



The impact of real earnings management and ESG to stock price crash risk evidence in Indonesia Stock Exchange

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ARTICLE INFO

Article history:

Received Nov 30, 2023

Revised Dec 03, 2023

Accepted Dec 08, 2023

Keywords:

ESG;

Firm Size;

Stock Price Crash Risk;

Real Earnings Management;

ROE.

ABSTRACT

The practice of real earnings management (REM) can increase the stock price crash risk cause information spreads rapidly. However there is hope when a company has a good ESG score, the stock price crash risk can reduce. The study will examine stock price crash risk with hypothesis real earnings management has positive relation and ESG has negative relation with stock price crash risk. Utilizing secondary data, the research comprises a sample of 39 companies with 159 observations, using unbalanced panel data with a fixed-effect model regression chosen. This study research found a positive relationship between REM and stock price crash risk and negative relationship between ESG score using dummy year for crisis Covid-19 era and stock price crash risk. During the Covid-19 period, investors demonstrate a more cautious approach to investment selection, displaying a tendency to opt for companies possessing higher ESG scores, aiming to mitigate the peril of declining stock values.

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INTRODUCTION

The Sarbanes-Oxley Act was created and enforced to safeguard investors by improving the precision of financial reporting. Moreover, its execution contributed to the enhancement of corporate governance standards and raised the level of responsibility among the executives and directors in publicly traded firms (Chang & Choy, 2016). Stock price crash risk reflects the sudden and unexpected negative surge in stock price (Kim & Zhang, 2006). Investors will react negatively when bad news corporate builds up over time and that will cause company stock price crash risk suddenly (Wu et al., 2019). Information asymmetry affected investors cannot obtain true information about firms in real time, resulting in cognitive bias on the part of investors, and thus stock prices cannot reflect negative information about enterprises in real time. As a result it could cause a major financial crisis and possibly bankruptcy (Chen et al., 2021)

One of the most important and decisive decisions made by management is how to handle earnings. (Fatima et al., 2020) A lot of researchers have written about and expressed great interest in earnings management (Tran & Dang, 2021). Earnings management is a practice carried out by managers as organizational to adjust profits, aiming to deceive stakeholders in meeting their

contractual commitments (Healy et al., 1998). Managers understand that by employing models and strategies for earnings management, they will inevitably lose some future income flow (Gajdosikova et al., 2022). Managers exhibit a propensity to favor implementing real earnings management (REM) rather than relying on accrual-based earnings management strategies (Graham et al., 2005). Despite the fact that implementing REM practices can potentially decrease the company's value, managers still opt for this approach as it often receives less scrutiny from auditors or regulatory bodies compared to accrual-based. (Roychowdhury, 2006). REM arises from the information imbalance between company managers who operate the business and shareholders who are investors. This disparity prevents investors from accessing precise details, leading to cognitive biases among them. Consequently, the stock price fails to reflect any negative aspects of the company's current standing. As hidden information accumulates beyond the company's capacity to manage adverse news, rapid dissemination of negative information causes a swift and steep decline in the company's stock price (Chen et al., 2021). The "situation becomes more intricate as the dissemination of negative news intensifies, leading to an acceleration in the decline of stock prices due to the entirely negative content encapsulated within the news. (Haider et al., 2022). Several similar studies have examined the relationship between ESG and stock price crash risk. The practice of REM destroys shareholder value due to stock price crash risk (Khurana et al., 2017). A higher level of REM is associated with a higher stock price crash risk (Li et al., 2022). Negative association between REM and stock price crash risk cause of high quality information disclosure will reduce stock price crash risk (Silva, 2018)

Environment, Social, Governance (ESG) as a non-financial framework has become an important consideration for investors in making investment-related decisions (Wang et al., 2023). The disclosure of ESG can enhance the capacity of investors to monitor the actions undertaken by management as implementers within the company (obtaining information at low cost) (Hong & Kostovetsky, 2021). Theoretically, disclosure of ESG ratings in ESG reports can assist investors in gaining a comprehensive understanding of the company and reducing information asymmetry between investors and management. It also prevents management from concealing adverse news, ultimately mitigating the risk of stock price crash risk (Wang et al., 2023). Also in the end, ESG is expected to become a perfect protective mechanism to prevent the fall of stock prices (Xu et al., 2022). Several similar studies have examined the relationship between ESG and stock price crash risk. The disclosure of ESG is thought to diminish the likelihood of stock price drops as it helps alleviate agency theory issues and minimizes the information gap between investors and management. (Grewal et al., 2020). A good ESG performance will make the risk of the company's stock price falling smaller (Wang et al., 2023). The risk of stock price crashes can be avoided by companies with high ESG scores (Xili Ma, 2019).

