

# The Effect of Financial Ratios on the Possibility of Financial Distress in Selected Manufacturing Companies Which Listed in Indonesia Stock Exchange

Rudolf Lumbantobing\*

Faculty of Economics & Business  
 Krida Wacana Christian University  
 Jakarta, Indonesia

\*rudolf.tobing@ukrida.ac.id

**Abstract**—This study purposed to confirm the influence of financial ratios toward the possibility of financial distress in the listed manufacturing companies in the Indonesia Stock Exchange. Using a selected sample consist of 30 emitens with 90 units of analysis, the relationship between financial ratios and financial distress during the period of 2015-2017 was tested. The results revealed that the ratios of activity are not significantly affect the possibility of financial distress. Liquidity ratios significant negatively affect the possibility of financial distress. Furthermore, debt ratios and earnings ratios significant positively affect the possibility of financial distress. The research recommends that liquidity ratios and debt ratios are the best ratios that can be used to predict financial distress. The study also recommends that the earnings ratios associated with liquidity ratios be provided in financial statements in order for users to make informed decisions in case of financial distress conditions.

**Keywords:** *debt ratio, liquidity, earning, activity, possibility of financial distress*

## I. INTRODUCTION

The situation where companies' operating cash flows are not sufficient to satisfy current obligation will have an impact on financial distress [1]. Companies can use financial ratios to compare the company's financial performance from one period to another. By comparing the company's financial ratios from year to year, it can be depicted whether there was an increase or decrease in the company's financial condition and performance over the time as shown by Campbell et al. [2]. Bruner [3] interpreted that financial ratios provide a useful way to identify and compare relationships across financial statement line items in understanding how ratios provide additional meaningful information. Trend in the relationships captured by financial ratios are particularly helpful in modeling a financial forecast. The comparison of ratios across time or with similar firms provides diagnostic tools for assessing the health of business-operating performance. Furthermore, Bruner [3] expressed that by understanding of the current condition of the business can be used to anticipate prospective performance.

Financial ratios are widely used to predict the likelihood of financial distress. In this study, leverage and liquidity ratios serve as an assessment of the total debt borrowed by the company, whether the company has inability to pay one's debts at maturity. Profitability ratio is used to find out how much profit obtained by the company, and the ratio of activity purposes to determine the efficiency of resources that have been used by the company [4]. Even though there are many controversies over the results of research around the relationship of financial ratios with financial distress, but the topic still possible conducted to obtain clarity about the financial ratios that can affect the possibility of company's financial distress, as stated in this study which explores the influence of financial ratios to the prediction of likelihood financial distress in manufacturing companies listed in the Indonesia Stock Exchange during 2015-2017.

## A. Research Question

The proposed problem statement as a research question in this study is "Do financial ratios influence the possibility of financial distress of the listed industrial companies of manufacturing sector in the Indonesia Stock Exchange?"

## II. THEORETICAL FRAMEWORK AND DEVELOPMENT HYPOTHESES

Wruck [1] and Ross et al. [4] expressed that financial distress is a situation where a firm's operating cash flows are not sufficient to satisfy current obligations and the firm is forced to take corrective actions. Furthermore, Gitman and Zutter [5] stated that financial ratios analysis can be used to predict the possibility of financial distress from the financial performance of the company by analyzing several ratios, such as leverage, liquidity, profitability and activity ratios (see also Hapsari [6]). This prediction is very important to know whether the company has a shape financial performance or experiencing the possibility of financial distress [2], so the company can immediately take the right decision before going bankruptcy as urged by Weiss [7] and Gilson [8]. Based on theoretical

concepts and literatures which described in previous researches can be constructed building on the model of empirical research studies are as below:

**A. Influence of Debt Ratio to Financial Distress Possibility**

Debt ratio is useful for measuring the extent to which a company's liability is used to finance the purchase or investment of a company's assets. The lower of the ratio means that the company's performance is getting better and the company can avoid the risk of financial distress [9]. Debt ratio significantly positive affected the company's financial distress, as reported in previous studies of Hidayat and Meiranto [10], Mas'ud and Srengga [11] and Pindado et al. [12]. The higher the debt ratio then the possibility of a company experiencing financial distress higher. The higher debt ratio means the interest expenses will be greater which means less profit and may increase potentially financial distress possibility [12,13]. Therefore, it can be formulated the hypothesis as follows:

H1: Debt ratio has positive effect on the possibility of financial distress.

**B. Influence of Liquidity Ratio to Financial Distress Possibility**

Gitman and Zutter stated that the liquidity ratio also known as the working capital ratio is used to measure how liquid a company [5]. The previous study reported by Tan [14] that liquidity ratio significant negatively affects the possibility of financial distress. The greater of the liquidity ratio indicates that the better the financial performance of the company, so the risk of financial distress is lower. Therefore the hypothesis that can be formulated is as follows:

H2: Liquidity ratio has negative effect on the possibility of financial distress.

