

The Impact of ESG Rating Discrepancies on Stock Price Crash Risk: An Analysis from The Perspective of Resource Constraints

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Abstract. In the context of the “dual carbon” era, ESG (Environmental, Social, and Governance) practices have become a crucial issue for corporate sustainable development. However, the information asymmetry caused by ESG rating discrepancies urgently needs to be analyzed, as it affects the risk of stock price crashes. This study investigates a sample of A-share listed companies from 2015 to 2022 and finds that ESG rating discrepancies significantly increase the risk of stock price crashes, with the social dimension being the primary driver of this effect. Mechanism tests reveal that ESG rating discrepancies influence the risk of stock price crashes by reducing information transparency. Heterogeneity analysis shows that this differential impact is more pronounced in firms with constrained resources. Our research demonstrates that the impact of ESG rating differences on capital market stability varies, thereby enriching the literature on the economic consequences of ESG and extending the research on the determinants of stock price crash risk from the perspective of resource constraints.

Keywords: ESG rating discrepancies; Stock price crash risk; Resource constraints; Information transparency.

1. Introduction

Amidst the global economic transition towards decarbonization and sustainable development, the ESG rating system has emerged as a pivotal nexus connecting corporate practices, capital allocation, and policy orientation. However, the divergence in rating methodologies among rating agencies and the contradictions in their local adaptability have given rise to significant discrepancies and market uncertainties (Chen et al., 2025). ESG ratings have become an indispensable component of global economic development, and emerging economies need to integrate ESG principles with their economic growth strategies to enhance the achievement of sustainable development goals (Gidage et al., 2024).

Between 2019 and 2020, regulatory bodies such as the China Securities Regulatory Commission (CSRC) and the State-owned Assets Supervision and Administration Commission (SASAC) successively issued a series of policies, including ESG information disclosure guidelines and action plans to promote ESG practices among listed companies. These policies encourage firms to incorporate ESG management into their strategic decision-making to achieve concurrent growth in economic and social value. Meanwhile, the substantial discrepancies in ESG ratings assigned by different rating agencies to the same company may cause investor confusion, thereby affecting stock returns and the development of capital markets.

Against this backdrop, interpreting the impact of ESG rating discrepancies on corporate capital markets is not only a crucial prerequisite for refining policy guidance and improving the ESG governance system but also an inevitable process for transforming corporate sustainable development.

Stock price crashes, as an extreme manifestation of stock market volatility, arise when managers manipulate accounting information to conceal “bad news” from the capital market. When this concealed “bad news” accumulates and is suddenly disclosed to the market, it immediately triggers a stock price crash (Kim et al., 2016). Such crashes not only jeopardize a company’s capital chain and its ability to continue operations but also inflict significant losses on small and medium investors. These investors, due to their limited access to information and low risk tolerance, are particularly

vulnerable during such events. Moreover, stock price crashes can potentially destabilize the entire capital market. Therefore, investigating the factors that influence stock price crashes is essential for ensuring the proper functioning of capital markets.

This study examines the impact of ESG rating discrepancies on the risk of stock price crashes from the perspective of resource constraints. The findings indicate that an increase in ESG rating discrepancies leads to a decline in corporate transparency and the quality of information disclosure. This, in turn, creates confusion among investors, signaling the presence of “bad news.” As “bad news” continues to accumulate in the capital market, the risk of a stock price crash increases. Additionally, this study finds that firms with high levels of resource constraints are more reliant on their ESG performance to obtain external resources compared to firms without such constraints. Thus, the impact of ESG rating discrepancies on the risk of stock price crashes varies depending on the degree of resource constraints faced by the firm.

This study examines the impact of ESG rating discrepancies on the risk of stock price crashes using a sample of Chinese A-share listed companies from 2015 to 2022. The results indicate that ESG rating discrepancies significantly increase the risk of stock price crashes, with the social dimension being the primary driver. The mechanism analysis shows that ESG rating discrepancies indirectly trigger risk by reducing corporate transparency. The heterogeneity analysis reveals that the impact of ESG rating discrepancies on stock price crash risk is significant in small and young firms, while large and mature firms are less sensitive to such discrepancies.

