

ESG performance and corporate value: The mediating role of reputation

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Abstract: Environment, social, and governance (ESG) has been expected as an important way for green innovation and sustainable development under the double-carbon target in China. The question then arises as to whether and how ESG performance affects corporate value. To answer this question, we conduct an empirical analysis of 1084 listed Chinese A-share companies over the 2011~2020 period using the panel data regression. The empirical results show that ESG performance significantly promotes corporate value even after addressing the endogeneity issue. This promotion process is mainly achieved by improving corporate reputation. The numerical results confirm that although the indirect effect (0.0003) is statistically significant, it only accounts for a small part of the total impact (0.0058) of ESG performance on corporate value. Overall, our findings offer new insights into the role of corporate reputation through which corporates can benefit from their ESG engagement.

1. Introduction

With the implementation of the double-carbon target (carbon peaking and carbon neutrality) in China, green development has gradually become mainstream. In this process, corporations will play an important role. It is well-known that environment, social, and governance (ESG hereafter) provides a new concept to guide corporation investment behavior. Recently, many corporations adhere to a series of disclosure guidelines issued by the Chinese regulators in reporting their ESG performance. However, the prerequisite for corporations to actively engage in ESG activities is that these activities do promote corporate value. The question then arises as to whether and how ESG performance affects corporate value.

Despite the growing literature on ESG, there is little consensus about its influence on corporate value, namely this ESG-value relation is not always clear [1]. While some researchers argue that good ESG performance promotes corporate value by lowering costs and idiosyncratic risk [2], others consider ESG activities as a waste of resources. Recently, the mechanism through which the effect of ESG on corporate value has been extensively investigated. The existing literature has empirically documented that good ESG performance can enhance corporate value by improving operational efficiency [3], lowering financial costs [4], and obtaining social attentions [5]. In

addition, a good reputation has proven to be positive on corporate value. For instance, [6] prove that corporations with good reputations have a higher market premium and tend to have better financial performance.

We select 1084 A-share companies listed in China during the 2011~2020 period. The Bloomberg ESG rating data is used to measure corporate ESG performance and Tobin's Q is used to measure corporate value. The empirical results from the panel data regression model indicate that ESG performance has a significant positive effect on corporate value. Economically, a one-unit increase in ESG performance enhances the average value of corporate value by 0.0058. We further attempt to explore the channel through which ESG may enhance corporate value. The empirical results confirm that corporate reputation plays a mediating role in the ESG-value relation. Superior ESG performance can enhance corporate reputation, which in turn increases corporate value. We also find that media attention plays a reverse moderating role in weakening the marginal impact of ESG on corporate value. The heterogeneity analyses show that the positive impact of ESG performance on corporate value is more prominent for non-state-owned corporations. To sum up, our findings provide new insights into the role of corporate reputation through which corporates can profit from their ESP performance.

The rest of this article proceeds as follows. In Section 2, we review related literature and develop two related hypotheses. Section 3 reports our research design, including sample data, variables, descriptive statistics, and model setup. Section 4 presents the empirical results, including the main findings, heterogeneity analyses, and further analyses. Section 5 provides concluding remarks.

2. Literature review and hypothesis development

2.1. The impact of ESG performance on corporate value

In addition to ESG information disclosure, a large body of literature explores the economic consequences of ESG in five aspects: financial performance [7], financing constraints [8], risk-taking [9], green innovation [10], and corporate value [2]. To date, there is far from a consensus on the effect of ESG on corporate value. While some scholars argue that good ESG initiatives will promote corporate value [11], others consider engagement in ESG practices as a way for managers to seize private benefits that damage corporate value [7]. Moreover, the uncorrelation between ESG performance and corporate value has also been documented [1].

A corporation discloses ESG information to let investors see their willingness for sustainable development, which helps reduce information asymmetry. In this sense, [12] believe that improving ESG transparency significantly reduces agency costs and produces more benefits than costs. [8] find that ESG information disclosure reduces corporate financing costs by increasing the transparency of corporate information, which can enhance corporate value. We believe that good ESG performance can make a long-term investment effect and promote long-term competitiveness in the market.

