Financial Ratio Analysis to Predict Financial Distress of Small and Middle Capitalization Company Listed in Indonesia Stock Exchange

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Abstract. Financial ratios are widely used by investors as a consideration in choosing stocks in their investment portfolio. Investors avoid company shares whose financial condition is indicated to be in financial distress because this condition can lead to company bankruptcy. Financial ratio analysis is expected to indicate the existence of financial distress conditions in the company. This research analyzes the financial ratios represented by Debt to Equity Ratio (DER) and Return on Equity (ROE) are able to show financial distress in a company as indicated by a high S-Score using the Springate Model.

Keywords: Financial Ratios, Price to Book Value, Debt to Equity Ratio, Return on Equity, Springate Model, S-Score

1. Introduction

The development of the Indonesian capital market has increased in recent years where in December 2021 there were 765 companies listed on the Indonesia Stock Exchange (IDX). Since 2018, according to IDX data , every year there have been around 50 issuers that have made an offer or Initial Public Offering (IPO) to obtain funding from the Indonesian Capital Market. When compared to IPOs in previous years, which recorded an average number of 20 issuers per year, the increase in the number of issuers in Indonesia can be said to have increased quite rapidly.

In December 2017, the IDX issued an index which lists companies with small and medium market capitalization, namely IDXSMC-LIQ , namely an index that measures the price performance of several stocks in the category of small and mid- *cap* companies that are fundamentally good and whose shares are liquid. The list of stocks in the index is interesting to observe because the price of shares with a small market capitalization tend to be more volatile

One of the considerations in determining the choice of stock is the issuer's financial performance which can be seen from its financial statements. According to [1], financial ratio analysis can show the condition of a company long before failure or bankruptcy actually occurs . The financial ratios used in this study are the Debt to Equity Ratio (DER) and Return on Equity (ROE) , which are financial ratios that respectively represent solvency ratios and profitability ratios.

Decreasing financial performance will lead to a condition of *financial distress* . *Financial distress* in the company will certainly affect the company's operations, it can even lead to bankruptcy. This is in line with the research results of [2]that If a company is in

financial distress or has financial problems, there is a tendency that the share price will decrease so that it will result in losses for investors.

Various formulas are used to predict financial distress, including the Zmijewski, Springate, and Altman models. The results of Munawarah's research [3], which compared the Zmijewski and Springate models, concluded that the Springate model is more accurate and precise than the Zmijewski model in predicting *financial distress* in companies registered in the *property* and *real estate sector* in 2011-2015 years. The results obtained from the above research in line with the results of research [4] who compared the Altman, Springate, and Zmijewski models in predicting *financial distress* in companies in the manufacturing sector listed on the IDX in the 2015-2017 period and concluded that the Springate model could indicate better *financial distress than the other two models.*

2. Method

The method used to determine the sample is *purposive sampling method* , while the criteria used in determining the sample are as follows: (a) Companies listed on the Indonesia Stock Exchange from 2019-2021. (b) Companies that are indexed at least 5 times the IDXMSC-LIQ Indonesia Stock Exchange from 2019 to 2021 for 6 times the index period. (c) Companies that publish complete and audited financial reports for the period 2019-2021. The population of this study are all companies registered with the IDXSMC-LIQ from 2019-2021 but based on the sample criteria mentioned above, there are 38 companies that meet the requirements. Then the data obtained is 38 x 3, which is 114 data.

Price to Book Value. The book value (*book value*) of shares shows the net assets or *net assets* owned by a shareholder by owning one share [5]. PBV is obtained by the following formula:

$$PBV = \frac{Stock\ Prise}{Book\ Value} \quad (1)$$

Debt to Equity Ratio (DER). *Debt to Equity Ratio* _ _ namely the ratio between the amount of debt to the amount of equity [6]. The calculation for DER is as follows:

$$\text{DER} = \frac{Total\ Debt}{Total\ Equity} x\ 100\% \quad (2)$$

Return on Equity (ROE) [7] stated that Return on Equity (ROE) is a ratio that measures the ratio between net income and equity which shows the efficiency of the use of own capital and calculated in the following way:

$$\text{ROE} = \frac{Net\ Income\ in\ One\ Year}{Total\ Equity} \text{x } 100\% \quad (3)$$