This study makes two main contributions. First, it enriches the literature on the economic consequences of ESG rating discrepancies. Previous studies have focused on the impact of ESG rating discrepancies on “green innovation” or “operational risk,” but none have examined their relationship with stock price crash risk. This study is the first to explain the heterogeneous effects of ESG rating discrepancies on stock price crash risk using the resource constraint theory, thereby enriching the empirical explanations of ESG controversy effects in capital markets. Second, it extends the literature on the determinants of stock price crash risk. While existing studies have examined crash risk from the perspectives of “executive characteristics” or “information disclosure,” this study introduces ESG rating discrepancies as a novel antecedent variable, thereby broadening the theoretical boundaries of the stock price crash mechanism.

2. Literature Review and Research Hypotheses

2.1. Literature Review

Regarding the divergence in ESG ratings, existing literature has demonstrated that ESG rating divergence can have a significant impact on the behavior of the entities, but this impact varies under different circumstances. Azmi et al. (2021) have shown that there is a non-linear relationship between ESG and corporate value, and only low levels of ESG have a positive impact; Serafeim et al. (2023) have indicated that ESG rating consensus can predict future news and can also interfere with the market's absorption of ESG information; Li et al. (2023) have stated that after credit rating agencies acquire ESG rating agencies, the latter will give higher ratings to their paying customers. The rating bias caused by this conflict of interest is more evident in companies with close business connections, and it reduces the predictive value of ratings for future ESG news. Existing research has verified that ESG rating divergence has a significant effect on the risk indicators of enterprises. Avramov et al. (2022) have indicated that ESG information uncertainty (such as rating divergence) will increase the market risk premium, reduce the demand for stocks, affect the relationship between risk and return, and weaken ESG performance. Existing research has also verified that ESG rating divergence has a significant effect on the green innovation behaviors of enterprises, and there are differences in the direction of the effect, the mechanism, and the role of enterprises with heterogeneous characteristics in different studies. Cohen et al. (2020) have found that among energy enterprises such as oil and gas with lower ESG scores, the higher the quantity and quality of green innovation.

Regarding the risk of stock price crashes, existing research believes that the behavior of senior executives and information disclosure can affect the risk of stock price crashes. Kim et al. (2011) have found that the comparability of financial statements can significantly reduce the risk of stock price crashes of enterprises by suppressing the behavior of management in concealing bad news, especially in an environment with information asymmetry. Hsu et al. (2022) believe that non-GAAP earnings disclosure can significantly increase the risk of stock price crashes of enterprises by exaggerating performance and substituting for the means of hiding bad news; Hong et al. (2022) believe that the separation of ownership and control intensifies the risk of stock price crashes, but effective supervision and growth opportunities can mitigate this effect; Benzoni et al. (2022) believe that stocks with a high probability of crashing are systematically overvalued, and institutional investors can profit before the bubble bursts through market timing operations. Existing research believes that the information environment and the behavior of investors can affect the risk of stock price crashes. Xu et al. (2022) believe that the lack of information acquisition channels (such as Google search) can significantly increase the risk of stock price crashes by hindering the information processing ability of investors; Jang et al. (2022) believe that stocks with a high probability of crashing exhibit abnormally low returns and overvaluation, and institutional investors will increase their positions before the peak of overvaluation and perform better, indicating that the crash effect may be partially due to rational speculative bubbles.

2.2. Research Hypotheses

Discrepancies in ESG ratings reflect the differences in the assessment results of a firm's ESG performance among various rating agencies. A higher degree of ESG rating discrepancy implies that it is more challenging for different rating agencies to reach a consensus on a firm's ESG value. On one hand, these discrepancies may indicate the presence of undisclosed information or poor quality of information related to environmental, social, and governance aspects, thereby increasing the firm's transparency risk. On the other hand, a higher ESG rating discrepancy suggests that the firm is more likely to attract the attention of a larger number of analysts. The disagreements among these analysts can lead to the release of more market noise, which in turn exacerbates stock price volatility. Previous research has identified information asymmetry and market noise as the primary factors contributing to stock price crashes. Therefore, ESG rating discrepancies can deteriorate the information environment and intensify market irrationality by affecting corporate transparency and analyst attention, ultimately leading to an increased likelihood of stock price crashes.

