

Study on the effect of ESG ratings of companies on financial restatement

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Abstract: A good ESG rating is a positive indicator of a company's high quality and helps to discipline corporate behaviour, thereby reducing the phenomenon of financial restatement. This paper examines the impact of ESG ratings on financial restatement and conducts further heterogeneity analysis in an attempt to find new ways to improve corporate financial performance. The findings show that there is a significant negative relationship between ESG rating and financial restatement. The results of the heterogeneity analysis indicate that the inhibitory effect of ESG rating on financial restatement gradually increases when the solvency or equity concentration of a company increases. The findings of this paper help listed companies to understand the importance of ESG rating results and make reasonable use of ESG rating information to reduce the possibility of financial restatement, and then explore the potential impact of ESG rating on the internal financial behaviour of listed companies in China.

Keywords: ESG rating; Financial restatement; Impact effect; Heterogeneity analysis.

1. Introduction

With the growing threat of global climate change and depletion of resources, sustainable development has become a key concern for society. Coupled with the promulgation of the dual carbon policy, the emergence of the concept of green investment and development has led many companies to actively participate in ESG rating workshops and publish ESG reports, and the attention of companies to ESG rating results has continued to increase. ESG ratings, which take environmental, social and governance aspects as the starting point for investment, are an important dimension for measuring the value of corporate investments and assessing the quality of corporate operations. However, research on the impact of ESG ratings on corporate financial behaviour has not yet been fully understood and appreciated by corporate investors and managers.

Financial restatements are a constant and topical concern for regulators, investors and stakeholders. With the current global economic downturn due to the epidemic, financial restatements are a frequent occurrence in most listed companies. A financial restatement, as the name implies, is a re-description of the contents of a financial report. The creation of a financial restatement implies a questioning of the authenticity and reliability of a company's previous financial reporting, and affects its financial performance. There is already research discussing the mechanism of ESG ratings on corporate performance, but research on the impact of ESG ratings on financial restatements is still lacking, but it is worth exploring further.

This paper uses financial data of Chinese A-share listed companies from 2015-2020, and with the help of Stata 16.0 software, we investigate the correlation between ESG rating results and financial restatement of listed companies, and explore the influence mechanism of ESG rating information on the financial restatement behaviour of listed companies, which enriches the research on the effect of ESG rating as an influencing factor, and also provides a certain reference for the improvement of corporate financial performance. It also

provides a reference for the improvement of corporate financial performance and corporate reputation.

The paper is then structured as follows: firstly, a summary of relevant research literature at home and abroad to deepen the knowledge on ESG ratings and financial restatement; secondly, a theoretical analysis and research hypothesis on the relationship between ESG ratings and financial restatement; again, a research design with data sources, model selection and variable setting as components; then, empirical results and analysis, including descriptive analysis, correlation analysis and heterogeneity analysis; and finally, research conclusions and implications.

2. Review of the Literature

The existing literature suggests that ESG ratings have a large impact on firm performance, firm value, and firm financial performance. Li Jinglin et al. (2021) concluded that corporate ESG performance and its three dimensions significantly enhance corporate performance and innovation in their study of the mechanisms by which ESG promotes corporate performance. Zhang, Lin and Zhao, Haitao (2019) showed that ESG ratings have a significant effect on corporate value, especially on the enhancement of corporate value. Wang Linlin et al. (2022) also indicated that the better the ESG rating, the higher the corporate performance and value possessed by the firm. In analysing the relationship between ESG ratings and financial performance, Chen Jing (2019) introduced dynamic time and studied it in the short, medium and long term, and the results of the study indicated that: the relationship between ESG and financial performance was not significant in the short term; there was a positive correlation between the two in the medium term; and the long term showed a significant positive correlation. Banke (2022) et al. found that companies that reported their ESG rating results on their company websites compared to other companies that did not. Banke (2022) et al. found that companies that reported their ESG ratings on their websites enjoyed higher corporate credibility and benefits than other companies that did not publish their results. However, little literature has focused on

the study of corporate ESG ratings on financial restatement.

