

Bankruptcy Risk and Its Effect on Earnings Management of Indonesian Firms

Fathullah Aryo Nareswara¹ and Silvia Dewiyanti^{1*}

¹Accounting Department, School of Accounting, Bina Nusantara University, Jakarta, Indonesia 11480

Abstract. The purpose of this study is to examine whether there is a notable relationship between bankruptcy risk measured by Altman Z-Score and earnings management in Indonesia. While many prior studies have analyzed the relevance of financial distress (which is often associated with bankruptcy risk) towards earnings management, there only exist few studies, to the best of authors's knowledge, that specifically uses bankruptcy risk itself as one of possible influencing factors on earnings management. Regression analysis is performed on the financial data of firms listed in Indonesia Stock Exchange (IDX), with the final sample comprised of 404 firm-year observations. Using bankruptcy risk as the independent variable, the result indicates that there is no significant relationship between bankruptcy risk and earnings management, which is the similar conclusion that had been reached by few prior studies on the same topic.

1 Introduction

Earnings management has always been a prevalent topic in accounting field. Earnings management happens due to the incentive of managers to report firm's financial performance in a favorable light, usually to appease external stakeholders such as investors. Countless studies have been conducted to analyze earnings management (see, for example, Cheng et al. 2016; Davidson et al. 2005; Park and Shin 2004; and Rusmin 2010). The aforementioned studies are amongst the most relevant ones in literature, and collectively, they propose several factors that can influence earnings management, such as internal governance of firm, board structures, and audit quality. These factors are all related in some way to the internal structure of firms, which is to say that firms' internal structure is considered as one of the most significant factors that can influence earnings management.

Aside from internal structure of firms, there are also several other factors that can influence earnings management, to a lesser extent. This study observes "bankruptcy risk" as one such factors. However, prior studies regarding this factor are more scarce (see, for example, Durana et al. 2021; and Egbunike and Igbinovia 2018) compared to internal structure of firms. Generally, studies conducted on this topic posit bankruptcy risk as an affected variable as opposed to an inflicting variable. Moreover, to the authors's knowledge, there has been no study

conducted in Indonesian setting that uses the variable bankruptcy risk as an inflicting variable. Hence it would be interesting to see how bankruptcy risk, as an inflicting variable, affects earnings management in Indonesian firms. There is a study of Agustia et al. (2020) that observed the relationship between bankruptcy risks and earnings management in Indonesia as well, however, they used bankruptcy risk as an affected variables. This study aims to see how the reverse, that is, earnings management as an inflicting variable towards bankruptcy risk as an affected variable using Indonesia setting, would differ in results from Agustia et al. (2020). Agustia et al. (2020) uses Indonesia setting as well, but utilizes bankruptcy risk as an inflicting variable towards earnings management as an affected variable, as opposed to this study. This study contributes to the literature by analyzing the effect that bankruptcy risk has on the practice of earnings management in Indonesian setting, by collecting data from annual reports of Indonesian firms listed in Indonesia Stock Exchange (IDX), with a total of 404 firm-year observations in year 2020.

2 Literature Review and Hypothesis Development

2.1 Earnings Management

Earnings management has a considerably broad sets of definitions and indicators in the literature.

*Corresponding author: fathullah.nareswara@binus.ac.id

Beneish (2001) argues that earnings management is a financial reporting phenomenon which depends on firm performance. It is more likely to occur if a firm's performance is either unusually good or unusually bad. Healy and Wahlen (1999) defines earnings management as an action undertaken by managers by using judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers. Dechow and Skinner (2000) stipulated that understanding management's incentives is key to understanding the desire to engage in earnings management. Particularly, managers have strong incentives to "beat benchmarks", which implies that firms that are highly focused on just beating benchmarks are potentially more likely to engage in earnings management. Indeed, the interpretations of earnings management's definition and discussions of its signs widely vary amongst many different scholars. Regardless, it is apparent that managers' incentive plays a big role in the phenomenon of earnings management.

