Research on Coal Enterprise Investor Sentiment Based on Regulation Algorithm

Xia Tiantian, Chen Xiuming, Shen Chen, Yu Yun

Xia Tiantian(1989—), Business School Netherlands Ph.D Candidates, Nanchang Institute of Technology Institute of Finance, Lecturer, Research field is Business management, Nanchang, 330000, China;

Chen Xiuming (1997—), Nanchang Institute of Technology Institute of Finance, Student, Research field is Business management, Nanchang, 330000, China

Shen Chen (1998—), Nanchang Institute of Technology Institute of Finance, Student, Research field is Business management, Nanchang, 330000, China

Yu Yun (1997—), Nanchang Institute of Technology Institute of Finance, Student, Research field is Business management, Nanchang, 330000, China

Chen Xiuming, 718798568@qq.com

Abstract. Academics have conducted extensive research on aspects of corporate social responsibility, but there are less involved in corporate social responsibility and investor sentiment. With the continuous transformation and upgrading of social economy, people pay more and more attention to corporate social responsibility. In order to better study corporate social responsibility, based on the quality of financial reporting, this paper examines the relationship between corporate social responsibility and investors by collecting second-hand data about the relationship between emotions. This paper focuses on how the relationship between corporate social responsibility and investor sentiment changes and how the relationship between the two changes with the quality of financial reporting. Through the research of this paper, we find that the higher the level of corporate social responsibility fulfillment, the greater the investor sentiment, the two are proportional. Under the same condition of the fulfillment of corporate social responsibility, the higher the quality of financial reports, the greater the investor sentiment.

1. Introduction

Changes in corporate social responsibility will have a certain degree of impact on their own performance or other interests, and their impact on investors is relatively scarce in the current study. Therefore, from the perspective of the quality of financial reporting, this article conducts an in-depth analysis of corporate social responsibility, investor sentiment, and financial reporting quality, and finds that the quality of financial reports has a regulatory effect on corporate social responsibility and supplements the research on social responsibility.

2. Theoretical review

The research ideas of this article are as follows: First, the relationship between corporate social responsibility and investor sentiment, how the investor sentiment changes under different levels of
corporate social responsibility performance; second, corporate social responsibility under the function of financial reporting quality adjustment. Relationship with investor sentiment. Investor sentiment is different under different conditions of financial reporting. By analyzing these two related literatures, we further clarify the research issues in this paper.

The systemic deviation of investor expectations for the future is called investor sentiment. Investor sentiment is difficult to measure with existing data. It represents whether investors are willing to invest their own cash in the market. This willingness to relate to multiple factors is difficult to measure. When investors have a high expectation value for a certain product and the possibility of profitability is high, investors’ sentiment will rise and the stock price will rise. Therefore, investors will judge the company’s investment sentiment by evaluating the company. By studying the findings of scholars such as Preston (1997), Feng (2016), and Li Shengyin (2016), we can see that the higher the level of corporate social responsibility, the better the corporate social image, and the higher the reputation of the company, the better it can satisfy all kinds of interests. The investor’s sentiment will have a positive effect on the needs of related parties. Comprehensive interpretation of the above explanations of corporate social responsibility by scholars at home and abroad we can find that the fulfillment of corporate social responsibility can meet the needs of stakeholders and improve the reputation of the company. The high degree of corporate social responsibility fulfills the trust of the market and establish a good enterprise. The image, the more capital investment that can be obtained, the resulting competitive advantage makes more people willing to invest. By analyzing the above-mentioned social responsibility and investor relations, the following hypotheses are proposed.

H1: The higher degree of corporate social responsibility performance, the higher investor sentiment.
H2: With the same level of corporate social responsibility performance, the higher the quality of financial reporting, the higher the investor sentiment.

3. Research Design

3.1 Inspection Model

The hypothesis in this paper is that the higher the degree of corporate social responsibility fulfillment, the higher the investor sentiment, and in the same degree of corporate social responsibility fulfillment, the higher the quality of financial reports the higher the investor sentiment. In order to better test this hypothesis, the following assumptions were constructed.

