

The Effect of Corporate Environmental, Social and Governance Performance on Corporate Market Value

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Abstract. Corporate Environmental, Social and Governance (ESG) performance is increasingly becoming a core variable influencing its long-term market value. This study examines the effects of corporate ESG in general and its sub-dimensions of Environment, Society, and Governance on Tobin's Q using a sample of A-share listed businesses from 2019 to 2024. Further explores its mechanism of action by using the proportion of Research and Development(R&D) investment as a mediating variable. The results show a considerable positive correlation between Tobin's Q and the overall ESG performance of businesses; the contributions of the Environment (E) and Governance (G) dimensions are positive, while the Society (S) dimension is negative; ESG indirectly enhances corporate valuation by encouraging innovation investment. The robustness results show that using PB as a substitute for Tobin's Q maintains the same conclusion but reduces significance; using PE as a substitute has lower explanatory power. Finally, based on the research conclusions, this paper provides suggestions for A-share listed companies, investors, and regulatory authorities for reference.

Keywords: Corporate ESG performance, market capitalization, research and development investment.

1. Introduction

Against the backdrop of increasingly prominent issues of global climate change, resource constraints, and social equity, how enterprises balance Environmental, Social and Governance (ESG) performance while pursuing profitability has become a significant concern for capital markets and policymakers. The ESG concept, encompassing Environmental, Social, and Governance principles, emphasizes that enterprises should not only pursue economic profits but also pay attention to the impact of their business practices on the environment, society, and corporate governance structure [1]. Elkington proposed the "triple bottom line theory," which provides important support for ESG practice and indicates that maximizing corporate value requires the synergistic effect of economic, environmental, and social triple bottom lines [2]. This viewpoint integrates the concept of sustainable development into the corporate value evaluation system for the first time. Academics like Wang Linlun and Kang Yonghui explicitly state that an organization's business value tends to increase with its ESG performance [3]. This also confirms the positive impact of corporate ESG performance on corporate market value, providing direct empirical evidence for the correlation between ESG and corporate market value.

Based on risk management theory, companies with poor ESG performance face higher environmental, social, and governance risks, which can increase their financing costs and trigger stock price volatility. Furthermore, good ESG performance stabilizes investor expectations and enhances corporate value by reducing such risks [4]. Therefore, ESG performance has a certain impact on the increase of corporate market value. Scholars such as Mohamed Marie and Adel Elgharrawy believe that companies with better ESG performance can better cope with changes in market conditions and reduce exposure to systemic risks, thereby achieving the effect of stabilizing market value [5]. This illustrates even further how corporate ESG performance increases company market value.

In today's society, competition for resources is becoming increasingly fierce, and the survival and development of enterprises rely on the acquisition and integration of external key resources. New-

quality productivity represents an advanced form of resource allocation [6]. To enhance new-quality productivity, enterprises inevitably need to increase their investment in innovation. Sun Jessica K and Zhang Daniel believe that ESG can drive innovation in terms of specialization and enterprise specificity [7]. Enterprises can enhance their innovation capabilities by optimizing their ESG performance, thereby acquiring more and better resources, attracting investors, and increasing their market value.

Corporate ESG performance not only represents the degree of a company's sustainable development but also serves as a crucial dimension for investors to assess long-term value and risk. The topic of how to balance corporate ESG performance and understand its impact on corporate market value cannot be overlooked. This article aims to explore the influence of corporate ESG performance on corporate market value, as well as whether research and development(R&D) investment serves as a mediating variable in this influence. This discussion holds significant importance for companies to optimize their ESG strategies, for investors to improve valuation, and for regulatory authorities to enhance information disclosure.

2. Research Hypothesis

ESG evaluates a business's non-financial performance from the viewpoints of corporate governance, society, and the environment. However, it is also intimately tied to its financial situation and significantly affects the company's market value. Literature from both domestic and foreign sources indicates that a company's financial risk decreases with its ESG performance [8]. This makes investors more willing to invest long-term capital, thereby increasing the company's market value. In addition, companies with good ESG performance can obtain more convenience in debt financing, and the resulting resource advantages will be transformed into profit growth potential, which is directly reflected in the price-to-earnings ratio and price-to-book ratio that measure the company's market value [9]. The first hypothesis is put forth in light of the study above:

H1: Corporate ESG performance has a positive impact on corporate market value.