Most of the current literature on financial restatements has been studied by scholars based on the perspectives of equity structure, corporate governance, internal control and independent audit quality. Both Yu Peng (2007) and Zhang Junrui and Ma Chen (2011) indicate that the probability of financial restatements occurring in firms with concentrated equity and fewer or no state-owned shares is relatively low. Cao Qiang (2010) argues that weaknesses in corporate internal controls are the main cause of financial restatements in Chinese listed companies, and Shamsul (2010) et al. examine the relationship between corporate governance characteristics and financial restatements and conclude that the independence of the audit committee is likely to lead to financial restatement behaviour. In addition, Habib (2021) et al. found through meta-analysis that the governance mechanisms of Big N auditor selection, type of audit opinion, timeliness and board independence showed a significant negative relationship with the occurrence of financial restatements.

In reviewing the domestic and international literature, few have been able to link ESG ratings with financial restatements and study the impact of ESG ratings on financial restatements. The current literature on ESG ratings has mainly studied its impact on corporate behaviour, corporate performance and financial performance, while the literature on financial restatement has mainly focused on equity structure, corporate governance, internal control and independent audit quality. Compared with the existing literature, the contributions of this paper are mainly: firstly, to expand the literature on ESG ratings and financial restatements in depth; secondly, to deepen the understanding and attention of investors, regulators and stakeholders to ESG rating information; and thirdly, to explore the impact factors of financial restatements from the perspective of ESG ratings, so as to reduce the probability of restatement and improve financial performance.

3. Theoretical Analysis and Research Hypotheses

As a comprehensive corporate evaluation indicator based on sustainability principles rather than focusing on financial performance and an important element of information disclosure for listed companies, the ESG rating of companies can guide corporate behaviour and corporate governance to a certain extent.

On the one hand, theoretical and empirical studies provide empirical evidence that the higher the ESG rating, the better the quality improvement of the company. Firstly, a company's environmental performance is mainly reflected in its effective management of environmental pollution emissions and the optimal use of natural resources. Positive environmental performance can reduce environmental risks and enhance the competitiveness of a company's market, which in turn can improve the overall governance efficiency and operational quality of the company, bringing more economic benefits to the company and thus reducing financial restatement events. Secondly, corporate social performance is demonstrated through the coordination of corporate relationships with stakeholders. By taking an active role in social responsibility, enterprises can help deepen the cooperative bonds between them and their stakeholders, bringing them more credibility and further contributing to the transparency of corporate financial reporting. Finally, corporate governance

performance is reflected in the corporate governance structure, transparency, management remuneration and business ethics. A good corporate governance structure can effectively manage corporate behaviour, improve information asymmetry within the enterprise, promote transparency of financial reporting information and improve financial restatement. At the same time, companies with good corporate governance will inspire corporate management and basic employees through a system of incentives and constraints, thus motivating employees to work and reducing management fraudulent practices. Therefore, a reduction in financial restatements is a direct result of disciplined corporate behaviour and an indirect reflection of a good ESG rating.

On the other hand, ESG rating results provide management with a clear understanding of the standards by which they make judgements when preparing financial reports. Some of the financial restatements that occur in companies are the result of senior management's lack of familiarity with accounting standards and their own ethical behaviour. When managers take responsibility for their responsibilities to society and to the business community, and act in an ethical manner, management will become more familiar with corporate accounting standards and their specific content, thus avoiding financial reporting errors and reducing restatements. ESG rating information therefore allows management to reflect on the issues surrounding financial restatements and to avoid the next one.

In summary, a good ESG rating result is a positive indication of higher corporate quality and also helps to discipline corporate behaviour, which in turn reduces the phenomenon of corporate financial restatement. Accordingly, this paper puts forward the following key hypotheses.