So far, there is still a lack of standardized guidelines for ESG information disclosure in China. Corporations with good ESG performance are more inclined to disclose their ESG information, through which they want to gain a wide understanding of market participants. In the long run, corporations that actively undertake social responsibility can gain the support of the public and achieve better performance. Therefore, we propose the following hypothesis.

H1: Good ESG performance will enhance corporate value.

2.2. The mediating role of corporate reputation

In recent years, scholars start to investigate the channel through which ESG engagement can enhance corporate value. For example, the positive ESG-value relation is completed mainly through

easing financing constraints [8], reducing agency costs [12], and reducing information asymmetry [5]. In [13], the impact of ESG components on corporate value has been examined in detail. The empirical results show that different ways may exist in forming the ESG-value relation.

In China, corporations may selectively disclose ESG information, which could lead to information asymmetry between the corporation and stakeholders. Undoubtedly, corporate reputation will play an important role in reducing information asymmetry. Corporations with a good reputation are more likely to gain the trust of investors. In investment activities, investors think that these corporations typically exhibit lower risk and more stable returns.

Moreover, [14] argue that ESG engagement is instrumental in improving the reputation of the corporation. A good corporate reputation cannot be replicated and can only be obtained through long-term efforts. Corporate reputation is an important resource for the corporation to attract consumer loyalty, raise investor expectations, and improve its competitiveness, which ultimately enhances its value. Therefore, this leads to our second hypothesis.

H2: Corporate reputation plays a mediating role in the ESG-value relation, that is, good ESG performance can enhance corporate value by improving corporate reputation.

3. Research design

3.1. Data source and sample selection

We select annual data of China's A-share listed companies from 2011 to 2020 as the initial sample. The ESG data comes from the Bloomberg database, while the other financial data comes from China Stock Market & Accounting Research (CSMAR) database. To ensure the validity of the data, we adopt the following sample selection criteria: (1) Excluding financial and insurance corporations; (2) Excluding ST, *ST sample corporations; (3) Excluding the observations with missing data for any variable; (4) Winsorizing all continuous variables at the 1% and 99% levels to avoid the impact of outliers. Finally, we obtain 8,544 corporation-year observations, which forms imbalanced panel data across $N=1084$ cross-sectional corporations and $T=10$ years.

3.2. Definition of variables

We provide in Table 1 detailed information on five types of variables: a dependent variable (corporate value), an independent variable (ESG), a mediating variable (corporate reputation), two moderating variables for media attention, and nine control variables.

3.2.1. Dependent variable

We choose Tobin's Q to measure the corporation value and define it as $TQ = \frac{\text{The sum of market capitalization plus the liabilities}}{\text{Total assets}}$. Total asset market value is the sum of total market value and book value of liabilities. Tobin's Q is a forward-looking measure of corporation value. A value below one implies that the corporation creates less market value than its assets are worth, and vice versa.

3.2.2. Independent variable

We construct the core independent variable, ESG performance, based on the ESG rating system of Bloomberg. Bloomberg formulates its rating system with reference to the standards published by international organizations. Its comprehensive ESG datasets cover three types of data: publicly disclosed data by listed companies, website data of the government and relevant regulatory departments, and authoritative media reports on ESG information. The index system with 21 topics

and 122 sub-indicators, comprises the ESG performance in three dimensions: environmental (E), social (S), and governance (G) factors. The overall ESG score is a composite index based on each E, S, and G dimension.