Numerous studies have concluded that companies with better ESG performance place greater emphasis on maintaining long-term sustainable development, and consequently invest more in green innovation [10]. Innovation capability is a crucial component of a company's core competitiveness. By vigorously integrating technological production factors and increasing R&D investment, or the proportion of Research and Development (R&D) investment in the company, companies can obtain more patents and research results [11]. These patent achievements will enhance market share and profitability, having a positive impact on the company's market value. Based on the above analysis, corporate ESG performance positively influences corporate innovation capability, thereby having a positive impact on the company's market value. Therefore, according to Efron's Bootstrap method, the second hypothesis is proposed:

H2: Corporate ESG performance enhances corporate market value by promoting R&D investment.

3. Data Selection and Model Construction

3.1. Sample Selection and Data Sources

The empirical research data sample for this article is the data of A-share listed companies from January 1, 2019, to December 31, 2024. To ensure the authenticity and comprehensiveness of the data used in the study, the sample data underwent the following processing: ST/*ST and delisted companies were excluded; samples with less than one year of listing and missing key variables were excluded; continuous variables were subjected to a two-way winsorization at the 1% level. After screening, a total of 20,014 enterprise sample data were collected.

This article primarily utilizes Excel for data filtering and Stata for regression analysis and data processing. The Huazheng Index Database is the source of the ESG rating data, and the China Stock

Market & Accounting Research Database (CSMAR) and Wind databases provide the other financial data.

3.2. Selection of Research Variables and Indicators

The dependent variable in this paper is TobinQ. The TobinQ index, proposed by James Tobin, not only effectively reflects the deviation between the current market value of a company and its intrinsic value but also predicts the company's future growth potential. It is an effective measurement index for comprehensively evaluating the market value of a company. To test the robustness of the research conclusions, this paper replaces the dependent variable TobinQ value, in the original model with price-earnings ratio and price-to-book ratio, respectively, and reconstructs the regression model to estimate the relationship between ESG performance and company market value. The explanatory variable in this paper is the ESG performance score, using the Huazheng ESG evaluation system, which assigns values from 0 to 100 to nine levels, starting from C to AAA. The higher the score, the better the company's ESG performance. To more accurately analyze the impact of corporate ESG performance on company market value, this paper selects five control variables by referring to relevant literature on other factors affecting company market value. The mediating variable is the proportion of R&D investment, which can be used to explore whether the company's innovation capability plays a mediating role in the impact of ESG performance on company market value. Following the practices of previous scholars such as Ji Yunyang, the company's innovation capability is simplified to the proportion of R&D investment. Specific variable definitions are provided in Table 1.

Table 1. Variable definition

variable	variable name	variable symbols	variable definition
The explained variable	Tobin's Q value	TobinQ	Enterprise market value / Enterprise replacement cost
	Price-to-Earnings Ratio	PE	Stock price / earnings per share
	Price-to-Book Ratio	PB	Market price of the company / Net assets
explanatory variable	ESG rating	ESG	The ESG rating score in the ESG database
	E rating	E	The rating score of E in the ESG database
	S rating	S	The rating score of S in the ESG database
	G rating	G	The rating score of G in the ESG database
control variable	company size	Size	The natural logarithm of the total assets of the enterprise at the end of the period
	Listing period	Age	The number of years from the company's listing to the end of the current year
	Asset-liability ratio	Lev	(Total liabilities / Total assets) * 100%
	Operating income growth rate	Growth	(Operating income of current period - Operating income of previous period) / Operating income of previous period * 100%
	Independence of the board of directors	IBM	Number of independent directors / Total number of board members
mediating variable	Ratio of R&D investment	RDI	(R&D expenses / operating income) * 100%

3.3. Model Construction

3.3.1 Main effect model

Corporate market value benefits from ESG performance. (H1), a main effect model is constructed:

$$\text{TobinQ}_{i,t} = \alpha + \beta \text{ESG}_{i,t} + \gamma_1 \text{Size}_{i,t} + \gamma_2 \text{Age}_{i,t} + \gamma_3 \text{Lev}_{i,t} + \gamma_4 \text{Growth}_{i,t} + \gamma_5 \text{IBM}_{i,t} + \varepsilon_{i,t} \quad (1)$$

$\text{TobinQ}_{i,t}$, $\text{PE}_{i,t}$, and $\text{PB}_{i,t}$ represent Tobin's Q value, Price-to-Earnings Ratio (PE), and Price-to-Book Ratio (PB) of enterprise i at time t , respectively. $\text{ESG}_{i,t}$ represents the ESG score of enterprise

i at time t . $Size_{i,t}$, $Age_{i,t}$, $Lev_{i,t}$, $Growth_{i,t}$, and $IBM_{i,t}$ represent control variables, where α is the constant term and $\epsilon_{i,t}$ is the error term.