In this study, the author aims to examine the impact of real earnings management and ESG score on evidence on stock price crash risk in Indonesia Stock Exchanges. The differences shown from this research compared to past research shows other factors that can influence the risk of stock price crashes and then also using dummy year (Covid-19 period) on ESG variable can better observe the impact that occurs on the risk of stock price crashes when the world economy declines.

RESEARCH METHOD

The study conducted quantitative research, utilizing secondary data obtained from sources such as S&P Capital IQ Pro, Yahoo Finance, Refinitiv, and respective company websites to gather information on Stock Price Crash Risk, REM, Total ESG Score, Firm Size, Leverage, Profitability measured through ROE, and Market-to-Book Ratio. It employed purposive sampling, considering companies with a complete ESG score available on the Refinitiv website, excluding financial services companies and banks. Additionally, it required data on weekly stock returns and excluded inactive stocks from the period spanning 2013 to 2022. The research targeted a population of 87

companies and selected 39 companies as the sample meeting the set criteria. This resulted in a total dataset comprising 159 data points. Stata software was employed to perform unbalanced panel data regression modeling. For easy reference, the research model can be found in Figure 1

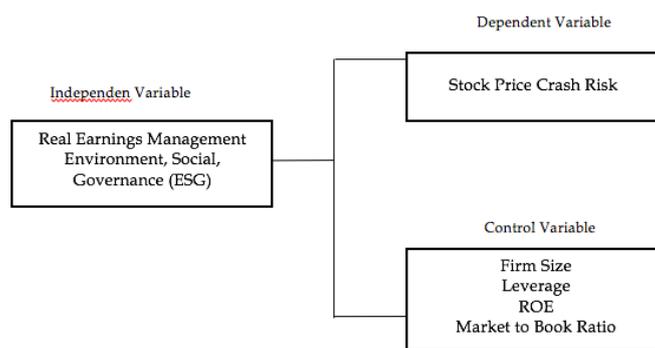


Figure 1. Illustration of Research Model

Table 1. Data Variabel Type

Variable Type	Indicator	Measurement	Reference by
Dependent	Stock Price Crash Risk	$NCSKEW = \frac{-n(n-1)^{\frac{3}{2}} \sum W_{j,t}^3}{(n-1)(n-2)(\sum W_{j,t}^2)^{\frac{3}{2}}}$	(Li et al., 2022)
		$DUVOL = \frac{-n(n-1)^{\frac{3}{2}} \sum W_{j,t}^3}{(n-1)(n-2)(\sum W_{j,t}^2)^{\frac{3}{2}}}$	(Li et al., 2022)
Independent	Real Earnings Management	$REM = AbPROD_{i,t} - AbDISX_{i,t} - AbCFO_{i,t}$	(Roychowdhury, 2006)
	Environment, Social, Governance (ESG)	ESG Score	(Refinitiv, 2022)
	Crisis	DUMyear = 1 for crisis year (2020-2022) DUMyear = 0 for non crisis year (2013-2019)	(Gianfrate, 2021)
Control	Firm Size	Natural logarithm of total assets	(Doğan, 2013)
	Leverage	$LR = \frac{Total\ Liability}{Total\ Asset}$	(Bradshaw et al., 2009)
	Profitability	$ROE = \frac{Sales\ Before\ EOI}{Book\ of\ Equity\ Value}$	(Bradshaw et al., 2009)
	Market to Book Ratio	$M/B = \frac{Market\ Value\ of\ Equity}{Book\ Value\ of\ Equity}$	(Bradshaw et al., 2009)

