

Analysis of Financial Ratio to Predict Financial Distress Conditions (Empirical Study on Manufacturing Companies listed on the Indonesia Stock Exchange for 2014-2017)

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ABSTRACT: This study aims to analyze financial ratios can predict the condition of financial distress of manufacturing companies listed on the Stock Exchange in 2014-2017. Financial ratios are measured by liquidity ratios, profitability ratios and solvency ratios. While financial distress is measured by Altman Z-Score. The population in this study is the financial statements of basic and chemical industry sub-sector manufacturing companies in 2014-2017. The sampling technique is purposive sampling. The type of data used is secondary data. And 26 data were obtained from the company. Based on the test results it can be concluded that the liquidity ratio and solvency ratio have a very strong negative relationship to financial distress. While the profitability ratio has a very strong positive relationship with financial distress.

Keywords: Liquidity ratio, profitability ratio, solvency ratio, and financial distress

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I. INTRODUCTION

One of the main objectives of financial analysis is to reduce the level of risk, which creditors are exposed to as a result of bankruptcy and debt default (Tamari, 1966). One system is often used to examine the financial position of a company as reflected in its financial statements ratio analysis - a comparison of various data in the balance sheet and profit and loss statements. The liquidity ratio is measured by the current ratio, for example, showing the capacity of the company to fulfill these obligations; profitability ratios measured by return on assets indicate the part of the owner in a business asset; Solvability ratio is measured by the debt equity to ratio showing the amount of funds provided by creditors with the owner of the company.

The recent phenomenon in Indonesia is the delisting of several companies in 2017. Delisting occurs when shares listed on the Exchange experience a decrease in criteria so that they do not meet the recording requirements, so the shares can be issued from the listing at the Exchange. The following is a list of Issuers / Public Companies / Tbk Companies or shares with delisting 2017 (issued) from the Indonesia Stock Exchange (IDX):

Table 1 2017 Delisting Shares

No	Code	Company name	Recording Date (IPO)	Deletion Date (Delisting)	Information
1	CPGT	Citra Maharlika Nusantara Corpora Tbk (d.h Cipaganti Citra Graha Tbk)	09-07-2013	19-10-2017	Transportation Sub Sector
2	INVS	Inovisi Infracom Tbk	03-07-2009	23-10-2017	Telecommunications Sub Sector
3	BRAU	Berau Coal Energy Tbk	19-08-2010	16-11-2017	Coal Mining Sub Sector

From table 1 describes companies that are delisted due to inability to pay obligations, due to poor financial conditions that experience liquidity and solvency problems. Among these companies are BRAU. BRAU was established in 2005 under the name of PT Risco, a company engaged in the business of trading, mining, plantations, and others. In 2006, the company focused on the coal mining business operated by a subsidiary of PT Berau Coal. In 2010, the company went public by offering 10% of the shares to the public.

Table 2 BRAU Financial Ratios

Financial Ratio			
Description	2014	2013	2012
Gross Profit Margin	20.20%	22.90%	32%
Net Loss Margin	-6.20%	-12.00%	-12.30%
Current Ratio	00.07	01.01	01.02
(Loss)/Profit Return on Assets	-4.80%	-8.80%	-8.90%
(Loss)/Profit Return on Equity	202%	-398%	-88%
Liabilitas to Total Assets	1	1	00.09
Liabilitas to Total Equity	-43	44	9
Net Working Capital	-422	50	185

In April 2015, the condition of the company was very bad by recording losses 3 times in a row from 2012 to 2014. Gross margin which was quite high in the coal business could not make the company record profits, even had to record a net loss in the range of 10%. ROE and ROA, the company recorded a negative position. The debt ratio that is too large is the main cause of the company's destruction, even at the end of 2014 BRAU was forced to record minus equity. In July 2015 BRAU failed to pay the US \$ 450 million debt due at that time. (Detik News, Monday October 23 2017).

The initial symptoms of bankruptcy are marked by financial difficulties (financial distress) experienced by the company, if financial conditions are not handled properly then bankruptcy can occur in the company. For the management of the company predictions of financial difficulties are things that need to be done every period because given the importance of knowing the financial condition of the company. The earlier the financial distress condition is known, the better the opportunity for the company to overcome its financial condition. So that management can immediately make improvements so that the company does not experience bankruptcy.

One that influences financial distress is financial ratios, which can be seen in the financial statements issued by the company. In general, research on bankruptcy, failure, and financial distress uses financial performance indicators as predictions in predicting future company conditions. This indicator is obtained from the analysis of financial ratios contained in financial statement information issued by the company.