Earnings management can be classified into two types, those are: real activity-based and accrual-based earnings management. Real activity-based earnings management (REM/Real Earnings Management), or real activities manipulation, is defined as management actions that deviate from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds (Roychowdhury 2006). It is motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations. To measure real activities manipulation, Roychowdhury (2006) utilizes cash flow from operations (CFO), production costs, and discretionary expenses, three of which are said to be the variables that could capture the effect of real operations better than accruals. On the other hand, accruals-based earnings management (AEM) is an activity that is implemented through managerial influence and discretion to accruals, which is also permitted by prevailing accounting standards and regulations (Agustia et al. 2020). Among many examples of such accruals are: fixed asset estimated useful life, salvage value, the depreciation method, asset impairment, and estimation of bad debt expense. For the purpose of this study, earnings management will be measured by only using accruals as the base, specifically, by using Discretionary Accruals as the proxy. Discretionary Accruals is measured by employing Jones model (Jones 1991). In addition, to robustly measure earnings management, this study uses three more proxies following the approach of Cadot et al. (2020). These proxies are:

- a. **Small Positive Return (SPR):** The likelihood that a firm will report a small positive return, or profit, which should be higher when firms manage earnings to avoid losses.
- b. **Small Positive Changes of returns (SPC):** The likelihood that a firm will report a small increase in profit (from year t to year $t+1$), which should be higher when firms manage earnings.
- c. **Current Accruals (CA):** This measure follows the approach of Hribar and Collins (2002), which is based on the level of reported accruals, measured by the difference between earnings and cash flow, assuming that the magnitude of accruals used to increase the reported earnings reveal earnings management.

2.2 Bankruptcy Risk

Firms enter the risks of going bankrupt when they are experiencing a severe financial distress. Regarding distressed firms, stakeholders usually take their decisions on the basis of its quarterly or annual reports (Dutzi and Rausch 2016). If a distressed firm cannot overcome its crisis, it will have to file for insolvency, which may result into an huge economic damage for almost all stakeholders. For this reason, stakeholders are interested in detecting early signs of a financially distressed firm to avoid further losses.

Many of prior studies revolving the topic of bankruptcy risk analyze samples of bankrupt and non-bankrupt firms to form models of bankruptcy prediction (see, for example, Severin and Veganzones 2021; Aziz et al. 1988; and Beaver et al. 2012). One of the pioneers on this field of study is Altman (1968), who developed the bankruptcy prediction model Z-Score. As a prediction model, Altman Z-Score has been used as a measurement of bankruptcy risk on many studies and is widely recognized for its reliability. It is a tool that measures bankruptcy risks of firms by combining profitability, leverage, liquidity, solvency, and activities (Agustia et al. 2020). It is outlined that the lower a firm's Z-Score, the greater its potential for bankruptcy becomes. For this study, the Z-Score will be used as a proxy for bankruptcy risk.

2.3 Hypothesis Development

Although bankruptcy risk is often studied in conjunction with earnings management, there have been only few studies that specifically address the possible impact that the former has on the latter (see, for example, Durana et al. 2021; Egbunike and Igbinovia 2018). Durana et al. (2021) found that the impact of corporate bankruptcy risk in the Growth stage of firm's life cycle is positive, but not significant. Growth stage of a firm is shown in its

growing debt ratios in the short and long term, which is indicative of its growing financing options. Egbunike and Igbिनovia (2018) also found that bankruptcy threat has no significant impact on the likelihood of upward earnings manipulation in Nigeria listed banks.

Campa and Minano (2015), by analyzing samples of Spain SME firms, found that on average, before bankruptcy, firms with higher non-temporary levels of financial distress manage earnings upwards using real transaction manipulation more than other lower-distressed bankrupt companies. However, while Campa and Minano (2015) study did analyze the effects of financial distress before bankruptcy, the bankruptcy risk itself, as a different proxy, was not thoroughly analyzed. Thus, regarding bankruptcy risk itself as hypothetical main factor in affecting earnings management, prior limited studies have mostly reached the similar conclusions; that is, bankruptcy risk does not have any significant effect on earnings management. Therefore, a hypothesis is developed for this study:

H₁: Bankruptcy risk has no significant effect on earnings management.