Hypothesis H0: The higher the ESG rating of a listed company, the less likely it is that financial restatement will occur.

4. Study Design

4.1. Data Sources

This paper takes A-share listed companies as the research object, and takes 2015-2020 as the selection interval of the research sample. The ESG rating data information in this paper comes from the Shang Dao Rong Green database, the financial restatement information comes from the Dibao database, and the rest of the financial data comes from the Guotaian database, and has been manually calculated, collated and compared.

In order to enhance the standardisation of the research sample and the true reliability of the research results, this paper selects data based on the following principles: (1) exclude financial and insurance listed companies; (2) exclude ST, *ST and PT listed companies; (3) exclude listed companies with incomplete or abnormal data; after excluding the above samples, a total of 1440 valid sample observations were collected. For data processing, this paper was completed through Stata 16.0. In addition, in order to avoid extreme values affecting the accuracy of the research results, all continuous variables at the 1% and 99% levels were subjected to Winsorize in the empirical analysis in this paper.

4.2. Model Design

To investigate the impact of ESG ratings on financial restatements, the following logit model is constructed.

4.3. Variable Setting

(1) Explanatory variables. The explanatory variable is ESG rating (ESG). The ESG ratings provided by the leading rating agencies in China, such as ShangDao RongGu, Thomson Reuters, FTSE Russell and S&P Dow Jones, are widely used in this paper. In this paper, we use the ESG rating data provided by this agency, which is divided into several grades according to the degree of strength and weakness of ESG performance.

(2) Explanatory variables. The explanatory variable is

$$\text{logit}RES_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 TOP_{it} + \beta_6 IND_{it} + \beta_7 AO_{it} + \beta_8 BOS_{it} + \varepsilon_{it} \quad (1)$$

Table 1. Specification of variable selection

Variable Type	Variable Name	Variable Symbol	Variable Description
Explanatory variables	ESG Rating	ESG	ESG rating from 'A+' to 'D' on a scale of 10 to 1, as extracted from Business Gateway Green data
Explained variables	Financial restatement	RES	Variable is 1 if the listed company undergoes financial restatement, 0 if not
Control variables	Company size	SIZE	Natural logarithm of total assets
	Solvency	LEV	Gearing ratio
	Profitability	ROA	Return on net assets
	Percentage of shareholding of the largest shareholder	TOP	Number of shares held by the largest shareholder / Total number of shares
	Board independence	IND	Number of independent directors/total number of board members
	Audit opinion	AO	Set to issue a standard unqualified audit opinion, variable is 1, no is 0
	Supervisory Board size	BOS	Total number of Supervisory Board members

Source: Compiled from this article

5. Empirical results and analysis

5.1. Descriptive analysis

Table 2. Descriptive statistical analysis of variables

Variable	N	mean	p50	sd	min	max
ESG	1440	5.157	5.000	1.049	3.000	8.000
RES	1440	0.123	0.000	0.328	0.000	1.000
SIZE	1440	10.652	10.566	0.567	9.545	12.202
LEV	1440	0.494	0.516	0.188	0.060	0.844
ROA	1440	0.094	0.086	0.086	0.252	0.330
TOP	1440	39.321	38.675	16.055	8.260	77.270
IND	1440	0.383	0.364	0.076	0.250	0.625
AO	1440	0.992	1.000	0.087	0.000	1.000
BOS	1440	5.035	5.000	2.032	3.000	12.000

Source: Compiled from this article

Table 2 demonstrates the results of the descriptive statistics of the variables. As shown in Table 2, (1) the mean and median ESG ratings of Shang Dao Rong Green institutions are 5.157 and 5.000 respectively, indicating that the ESG rating levels of Chinese A-share listed companies are mostly at a medium level. (2) From 2015 to 2020, the financial restatement rate of listed companies is 12.29%, which generally indicates that financial restatement still exists for some listed companies in China. (3) Among the results of other statistical variables, the mean value of ROA of listed companies is 0.094, indicating that the profitability of listed companies in China needs to be improved; the mean value of the shareholding ratio of the largest shareholder is 39.32%,

financial restatement (RES). When a financial restatement occurs in a listed company, then RES is set to 1 and 0 when it does not occur.