One potential channel through which ESG rating discrepancies influence the risk of stock price crashes is by affecting corporate transparency. When ESG rating discrepancies widen, firms may conceal controversial information or delay the disclosure of significant financial information to avoid criticism and scrutiny in the market. This behavior leads to a reduction in corporate transparency. Lower transparency exacerbates information asymmetry, making investors more susceptible to falling into an "information vacuum." As a result, the probability of investors making irrational decisions in response to negative information shocks increases, thereby raising the risk of stock price crashes.

Based on the above analysis, this study proposes Hypothesis 1: ESG rating discrepancies significantly increase the risk of stock price crashes.

Resource-abundant firms typically possess diversified financing channels, strong market credibility, and robust corporate governance mechanisms. Their operational management and financing are less reliant on ESG performance. For these firms, ESG ratings are primarily a means of maintaining their corporate image or fulfilling compliance requirements, rather than a tool to acquire resources. Therefore, ESG rating disputes have a relatively minor impact on the stock price crash risk of such firms.

In contrast, resource-constrained firms are those with restricted access to financing and lower market trust. These firms have weaker capabilities in obtaining financing and are more limited in seeking external resources. ESG rating disputes are more likely to be perceived as negative factors

by the market, intensifying investors' concerns about the firm's debt repayment ability or strategic sustainability, thereby amplifying the risk of stock price crashes.

To characterize resource-constrained firms, this study introduces two proxies: firm size (SIZE) and age (AGE). Large firms are those with asset sizes above the industry average. These firms, with abundant resources (such as cash flow and collateral), have relatively lower financial distress costs and financing constraints. High-age firms are those with establishment years above the industry average. These firms are also resource-abundant and less constrained by resource limitations.

Based on the above analysis, this study proposes Hypothesis 2: The impact of ESG rating discrepancies on stock price crash risk varies depending on the degree of resource constraints faced by firms.

3. Research Design

3.1. Sample Selection and Data Sources

This study employs a sample of Chinese A - share listed companies on the Shanghai and Shenzhen Stock Exchanges from 2015 to 2022, with an initial sample size of 33,297 firms. To achieve the research objectives, the following procedures were conducted: (1) financial firms were excluded, removing 781 samples; (2) ST - flagged abnormal firms were excluded, removing 948 samples; (3) firms with a debt - to - asset ratio exceeding 1 were excluded, removing 90 samples; and (4) samples with missing values for the explanatory or dependent variables were excluded, removing 12,065 samples. Ultimately, a final sample of 19,413 firms was obtained. Additionally, all continuous variables were winsorized at the 1st and 99th percentiles to control for outliers. The ESG rating data were sourced from four databases: WIND, CSMI, SynTao Green Finance, and RKS Global. Other data were obtained from the CSMAR database.

3.2. Model Specification

To examine the impact of ESG rating discrepancies on stock price crash risk from the perspective of resource constraints, we construct the following model (1):

$$FNCSKEW_{i,t} = \beta_0 + \beta_1 ESGSD_{i,t} + \beta_2 CONTROLS_{i,t} + \sum YEAR + \sum IND + \varepsilon_{i,t} \quad (1)$$

Here, *FNCSKEW* represents the negative skewness coefficient of returns one period ahead. Thus, *FNCSKEW* indicates the negative skewness coefficient of returns for firm *i* in year *t+1*, and this metric is used as a proxy for stock price crash risk. *ESGSD* denotes the ESG rating discrepancy for firm *i* in year *t*. Initially, ratings from the four rating agencies are standardized under a unified criterion, followed by calculating the mean and standard deviation. Subsequently, these values are normalized, and the final *ESGSD* is generated based on multiple normalized variables.

The control variables include a series of factors that may influence stock price crash risk. Additionally, we control for year and industry fixed effects to account for potential confounding influences. The term ε_{it} represents the random error term.

If $\beta_1 > 0$, it suggests that ESG rating discrepancies have a positive impact on stock price crash risk, implying that greater ESG rating discrepancies increase the likelihood of stock price crashes. Conversely, if $\beta_1 < 0$, it indicates that ESG rating discrepancies have a negative impact on stock price crash risk, implying that greater ESG rating discrepancies reduce the likelihood of stock price crashes.