3 Methods

3.1 Bankruptcy Risk

Altman (1968) developed a discriminant model, Z-Score, as an answer to growing concern of academics who started to question the reliability of ratio analysis in assessing the performance of business enterprise at the time (Altman 1968). The Z-Score is a model that was developed using a set of financial and economic ratios investigated in the context of bankruptcy prediction, where multiple discriminant statistical methodology is employed. It utilizes five variables (ratios) that, according to Altman (1968), are the most reliable predictors of corporate bankruptcy. Those variables are: 1) Working Capital/Total Assets, 2) Retained Earnings/Total Assets, 3) Earnings Before Interest and Taxes/Total Assets, 4) Market Value of Equity/Total Liabilities, and 5) Sales/Total Assets. The lower a firm's Z-Score is, the greater its bankruptcy potential, and vice-versa. Combined with five corresponding discriminant coefficients that were developed using MDA (Multiple Discriminant Analysis), the equation for the Altman Z-Score, which will be used as the measurement of bankruptcy risk for this study, is as follows:

$$Z\text{-Score} = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5 \quad (1)$$

where:

X_1 = Working Capital (Current Assets – Current Liabilities)/Total Assets

X_2 = Retained Earnings/Total Assets

X_3 = Earnings Before Interest and Taxes/Total Assets

X_4 = Market Value of Equity/Total Liabilities

X_5 = Sales/Total Assets

3.2 Earnings Management

This study employs four proxies for earnings management, as outlined in the previous section. The first two proxies (SPR and SPC) are calculated by using earnings before extraordinary items scaled by total assets (EOA). Based on EOA, two dummy variables *SPR* and *SPC* are then developed.

$$SPR1 = 1 \text{ if } 0\% < EOA < 2.5\% \quad (2)$$

$$SPR2 = 1 \text{ if } 0\% < EOA < 3.5\%$$

$$SPC1 = 1 \text{ if } 0\% < \Delta EOA < 3\% \quad (3)$$

$$SPC2 = 1 \text{ if } 0\% < \Delta EOA < 5\%$$

Third proxy is calculated by the following accrual-based earnings management proxy, Current Accruals (*CA*):

$$CA_{it} = \frac{EBXI_{it} - CFO_{it}}{A_{i,t-1}} \quad (4)$$

where EBXI represents earnings before extraordinary items, CFO denotes cash flow from continuing operations, and A is lagged total assets. Fourth proxy is measured by using Jones model (Jones 1991). In this model, the discretionary accruals are the residuals of an accrual-based estimation based on the information provided by firm's balance sheet:

$$\frac{TA_{it}}{A_{i,t-1}} = \gamma_1 \frac{1}{A_{i,t-1}} + \gamma_2 \frac{\Delta REV_{it}}{A_{i,t-1}} + \gamma_3 \frac{PPE_{it}}{A_{i,t-1}} + \varepsilon_{it} \quad (5)$$

where TA is the total accruals of firm *i* in year *t*, calculated as the difference between net income and cash flow from operations, ΔREV represents the difference of sales revenue of firm *i* between year *t* and *t-1*, PPE is gross property, plant, and equipment. The residuals from the regression model compose discretionary accruals (*DACC*). The discretionary accruals comprise of residuals of an accrual estimation, which separates the accruals related to earnings management from the accruals related to core operations (Cadot et al. 2020).

3.3 Research Design

To determine the impact of bankruptcy risk on earnings management, the following regression model is employed:

$$AEM_{it} = \beta_0 + \beta_1 Z\text{-Score}_{it} + \beta_2 LEVERAGE_{it} + \beta_3 SIZE_{it} + \beta_4 AQ_{it} + \beta_5 SOE_{it} + \varepsilon_{it} \quad (6)$$

where *AEM* (Accruals Earnings Management) represents the proxy(ies) of earnings management.