(3) Control variables. In this paper, a total of seven variables were set in conjunction with previously available literature: company size (SIZE), solvency (LEV), profitability (ROA), shareholding of the largest shareholder (TOP), board independence (IND), audit committee (AO), and supervisory board size (BOS). See Table 1 for specific calculations.

indicating a strong concentration of equity; the mean value of IND is 38.31%, indicating that independent directors of listed companies are able to maintain a certain degree of independence; the mean and median values of AO are 0.992 and 1.000 respectively, indicating that almost all listed companies were able to obtain a standard audit opinion on their annual financial reports.

5.2. Relevance analysis

Table 3 shows the correlation analysis of the variables in the model. As shown in Table 3, ESG ratings of listed companies are significantly and negatively correlated with corporate financial restatement behaviour at the 1% level. This provides a degree of reliability to support the main hypothesis of this paper and also prepares the ground for subsequent empirical tests.

5.3. Regression analysis

5.3.1. logit regression analysis

Table 4 reports the results of logit regressions of corporate ESG ratings on financial restatements. Column (1) controls for industry and year fixed effects only; while column (2) adds seven control variables to this as regression results for the model and column (2) serves as the main regression. In column (2), the regression coefficient of the ESG rating information variable ESG is -0.384 and is significantly negatively correlated at the 1% significance level, i.e. a higher corporate ESG rating level is conducive to a lower incidence of corporate financial restatement behaviour, which is consistent with the hypothesis of this paper.

5.3.2. Robustness tests

In order to enhance the persuasiveness of the findings of this paper, the robustness of the findings will be tested in two

ways.

First, replacing the explanatory variables. In this paper, the ESG rating of Huasheng Securities is chosen as the explanatory variable for the study to derive the robustness test results, which are shown in column (1) of Panel B in Table 4. The results show that there is still a significant negative relationship between corporate ESG rating and financial restatement.

Second, additional control variables. In China's state-owned companies, company managers and effective controllers lack the incentive to pursue long-term interests,

while the cost of falsification is less than the benefit of falsification, causing them to choose distorted accounting information for their own benefit (J. Liang, X. Wang, and J. C. Li, 2004). Therefore, this paper adds the property rights nature SOE control variable to the original one. The robustness results are shown in column (2) of Panel B in Table 4. The results show that corporate ESG ratings are still significantly and negatively related to financial restatement, fully validating the research hypothesis of this paper.

Table 3. Correlation analysis of variables

	ESG	RES	SIZE	LEV	ROA	TOP	IND	AO	BOS
ESG	1								
RES	-0.119***	1							
SIZE	0.181***	-0.132***	1						
LEV	0.043	-0.023	0.618***	1					
ROA	-0.042	-0.078***	0.020	-0.136***	1				
TOP	0.073***	-0.087***	0.250***	0.014	0.054**	1			
IND	0.003	-0.066**	0.062**	0.016	0.112***	0.040	1		
AO	0.028	-0.089***	0.053**	-0.016	0.091***	0.070***	-0.002	1	
BOS	0.041	-0.022	0.166***	0.119***	-0.114***	0.162***	-0.093*	0.029	1