3.3. Variable Definitions

3.3.1 Dependent Variable

Stock price crash risk. Drawing on the research of Xu et al. (2012) and Kim et al. (2011), this study measures stock price crash risk using two indicators: the negative skewness of stock returns (NCSKEW) and the ratio of downside to upside return volatility (DUVOL). First, the weekly stock return $r_{i,t}$ is calculated using model (2):

$$r_{i,t} = \beta_0 + \beta_1 r_{m,t-2} + \beta_2 r_{m,t-1} + \beta_3 r_{m,t} + \beta_4 r_{m,t+1} + \beta_5 r_{m,t+2} + \varepsilon_{i,t} \quad (2)$$

To calculate the weekly return of individual stocks, $r_{m,t}$ denotes the average return of all A - shares in week t , weighted by their circulating market value. The model includes lagged and lead terms of market returns to correct for the impact of nonsynchronous trading. The residual $\varepsilon_{i,t}$ represents the idiosyncratic return of stock i , excluding the market return component. The firm - specific return of stock i in week t is defined as $W_{i,t} = \ln(1 + \varepsilon_{i,t})$. Based on $W_{i,t}$, the negative skewness coefficient of returns $NCSKEW_{i,t}$ and the ratio of downside to upside return volatility $DUVOL_{i,t}$ are subsequently calculated.

$$NCSKEW_{i,t} = -[n(n-1)^2 \sum W_{i,t}^3] / [(n-1)(n-2) (\sum W_{i,t}^2)^{3/2}] \quad (3)$$

As shown in model (3), n represents the number of weeks in which the stock is traded each year. A higher value of n indicates a more pronounced negative skewness coefficient, which in turn implies a higher risk of stock price crashes.

$$DUVOL_{i,t} = \log\{[(n_d - 1) \sum_{UP} W_{i,t}^2]\} \quad (4)$$

As depicted in model (4), n_d denotes the number of weeks in which the stock's weekly idiosyncratic return exceeds (or falls below) the annual average return. A higher value of n_d suggests that the return distribution is more skewed to the left, thereby increasing the likelihood of a stock price crash.

2.3.2 Independent Variable

ESG rating discrepancies. To measure the ESG rating discrepancy (ESG_SD) indicator, we refer to relevant existing studies, including Brandon et al. (2021), Sun et al. (2024), and Christensen et al. (2022). This study employs the standardized standard deviation of the rating score range provided by four rating agencies—CSC, Maton, SynTao Green Finance, and WIND—for the same firm. The specific approach is as follows: (1) WIND and CSC's rating results range from CCC to AAA, which are assigned values from 1 to 7 according to the rating results, from low to high. SynTao Green Finance's rating results range from C- to A+, which are assigned values from 1 to 8 according to the rating results, from low to high. Maton's rating results range from C- to AA+, which are assigned values from 1 to 17 according to the rating results, from low to high. (2) To ensure comparability among the data from the four rating agencies, the rating results are standardized. (3) Data from firms rated by only one agency in a given year are excluded. Finally, the ESG rating discrepancy (ESG_SD) is obtained.

2.3.3 Control Variables

Drawing on the research of Kim et al. (2011), Quan et al. (2015), Zhao et al. (2024), and Seng et al. (2024), this study selects the following control variables: return on assets (ROA), firm size (SIZE), debt - to - asset ratio (LEV), total shareholding of the top ten shareholders (TOP10), sum of squares of the shareholding of the top five shareholders (OCI), standard deviation of the average idiosyncratic returns of the stock over the year (SIGMA), and average idiosyncratic return of the stock over the year (RET). Additionally, we control for year - fixed effects (YEAR) and industry - fixed effects (IND). The specific definitions of these variables are presented in Table 1.

Table 1 Variable Definitions

Variable Type	Variable Name	Symbols	Definition
Dependent Variable	Stock Price Crash Risk	NCSKEW	Negative Skewness Coefficient:
		DUVOL	Up-Down Volatility Ratio
Independent Variable	ESG Rating Discrepancy	ESGSD	The standard deviation of ESG scores for listed companies by rating agencies after normalization.
Control Variables	Average Weekly Return	RET	The average weekly idiosyncratic return of a stock over the year.
	Return Standard Deviation	SIGMA	The standard deviation of weekly idiosyncratic returns for a given stock over a year.
	Equity Concentration	OCI	The sum of the squares of the ownership proportions of the top 5 largest shareholders, measured using the Herfindahl index.
	Equity Concentration	Top 10	The total proportion of shares held by the top 10 largest shareholders.
	Firm Size	SIZE	The natural logarithm of the total assets of the firm at the end of year t .
	Debt-to-Asset Ratio	LEV	The ratio of total liabilities to total assets at the end of year t .
	Return on Assets	ROA	The ratio of net profit to total assets at the end of year t .