Z-Score is the proxy for bankruptcy risk. Besides the aforementioned variables, several control variables are also employed: *LEVERAGE* is the total liabilities of a firm scaled by its total assets. *SIZE* is the natural logarithm of firm's total assets. *AQ* (Audit Quality) is a dummy variable, representing whether or not a firm is audited by Big4 audit firms on that year. If a firm is audited by Big4, then the value is 1, otherwise 0. *SOE* (State-Owned Enterprise) is a dummy variable as well, representing whether a firm is state-owned or not. If it is state-owned, the value is 1, otherwise 0. Detailed description of all variables is provided in Appendix.

4 Data Collection

This study collects data from the sample of Indonesian firms that are listed in Indonesia Stock Exchange (IDX) for the financial period 2020. All data are hand-collected from the annual reports of sample firms. The procedure for generating the final sample of firms is described as follows: Firstly, 757 firms are identified from the beginning sample. Then, several filtering criteria are used; First, firms from the financial services industry are removed due to their different operating and financial structures, amounting to 164 firms. Second, firms that use foreign currency to report their financial statement are removed to mitigate currency translation problem that may mislead the result of this study, amounting to 90 firms. Lastly, 99 firm-year observations with missing informations are also removed. More detailed sample generation procedure is provided in Table 1.

Table 1. Sample Generation Procedure

Criteria	Firms
Initial data set	757
Financial services firms	(164)
Firms using foreign reporting currencies	(90)
Firms with missing informations	(99)
Total	404

Source: Research Data.

5 Results and Discussion

5.1 Descriptive Statistics

The summary statistics for the sample is provided in Table 2. *SPR1*, *SPR2*, *SPC1*, and *SPC2*, are all showing the Means below 0.50 (0.26, 0.31, 0.17, and 0.23 simultaneously). This indicates that on average, Indonesian firms in period 2020 are more likely not manage earnings than to manage earnings, from the perspective of positive returns (*SPR*) and changes in positive returns (*SPC*). Discretionary accruals (*DACC*) has a mean of 0.00, which indicates that on average, the discretionary accruals of Indonesian firms comprise of very small and insignificant percentage of total accruals. *Z_SCORE* has a mean of 11.09, and a highest value of 2390.35. This value belongs to a firm that, based on the sample data, has a very high ratio of market value of equity to total liabilities, causing its *Z-Score* value to inflate significantly. From control variables' side, *LEVERAGE* and *SIZE* have the mean of 0.76 and 14.44, respectively. Meanwhile, with *AQ* and *SOE* having the mean of 0.25 and 0.03, it indicates that 25% of sample firms are audited by Big4 firms and 3% of firms are comprised of State-Owned Enterprises. The Appendix provides more detailed description of the variables.

Table 2. Descriptive Statistics

Variable	N	Mean	SD	Min.	Q1	Median	Q3	Max.
SPR1	404	0.26	0.44	0.00	0.00	0.00	1.00	1.00
SPR2	404	0.31	0.46	0.00	0.00	0.00	1.00	1.00
SPC1	404	0.17	0.38	0.00	0.00	0.00	0.00	1.00
SPC2	404	0.23	0.42	0.00	0.00	0.00	0.00	1.00
CA	404	-0.08	0.40	-7.10	-0.12	-0.05	-0.01	0.95
DACC	404	0.00	0.25	-1.92	-0.08	-0.01	0.06	2.56
Z SCORE	404	11.09	121.71	-191.77	0.85	2.33	5.17	2390.35
LEVERAGE	404	0.76	4.17	0.00	0.27	0.44	0.62	75.94
SIZE	404	14.44	1.88	8.81	13.21	14.27	15.70	21.19
AQ	404	0.25	0.43	0.00	0.00	0.00	0.00	1.00
SOE	404	0.03	0.18	0.00	0.00	0.00	0.00	1.00

Source: Research Data.