If β_1 , β_2 , β_3 , and β_4 are statistically significantly positive, then Hypothesis H1 holds, indicating that corporate ESG performance has a positive impact on corporate market value.

3.3.2 Mediation effect model

To verify the hypothesis that corporate ESG performance promotes corporate market value through the promotion of R&D investment (H2), a mediation effect model is constructed:

$$RDI_{i,t} = \alpha + \beta ESG_{i,t} + \gamma_1 Size_{i,t} + \gamma_2 Age_{i,t} + \gamma_3 Lev_{i,t} + \gamma_4 Growth_{i,t} + \gamma_5 IBM_{i,t} + \epsilon_{i,t} \quad (2)$$

$$TobinQ_{i,t} = \alpha + \beta_1 ESG_{i,t} + \beta_2 RDI_{i,t} + \gamma_1 Size_{i,t} + \gamma_2 Age_{i,t} + \gamma_3 Lev_{i,t} + \gamma_4 Growth_{i,t} + \gamma_5 IBM_{i,t} + \epsilon_{i,t} \quad (3)$$

$RDI_{i,t}$ represents the proportion of R&D investment of enterprise i at time t .

If the coefficient is significantly positive in model (2) and remains significantly positive in model (3), then hypothesis H2 is valid, indicating that there is a mediating effect between the proportion of R&D investment and the ESG performance of the enterprise as well as its market value.

4. Empirical Analysis of the Impact of Corporate ESG Performance on Market Capitalization

4.1. Descriptive Statistical Analysis

Descriptive statistical analysis of each variable was conducted using Stata software:

Table 2. Descriptive statistics

Variable	Obs	Mean	Std.	Min	Max
TobinQ	20014	2.5517	1.7482	0.8347	10.7469
PE	20014	64.0993	93.2795	4.7536	633.5183
PB	20014	3.1646	2.5316	0.4610	15.3550
ESG	20014	73.8912	5.4618	44.5300	100.0000
E	20014	62.9065	7.0736	34.4400	92.3000
S	20014	77.7353	6.7253	14.1800	100.0000
G	20014	79.3862	5.8828	32.2200	96.6700
Size	20014	21.9756	2.0441	6.3333	28.6460
Age	20014	12.5778	8.6752	0.1671	34.0575
Lev	20014	0.3839	0.1891	0.0515	0.8330
Growth	20014	0.2484	0.5882	-0.5681	3.6578
IBM	20014	37.9783	5.2898	33.3300	57.1400
RDI	20014	5.5580	5.3255	0.0300	29.1373

It can be seen from table 2 that the minimum and maximum values of Tobin Q value are quite different, indicating that the market value of the sample enterprises is quite different. The ESG score of the core explanatory variable shows that listed companies pay more attention to ESG performance as a whole, but there are still significant differences. The average g score is higher than the s score and higher than the e score, indicating that enterprises pay more attention to corporate governance.

The scale of the enterprise is over 21, covering all levels of large, medium, small and micro enterprises. The listing years reflect the sample structure of "coexistence of new and old". The average asset liability ratio is 0.38 and the maximum is 0.83, indicating that the overall leverage is good, but individual companies have high liabilities. The growth rate of revenue showed high fluctuation characteristics, and the standard deviation was nearly 60%. The upper limit of board independence is 24% higher than the average, indicating that the proportion of independent directors in some companies is significantly high. The average R&D investment intensity is 5.6%, the maximum is

nearly 30%, and the right tail is prominent, indicating that a few enterprises' R&D expenditure is large.

4.2. Benchmark Regression Analysis

According to the results of F test ($f(480615202)=7.43$, $\text{prob}>f=0.0000$) and Hausman test ($\text{chi}^2=94.96$, $\text{prob}>\text{chi}^2=0.0000$), this paper finally selects the two-way fixed effect model to ensure the reliability of the estimation results.

Table 3. Benchmark regression analysis

	(1)	(2)	(3)	(4)	(5)
	tobinq	tobinq	tobinq	tobinq	tobinq
esg		0.016*** (2.685)			
e			0.022*** (2.741)		
s				-0.013*** (-11.038)	
g					0.011*** (2.049)
size	-0.076*** (-11.982)	-0.073*** (-11.568)	-0.070*** (-11.130)	-0.079*** (-12.534)	-0.075*** (-11.877)
age	0.053*** (2.88)	0.049** (2.41.)	0.058** (3.12)	0.052** (2.78)	0.047** (2.63)
lev	1.848*** (6.057)	1.932*** (6.965)	1.832*** (6.042)	1.790*** (5.987)	1.919*** (6.736)
growth	0.109*** (7.141)	0.107*** (6.992)	0.098*** (6.473)	0.103*** (6.748)	0.111*** (7.154)
ibm	0.004** (2.028)	0.004* (1.825)	0.004* (1.924)	0.004* (1.787)	0.004* (1.721)
_cons	4.961*** -29.952	6.102*** -31.043	6.181*** -35.355	5.993*** -31.604	5.810*** -28.394
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
N	20014	20014	20014	20014	20014
R2	0.04	0.047	0.064	0.047	0.043
F	156.335	148.832	206.21	150.431	135.406