4. Regression Results Analysis

4.1. Descriptive Statistics

Table 2 presents the descriptive statistics of the variables. The variable FNCSKEW, which measures stock price crash risk, has a mean of -0.342 and a median of -0.292, both of which are negative values. The variable ESGSD, which reflects ESG rating discrepancies, has a mean of 0.665 and a median of 0.529. The mean is greater than the median, indicating a right-skewed distribution. This suggests an uneven distribution of ESG rating discrepancies in the sample data, with some firms exhibiting large discrepancies. Such discrepancies reflect the significant differences in ESG evaluations of firms by various entities. These differences influence the market expectations of different entities regarding firms, and they also serve as the basis for further exploring the impact of ESG rating discrepancies on stock price crash risk, providing a fundamental descriptive characterization.

Table 2 Descriptive Statistics

	N	Mean	SD	Min	p25	p50	p75	Max
FNCSKEW	19,413	-0.342	0.726	-2.525	-0.740	-0.292	0.100	1.590
ESG SD	19,413	0.665	0.438	0.147	0.277	0.529	0.953	2.011
SIZE	19,413	22.438	1.374	20.044	21.429	22.224	23.230	26.547
LEV	19,413	0.419	0.197	0.061	0.262	0.412	0.563	0.884
ROA	19,413	0.035	0.070	-0.284	0.013	0.037	0.069	0.213
SIGMA	19,413	0.063	0.022	0.026	0.048	0.060	0.075	0.138
RET	19,413	0.002	0.008	-0.017	-0.004	0.001	0.006	0.028
TOP10	19,413	58.876	15.214	23.806	47.896	59.644	70.370	90.928
OCI	19,413	0.154	0.112	0.013	0.070	0.123	0.209	0.551

4.2. Difference Analysis

Table 3 presents the results of the difference analysis. The sample is divided into two groups based on the ESG rating discrepancy scores: a high group (Group 1) and a low group (Group 2) for heterogeneity testing. Regarding the dependent variable FNCSKEW, the high group has a mean of -0.328 and a median of -0.280, while the low group has a mean of -0.352 and a median of -0.303. The difference in means between the high and low groups is 0.024, with a significance level of 0.022, indicating a significant difference in the mean levels between the two groups. The difference in medians is 0.023, with a significance level of 0.009, suggesting a significant difference in the median levels as well. A higher median level indicates that the central tendency of the variable is more positively skewed, and the central level of the FNCSKEW indicator in the high group is significantly higher than that in the low group. This implies that there are substantial differences in the FNCSKEW indicator between the groups with different levels of ESG rating discrepancies, with the high group exhibiting significantly higher mean and median levels than the low group. These differential analysis results provide the basis for characterizing the grouped situations in the subsequent main regression analysis, suggesting the potential association between ESG rating discrepancies and FNCSKEW.

Table 3 Difference Analysis

Variables	Mean 1	Median 1	Mean 2	Median 2	MeanDif f	p-Value	MedDif f	p-Value
FNCSKEW	-0.328	-0.280	-0.352	-0.303	0.024	0.022**	0.023	0.009**
SIZE	22.693	22.518	22.243	22.027	0.45	0.000**	0.491	0.000**
LEV	0.429	0.425	0.411	0.403	0.018	0.000**	0.022	0.000**
ROA	0.036	0.037	0.034	0.038	0.002	0.067*	-0.001	0.438
SIGMA	0.062	0.059	0.064	0.061	-0.002	0.000**	-0.002	0.000**
RET	0.001	0.001	0.002	0.001	-0.001	0.023**	0	0.069*
TOP10	59.442	60.258	58.443	59.212	0.999	0.000**	1.046	0.001**
OCI	0.159	0.126	0.150	0.121	0.009	0.000**	0.005	0.015**

4.3. Main Regression Analysis

The regression estimates of the relationship between ESG rating discrepancies and stock price crash risk are presented in Table 4. Column (1) shows the regression estimates controlling for year and industry fixed effects, with a regression coefficient of 0.030, significant at the 5% level. Column (2) presents the regression estimates controlling for multiple control variables, also yielding a

regression coefficient of 0.030, significant at the 5% level. The conclusion is drawn that ESG rating discrepancies increase the risk of stock price crashes.