3.2.3. Mediating variable

We adopt financial indicators to construct the mediating variable: corporation reputation. Unlike the Fortune World’s most admired company (MAC) survey data for measuring reputation, we select 13 indicators from four dimensions: corporation, consumer, creditor, and shareholder. First, the corporation dimension includes three indicators: sustainable growth rate, the proportion of independent boards, and intangible assets. Second, the consumer dimension includes two indicators: the revenue growth rate, and whether the corporation discloses consumer interests. Third, the creditor dimension includes three indicators: debt-to-asset ratio, current ratio, and long-term debt ratio. Fourth, the shareholder dimension includes five indicators: the number of boards, the proportion of shareholders attending shareholder meetings, the net profit margin of total assets, return on equity, and whether auditors come from the four major accounting firms. Based on this index system, we further use factor analysis to evaluate the comprehensive level of corporate reputation.

3.2.4. Moderating variable

We focus on the moderating effect of media attention on the ESG-corporation relation. To this end, we consider two ways of measuring media attention. The first one is to count the number of times the corporation name appears in the headlines of news reports in a year and construct a variable: Newsnum_Title. Specifically, Newsnum_Title = ln (the number of times the corporation name appears in the headlines of financial news on the Internet + the number of times the corporation name appears in the headlines of financial news in newspapers). Second, we construct a variable: Newsnum_Cont and define it as the number of times the corporation name appears in the contents of news reports in a year, namely, Newsnum_Cont = ln (the number of times the corporation name appears in the contents of financial news on the Internet + the number of times the corporation name appears in the contents of financial news in newspapers). The data comes from the financial news section of the Chinese Research Data Services (CNRDS) platform; The larger the value of Newsnum_Title and Newsnum_Cont, the higher the corporation's media attention.

3.2.5. Control variables

Following [11], we also consider several control variables. Specifically, we control for corporation size (Size), debt-to-asset ratio (LEV), return on equity (ROE), Ownership concentration (TOP10), board independence (BI), cash asset ratio (CAR), book-to-market ratio (BM), and operating cash flow (OCF).

Table 1: The detailed information of variables

Type	Name	Variable	Definition
Dependent variable	Corporation value	TQ	Tobin’s Q
Independent variable	ESG	ESG	Bloomberg’s ESG rating
Mediating variable	Corporation reputation	REP	A composite indicator using factor analysis
Moderating	Media	Newsnum_Title	The natural logarithm of the number of times the corporation name appears

variables	attention		in the titles of online financial news and newspaper financial news
		Newsnum_Cont	The natural logarithm of the number of times the corporation name appears in the contents of online financial news and newspaper financial news
Control variables	Corporation size	SIZE	The natural logarithm of total assets
	Debt-to-asset ratio	LEV	Total debts/Total assets
	Return on equity	ROE	Net income/Average shareholders' equity
	Ownership concentration	TOP10	The number of shares held by The top 10 shareholders/The total number of outstanding shares
	Board independence	BI	The proportion of independent boards
	Cash asset ratio	CAR	(Cash + Cash equivalents)/Total assets
	Book-to-market ratio	BM	Book value of equity/Market value of equity
	Operating cash flow	OCF	(Net income + Non cash expenses + Increase in working capital)/ Total assets

3.3. Model setup

3.3.1. Main effect test

For testing H1, we investigate the impact of ESG performance on corporate value (TQ) and build a panel data regression model as follows:

$$TQ_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \gamma Controls_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t} \quad (1)$$

where the subscript i denotes corporations and t denotes years; *Controls* includes a series of control variables; μ_i and η_t represent corporation individual fixed effect and time fixed effect, respectively; ε is the error term. The regression coefficient β_1 captures the effect of ESG performance on corporate value. If β_1 is positive and statistically significant, H1 is then supported; Otherwise, H1 cannot be empirically supported.

3.3.2. Mediating effect test

To examine the mediating role of corporate reputation in H2, we further design two panel data regression models as follows:

$$REP_{i,t} = \beta_0 + \beta_2 ESG_{i,t} + \lambda Controls_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t} \quad (2)$$

$$TQ_{i,t} = \beta_0 + \beta_2' ESG_{i,t} + \beta_3 REP_{i,t} + \theta Controls_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t} \quad (3)$$

where the subscript i denotes corporations and t denotes years; *REP* is the mediating variable, *Controls* includes a series of control variables; μ_i and η_t stand for corporation individual fixed effect and time fixed effect, respectively; ε is the error term.