The table 1 shows the each variable detail, indicators measurement, and reference. Thus, the empirical model equation used for this research panel data regression show as follow

$$CRASH_{i,t} = \alpha_1 + \beta_1 REM_{i,t} + \beta_2 ESG_{i,t} + \beta_3 LNNTA_{i,t} + \beta_4 LV_{i,t} + \beta_5 ROE_{i,t} + \beta_6 MB_{i,t} \dots \epsilon_{0i,t}$$

- CRASH = NCSKEW, DUVOL
- REM = Real Earnings Management
- ESG = ESG Score (Total Score of Environment, Social, Governance)
- LNNTA = Firm Size

LR	= Leverage
MB	= Market to Book Ratio
ROE	= Profitability measured by Return on Equity
DUMMY	= Crisis year during Covid-19 in 2020 - 2022

RESULTS AND DISCUSSIONS

Descriptive statistics

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
W_NCSKEW	368	-16.993	35.769	-122.4	109.583
W_DUVOL	368	.041	.118	-.918	.535
REM	380	.195	.176	-.422	.74
ESG	183	62.281	16.93	1.68	84.81
LNTA	387	30.76	1.47	26.124	34.049
LV	378	.514	.185	.104	1.468
W_ROE	375	.018	.032	-.054	.144
MTB	369	2.417	1.789	-2.253	9.094

The table 2 above show the result of descriptive statistics in each variable in the research. This research using winsor for variable NCSKEW, DUVOL and ROE. The descriptive statistic of data sample show mean for dependent variabel Stock Price Crash Risk measured by Ncskew and Duvol is -16.993 and 0.41 with maximum 109.583 and 0.535. Meanwhile the standart deviation at 35.769 and 0.118. Then mean for independent variable REM is 0.195 with minimum -0.422 and maximum 0.74, the standart deviation at 0.176. The mean for independent variable ESG score is 62.281 with minimum 1.68 and maximum 84.81, the standart deviation at 16.93. The other data information obtained for mean in the control variable such as firm size at 30.76, leverage at 0.514, profitability measured by ROE at 0.18 and market to book ratio at 2.417

Matrix Correlation

Table 3. Matrix Correlation

Variables	W_NCSKEW	W_DUVOL	REM	ESG	LNTA	LV	W_ROE	MTB
W_NCSKEW	1.000							
W_DUVOL	0.418	1.000						
REM	0.195	0.146	1.000					
ESG	0.136	0.005	0.057	1.000				
LNTA	-0.020	-0.008	-0.130	0.436	1.000			
LV	0.227	0.132	0.171	-0.200	-0.092	1.000		
W_ROE	-0.270	-0.145	-0.179	-0.254	0.137	-0.253	1.000	
MTB	-0.085	0.015	-0.302	-0.194	0.038	-0.211	0.215	1.000

The table 3 above show the correlation between variabel dependent (NCSKEW and DUVOL), independent (REM"and ESG) and control (firm size, leverage, profitabilitas measured by ROE, and market to book ratio. From the table can be concluded both NCSKEWand DUVOL has a weak positive relationship with real earnings management. As well as with NCSKEW and DUVOL has week and positive relationship with ESG. In addition from the table, NCSKEW has negative relationship with firm size, ROE and market to book ratio that indicate if the level of firm size, ROE and and market to book ratio increase the likelihood of NCSKEW will also increase while with leverage has positif relationship. Then, DUVOL has negative relationship with firm size and ROE while with leverage and market to book ratio has positif relationship that indicate if the level of leverage and market to book ratio increase the likelihood of DUVOL will also increase.

Result of Model Selection Test and Classic Assumption Tests

This research classified as unbalanced panel data and used a fixed-effect model regression. Previously, the fixed-effect model chosen after following series test as Chow Test and Hausman Test. Finally, the result of classic assumption show that there's no autocorrelation indicated and no autocorrelation indicated in data sample in this research model.