To further investigate which specific indicators within the environmental (E), social (S), and corporate governance (G) dimensions are associated with stock price crash risk, the same approach used for ESG rating discrepancies (ESG_SD) is applied to generate three explanatory variables: environmental rating discrepancies (E_SD), social rating discrepancies (S_SD), and corporate governance rating discrepancies (G_SD). Column (3) shows the regression estimates controlling for industry - year double fixed effects, with the regression coefficient estimate for E_SD being -0.005, which is not significant. Column (4) presents the regression estimates controlling for industry - year double fixed effects, with the regression coefficient estimate for S_SD being 0.032, significant at the 1% level. Column (5) shows the regression estimates controlling for industry - year double fixed effects, with the regression coefficient estimate for G_SD being -0.004, which is not significant. Therefore, it is concluded that among the three ESG dimensions, the social (S) dimension plays a role in stock price crash risk.

Table 4 Main Regression Analysis

	(1)	(2)	(3)	(4)	(5)
VARIABLES	FNCSKEW	FNCSKEW	FNCSKEW	FNCSKEW	FNCSKEW
ESG_SD	0.030** (0.014)	0.030** (0.013)			
E_SD			-0.005 (0.621)		
S_SD				0.032*** (0.002)	
G_SD					-0.004 (0.684)
SIZE		0.017*** (0.001)	0.020*** (0.000)	0.019*** (0.000)	0.020*** (0.000)
LEV		-0.100*** (0.004)	-0.117*** (0.001)	-0.118*** (0.001)	-0.116*** (0.001)
ROA		0.327*** (0.000)	0.305*** (0.001)	0.306*** (0.001)	0.303*** (0.001)
SIGMA		-0.750** (0.012)	-0.709** (0.020)	-0.709** (0.020)	-0.698** (0.022)
RET		7.286*** (0.000)	6.796*** (0.000)	6.791*** (0.000)	6.790*** (0.000)
TOP10		0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
OCI		-0.226*** (0.001)	-0.231*** (0.001)	-0.230*** (0.002)	-0.232*** (0.001)
Constant	-0.531*** (0.000)	-0.962*** (0.000)	-0.860*** (0.000)	-0.870*** (0.000)	-0.860*** (0.000)
Observations	19,413	19,413	18,397	18,397	18,397
IND&YEAR FE	YES	YES	YES	YES	YES
Adjusted R ²	0.015	0.023	0.018	0.018	0.018

4.4. Robustness Tests

The primary regression analysis in this study reveals that ESG rating discrepancies (ESG_SD) have a significant impact on stock price crash risk (FNCSKEW), primarily driven by the social dimension (S_SD). However, whether the conclusions drawn in this study can withstand rigorous

scrutiny remains to be verified. To this end, the reliability of the primary regression results is examined from three aspects.

(1) Alternative measure of the independent variable: Initially, the ESG rating scores from the four rating agencies selected in this study are standardized. Subsequently, the rating discrepancy scores between each pair of agencies are calculated. Finally, the average of all discrepancy scores for each sample is taken to obtain an alternative measure of ESG rating discrepancies (ESG_MN). The regression results are presented in column (1) of Table 5. The regression coefficient is 0.019 and is significant at the 5% level. This finding is consistent with the primary regression analysis, indicating that the impact of ESG rating discrepancies on stock price crash risk is robust.

(2) Alternative fixed - effects model: To mitigate the potential influence of individual - firm - specific differences on the empirical results, an alternative fixed - effects model is employed in this study. This model controls for variables that are invariant over time but vary across firms. After controlling for firm - level fixed effects, the regression is re - conducted. The results are shown in column (2) of Table 5, with a regression coefficient of 0.026, which is significant at the 10% level. This finding is consistent with the aforementioned analysis.