In general, there are three forms of mediation. First, if $\beta_1, \beta_2, \beta_3$ are statistically significant, but β_2' is insignificant, a full mediation effect does exist. Second, if $\beta_1, \beta_2, \beta_3$ are statistically significant and β_2' is also significant, there is a partial mediation effect. Third, if β_1 is statistically significant, and at least one of β_2 and β_3 is insignificant, we need further the Sobel test: there is a partial mediation effect when the Sobel Z is statistically significant; Otherwise, there is no mediation effect.

4. Empirical analysis

4.1. Main findings

4.1.1. The impact of ESG on corporation value

As mentioned above, Table 2 presents our OLS regression results. In all the estimations, we adopt standard errors clustered by the corporation. In addition to controlling the individual fixed effect and time fixed effect, column (1) of Table 2 reports the direct effect of ESG performance only, column (2) additionally includes the control variables. Both columns show that the regression coefficient of ESG performance is positive and statistically significant at the level of 1% or 5%. This positive effect indicates that ESG performance can promote corporate value, which strongly supports H1.

After including control variables, the regression coefficient of ESG decreases from 0.0147 to 0.0058. This implies that corporate value will increase by 0.0058 on average, all other things being equal, as ESG increases one score. According to descriptive statistics, ESG performance has considerable room for improvement since its mean is just 22.2020 (out of 100). Taken together, it is promising for corporations to enhance corporate value by improving their own ESG performance.

4.1.2. The mediating effect of corporate reputation

Columns (2) to (4) of Table 2 comprehensively report the test results of the mediating role of corporate reputation. From column (3), the regression coefficient of ESG on REP is positive (0.0051) and statistically significant at the 1% level. This implies that the better the ESG performance of a corporation, the higher the corporate reputation. Based on column (2), column (4) adds REP as a covariate. The results demonstrate that both ESG and REP have a significant positive impact on TQ at the level of 5% and 1%, respectively. So far, we conclude that corporate reputation plays a partial mediating role in the ESG-value relation for Chinese listed corporations. Hence, H2 is partially supported.

Table 2: OLS regression results for two hypothesis tests

Variable	(1)	(2)	(3)	(4)
	TQ	TQ	REP	TQ
ESG	0.0147*** (0.0029)	0.0058** (0.0024)	0.0051*** (0.0013)	0.0055** (0.0024)
REP				0.0646*** (0.0211)
Controls	No	Yes	Yes	Yes
Corporation FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Obs.	8544	8544	8544	8544
Adj. R ²	0.0685	0.3799	0.0489	0.3806
F-test	172.1098***	333.4165***	81.1385***	317.5702***

Note: Robust standard errors in parentheses, and *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Comparing column (2), column (4) shows that the regression coefficient of ESG reduces from 0.0058 to 0.0055. The magnitude of this decline is equal to the indirect effect, namely, $0.0003 = 0.0051 \times 0.0646$. We find that although the indirect effect is statistically significant, it only accounts for a small part of the impact of ESG performance on corporate value.

4.2. Robustness checks

In the ESG-value relation, the endogeneity issue may be caused by reverse causality. To alleviate this issue, we adopt the instrument variables approach. In this study, we consider two instrument variables: mean industry-year ESG performance (MESG) excluding the focal corporation and the lagged ESG performance (LESG) by one year. We include these two instrument variables together in the model and estimate the model using the two-stage least squares (TSLS) method. In Table 3, column (1) shows that the impacts of LESG and MESG on ESG are statistically significant at the level of 1% and 5%, which satisfies the requirement of the correlation between instrumental variables and the independent variable. Column (2) reports the estimates in the second stage, where PESH, the fitted variable of ESG, is used to predict TQ. The regression coefficient of PESH is significantly positive at the 1% level, which is in line with our main findings. This result finds further support for H1 after conducting instrumental variable regression.

