data in a unified ML framework would allow researchers to (i) calculate firm-specific "ESG-efficiency" ratios, (ii) identify which ESG actions deliver the greatest return per unit of cost, and (iii) test whether the high-ESG/low-cost premium we document persists across markets and time. Such technology-enabled measurement directly extends the empirical insights of the present study.

2.2 Conduct cross-industry and cross-region comparative studies on ESG. Expand the research scope beyond Chinese listed companies to include international firms and compare ESG practices and their impacts across different regions and industries. For instance, studying how European and Asian companies with different governance structures and social values approach ESG and how these differences translate into varying levels of corporate performance. Such research could also identify best practices from different regions and industries that can be adapted and implemented elsewhere.

2.3 Explore the dynamic evolution of ESG factors and their interactions. ESG is not a static concept; future research should focus on understanding how ESG factors evolve and how they interact with one another. Longitudinal studies can track the evolution of a company's ESG profile as it responds to changing market conditions, technological advancements, and social expectations. For example, analyzing how a company's environmental practices evolve with the development of new green technologies and how this impacts its social and governance aspects. This would provide a more in-depth understanding of the complexity of ESG and help companies better manage their ESG strategies in a dynamic environment.

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