S-Scores [8]financial ratios that are used to predict existence *financial distress.* The four ratios are combined into a formula for measuring *financial distress* known as the Springate model (*S-Score*) with the following formula :

$$S = 1.03\ A + 3.07\ B + 0.66\ C + 0.4\ D \quad (4)$$

Where A is *Working Capital to Total Assets Ratio* , B is *Earning Before Interest and Tax to Total Assets Ratio* , C is *Earning Before Interest and Tax to Current Liability Ratio* , and D is *Sales to Total Assets Ratio* . An S-score of less than 0.862 indicates a condition of financial distress, and an S-score value of more than 0.862 indicates undistress.

The data in this study are data published through financial statements of the sample companies, then calculations are performed to obtain PBV, DER, ROE, and *S-Score ratios*. The data is taken from the 2019-2021 annual financial reports. The analysis technique of this research uses *Structural Equation Modeling* (SEM), which is classified as *Covariance Based Structural Equation Modeling* (CB-SEM) using AMOS statistical software.

3. Result and Discussions

3.1 The Effect of PBV on Financial Distress

Kuncoro and Agustina's study in 2017 found that Price to Book Value (PBV) does not have an impact on the occurrence of financial distress. This aligns with the findings of Yulitasari and Yulistina in 2019, who stated that PBV partially does not significantly affect the level of financial distress. Similarly, Lestari and Kusrini in 2021 also concluded that PBV does not have a significant effect on financial distress.

However, contrasting results were obtained in another study [9], which revealed that PBV has a positive effect on financial distress in banking companies listed on the IDX from 2015 to 2017. Considering the divergent outcomes of previous research, it is important to note that a higher PBV value indicates greater investor confidence in a company's financial performance, suggesting that a high PBV value signifies a company that is not facing financial distress.

H 1 : PBV has a negative effect on *financial distress.*

3.2 The Effect of DER on Financial Distress

[10]examined the effect of various company financial ratios on the existence of *financial distress* conditions in financial companies and found the conclusion that DER has no effect on changes in stock prices and the potential for *financial distress* , this occurs because high DER numbers are a characteristic of banking company.

A different opinion was put forward by [11]who stated that *the leverage ratio , including* DER, had a negative effect on *financial distress* in companies listed on the IDX in the 2013-2017 period. According to [7], DER is a variable that has a significant effect on the possibility of *financial distress* . DER has also had a positive effect on *financial distress* in banking companies listed on the IDX for the 2015-2017 period [9]. [12]also stated the same thing that *the Debt to Equity Ratio* is one of the factors that influence *financial distress.*

H 2 : DER has a positive effect on *financial distress* .

3.3 The Effect of ROE on Financial Distress

[13]states that ROE affects *financial distress* with the *Z-Score approach* in manufacturing companies in the 2014-2017 period. [7]also stated that Return *on* Equity *has a significant effect on* financial distress. The same opinion states that ROE partially has a significant correlation with *financial distress* in manufacturing sector companies listed on the IDX in 2014-2017 [14].

According to [15], simultaneously and partially firm size, *DER, ROE,* and Current Ratio can show indications of *financial distress* in property companies listed on the IDX in the 2014-2017 period. These results are in line with the research of [16] which states that *Return on Assets ,* ROE *, Current Ratio* and DER partially and simultaneously affect the condition of *financial distress.*

H 3 : ROE has a negative effect on *financial distress*

3.4 Descriptive Statistics

The table below shows the descriptive results of each research variable which were obtained using the SPSS statistical software.

