

Examining the Relationship Between Corporate Social Responsibility Performance and Stock Price Crash Risk

Dan Zhang^{1*}, Xinran Zeng²

¹School of Economics and Management, Beijing University of Technology, Beijing 100124, China

²Erasmus University Rotterdam, Rotterdam 3062 PA, Netherlands

*Corresponding author: Dan Zhang, zhangdan90504@163.com

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Abstract: This paper selects the Corporate Social Responsibility (CSR) index from Hexun.com (2010–2020) and the stock price crash index of China’s Shanghai and Shenzhen A-share listed companies from the China Stock Market & Accounting Research Database (CSMAR) for empirical analysis. By examining the impact of CSR performance on stock price crash risk, this study identifies key relationships and further investigates the moderating role of media promotion and communication as an intermediary to explore the transmission mechanisms and influence between the two. The empirical results indicate that CSR performance is significantly negatively correlated with stock price crash risk, suggesting that strong CSR performance can effectively reduce the likelihood of a stock price crash. Furthermore, additional analysis reveals that media plays a moderating role in the relationship between CSR performance and stock price crash risk. This study aims to contribute to the understanding of the formation mechanisms and analytical paradigms of factors influencing stock price crash risk while providing theoretical support and reference value for risk prevention strategies.

Keywords: Social responsibility information disclosure; Stock price crash risk; Information effect

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1. Introduction

From the 1997 Asian financial crisis to the severe stock price crashes triggered by the COVID-19 outbreak in early 2020, stock market collapses have had widespread economic and social consequences. These events have led to investor wealth losses, weakened business investment and consumer confidence, financial system turmoil, increased pressure on employment and economic growth, and heightened political and public opinion concerns.

Several studies have indicated that CSR performance is closely related to corporate stability, investor confidence, and broader market fluctuations^[1,2]. For instance, Fu categorized CSR into different components and found that the fulfillment of environmental and stakeholder responsibilities had a significant impact on reducing stock price crash risk, whereas charitable donations did not significantly mitigate such risks^[3].

In addition to CSR, shareholder behavior is considered a critical factor influencing stock price crash risk^[4-6].

For example, Jiang and Xu demonstrated that excessive corporate investment significantly increases the likelihood of future stock price crashes, with long-term effects that firms are often unable to predict ^[7].

2. Study hypothesis

Based on the aforementioned research, the disclosure of the CSR index may theoretically reduce stock price crash risk by increasing transparency. However, it may also serve as a tool for corporate management to conceal negative information, thereby exacerbating the risk of a stock price crash. Therefore, the first hypothesis to be tested in this study is as follows:

H1A: When enterprises fulfill greater social responsibilities, the risk of a stock price crash is relatively moderate or reduced.

H1B: When enterprises fulfill greater social responsibilities, the risk of a stock price crash in the future increases.

3. Research and design

3.1. Sample selection and model design

3.1.1. Sample selection

In this study, Shanghai and Shenzhen A-share listed companies in China from 2010 to 2020 were selected as the initial research samples, resulting in a total of 25,812 annual sample observations.

3.1.2. Model design

To verify hypotheses H1A and H1B, the following model is designed:

$$Risk_{i,t} = \alpha_0 + \alpha_1 CSR_{i,t} + \sum_{i=2}^{12} \alpha_i Control\ Variables_{i,t} + Year + IND + \varepsilon_{i,t} \quad (1)$$

3.2. Variable definition

3.2.1. Explained variable: Stock price crash risk

This variable draws on the design used by Kim ^[8] and Ye and Wang ^[9] in the existing literature. It is measured using the negative return skew coefficient (NCSKEW) and the rate of up-and-down volatility (DUVOL).

3.2.2. Explanatory variable: CSR performance

CSR performance is measured using the scoring results from the professional evaluation system of social responsibility reports of listed companies on Hexun.com.

3.2.3. Control variables

Control variables are defined and measured based on existing literature, such as Chen *et al.* ^[10] and Song ^[11]. The specific definitions and measurements of the control variables are shown in **Table 1**.

Table 1. Definition of variables

| Variable type | Variable name | Variable symbol | Variable measure |
|-----------------------------------|-----------------------------------|---|---|
| Explained variable | Stock Price Cash Risk | NCSKE, DUVOL | The negative skew of NSK stock's weekly return, upward volatility of weekly return of DUV stocks |
| Explanatory variable | CSR Performance | CSR Index | CSR Index release by Hexun |
| Mediating variable | MEDIA Publicity and Promotion | Log of media mentions | Logarithm of the number of news articles mentioning the company on the Internet and in newspapers |
| Control variables | Company Size | SIZE | Company's total assets |
| | Corporate Financial Leverage | LEV | Corporate asset-liability ratio |
| | Return on Total Assets | ROA | Percentage of return on total assets of the enterprise |
| | Book-to-Market Ratio | BM | The book-to-market ratio of the enterprise |
| | Growth Rate of Operating Income | GROWTH | The growth rate of the enterprise's main business income |
| | Equity Nature | Equity_Nature | Whether the enterprise is state-owned (1 if state-owned, 0 otherwise) |
| | Audit Quality | BIG4 | Whether the enterprise is audited by one of the Big Four accounting firms (1 if audited, 0 otherwise) |
| | Listing Years | ListAge | Number of years since the enterprise was listed |
| | Board Size | Board | Number of directors in the enterprise |
| | Dual Chairman and General Manager | Dual | 1 if the chairman and general manager are the same person, 0 otherwise |
| Proportion of Largest Shareholder | Top1 | Number of shares held by the largest shareholder / total number of shares | |