Table 5 Results of Alternative Independent Variable and Fixed - Effects Model Tests

	(1)	(2)
VARIABLES	FNCSKEW	FNCSKEW
ESG_SD		0.026*
		(0.087)
ESG_MN	0.019**	
	(0.030)	
SIZE	0.018***	0.192***
	(0.000)	(0.000)
LEV	-0.101***	-0.484***
	(0.004)	(0.000)
ROA	0.328***	-0.189
	(0.000)	(0.125)
SIGMA	-0.750**	2.469***
	(0.011)	(0.000)
RET	7.282***	6.784***
	(0.000)	(0.000)
TOP10	0.002***	0.001
	(0.000)	(0.347)
OCI	-0.226***	0.194
	(0.001)	(0.415)
Constant	-0.973***	-5.013***
	(0.000)	(0.000)
Observations	19,413	19,413
IND&YEAR FE	YES	YES
Adjusted R ²	0.023	-0.275

(3) First - differencing approach: To eliminate individual - specific heterogeneity that does not vary over time and to mitigate the potential bias from omitted variables in the fixed - effects model, we employ a first - differencing approach. This method involves differencing the variables to generate new explanatory variables, dependent variables, and control variables, namely D_ESG_SD, D_SIZE, D_LEV, D_ROA, D_SIGMA, D_RET, D_TOP10, D_OCI, which capture the annual changes in these variables. The regression results are presented in Table 6. The coefficient of D_ESG_SD is positive and significant at the 10% level, indicating that an increase in ESG rating discrepancies is

associated with a higher risk of stock price crashes. This finding is consistent with the primary regression conclusion.

Table 6 Regression Results of the First - Differencing Model

	(1)
VARIABLES	D_FNCSKEW
D_ESG_SD	0.032*
	(0.052)
D_SIZE	0.202***
	(0.000)
D_LEV	-0.572***
	(0.000)
D_ROA	-0.285**
	(0.040)
D_SIGMA	5.435***
	(0.000)
D_RET	8.726***
	(0.000)
D_TOP10	-0.001
	(0.612)
D_OCI	0.026
	(0.938)
Constant	0.612***
	(0.000)
Observations	14,654
IND&YEAR FE	YES
Adjusted R ²	0.049

4.5. Mechanism Tests

ESG Rating Discrepancies and Corporate Opacity. This mechanism primarily investigates the intrinsic transmission pathway through which ESG rating discrepancies (ESG_SD) influence stock price crash risk (FNCSKEW). Here, OPACITY represents corporate opacity, proxied by the quality of information disclosure or the extent of earnings management, with higher values indicating lower transparency. As shown in Table 7, which presents the mechanism test results, in column (1), the coefficient of ESG_SD on OPACITY is -0.024, significant at the 5% level and negative. This indicates that higher ESG rating discrepancies are associated with lower corporate transparency. This finding confirms that ESG_SD affects stock price crash risk through its impact on corporate transparency, providing a more nuanced theoretical underpinning for understanding the economic consequences of ESG rating discrepancies.

Table 7 Mechanism Tests

	(1)
VARIABLES	OPACITY
ESG_SD	-0.024**
	(0.011)
SIZE	0.129***
	(0.000)
LEV	-0.369***
	(0.000)
ROA	2.095***
	(0.000)
SIGMA	-2.945***
	(0.000)
RET	6.724***
	(0.000)
TOP10	0.003***
	(0.000)
OCI	0.274***
	(0.000)
Constant	0.378***
	(0.001)
Observations	18,424
IND&YEAR FE	YES
Adjusted R ²	0.215

4.6. Heterogeneity Analysis Based on Resource Constraints

Given the findings from the previous analysis that ESG rating discrepancies significantly affect stock price crashes, the impact may vary due to differences in firm characteristics. Therefore, this study conducts a heterogeneity analysis based on two indicators of resource constraints: firm size and firm age, to explore the heterogeneous effects of ESG rating discrepancies on stock price crash risk.

After controlling for industry and year double fixed effects, the sample is divided into different groups for heterogeneity analysis. First, firms are categorized by size based on the median of asset size into large and small firms. As shown in Table 9, in column (1), the regression coefficient for large firms is 0.014, which is not significant, indicating that ESG rating discrepancies have little impact on FNCSKEW for large firms. In column (2), the regression coefficient for small firms is 0.043, significant at the 5% level, suggesting that ESG rating discrepancies have a significant positive impact on FNCSKEW for small firms.

Second, firms are categorized by age based on the median of firm age into high - age and low - age firms. In column (3), the regression coefficient for high - age firms is 0.028, which is not significant, indicating that the impact of ESG rating discrepancies on stock price crash risk is not pronounced for high - age firms. In column (4), the regression coefficient for low - age firms is 0.033, significant at the 5% level, suggesting that ESG rating discrepancies have a significant impact on FNCSKEW for low - age firms.