From the regression results in Table 3, it can be seen that the control variable has a significant impact on tobinq with column (1) as a reference. In column (2), the better the overall performance of enterprise ESG, the higher its market value, and the result is significant, which supports the hypothesis of positive correlation (H1). The results from columns (3) to (4) show that the environmental dimension and governance dimension are significantly positive, and the social dimension is significantly negative. In the control variables, the size of the company is significantly negatively correlated with the market value, and the financial leverage, growth and market value are significantly positively correlated. The results meet the theoretical expectations.

Changes in ESG performance in the future may still have a systematic impact on the market value of enterprises. If the enterprise continues to optimize the overall performance of ESG, especially the investment and disclosure quality of environmental dimension and governance dimension, its market value is expected to be further improved. If the negative relationship between social dimension performance and enterprise value persists, it may indicate that the input cost of social dimension in the current sample has not yet been converted into the value recognized by the market. However, if enterprises can more accurately identify social needs in the future, the impact of this dimension on market value is expected to gradually turn positive. These forecasts need to be further verified in combination with longer period sample data or cross industry comparison.

4.3. Mediating Effect Test

Table 4. Mediating effect test

	(1)	(2)
	rdi	tobinq
esg	0.012*** (3.807)	0.015*** (3.903)
size	0.035*** (2.597)	-0.070*** (-11.296)
age	0.047** (2.753)	0.055*** (2.961)
lev	-0.890*** (-4.521)	1.997*** (5.961)
growth	-0.074** (-2.270)	0.101*** (6.716)
ibm	0.011** (2.371)	0.003*** (2.467)
rdi		0.014*** (3.773)
_cons	3.820*** (9.096)	6.385*** (32.808)
Year	Yes	Yes
Industry	Yes	Yes
N	20014	20014
R2	0.004	0.071
F	11.270	192.372

According to the mediation effect test results in Table 4, the results in column (1) show that the regression coefficient of ESG to RDI is significantly positive, indicating that the better the performance of enterprise ESG, the higher the proportion of R&D investment; Column (2) after ESG and RDI are both included in tobinq equation, the coefficient of ESG decreases compared with that without RDI, but it is still significant, and the coefficient of RDI is 0.014, indicating that R&D investment plays a significant intermediary role in the process of ESG affecting the market value, which verifies the hypothesis that good ESG performance of enterprises can increase the market value of enterprises by encouraging enterprises to increase R&D investment (H2).

4.4. Robustness Test

In order to verify whether the results of the main effect model are robust, PE and PB are used as alternative variables for robustness analysis. Build robustness analysis model:

$$PE_{i,t} = \alpha + \beta ESG_{i,t} + \gamma_1 Size_{i,t} + \gamma_2 Age_{i,t} + \gamma_3 Lev_{i,t} + \gamma_4 Growth_{i,t} + \gamma_5 IBM_{i,t} + \varepsilon_{i,t} \quad (4)$$

$$PB_{i,t} = \alpha + \beta ESG_{i,t} + \gamma_1 Size_{i,t} + \gamma_2 Age_{i,t} + \gamma_3 Lev_{i,t} + \gamma_4 Growth_{i,t} + \gamma_5 IBM_{i,t} + \varepsilon_{i,t} \quad (5)$$

If β is still statistically significantly positive, it indicates that the main effect model is robust, that is, the positive impact of enterprise ESG performance on enterprise market value holds under different market value measurement indicators.

4.4.1 Replace TobinQ with PE

It can be seen from table 5 that the comprehensive score of ESG is significantly positive, but the overall explanatory power of the model is low ($R^2 \approx 0.002$), and the environmental, social and governance sub items are not significant, indicating that the impact of ESG on PE is small and the direction is unstable. This result may be because the denominator of PE is the current net profit, while ESG investment will compress the profit in the short term, and the molecular market value fails to reflect the long-term value synchronously. However, it is generally in line with H1 assumption.