Table 1. Descriptive Statistical Test Results

	N	Range	Minimum	Maximum	Means	
	Statistics	Statistics	Statistics	Statistics	Statistics	std. Error
PBV	114	19,10	-8,26	10.83	1.54	0.18
DER	114	27.90	-10.83	17.07	2.06	0.31
ROE	114	6,41	-1.50	4.90	0.12	0.05
S -Score	114	8,19	-0.17	8.02	2.00	0.12
Valid N (listwise)	114					

The PBV value is in the range of -8.26 to 10, which indicates that some companies have a negative value on PBV. The negative value indicates the stock price is lower than the book value. Likewise, a negative ROE value indicates that the company experienced a loss in the current year, while a positive value means that the company experienced a profit. A low DER value indicates a company's debt is lower, and a high DER value indicates a company has greater debt. A negative DER value indicates a negative equity position, meaning that the amount of debt is greater than the company's assets.

3.5 Results and Discussion

This research model can be described as follows:

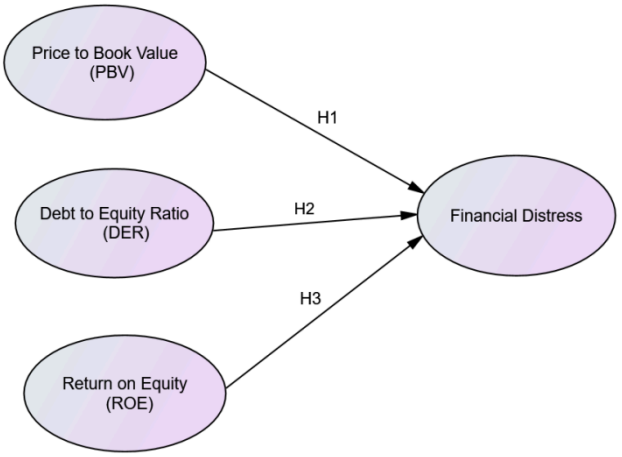

Figure 1. Research Framework

The structural model of this study is shown in Figure 1. as can be seen in the figure, all the variables used are *observed variables* which can be measured directly, so there is no need for indicators to explain each variable. Outliers are removed so that the remaining 102 data can be processed to the next stage.

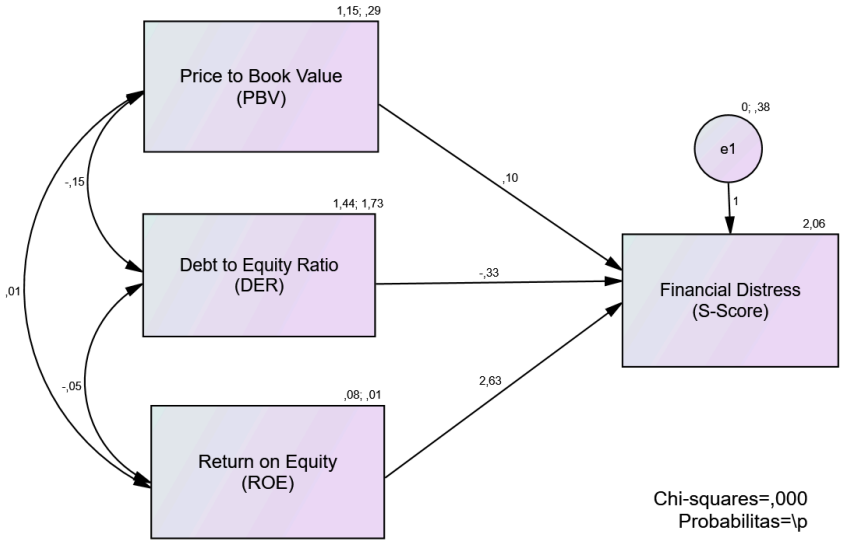

Figure 2. Structural Equation Modeling (SEM) using AMOS statistical software.

In the SEM diagram above it can be seen that there is no problem with the model identification value indicated by the absence of a negative error value so that the testing step can be carried out at a later stage.

Table 2. shows the AMOS output, namely the assessment of normality to test the normality of the data, while the test values for Goodness of Fit are shown in table 2.