Regression Result

Table 4. Regression Result

	W_DUVOL	W_DUVOL	W_DUVOL
REM	.13911** (.05358)		.13851 (.07565)
ESG		.00102*** (.0001)	.02248 (.01304)
ESGdum		-.0004*** (.00012)	-.00011 (.00027)
LNTA			-.04339 (.02603)
LV			.01759 (.11388)
W_ROE			-.77133* (.41372)
MTB			-.01176** (.00517)
_cons	.01589 (.01358)	0.0000 0.0000	0.0000 0.0000
Observations	364	177	159
Pseudo R ²	0.0272	0.0259	0.1873
Prob > F	0.0289	0.0000	0.0000

Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

The table 4 above show the regression result for stock price crash risk using DUVOL as measured. The result show that the coefficient for real earnings management is 0.13911. A positive coefficient in real earnings management indicates a positive relationship between REM (independent variable) and DUVOL (dependent variable) as a measure to assess the stock price crash risk. Meanwhile, the coefficient of 0.00102 for ESG also indicates a positive relationship between ESG values (independent variable) and DUVOL (dependent variable). The overall value of the R-squared is 0.1873, which means that 18.73% of the variation in the dependent variable can be explained by the independent variables present in the research regression model. Thus, the results indicate that the greater the occurrence of REM within a company, the larger stock price crash risk happen. This supported by previous result by (Li et al., 2022) proves that companies with high "REM" will have a higher stock price crash risk and (Fatima et al., 2020) proves "REM" significantly influences stock price crash risk in emerging market countries.

Meanwhile for ESG, The results indicate that the higher ESG value, the greater the stock price crash risk. This result supported by previous research by (Jeong Hwan, 2022) proves the ESG scores has negative effected for stock price crash risk. However, when considering the crisis period during the global Covid-19 pandemic, including Indonesia from 2020 to 2021, it shows that having a high ESG can reduce the stock price crash risk. This could occur due to investors' tendency at that time to divest from high-risk stocks and opt for stocks with good ESG ratings or lower risk. This

result supported by previous research by (Wang et al., 2023) proves higher ESG score will impact on the lower stock price crash risk.

Robustness Test

Table 5. Robustness Test

	W_NCSKEW	W_NCSKEW	W_NCSKEW
REM	16.77102 (21.6346)		16.41426 (30.22857)
ESG		-.2672*** (.06865)	-10.12559 (6.758)
ESGdum		-.03881 (.05631)	-.16081 (.12984)
LNTA			19.2881 (14.08824)
LV			61.94487 (45.90863)
W_ROE			-504.072* (233.4184)
MTB			.22859 (3.07762)
_cons	-20.05663** (6.35791)	0.0000 0.0000	0.0000 0.0000
Observations	364	177	159
Pseudo R ²	0.0033	0.0011	0.1714
Prob > F	0.4581	0.0000	0.000

Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

The table 5 above when tested using NCSKEW, the robustness test demonstrates consistency in the ESG as an independent variable. Whether a regular ESG score is used, or a dummy variable for the year of the Covid-19 crisis is included, the result shows a negative relation between ESG and NCSKEW. This inverse link suggests that a fall in stock price crash risk might be mitigated by having strong ESG values. However, In contrast, REM using NCSKEW show not have an impact to stock price crash risk.

CONCLUSION

This study demonstrated a negative relation between ESG score using a dummy year for crisis and a positive relation between REM and stock price collapse risk. For almost three years during the Covid-19 era, investors have been more cautious when selecting investments, and as a result, they have tended to select companies with high ESG scores in an effort to lower the risk of declining share prices. The likelihood of declining share prices will increase with the amount of information available about a company's genuine earnings management. This was seen in the Enron case when the company's share price fell sharply shortly after the negative news circulated and investors and suppliers lost faith in the company as a result of the exposure of earnings management methods in October 2001. (Thomas, 2002). Several contribution that made in this research. First, convincing that the danger of doing real earnings management is significant as it can have adverse effects besides stock price crashes even leading company to bankruptcy. Second, The role of ESG in emerging market countries is not widely recognized by investors, so it is hoped this research can serve as a reference for investors that ESG scores need to be considered before making investment decisions. Third, the research recommend to investor several component that should be considered

before making investment decision. The limitations of this study research are attributed to the small sample size, consisting of only 39 companies that meet the requirements and issue ESG reports on the Indonesia Stock Exchange—is blamed for its inadequacies. As a result, the study may have been biased, and careful interpretation is required.

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