**C. Influence of Earning Ratio to Financial Distress Possibility**

Earning ratio measures the ability of companies to generate profits by using owned resources. The lower of the profitability indicates the higher likelihood of financial distress. So that the ratio of earning (profitability) significant negatively affects the financial distress, as reported in previous researches by Lumbantobing [15], Tan [14], Restianti and Agustina [9]. Therefore the hypothesis that can be formulated is as follows:

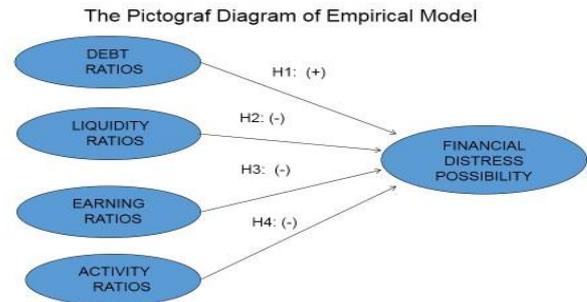
H3: Earning ratio has negative effect on the possibility of financial distress.

**D. Influence of Activity Ratio to Financial Distress Possibility**

Gitman stated that activity ratio is used to measure the ability of companies in using their existing assets effectively to generate sales [5]. Many previous studies reported that the ratio of total asset turnover significantly effects on financial distress, as shown by the findings Hidayat and Meiranto [10]. Therefore the hypothesis that can be formulated is as follows:

H4: Activity ratio has negative effect on the possibility of financial distress.

Based on theoretical concepts and literature review on the financial distress in the above, it can be constructed building on the model of empirical research studies are as in figure 1.



Source: The hypothetical model which was developed in this study

Fig. 1. The constructed empirical research model.

**III. METHODS**

Data source was derived from annual reports and audited financial statements of 30 the listed manufacturing companies in IDX which obtained from the Indonesian Capital Market Directory in 2015 – 2017.

**A. Variables and Measures**

1) *Independent variables*: Debt ratio expresses how much the company's assets are financed by debt. This variable was proxied by debt to asset ratio (DAR). Liquidity ratio expresses a ratio that indicates a company's ability to meet its obligations or pay its short-term debt. This variable was proxied by current asset ratio (CR) which is the ratio of total current assets to total current liabilities. Earning ratio describes ability to generate profit from its normal business activities. The ratio measured the ratio of earning after tax to total assets (ROA). Activity ratio measures the effectiveness and efficiency of companies in utilizing existing resources. The ratio was proxied by ratio of sales to total assets (TATO).

2) *Dependent variable*: The possibility of financial distress expressed as a situation where a firm's operating cash flows are not sufficient to satisfy current obligations. The measurement of the financial distress variable used the dummy variable of the current ratio by looking at whether the current asset is less than its current liabilities. Dummy variables will be marked 1 for companies were experiencing financial distress and marked 0 in companies that did not experience financial distress. Measurement of possible financial distress using natural logarithms  $\ln(p/1-p)$ , which p expressed the probability of financial distress. Then the result of the calculation is transformed using logit or normit distribution. In this study there are four probabilities of experiencing financial distress based on the last 3 years on manufacturing companies. In column Y marks 0 is given for companies not experiencing financial distress for 3 years,

mark 1 for companies experiencing possible financial distress on 1 year period, mark 2 for companies experiencing financial distress possibilities over a period of 2 years, mark 3 for Companies experiencing the possibility of financial distress in 3 years in a row. The value Co is a constant used to calculate logistic regression. Then the result of the calculation is used as data which is transformed using table I. Finally, the data will be transformed using natural logarithm based on result p ( $z < z_0$ ), after getting result from calculation.

TABLE I. TRANSFORMED DATA

| Y | Co          | Transform | P(z < z <sub>0</sub> ) | P/(1-P) | Ln       |
|---|-------------|-----------|------------------------|---------|----------|
| 0 | Co + 0      | -0,67     | 0,2514                 | 0,3358  | (1,0912) |
| 1 | Co + 1      | 0,33      | 0,6293                 | 1,6976  | 0,9997   |
| 2 | Co + 2      | 1,33      | 0,90824                | 9,8978  | 2,0019   |
| 3 | Co + 3      | 2,33      | 0,9901                 | 100     | 3,0095   |
|   | 4co + 6 = 0 |           |                        |         |          |
|   | Co = -2/3   |           |                        |         |          |

**B. Data Analysis Technique**

Completion of the equation model in this study using logistical regression analysis. Equation is expressed as:

$$\ln(p/1-p) = \beta_0 + \beta_1DAR + \beta_2CR + \beta_3ROA + \beta_4TATO + \xi \quad (1)$$

**IV. RESULTS AND DISCUSSION**

Tables II and III show the regression model is fit to predict the possibility of financial distress based on the financial ratio variables of the sample of this study. The proportion of variations in possibility financial distress can be explained by the regression model by 38.60%.