The method that can be done to analyze financial statements is ratio analysis. Ratio analysis is a method of analysis using comparative calculations of quantitative data shown in the balance sheet and profit and loss. Basically the calculation of financial ratios is to assess the company's financial performance in the past, present, and the possibility in the future. There are several financial ratio variables that can detect a company's financial distress, namely liquidity ratios, profitability ratios and solvency ratios.

The liquidity ratio is the ability of companies to fulfill short-term obligations (Martin Schruk 2013: 28-29).

The profitability ratio is used to analyze the company's profitability in total and the profits generated for shareholders (Sandeep Goel, 2014: 25). The profitability ratio is the result of a number of policies and decisions. The ratio examined so far provides useful clues about the effectiveness of the company's operations, but profitability ratios continue to show the combined effects of liquidity, asset management, and debt on operating results (Eugene F. Brigham and Michael C. Ehrhardt, 2008: 134).

Solvability ratios, also called leverage ratios, measure a company's ability to maintain operations without limits by comparing the level of debt with equity, assets and income. The solvency ratio shows the company's ability to make payments and pay off its long-term obligations to creditors, bondholders, and banks. A better solvency ratio shows companies that are more feasible and financially sound in the long run (Shaun, 2013: 65).

The indicator used to measure the level of corporate leverage in the study is total debt divided by total capital (debt to equity ratio). A company that has high financial leverage means having a lot of debt to outsiders. This means that the company has a high financial risk due to financial distress.

II. LITERATURE REVIEW

Signal Theory

The grand theory of this research is signal theory. Signaling theory is a theory that reveals that the company gives a signal to users of financial statements. Signal theory explains the reasons for companies presenting information for capital markets (Wolk et al., 2000). Signal theory underlies this research, signal theory used to explain that financial statements are used to give positive signals and negative signals to the wearer.

Financial Ratio

According to Clive Marsh (2012: 35) Ratio analysis is a way to get a better understanding of financial performance. The ratio allows a comparison between one company and another company. this ratio allows us to track efficiency and profitability. The ratio can be used to uncover trends in profitability, efficiency, gearing, liquidity and return on investment.

Liquidity Ratio

According to Pameela Peterson Drake (2016: 2) the liquidity ratio reflects the company's ability to fulfill its short-term obligations using assets that are most easily converted into cash. Assets that can be disbursed in a short time are referred to as liquid assets, which are listed in the financial statements as current assets. In this study using the current ratio. Current ratio or current ratio is a ratio to measure a company's ability to pay short-term liabilities or debts that are immediately due when billed as a whole. In other words, how much current assets are available to cover short-term liabilities that are immediately due.

Profitability ratio

According to Eugene F. Brigham and Michael C. Ehrhardt (2008: 134) profitability ratios are the result of a number of policies and decisions. the ratio examined so far provides useful clues about the effectiveness of the company's operations, but profitability ratios continue to show the combined effects of liquidity, asset management, and debt on operating results. In this study using the independent variable ROA. According to Koewn (2008: 88) an indicator that can be used as a measurement of company profitability is ROA (Return On Asset) which is a return on assets used to generate a company's net income.

Solvability ratio

According to Martin Schmuk (2013: 28-29) solvency ratio is its ability to pay long-term debt and long-term fixed costs. In this study using the independent variable DER. Debt to equity ratio is the ratio used to assess debt with equity.

This ratio is measured by comparing all debt, including current debt with all equity. This ratio is useful to find out the amount of funds provided by the borrower (creditor) with the owner of the company. In other words, this ratio serves to know every rupiah of its own capital which is used as collateral for debt.

Financial Distress

According to Bilgam (2012: 2-3) financial failure is a condition of the company

which is the difficulty of funds both in terms of funds in terms of cash or in terms of working capital. Some asset liability management plays a major role in the arrangement to prevent financial failure. Financial failure can also be interpreted as an insolvency that distinguishes between the basis of cash flows and the stock base.

According to Plat and Plat (2006) financial distress as a stage of decline in financial conditions that occur before the occurrence of bankruptcy or liquidation. Financial distress starts from the inability to fulfill its obligations, especially short-term obligations including liquidity obligations, and also includes liabilities in the category of solvency or leverage.

In this study financial distress was measured by Altman Z-Score. With diskriman zone If $Z > 2.99$ then the company is declared as a healthy company; If $1.81 < Z < 2.99$, the company is declared as a company prone to financial distress; If $Z < 1.81$, the company is declared as an unhealthy company and has the potential to experience high financial distress risk.

III. RESEARCH METHODS

The research population is the basic and chemical industry companies listed on the Indonesia stock exchange for the period 2014-2017. The sampling technique uses saturated samples. Then obtained a sample of 26 companies.