Model1:

\[ \text{INT} = a_0 + a_1 \text{CSR} + a_2 \text{SIZE} + a_3 \text{DEBT} + a_4 \text{ROE} + a_5 \text{GRO} + a_6 \text{SHA} + a_7 \text{EQU} + a_8 \text{PRO} + a_9 \text{BM} + \epsilon \]

Model2:

\[ \text{INT} = \beta_0 + \beta_1 \text{CSR} + \beta_2 \text{DQ} + \beta_3 \text{DQ} \times \text{CSR} + \beta_4 \text{SIZE} + \beta_5 \text{DEBT} + \beta_6 \text{ROE} + \beta_7 \text{GRO} + \beta_8 \text{SHA} + \beta_9 \text{EQU} + \beta_{10} \text{PRO} + \beta_{11} \text{BM} + \epsilon \]

From the above model, we can see that if \( a_1 \) is significant in model 1, it means that H1 is established; in model 2, \( \beta_1, \beta_2, \) and \( \beta_3 \) are significant; at the same time, \( \beta_1, \beta_2, \) and \( \beta_3 \) in the subsamples of Chinese and non-state-owned enterprises are significant, which can prove Hypothesis 2 holds.

3.2 Sample Selection and Data Sources

Through the industry classification standard of the China Securities Regulatory Commission (2010), the coal industry was selected as a sample. As of the end of 2016, the number of coal companies listed on the Shanghai and Shenzhen stock exchanges reached 290 (excluding SME boards), as shown in Table 1. Selecting 290 listed companies from 2006 to 2015 as the representative original sample, excluding ST, ST, and incomplete data, as well as companies that were not listed for their respective years of life, eventually obtained 261 observations. The data of this paper comes from the following ways: (1) The original data of investor sentiment comes from the CSMAR database; (2) the original data of financial report quality comes from the CSMAR database and Eastern Fortune Net; (3) the
enterprise The original data of social responsibility comes from the Run Ling Global Corporate Social Responsibility Report and the CSMAR database, which is analyzed by the principal component method. (4) The data of the control variables are mainly from the CSMAR database. All of the above data are I download and organize.

3.3 Variable Selection and Definition
According to the measurement methods of Yi Zhigao and Mao Ning (2009), the composition of investor sentiment indicators is based on the number of IPOs selected, IPO first day earnings, trading volume, number of new investor accounts, and consumer confidence index as the basic indicators. The economic factors such as consumer price index, industrial producer ex-factory price index and macroeconomic prosperity index remained unchanged, and a monthly investor sentiment index was constructed using principal component analysis. Then, I calculate the average monthly investor sentiment index on an annual basis and use this average as an alternative variable to the annual investor sentiment. The corporate social responsibility data will be based on the research perspectives of Zhu Song (2011) and Zhou Zhongsheng (2012) scholars, using the A-share listed company's social responsibility report rating results published in the CSMAR database as the indicator of corporate social responsibility. The goal of financial reporting is to provide reliable and relevant information that helps investors make decisions, and the accounting earnings information disclosed in financial reports is most important to investors (Ecker et al., 2006). Accounting earnings is not only an important tool for investors to make investment decisions, but also an important basis for managers' compensation contract design. Therefore, this paper selects the accruals quality, earnings smoothness, and accounting conservatism in accounting earnings to measure the financial report quality of the company, and builds the financial reporting quality index with the weighted indexes of these three estimated indicators to alleviate the errors and extremes of individual indicators. The value is affected. At the same time, the three are used as the adjustment variables to bring the model into the verification. At the same time, company size, asset-liability ratio, return on net assets, profitability, shareholding structure, shareholding balance, property rights, and growth ability are selected as control variables.

4. Data Analysis
A layer-by-layer regression analysis method was used to examine the impact of financial reporting quality and corporate social responsibility on investor sentiment. At the same time, they examined the impact of corporate social responsibility on investor sentiment and the relationship between financial reporting quality and investor sentiment. The output is shown in the table below.

From the output of Model 1 in Table 3, it can be seen that there is a significant positive correlation between corporate social responsibility and investor sentiment (B=0.054***). Hypothesis 1 is verified, indicating that corporate social responsibility fulfills corporate emotional improvement.

From the output of Model 2 in Table 3, according to the research perspectives of Wen Zhonglin (2016), it can be seen that the product of corporate social responsibility and financial reporting quality has a significant correlation with investor sentiment at the 1% level of significance (B=0.152* **). And, before the product item was added, the impact of corporate social responsibility and investor sentiment was significantly related. Through the comparative analysis of Model 1 and Model 2, the product of CSR and firm maturity was not added in Model 2. In this case, the coefficient of influence of corporate social responsibility on investor sentiment is B=0.054. After adding product term, B=0.007, the positive correlation coefficient between corporate social responsibility and investor sentiment becomes smaller, and the product coefficient coefficient is positive. Demonstrating that the quality of financial reports is positively modulating the positive impact of corporate social responsibility and investor sentiment, H2 has been validated. This phenomenon is mainly due to mature companies. Not only do investors have higher requirements, but also has a stable reputation and is more willing to invest funds in other projects that are more conducive to corporate growth, such as R&D and innovation projects. In addition, companies need to achieve the same level of performance improvement requires more capital investment.
In addition, in order to ensure the scientific conclusion of the research, this article will take the quality of accruals, the smoothness of surplus and the soundness of accounting in the financial report as the indicators of financial report quality into the model to carry out robustness test. According to the test results, the model regression results after the accruals quality, surplus smoothness, and accounting conservatism were brought into the model as the adjustment variables are consistent with the above conclusions. Therefore, the scientific nature of H2 is further explained.