TABLE II. ANALYSIS OF VARIANCE

| Model      | Sum of Squares | Df | Mean Square | F      | Sig.  |
|------------|----------------|----|-------------|--------|-------|
| Regression | 130.145        | 4  | 32.536      | 13.356 | 0.000 |
| Residual   | 207.067        | 85 | 2.436       |        |       |
| Total      | 337.212        | 89 |             |        |       |

TABLE III. MODEL SUMMARY AND COEFFICIENT OF DETERMINATION (R<sup>2</sup>)

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1     | 0.621 | 0.386    | 0.361             | 1.6297                     |

Table IV depicts the estimation equation obtained by logistic regression model is expressed as:

$$\ln (P/1-P) = 1.968 + 0.562DAR - 1.839CR + 2.675ROA + 0.189TATO.$$

TABLE IV. REGRESSION MODEL COEFFICIENTS

| Model      | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig.  |
|------------|-----------------------------|------------|---------------------------|--------|-------|
|            | B                           | Std. Error | Beta                      |        |       |
| (Constant) | 1.968                       | 0.367      |                           | 5.362  | 0.000 |
| DAR        | 0.562                       | 0.241      | 0.234                     | 2.342  | 0.038 |
| CR         | -1.839                      | 0.321      | -0.543                    | -5.729 | 0.000 |
| ROA        | 2.675                       | 1.354      | 0.196                     | 1.976  | 0.049 |
| TATO       | 0.189                       | 0.142      | 0.079                     | 1.331  | 0.181 |

Source: The processed data in this study, 2019

The influence of each variable of financial ratios to the variable of possible financial distress can be explained as follows:

**A. Debt Ratio**

The debt ratio (DAR) significant positively effect on financial distress in the manufacturing companies of this research sample. Thus the hypothesis 1 is accepted. The results of this test indicate the possibility of debt ratio of manufacturing companies in this study sample is in favorable condition with default risk that is well calculated, so it affects the possibility of financial distress. The results confirm the findings of Mas'ud and Srengga [11], and the findings of Hidayat and Meiranto [10].

**B. Liquidity Ratio**

The current asset ratio (CR) has significant negative effect on the financial distress in the manufacturing companies of this research sample. Results support for hypothesis 2. This shows evidence when the larger current assets owned company is more expected to reduce the possibility of financial distress of the company. High liquidity ratio shows the company's ability to pay off its due date short-term liabilities. This result confirms the findings of previous studies was reported by Tan [14] which showed that liquidity ratio significant negatively affects the possibility of financial distress.

**C. Earning Ratio**

The ratio of return on assets (ROA) significantly positive affect the financial distress in the manufacturing companies of this research sample. Thus the hypothesis 3 is inconclusive (acceptable but with opposite direction coefficient). The result indicates that ROA significant positively effect on the possibility of financial distress. The proxy ROA is inversely proportional to liquidity (CR). High liquidity indicates a lot of unbalanced cash in an effort to generate profits, so that the profit earned becomes low. This result supports the findings of previous research done by Mas'ud and Srengga [11], and Supriyanto and Darmawan [16], but does not confirm the findings of Tan [14], Restianti and Agustina [9], and Lumbantobing [15] Lumbantobing [17] which revealed that profitability ratio significant negatively effects on the condition of financial distress.

**D. Activity Ratio**

Asset turnover ratio (TATO) does not have significant negative effect on the companies' financial distress of the sample with the opposite direction coefficient, so the hypothesis 4 of this study is rejected. Although not significant,

the positive regression coefficient of TATO reveals that a high sales turnover with bad credit management can decrease liquidity, thus potentially increasing the likelihood of company's financial distress. The result of this study provides supporting to the previous research reported by Restianti and Agustina [9], but does not confirm to the findings of Hidayat and Meiranto [10].

## V. CONCLUSION

The results of this study showed evidences that variables debt ratios, liquidity ratios and earning ratios significantly affect the possibility of financial distress, while activity ratios do not significantly affect the possibility of financial distress. Liquidity ratios significant negatively affect the possibility of financial distress. Debt ratios and earning ratios significantly positive effect on the possibility of financial distress. So, the findings concluded that debt ratios, liquidity ratios and earning ratios can be used to predict the possibility of financial distress in the manufacturing sector of Indonesia companies listed in the Indonesian Stock Exchange.