The data used in this study are secondary data taken from financial statements and independent auditors' reports of companies included in the group of companies listed on the Indonesian stock exchange obtained from the website <http://www.idx.co.id>, Indonesian Capital Market Directory (ICMD) for 2014-2017 and SahamOk.com. The statistical method used to test the hypothesis in this study is logistic regression analysis using SPSS 24 software. The data analysis method used in this study is logistic regression analysis and prediction time 1 year.

IV. RESULTS AND DISCUSSION

Logistic regression analysis

1. Overall Model Fit

This test is conducted to find out whether the model is fit with the data or not, both before and after the dependent variable is entered into the model. This test is done by comparing the values between the initial and final 2-log likelihood, namely in Table 3. Iteration History in SPSS output.

Table 3 Fit Model Test Results (-2 Initial Log Likelihood)

Iteration History ^{a,b,c}			
Iteration		-2 Log Likelihood	Coefficients
			Constant
Step 0	1	42,579	-1,744
	2	37,510	-2,413
	3	37,149	-2,653
	4	37,145	-2,681
	5	37,145	-2,681

Table 3 is the Iteration History 0 which is -2 initial Log Likelihood which is equal to 37,145. The values listed in the table are used to be compared with the Iteration History 1 value which is -2 final Log Likelihood. The presence of a reduction between the initial 2-Log Likelihood and -2 final Log Likelihood indicates that the model is hypothesized to be fit with the data.

Table 4 Fit Model Test Results (-2 Final Log Likelihood)

Iteration History ^{a,b,c,d}						
Iteration	-2 Log Likelihood	Coefficients				
		Constant	rasio_likuiditas	rasio_profitabilitas	rasio_solvabilitas	
Step 1	1	41,953	-1,611	-,064	,183	,000
	2	35,651	-2,016	-,209	,700	,000
	3	32,601	-1,560	-,684	2,574	-,001
	4	27,567	,368	-2,261	7,468	-,001
	5	23,534	2,758	-4,574	10,993	-,004
	6	19,476	5,604	-7,307	12,645	-,112
	7	18,395	7,229	-9,024	12,857	-,202
	8	18,314	8,047	-9,939	12,591	-,214
	9	18,313	8,203	-10,112	12,518	-,214
	10	18,313	8,206	-10,116	12,517	-,214
	11	18,313	8,206	-10,116	12,517	-,214

In Table 4 shows that the final Log Likelihood value of -2 is 18,313. then the Like2 Log value -2 has decreased at the end of 37,145to 18,313, which indicates that the model optimized is fit with the data.

Table 5 Omnibus Test of Model Coefficients

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	18,833	3	,000
	Block	18,833	3	,000
	Model	18,833	3	,000

Omnibus test results obtained chi-square value 18,833 with a sig value of 0,000 <0,05. This means that simultaneously (together) the independent variables, namely liquidity ratios (X1), profitability ratios (X2) and solvency ratios (X3) affect financial distress conditions.

2. Goodness of Fit Test

Assessing the feasibility of a logistic regression model using the Goodness of Fit Test as measured by the Chi-Square value in the Hosmer and Lemeshow test sections. Significant probability obtained was then compared with a significant level > α (0.05). The hypothesis used to assess the feasibility of the regression model is:

H₀: There is no difference in model with data

H₁: There are different models with data

Table 6 Feasibility Test Results of the Regression Model

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	,975	8	,998

The results of statistical tests show Chi-Square 0,975 with a significance value of 0.998 > 0.05, then H_0 is accepted. This means that there is a difference between the model and the data. Thus the model is able to predict the value of observation or it can be said that the model is acceptable because it matches the observation data.

3. Coefficient of Determination

The coefficient of determination is used to find out how much the probability of independent variables is able to explain the variability of the dependent variable. The determination coefficient in logistic regression can be seen in the value of Nagelkerle R square. Nagelkerle R square can be interpreted like the value of R square in multiple regression (Ghozali, 2013). This value is obtained by dividing the value of Cox & Snell R Square with its maximum value.

Table 7 Determination Coefficient Test Results

Model Summary			
Step	-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
1	18,313 ^a	,215	,566

a. Estimation terminated at iteration number 11 because parameter estimates changed by less than ,001.

Table 7 shows the Nagelkerle R Square value of 0.357 which means that dependent variability can be explained by the independent variable of 35.7%, the remaining 64.3% is explained by variables outside the research model.

4. Testing of Regression Coefficients

Testing the hypothesis in this study to examine the effect of independent variables namely liquidity ratios, profitability ratios and solvency ratios from the previous year on financial distress conditions. This test is done by using the regression test results which are addressed in the variables in the equation in the column of significance that are compared with the level of volatility. If the significance level is <0.05, then H_0 is accepted.