| Table 1: Data analysis table |
|-----------------------------|
|                            | INT (RQ=AV) | INT (RQ=AQ) | INT (RQ=ES) | INT (RQ=AC) |
|                            | Model1     | Model2     | Model1     | Model2     | Model1     | Model2     | Model1     | Model2     |
| CSR                        | 0.054**    | 0.007**    | 0.007**    | 0.310**    | 0.139**    | 0.115**    | 0.141**    | 0.117**    |
| RQ                         | 0.051**    | 0.192**    | 0.234**    | 0.237***   |
| RQ×CS                      | 0.189**    | 0.583**    | 0.016**    | 0.016***   |
| SIZE                       | -1.688     | -1.843     | -1.994     | -1.776     | -1.496     | -1.146     | -1.519     | -1.164     |
| DEBT                       | -0.009     | -0.131     | -0.007     | -0.012     | 0.023      | 0.016      | 0.023      | 0.016      |
| ROE                        | -0.020     | -0.214     | -0.037     | -0.034     | -0.013     | -0.009     | -0.014     | -0.010     |
| GRO                        | 0.010      | 0.009      | 0.006      | 0.006      | 0.007      | 0.006      | 0.007      | 0.006      |
| SHA                        | 0.000      | 0.000      | 0.000      | 0.000      | -0.002     | -0.002     | -0.002     | -0.002     |
| EQU                        | -0.020     | -0.024     | -0.079     | -0.080     | 0.052      | 0.037      | 0.053      | 0.037      |
| PRO                        | 0.004      | 0.005      | 0.004      | 0.001      | 0.006      | 0.007      | 0.006      | 0.007      |
| BM                         | -0.011     | -0.013     | -0.035     | -0.019     | -0.013     | -0.018     | -0.014     | -0.018     |
| R2                         | 0.561      | 0.631      | 0.631      | 0.627      | 0.503      | 0.407      | 0.510      | 0.413      |
| ADJ R2                     | 0.555      | 0.624      | 0.624      | 0.621      | 0.498      | 0.403      | 0.506      | 0.410      |
| F                          | 39.23**    | 27.66**    | 48.85***   | 44.30**    | 42.04**    | 44.04**    | 42.70**    | 44.73***    |

PS: "***"<0.01, "**"<0.05.

5. Research findings and inspiration

This article uses the relevant data of 290 listed coal companies from 2006 to 2015 as representative original samples. The relationship between corporate social responsibility, investor sentiment and financial reporting quality under the current background of China's economic transformation and upgrading was examined. Through research, we found a significant positive correlation between corporate social responsibility and investor sentiment, and corporate social responsibility. The higher the degree of fulfillment, the higher the investor sentiment; the lower the degree of fulfillment of corporate social responsibility, the lower the investor sentiment. This confirms the relevant assumptions of this paper: 1. The higher degree of corporate social responsibility performance, the higher the investor sentiment. 2. With the same degree of corporate social responsibility fulfillment, the higher the quality of financial reports, the higher the investor sentiment.

Through the above conclusions, we have supplemented the relevant theories of corporate social responsibility, and have also obtained the following inspiration. Enterprises should continuously improve their corporate social responsibilities. By improving this responsibility, they can enhance their competitive advantage, and they also bear corresponding social responsibilities while achieving greater profits. Through research, we have found that companies actively take social responsibility and establish a good image for the company. This series of measures is conducive to the formation of a company-specific brand effect, helping companies absorb external investment, but also bring potential investors and business partners for the company. The quality of financial reports also plays an important role in the investment decision-making process. Providing high-quality financial reports helps companies make the right decisions. When the level of corporate social responsibilities is not
changed, the quality of financial reports plays an important role. High-quality financial reports can be used by information users to make correct judgments, thereby reducing investment risks.

Acknowledgment
This study is sponsored by Education Reform Research Project of Jiangxi Higher Education School(JXJG-17-25-9)

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