## VI. RECOMMENDATIONS

The results of this research demonstrated that the liquidity ratios highly significant affects the possibility of financial distress in the samples of this study. Therefore, the liquidity ratios are the best ratios that able to be used to predict financial distress. The study also recommends that the earning ratios which have closely linked to liquidity be provided in financial statements in order for users to make informed decisions in case of financial distress conditions. It will enable timely corrective actions that help reduce the incidence of company's financial distress or bankruptcy probability.

## REFERENCES

- [1] K.H. Wruck, "Financial Distress: Reorganization and Organization Efficiency," *Journal of Financial Economics*, vol. 27, 1990.
- [2] J.Y. Campbell, J.D. Hilscher, and J. Szilagyi, "Predicting Financial Distress and The Performance of Distressed Stocks," *Journal of Investment Management*, vol. 9, no. 2, 2011.
- [3] R.F. Bruner, K.M. Eades, and M.J. Schill, *Case Studies in Finance: Managing for Corporate Value Creation*, Sixth Ed. Singapore: McGraw-Hill Education, 2010.
- [4] S.A. Ross, R.W. Westerfield, J. Jaffe, and B.D. Jordan, *Modern Financial Management*, Eighth Ed. USA: McGraw-Hill Education (Asia), 2009.
- [5] L.J. Gitman and C.J. Zutter, *Principles of Managerial Finance*, 13th Ed. Boston: Pearson Prentice-Hall, 2015.
- [6] E.I. Hapsari, "Kekuatan Rasio Keuangan Dalam Memprediksi Kondisi Financial Distress Perusahaan Manufaktur di BEI," *Jurnal Dinamika Manajemen*, vol. 3, no. 2, 2012.
- [7] L.A. Weiss, "Bankruptcy Resolution: Direct Costs and Violation of Priority of Claims," *Journal of Financial Economics*, vol. 27, 1990.
- [8] S.C. Gilson, "Transactions Costs and Capital Structure Choice: Evidence from Financially Distressed Firms," *Journal of Finance*, vol. 52, pp.161-196, 1997.
- [9] T. Restianti and L. Agustina, "The Effect of Financial Ratios on Financial Distress Conditions in Sub Industrial Sector Company," *Accounting Analysis Journal*, vol. 7, vol. 1, pp. 25-33, 2018.
- [10] M.A. Hidayat and W. Meiranto, "Prediksi Financial Distress Perusahaan Manufaktur di Indonesia," *Diponegoro Journal of Accounting*, vol. 3, no. 3, pp.1-11, 2014.
- [11] I. Mas'ud and R.M. Srengga, "Analisis rasio keuangan untuk memprediksi financial distress perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia," *Jurnal Akuntansi Universitas Jember*, vol. 10, no. 2, 2012.
- [12] J. Pindado, L. Rodrigues, and C. de la Torre, "Estimating Financial Distress Likelihood," *Journal of Business Research*, vol. 61, 2008.
- [13] R. Lumbantobing, "The Influence of Capital Structure Determinant Variables Toward Corporate Debt Ratio Which Mediated by Agency Cost," *Proceedings of the 5th Annual International Conference on Management Research (AICMaR 2018)*, *Advances in Economics, Business and Management Research Atlantis Press*, vol. 74, 2019.
- [14] T.K. Tan, "Financial distress and firm performance: Evidence from the asian financial crisis," *Journal of Finance and Accountancy*, vol. 11, 2012.
- [15] R. Lumbantobing, "Studi Mengenai Perbedaan Struktur Modal Perusahaan Penanaman Modal Asing Dengan Perusahaan Penanaman Dalam Negeri Yang Go Public di Pasar Modal Indonesia (Perspektif Teori Dasar Struktur Modal, Teori Keagenan dan Teori Kontingensi Dalam Upaya Mengoptimalkan Struktur Modal Perusahaan)," *Program Pasca Sarjana Universitas Diponegoro*, 2008. Unpublished.
- [16] J. Supriyanto and A. Darmawan, "The Effect of Financial Ratio on Financial Distress in Predicting Bankruptcy," *Journal of Applied Managerial Accounting*, vol. 2, no. 1, 2018.
- [17] R. Lumbantobing, "Rasio Utang Memediasi Pengaruh Kemampulanaan dan Ukuran Aktiva Terhadap Kebijakan Dividen (Studi Empiris Pada Perusahaan Perkebunan Kelapa Sawit Yang Terdaftar di Bursa Efek Indonesia)," *DeReMa (Development Research of Management): Jurnal Manajemen* vol. 12, no. 1, pp. 139-157, 2017.