4. Empirical results

4.1. Descriptive statistics

Table 2. Descriptive statistics of key variables

| Variable names | N | Mean | SD | Min | Median | Max |
|----------------|-------|--------|--------|--------|--------|--------|
| NSK | 25812 | -0.296 | 0.709 | -2.413 | -0.254 | 1.639 |
| DUV | 25812 | -0.194 | 0.473 | -1.349 | -0.194 | 1.023 |
| CSR | 25812 | 20.048 | 15.322 | -3.250 | 21.960 | 74.270 |
| Size | 25812 | 22.195 | 1.288 | 19.940 | 22.010 | 26.209 |
| Lev | 25812 | 0.424 | 0.206 | 0.053 | 0.417 | 0.892 |
| ROA | 25812 | 0.043 | 0.061 | -0.218 | 0.040 | 0.216 |
| BM | 25812 | 1.031 | 1.109 | 0.094 | 0.665 | 6.674 |
| SmallGrowth | 25812 | 0.002 | 0.004 | -0.005 | 0.001 | 0.024 |
| SOE | 25812 | 0.370 | 0.483 | 0.000 | 0.000 | 1.000 |
| Big4 | 25812 | 0.060 | 0.237 | 0.000 | 0.000 | 1.000 |
| ListAge | 25812 | 2.109 | 0.838 | 0.000 | 2.303 | 3.296 |
| Board | 25812 | 2.134 | 0.197 | 1.609 | 2.197 | 2.708 |
| Dual | 25812 | 0.269 | 0.443 | 0.000 | 0.000 | 1.000 |
| Top1 | 25812 | 34.784 | 14.909 | 8.803 | 32.770 | 74.824 |
| In_Media | 25812 | 5.692 | 0.963 | 3.497 | 5.656 | 8.460 |

As shown in **Table 2**, the mean values for the stock price crash risk indicators NSK and DUV are -0.296 and -0.194, respectively, which are consistent with the descriptive statistical results from Shen ^[12]. The standard deviations are 0.709 and 0.473, respectively, aligning with the research findings of Huang *et al.* ^[13], Qin ^[14], and Zhou *et al.* ^[15].

The mean value for the CSR index is 20.048, with the maximum, minimum, and median values being 74.270, -3.250, and 21.960, respectively, indicating significant variability among enterprises in terms of CSR performance. The difference between the minimum and maximum values is 77.520, suggesting the presence of extreme values in CSR performance across different enterprises and years. Additionally, the standard deviations of the other variables are relatively small, indicating that the descriptive statistical results in this study are acceptable.

4.2. Main effect regression results

Table 3. Main effect regression analysis results

| | NSK | DUV |
|---------|-----------------------|-----------------------|
| CSR | -0.002*** (-4.650) | -0.001*** (-4.159) |
| Control | Yes | Yes |
| _cons | 0.264** (2.337) | 0.540*** (7.196) |
| N | 25812 | 25812 |
| adj. R2 | 0.020 | 0.026 |

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 3 reveals that the CSR coefficients are -0.002 and -0.001 for NSK and DUV, respectively, and both are significant at the 1% level. This supports the establishment of hypothesis H1A, which suggests that an increase in CSR performance can effectively reduce the agency’s cost of management, improve corporate transparency, enable investors to better understand the actual business conditions, and ultimately reduce the risk of a stock price crash.

4.3. Test of mediating effect of media reports

To examine the moderating effect of media reports on the relationship between CSR performance and stock price crash risk, a cross-variable method is employed. The results are presented in **Table 4**.

Table 4. Testing the moderating effect of media reports

| | NSK | DUV |
|-----------|-----------------------|-----------------------|
| CSR | -0.010*** (-5.920) | -0.007*** (-5.977) |
| ln_Media | -0.045*** (-4.997) | -0.034*** (-5.696) |
| Iteration | 0.001*** (5.143) | 0.001*** (5.433) |
| Control | yes | yes |
| N | 25812 | 25812 |

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The iteration regression coefficients for both NSK and DUV are 0.001, and they are significantly positive at the 1% level. This reflects that increased media coverage strengthens the positive effect of CSR performance on reducing stock price crash risk. In other words, media coverage moderates the relationship between CSR performance and stock price crash risk.

5. Conclusion

This paper investigates the relationship between CSR performance and stock price crash risk, considering media coverage as a moderating variable. The empirical results reveal a significant negative correlation between stock price crash risk and CSR performance, indicating that better CSR performance is associated with a reduced risk of stock price crashes.

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