Table 5. PE robustness test

	(1)	(2)	(3)	(4)	(5)
	pe	pe	pe	pe	pe
esg		0.460*** (2.023)			
e			0.223 (1.095)		
s				-0.394 (-0.798)	
g					0.273 (1.467)
size	-1.124* (-1.763)	-1.043 (-1.636)	-1.089* (-1.706)	-1.100* (-1.724)	-1.129* (-1.771)
age	-11.397*** (-15.332)	-11.484*** (-15.982)	-11.367*** (-14.824)	-10.977*** (-13.982)	-11.312*** (-14.571)
lev	47.479***	45.093***	47.573***	47.048***	47.953***
growth	-5.115 3.809**	-4.842 3.733**	-5.125 3.745**	-5.06 3.856**	-5.135 3.809**
ibm	-2.468 0.176 -0.791	-2.418 0.189 -0.85	-2.424 0.178 -0.798	-2.496 0.172 -0.773	-2.468 0.172 -0.77
_cons	62.948*** -3.774	95.581*** -4.811	69.854*** -3.917	55.399*** -2.889	57.271*** -2.774
N	20014	20014	20014	20014	20014
R2	0.002	0.003	0.002	0.002	0.002
F	9.084	9.098	7.507	7.395	7.31

4.4.2 replace TobinQ with PB**Table 6. PB robustness test**

	(1)	(2)	(3)	(4)	(5)
	pb	pb	pb	pb	pb
esg		0.036*** (2.639)			
e			0.045*** (2.799)		
s				-0.025*** (-11.593)	
g					-0.024*** (-7.611)
size	-0.159*** (-12.294)	-0.153*** (-11.849)	-0.147*** (-11.444)	-0.166*** (-12.822)	-0.158*** (-12.184)
age	0.275*** (3.817)	0.281*** (3.822)	0.277*** (3.819)	0.279*** (3.821)	0.274*** (3.792)
lev	1.015*** (5.383)	0.829*** (4.4)	1.049*** (5.635)	1.131*** (6.008)	0.859*** (4.534)
growth	0.222*** (7.087)	0.216*** (6.927)	0.199*** (6.416)	0.210*** (6.708)	0.222*** (7.102)
ibm	-0.009* (-1.935)	-0.008* (-1.714)	-0.008* (-1.830)	-0.008* (-1.703)	-0.007 (-1.604)
_cons	6.553*** (19.333)	9.096*** (22.625)	9.058*** (25.317)	8.580*** (22.103)	8.430*** (20.135)
Year	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
N	20014	20014	20014	20014	20014
R2	0.015	0.024	0.04	0.022	0.019
F	58.492	74.301	126.397	69.577	58.555

***p<0.01,**p<0.05,*p<0.10

The results in Table 6 show that the coefficient of ESG comprehensive score is consistent with the tobing results above, which again supports the assumption that the performance of ESG is positively correlated with the market value. The environmental dimension coefficient is still significantly positive at the 1% level, while the social and Governancedimension coefficients are significantly negative, and the model R^2 drops to 0.015–0.040, indicating that PB has limited sensitivity to ESG and is only partially robust. It may be because the update of book net assets is slow, and the denominator is affected by the accounting policy cycle, which lags behind the social response.

5. Conclusion

This study focuses on the impact of enterprise ESG performance on the market value of enterprises, and uses benchmark regression analysis to empirically test A-share listed companies from 2019 to 2024. Unlike previous studies that only considered the impact relationship between the two variables, this paper not only examined the role of ESG in the overall performance, but also studied the impact differences of environment (E), society (S) and Governance (G) in different dimensions, and explored the mechanism of impact with the proportion of R&D investment as the intermediary variable. The results show that the comprehensive performance of enterprise ESG is significantly positively correlated with market value, in which the environment and governance dimensions have a positive impact, while the social dimension has a negative impact, and ESG can indirectly improve enterprise valuation by encouraging innovation investment; The sensitivity of different market value indicators to ESG is different. Tobin's Q value is the highest, followed by the price to book ratio, and the P/E ratio is the lowest, which reflects the long-term and short-term attributes of ESG's value effect.

The research conclusion of this paper verifies the influencing factors of enterprise market value from the perspective of enterprise ESG performance, enriches the mechanism of the impact, and has certain practical significance. Accordingly, this paper suggests that enterprises optimize the allocation of ESG resources and cooperate in R&D and innovation, investors pay attention to the actual value of ESG in different dimensions, and regulatory authorities refine disclosure requirements and provide differentiated guidance. However, there are still limitations in this study. Only the ESG data of the China Securities Index may have rating bias, and the impact of industry differences is not analyzed. In the future, it can expand the comparison of multiple data sources and explore the dynamic relationship by industry to improve the applicability of the conclusion.

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