Table 2. Assessment of normality (Group number 1)

Variables	min	max	skew	cr	kurtosis	cr
PBV	,230	3,222	,822	3,390	1.146	2,363
ROE	-,152	,331	,090	,372	,409	,844
DER	,143	6,052	1.506	6,209	1,973	4,067
S	,514	4,210	,481	1,982	-.552	-1.139
Multivariate					2,067	1.507

The multivariate cr kurtosis value is 1.507 after removing *the outliers* so that the assumption that the data is normally distributed can be fulfilled, so that research can proceed to the next stage. The Result of Goodness of fit values can be described as follow:

Table 3. Goodness of Fit

GOF size type	Limit Value	Test Value	Test results

Chi-square	The smaller the better	0.000	fit
CFI	≥ 0.9	1	fit
NFIs	≥ 0.9	1	fit
NCP	The smaller the better	0.000	fit
RMSEA	< 0.08	0.390	Unwell
ECVI	*the saturated ECVI* value the better	Equal to *saturated* ECVI (0.277)	fit
AIC	*the saturated AIC* value the better	Equal to *saturated* AIC (28)	fit

Table 3. shows that the structural model is an acceptable model so that it can be used to analyze the influence or relationship between exogenous and endogenous variables.

3.6 Hypothesis Testing

Below is the AMOS *print output* on *Scalar Estimates: Standardized Regression Weights and Squared Multiple Correlations* :

Table 4. Regression Weights: (Group number 1 - Default model)

		Estimates	SE	CR	P	Label
S <---	DER	-,330	.053	-6,225	***	par_1
S <---	ROE	2,631	,812	3,239	,001	par_2
S <---	PBV	,097	,120	,803	,422	par_3

The research hypothesis was tested using a t-value with a significance level of 0.05, where a CR value ≥ 1.967 or a P value ≤ 0.05 indicates the rejection of the null hypothesis (H0) and acceptance of the research hypothesis. Hypothesis 1, examining the impact of PBV on financial distress, was not supported as the t-value (0.803) was below the threshold and the P value (0.422) exceeded the significance level. Hypothesis 2, investigating the influence of DER on financial distress, yielded significant results with a t-value (-6.225) below the threshold and a P value that supported the alternative hypothesis. Therefore, it can be concluded that DER has a positive effect on financial distress. Hypothesis 3, exploring the impact of ROE on financial distress, was supported by a significant t-value (3.239) and a P value (0.001) that met the criteria. Thus, it can be concluded that ROE has a negative effect on financial distress.

Conclusions

Based on the research results, it is known that PBV does not have an effect on the financial distress experienced by the company. This is possible because the value of PBV is influenced by stock prices, where the ups and downs of stock prices will not have an impact on the company's financial condition, but will have an impact on returns for investors .

The condition of financial distress is indicated by a low S-Score, and conversely a high S-Score indicates undistress. The estimated result of -0.33 shows that the DPR has a negative influence on the S-Score and therefore has a positive effect on financial distress. The reverse

result is shown by ROE, where ROE has a negative effect on financial distress. The results of this study mean that operating profit (return) has an influence on a healthy financial condition.

This study only measures the data obtained from the results of the company's financial statements indexed in IDXSMC-LIQ over a period of three years. More accurate research results will require data with a longer research period, so future research is expected to use financial report data with a longer duration.

References

[1] Brigham, F. Eugene, and J. F. Houston, *Dasar-dasar Manajemen Keuangan Buku 1 (Alih Bahasa: Ali Akbar Yulianto)*. Jakarta: Salemba 4, 2011.

[2] Wawo and Nirwana, "Pengaruh Financial Distress terhadap Harga Saham," *Jurnal Ilmiah Akutansi Peradaban*, 2020, doi: https://doi.org/10.24252/jiap.v6i1.14467.

[3] M. Munawarah, "Zmijewski dan Springate : Analisis Diskriminan dalam Memprediksi Financial Distress," *Akuisisi: Jurnal Akuntansi*, vol. 15, no. 1, pp. 1–8, 2020, doi: 10.24127/akuisisi.v15i1.279.

[4] D. Supriati, I. R. Bawono, and K. C. Anam, "Analisis Perbandingan Model Springate, Zmijewski, Dan Altman Dalam Memprediksi Financial Distress Pada Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia," *Journal of Applied Business Administration*, vol. 3, no. 2, pp. 258–270, 2019, doi: 10.30871/jaba.v3i2.1730.