Note: *, **, *** indicate significant at the 10%, 5%, 1% levels respectively

Source: Compiled from this article

Table 4. logit regression analysis and robustness tests

Variables	Panel A: logit regression analysis		Panel B: Robustness testing	
	(1)	(2)	(1)	(2)
	RES	RES	RES	RES
ESG	-0.367*** (0.082)	-0.332*** (0.089)		-0.353*** (0.093)
HZESG			-0.199** (0.079)	
SOE				0.284 (0.217)
SIZE	Uncontrolled	-0.892*** (0.227)	-0.870*** (0.231)	-1.008*** (0.244)
LEV	Uncontrolled	1.161* (0.602)	1.173*** (0.594)	1.160* (0.621)
ROA	Uncontrolled	-1.742* (0.920)	-1.493 (0.942)	-1.462 (0.989)
TOP	Uncontrolled	-0.008 (0.006)	-0.010* (0.006)	-0.007 (0.006)
IND	Uncontrolled	-2.580** (1.190)	-2.406** (1.180)	-2.518** (1.238)
AO	Uncontrolled	-1.211* (0.659)	-	-1.367** (0.677)
BOS	Uncontrolled	-0.009 (0.043)	-0.013 (0.043)	-0.018 (0.046)
Constant	-0.125 (0.409)	11.210*** (2.249)	9.034*** (2.167)	12.47*** (2.420)
N	1440	1440	1440	1380
R ²	0.020	0.062	0.051	0.066

Note: () denotes z-value; *, **, *** denote significant at 10%, 5%, 1% levels respectively

Source: Compiled from this article

5.4. Heterogeneity analysis

While the above study has provided a series of explanations on the relationship between corporate ESG ratings and financial restatement behaviour, the next study in this paper will examine the further impact of ESG ratings on the financial restatement behaviour of Chinese listed companies based on the following two scenarios.

5.4.1. Corporate gearing

In this paper, the data are grouped based on the mean of the firm's gearing ratio as the basis for classification and the main regression model is repeated. The regression results are shown in columns (1) and (2) in Table 5. The results indicate that the marginal effect of corporate ESG ratings on financial restatement behaviour is higher when the corporate gearing ratio is smaller, i.e. the stronger the solvency, further

suggesting that firms obtain higher ESG ratings by improving solvency, which in turn strengthens the disincentive effect on financial restatement behaviour of Chinese listed companies.

5.4.2. Proportion of shareholding of the first largest shareholder

In this paper, the regression results are based on the median of the data on the percentage of shareholding of the first largest shareholder of a firm as a grouping, as shown in columns (3) and (4) in Table 5. The empirical evidence suggests that the higher the shareholding ratio of a firm's first largest shareholder, the stronger the negative relationship between ESG ratings and the firm's financial restatement. It further suggests that stronger equity concentration provides good environmental conditions for the avoidance of corporate financial restatement behaviour and increases the chances of potential error risks being detected within the firm.

Table 5. Heterogeneity analysis

Variables	RES			
	(1)	(2)	(3)	(4)
	LEV>= average	LEV< average	TOP>= median	TOP< median
ESG	-0.287** (0.114)	0.484*** (0.148)	0.408*** (0.128)	-0.259** (0.123)
Others	control	control	control	control
Constant	12.72*** (3.038)	8.030** (3.567)	14.30*** (3.429)	8.987*** (3.009)
N	774	666	719	720
R ²	0.071	0.063	0.082	0.041

Note: () denotes z-value; *, **, *** denote significant at 10%, 5%, 1% levels respectively

Source: Compiled from this article

6. Research findings and implications

Using data from 2015-2020 for A-share listed companies in China, this paper finds that there is a significant negative relationship between corporate ESG ratings and financial restatements, i.e. good ESG ratings help to inhibit the occurrence of financial restatements by listed companies in China. Further analysis found that the negative relationship between ESG rating and financial restatement was stronger when the solvency or equity concentration of enterprises increased. It is evident that both the improvement of a company's own solvency and the improvement of its internal equity structure reduce the likelihood of financial restatement. This study will help listed companies to understand the importance of ESG rating results and to make reasonable use of ESG rating information, as well as to clarify the impact of ESG rating on financial restatement and to reduce the

possibility of financial restatement, so as to explore the potential impact of ESG rating on the internal financial behaviour of listed companies in China.

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