Table 8 Hypothesis Test Results

Variables in the Equation						
Step	Variable	B	S.E.	Wald	df	Sig.
1 ^a	rasio_likuiditas	-10,116	5,449	3,447	1	,063
	rasio_profitabilitas	12,517	14,823	,713	1	,398
	rasio_solvabilitas	-,214	,180	1,417	1	,234
	Constant	8,206	5,148	2,541	1	,111

a. Variable(s) entered on step 1: rasio_likuiditas, rasio_profitabilitas, rasio_solvabilitas.

From Table 8 shows the results of logistic regression tests at the level of significance α (0.05). From testing the logistic regression equation above, the regression equation is obtained as follows:

$$Y = 8,206 + (-10,116X_1) + 12,517 X_2 + (-0,214 X_3)(1)$$

From the regression equation above, it can be analyzed as follows:

1. The constant value of 8,206 shows that without the influence of independent variables (liquidity ratio, profitability ratio and solvency ratio) then the chances of companies experiencing financial distress conditions will decrease by 8,206%.
2. The coefficient of liquidity ratio (X_1) is -10,116 means that every decrease in liquidity is 1%, then the chances of a company experiencing financial distress will increase by 10,116% and strong negative relations are very strong.

3. The coefficient of profitability ratio (X2) of 12,517 means that every increase in profitability by 1% then the opportunity for a company to experience financial distress will increase by 12,517% and strong relationship is very strong positive.
4. The variable coefficient of solvency ratio (X3) is -0,214 means that every decrease in solvency is 1%, then the opportunity for a company to experience financial distress will increase by 0,214% and strong negative relations are very strong.

Liquidity and Financial Distress Ratio

Based on the results of the logistic regression test conducted in this study, it can be said that the variable liquidity ratio has a very strong negative relationship with financial distress.

Companies that have low liquidity will have greater influence on financial distress conditions and can be caused by companies having small current assets used to pay off the company's short-term debts before maturity. Current debt is large enough so that the company's current assets are insufficient to pay off company debts and the company cannot guarantee that it will pay off the company's current debt at maturity.

Ahmad Khaliq's research, et al (2014) shows that liquidity ratios, namely the current ratio, have a significant effect on financial distress. In line with the research of Soo Wah Low et al (2001), Muhammad Arif Hidayat & Wahyu Meiranto (2014), Nih Luh Made Ayu Widhiari & Ni K. Leli Aryani M (2015), Muhammad Arif Hidayat & Wahyu showed that the liquidity ratio is the current ratio significant to financial distress.

Profitability and Financial Distress Ratio

Based on the results of the logistic regression test conducted in this study, it can be said that the profitability ratio variable has a positive relationship with financial distress.

This is because companies do not use assets effectively and efficiently in generating net income. With the use of effective and efficient assets, it will reduce the costs incurred by the company, so that the company will obtain savings in funds and have sufficient funds to run the business. If the company has sufficient funds, then the possibility of the company experiencing financial distress will be small.

The results of this study are in line with the research conducted by Ahmad Khaliq et al (2014), Luciana and Kristadji (2003), Fitri Marfungatun (2016), Alfinda R, M. Saifi & Ari Dermawan (2018), Wahyu & Doddy (2009), and Almilia (2006) which shows that profitability ratios are not significant for financial distress conditions.

Solvability and Financial Distress Ratio

Based on the results of logistic regression testing that has been done on this study, it can be said that the variable solvency ratio has a negative relationship with financial distress.

These results indicate that the company that has high solvency means that the company will influence the creditor because the interest rate will be high so that the company's debt is greater and the possibility of the company will experience financial distress. This is because if the company's liabilities are high compared to assets owned by the company it will have a negative impact on the company so that the possibility of bankruptcy will be even greater.

Ahmad Khaliq et al (2014) research shows that leverage ratios, namely debt to equity ratio, have a significant effect on financial distress. then the study of Elijah Adeyinka Adedeji (2014), Mohammed Samesh Gameel & Khairy El-Geziry, Alfinda R, M. Saifi & Ari Dermawan (2018), Orina Andre (2009) showed that solvency ratios were significant in predicting financial distress

V. CONCLUSION

Based on the results of data analysis and discussion of financial ratios can predict financial distress conditions with independent variables, liquidity ratios, profitability ratios and solvency ratios (empirical studies of manufacturing companies listed on the Indonesia Stock Exchange 2014-2017) then conclusions can be taken as follows:

1. The liquidity ratio is able to predict financial distress in this case illustrated from the coefficient value of -10,116 and has a very strong negative relationship with financial distress.
2. Profitability ratio can be used as a basis for predicting financial distress. This is illustrated from the coefficient of 12,517 and has a very strong positive relationship with financial distress.
3. Solvability ratios are able to predict financial distress in this case the coefficient value is described as -0,214 and has a very strong negative relationship with financial distress.

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