[5] J. Hartono, *Teori Portofolio dan Analisis Investasi*, 11th ed. Yogyakarta: BPFE, 2019.

[6] T. Hidayat, *Value Investing Beat The Market in Five Minutes*. Elex Media Komputindo, 2017.

[7] D. F. Santosa, L. Anggraeni, and K. Pranowo, "DETERMINANT OF FINANCIAL DISTRESS ON THE RETAIL SUBSECTOR PUBLIC COMPANIES IN INDONESIA STOCK EXCHANGE," *Jurnal Aplikasi Manajemen dan Bisnis*, vol. 6, 2020, doi: DOI: http://dx.doi.org/10.17358/jabm.6.1.128.

[8] G. L. V. Springate, *Predicting the Possibility of Failure in a Canadian Firm: A Discriminant Analysis*. Simon Fraser University, 1978.

[9] N. K. D. Sukmawati, I. W. Widnyana, and I. W. Sukadana, "Analisis Kinerja Keuangan dalam Memprediksi Kondisi Financial Distress pada Perusahaan Perbankan yang Terdaftar di Bursa Efek Indonesia Tahun 2015-2017," *Values: Jurnal Pengabdian Kepada Masyarakat*, vol. 1, no. 3, pp. 244–251, 2020.

[10] R. K. Kumaidi and N. Asandimitra, "Pengaruh ROA, ROE, DER, DPR Dan LDR Terhadap Harga SahamSektor Perbankan BEI Periode 2011-2016 (Dengan Penggolongan Kapitalisasi Kecil Dan Kapitalisasi Besar)," *Jurnal Ilmu Manajemen*, vol. 5, 2017.

[11] D. Mesak, "Financial Ratio Analysis in Predicting Financial Conditions Distress in Indonesia Stock Exchange," *Russ J Agric Socioecon Sci*, vol. 86, no. 2, pp. 155–165, 2019, doi: 10.18551/rjoas.2019-02.18.

[12] N. D. Adytia and Nursito, "PENGARUH CURRENT RATIO, DEBT TO EQUITY RATIO, DAN RETURN ON EQUITY TERHADAP FINANCIAL DISTRESS," *Journal of Economic, Business and Accounting*, vol. 4, no. 2, pp. 1–10, 2021.

[13] R. A. F. Syaizamari, "Peranan Rasio Keuangan Terhadap Kondisi Financial Distress Perusahaan Manufaktur Di Bursa Efek Indonesia (Bei)," *J Chem Inf Model*, vol. 110, no. 9, pp. 1689–1699, 2017.

[14] M. A. Muis, "Analisis Pengaruh Return on Assets, Net Profit Margin Return on Equity, Debt To Equity Ratio, Dan Debt To Asset Ratio Untuk Memprediksi Financial Distress Pada Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia Periode 2014-2017," *JMB : Jurnal Manajemen dan Bisnis*, vol. 9, no. 1, p. 51, 2020, doi: 10.31000/jmb.v9i1.2304.

[15] S. Sarina, A. Lubis, and L. Linda, “Pengaruh Ukuran Perusahaan, Debt To Equity Ratio, Return On Equity Dan Current Ratio Untuk Mengidentifikasi Financial Distress Pada Perusahaan Properti Yang Terdaftar Di Bursa Efek Indonesia Periode 2014-2017.,” *Owner (Riset dan Jurnal Akuntansi)*, vol. 4, no. 2, p. 527, 2020, doi: 10.33395/owner.v4i2.243.

[16] V. D. T. Simorangkir, A. Hidayat, R. Parameswari, and D. Yana, “Pengaruh Return On Asset (ROA), Return On Equity (ROE), Current Ratio (CR), Debt To Equity Ratio (DER), Dan Total Asset Turnover (TATO) Terhadap Kondisi Financial Distress,” *GOODWILL: Jurnal Penelitian Akuntansi*, vol. 3, no. 2, pp. 380–391, 2021.