Table 8 Heterogeneity Analysis Based on Resource Constraints

	(1)	(2)	(3)	(4)
	SIZE		AGE	
	HIGH	LOW	HIGH	LOW
VARIABLES	FNCSKEW	FNCSKEW	FNCSKEW	FNCSKEW
ESG_SD	0.014 (0.393)	0.043** (0.021)	0.028 (0.144)	0.033** (0.040)
SIZE	0.023*** (0.001)	-0.012 (0.446)	0.002 (0.771)	0.036*** (0.000)
LEV	-0.166*** (0.001)	-0.028 (0.586)	-0.073 (0.168)	-0.136*** (0.004)
ROA	0.413*** (0.001)	0.162 (0.183)	0.203 (0.134)	0.427*** (0.000)
SIGMA	-0.123 (0.746)	-1.935*** (0.000)	-0.942** (0.040)	-0.564 (0.150)
RET	6.182*** (0.000)	10.488*** (0.000)	7.654*** (0.000)	6.892*** (0.000)
TOP10	0.001** (0.028)	0.002** (0.018)	0.002** (0.018)	0.002*** (0.003)
OCI	-0.221*** (0.009)	-0.176 (0.149)	-0.271** (0.014)	-0.189** (0.037)
Constant	-1.184*** (0.000)	-0.148 (0.685)	-0.638*** (0.001)	-1.382*** (0.000)
Observations	10,896	8,517	8,686	10,727
IND&YEAR FE	YES	YES	YES	YES
Adjusted R ²	0.029	0.022	0.025	0.023

In summary, based on the aforementioned results: from the perspective of resource constraints, large firms and high - age firms, with their substantial financial resources and abundant resources, do not rely on ESG - related financing or resource acquisition. Their engagement in ESG activities is more about reputation - building and financing - related objectives. Since large and high - age firms are not in urgent need of these benefits, ESG rating discrepancies (ESG_SD) have an insignificant impact on stock price crash risk (FNCSKEW). In contrast, small firms and low - age firms, constrained by limited resources, need to leverage ESG - related signaling to obtain resources. Therefore, ESG rating discrepancies have a more pronounced impact on stock price crash risk for these firms. The results are consistent with the hypothesis that, under the resource - constraint perspective, the correlation between ESG behavior and stock price crash risk varies across firms of different sizes and ages. Specifically, large and high - age firms, with their ample resources, experience limited impact from ESG factors, whereas small and low - age firms, facing resource scarcity, are more susceptible to stock price crash risk due to ESG rating discrepancies.

5. Conclusions and Implications

This study empirically examines the impact of ESG rating discrepancies on stock price crash risk from the perspective of resource constraints, using a sample of Chinese A - share listed companies from 2015 to 2022. The findings are as follows: (1) ESG rating discrepancies significantly increase stock price crash risk, with the social dimension (S) being the primary driver. (2) The mechanism analysis reveals that ESG rating discrepancies affect stock price crash risk by reducing corporate transparency and exacerbating information asymmetry. (3) The heterogeneity analysis based on resource constraints shows that the impact of ESG rating discrepancies on stock price crash risk is

more pronounced in firms with higher resource constraints, such as small and low - age firms, while large and high - age firms are relatively insensitive to ESG rating discrepancies.

Based on the above results, this study has the following practical values: (1) From a policy perspective, policymakers and regulators should pay attention to the standardization of ESG information disclosure, improve relevant systems, reduce rating discrepancies, and thereby enhance market transparency to maintain the stability of the capital market. (2) For investors, when conducting risk management, it is necessary to fully consider the economic consequences of ESG rating discrepancies in small and low - age firms.

However, this study also has some limitations: the sample only includes A - share listed companies from 2015 to 2022, and the relatively limited time span and sample scope may affect the generalizability of the conclusions. Moreover, the study only considers some influencing factors and does not cover all variables that may affect the relationship between ESG rating discrepancies and stock price crash risk. Future research could expand the sample scope to include firms from more countries and regions and extend the time span. Meanwhile, further exploration of potential influencing factors and the construction of a more comprehensive research model are needed to delve into the relationship between ESG rating discrepancies and stock price crash risk.

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