5.2 Results (Numerical Only)

The results for this study are provided in Table 3. This table had included all the dependent and independent variables, as well as the control variables. The result shows that *Z-Score* has no statistically significant relationship with any of the established earnings management proxies. Indeed, this result corresponds with the hypothesis. From the

control variables' perspective, however, several significant relationships with earnings management's proxies can be found. *SPR1* is significantly affected by Audit Quality and *SOE*, negatively and positively. *SPR2* has significantly negative relationship with Audit Quality and positive with *SOE* as well, in addition of having a significantly positive relationship with firms' size.

Current Accruals has significantly negative relationships with firms' Leverage and Audit Quality. Meanwhile, Discretionary Accruals has

significantly negative relationships with firms' Leverage and size.

Table 3. Regression Results

	SPR1	SPR2	SPC1	SPC2	CA	DACC
Z_SCORE	0.000281 (0.000177)	0.000260 (0.000187)	-3.34e-05 (0.000156)	-6.46e-05 (0.000174)	5.83e-06 (6.59e-05)	2.20e-05 (8.89e-05)
LEVERAGE	-0.00317 (0.00524)	-0.00292 (0.00552)	-0.00253 (0.00460)	0.00745 (0.00513)	-0.0866*** (0.00195)	-0.0287*** (0.00263)
SIZE	0.0163 (0.0140)	0.0329** (0.0147)	0.0156 (0.0123)	0.0197 (0.0137)	0.00286 (0.00520)	-0.0193*** (0.00701)
AQ	-0.146** (0.0565)	-0.152** (0.0595)	-0.0317 (0.0496)	-0.0475 (0.0553)	-0.0627*** (0.0210)	-0.01000 (0.0283)
SOE	0.358*** (0.126)	0.322** (0.133)	-0.0813 (0.111)	-0.155 (0.124)	0.0292 (0.0469)	0.0689 (0.0632)
Constant	0.0482 (0.196)	-0.140 (0.206)	-0.0412 (0.172)	-0.0425 (0.192)	-0.0432 (0.0729)	0.301*** (0.0983)
R-squared	0.051	0.053	0.006	0.011	0.838	0.238
Adjusted R ²	0.228	0.228	0.228	0.228	0.228	0.228
N	404	404	404	404	404	404

Note: Numbers in parentheses are standard errors. *, ** and *** represent statistical significance at 10%, 5% and 1% levels, respectively.

5.3 Discussion

The results of this study show no significant relationship between bankruptcy risk and earnings management. What could be found, however, were only significant effects of control variables toward earnings management. This corresponds to the results of Durana et al. (2021) and Egbunike and Igbinoia (2018), in which both studies identified no significant impact of bankruptcy risk towards earnings management. Comparing the results of this study to Agustia et al. (2020), who used earnings management as an independent variable and bankruptcy risk as dependent variable, the outcome remained the same. Even after turning bankruptcy risk into an independent variable while earnings management into a dependent variable in this study, as well as utilizing additional proxies for accruals based earnings management (AEM), a significant relationship between bankruptcy risk and earnings management still could not be found. Indeed, this study has wielded the same result with previous studies in similar topic.

This result could implicate that managers in Indonesia may need not worry excessively about whether the severity of bankruptcy risk, specifically when measured by Altman Z-Score, could significantly affect the legitimacy of firm's earnings processing. Although, this study only uses AEM as the proxy for earnings management, so the result may not be as robust as if one were to utilize real activity-based earnings management (REM) as additional proxy for earnings management.

6 Conclusion

This study provides an outlook on the effect of bankruptcy risk measured by Z-Score towards

earnings management, from a sample of 404 firm-year observations of firms listed in Indonesia Stock Exchange as of period 2020. The result shows that bankruptcy risk does not have significant effect on earnings management, which corresponds to the results of prior studies on the same topic (Durana et al. 2021; and Egbunike and Igbinoia 2018). As a note of importance, this study has its limitations in that it only uses accruals-based proxy (AEM) for earnings management. It is recommended for future studies if conducted in the same regional setting (Indonesia) to utilize real activity-based earnings management (REM) as an additional proxy. REM has greater potency than AEM because it is easier to implement and it is also more difficult to detect than others due to its opacity (Campa and Camacho-Minano 2015), hence, an analysis on REM could prove useful for producing more robust results.

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