Table 3: Addressing endogeneity: TSLS

Variable	(1)	(2)
	ESG	TQ
LESG	0.6485*** (0.0100)	
MESG	0.0608** (0.0247)	
PESH		0.0113*** (0.0039)
Controls	Yes	Yes
Corporation FE	Yes	Yes
Year FE	Yes	Yes
Obs.	7411	7411
Adj. R ²	0.4565	0.3681
F-test	384.5085***	299.8271***

Note: Robust standard errors in parentheses, and *** p<0.01, ** p<0.05, * p<0.1.

4.3. Further analyses

4.3.1. The moderating role of media attention

External monitoring, such as media attention, is crucial to corporation development. To test the moderating role of media attention, we add the interaction term between ESG and Newsnum_Title (Newsnum_Cont) and re-estimate the models (omitted to save space). The regression coefficient of Newsnum_Title×ESG is negative (-0.0038) and statistically significant at the 1% level. This result indicates that media attention does reduce the effect of ESG on corporation value and plays a reverse moderating role. Similarly, the regression coefficient of Newsnum_Cont×ESG is also negative (-0.0042) and statistically significant at the 1% level. The reverse moderating role of media attention is confirmed again.

As external monitoring, media attention provides an important way to alleviate the information asymmetry of corporations, thus reducing financing constraints and enhancing corporation value. Therefore, the more attention a corporation receives from social media, the stronger external monitoring power it has, thus weakening the marginal impact of ESG.

4.3.2. Heterogeneity on ownership type

According to ownership type, we divide the sample into two groups, including 602 state-owned

corporations (SOEs) and 482 non-state-owned corporations (Non-SOEs). The grouping regression results (omitted to save space) show that the regression coefficient (0.0014) of ESG for SOEs in column (1) is far less than that (0.0088) for Non-SOEs in column (2). Moreover, ESG is insignificant for SOEs but statistically significant for Non-SOEs at the 10% level.

This heterogeneous effect implies that Non-SOEs are more conducive to improving ESG performance than SOEs. One possible reason is that most people believe SOEs should play a positive role in the community, which makes the public and investors less sensitive to their ESG performance. In contrast, Non-SOEs tend to pursue profit maximization and their engagement in ESG is more likely to gain recognition from stakeholders. Therefore, Non-SOEs with good ESG performance are more likely to attract attention, obtain a higher reputation, and create greater value.

5. Conclusions

In this study, we answer the question of whether and how ESG performance affects corporate value. Based on the imbalanced panel data of 1084 A-share listed companies in China from 2011 to 2020, we use the panel data regression model to estimate the impact of ESG performance on corporate value and consider the mediating role of corporate reputation in the ESG-value relation. Moreover, we conduct robustness checks, heterogeneity analyses, and further analyses.

Based on the empirical analysis, we draw the following conclusions: (1) The performance of ESG of Chinese A-share listed companies can significantly promote the improvement of corporate value with a marginal effect of 0.0058. (2) Corporate reputation plays a mediating role in the ESG-value relation with an indirect effect of 0.0003. (3) Media attention plays a reverse moderating role in weakening the marginal impact of ESG on corporate value. (4) The positive impact of ESG performance on corporate value is heterogeneous and more prominent for non-state-owned corporations.

Our findings have at least two policy implications. First, listed corporations in China should improve ESG performance and disclose ESG information actively. If doing so, the listed corporation will promote long-term competitiveness and development potential by obtaining more market resources. Eventually, corporation value will be enhanced with the increase in ESG performance. Second, listed corporations should pay attention to accumulating reputation. The mediating effect test illustrates the role of corporate reputation through which corporates can benefit from their ESG engagement. However, the reputation of Chinese listed companies is generally not good and there is still a lot of room for improvement. Only in this way can the contribution of this channel be brought into further play.

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