The Influence of Financial Ratios and Macroeconomic Indicators in Predicting Financial Distress (Empirical Study in the Consumer Goods Sector Companies)

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ABSTRACT

The purpose of this research is to analyze and find empirical evidence of the effect of financial ratios that are proxied by Current asset turnover, Asset turnover, Days sales in receivables, Cash flow to total debt, Total liabilities to total assets, and macroeconomic indicators that are proxied by inflation and BI interest rates on financial distress. This study uses an associative causal approach and the data used in the secondary data. The object used in this study is consumer goods sector companies listed on Indonesia Stock Exchange during the period 2014-2018. The sample of this study was 36 companies. The data analysis technique used is logistic regression. The research finding shows that current asset turnover, asset turnover, and cash flow to total debt have an impact on financial distress. While the day's sales in receivables, total liabilities to total assets, the sensitivity of inflation, and sensitivity of BI Rates have no influence on financial distress. Therefore, company management needs to prioritize policies and be able to use current assets, total assets, and total debt proportionately and control operational costs more efficiently in order to increase the company's revenue and net profit, and then the company is able to pay installments and interest costs from the debt.

Keywords: financial distress; financial ratios; macroeconomic indicators; sensitivity of inflation; sensitivity of BI rates; logistic regression.

1. Introduction

Companies that experience continuously in a decline on financial performance are feared to experience financial distress. Financial distress is a decline in the company's financial condition that occurred before bankruptcy, and reflects the problems with liquidity (Platt and Platt, 2002). Companies that experience in financial distress are if, at 2 years or more experiencing negative income and more than a year there has been no dividend payment.

Elloumi and Gueyie (2001) define financial distress as a company that has negative earnings per share. If not to be treated, it will cause a bigger problem, such as the company will become insoluble and eventually bankrupt. Therefore, Platt and Platt (2002) state the usefulness of prediction information on financial difficulties in a company is to accelerate management actions

and prevent problems before bankruptcy occurs. The ability to predict financial distress early is important for the company itself and investors (Alifiah, 2013). Financial distress can be recognized early if the financial statements and macroeconomic conditions are carefully analyzed.

This study will use EPS (earning per share) to determine the criteria for companies experiencing financial distress. According to Tandelilin (2001), earning per share information is the most frequently used by shareholders in assessing the company's prospects in the future. Negative value of EPS reflects the bad earnings and the lack of attractiveness of the company in the view of investors.

Table 1 shows that the consumer goods sub-sector of the manufacturing industry in Indonesia, there are 8 companies that experience negative earnings per share. It is feared that the poor financial performance will make the company is experiencing financial difficulties that lead to financial distress. Financial distress arises due to various situations, according to research conducted by Wern Ong et al. (2011), the company health can be seen from the company in utilizing its assets to generate profits, the company's ability to pay its obligations and how much assets are made from its liabilities.

Table 1. Earnings Per share of consumer goods sector companies at period 2014-2018

Issuer	Earnings Per Share				
	2014	2015	2016	2017	2018
ALTO	-4.6	-11.11	-12.09	-28.48	16.88
IIKP	-3.53	-4.8	-8.16	-0.39	-0.23
INAF	0.38	2.12	-5.6	-14.93	-11.32
LMPI	1.7	3.93	6.87	-30.88	-32.35
MBTO	2.73	-13.14	8.24	-23.08	-58.2
PSDN	-21.27	-32.66	-3.26	14.48	-11.01
MRAT	17.22	2.44	-12.97	-3.08	1.84
RMBA	-314.74	-226.32	-57.3	-13.19	-11.65

Besides from internal aspects, there are also external aspects, which are the influence of a country's economic conditions or global economic conditions that time to time can change and could affect the macroeconomic conditions of a company, such as inflation and BI rates (Oktarina, 2017). Financial distress prediction models nowadays have been widely developed in companies using financial ratios based on popularity and ability to predict (Waqas et al., 2018). The selection of financial ratio variables to predict financial distress will be chosen based on an experimental process carried out by previous research.

2. Literature Review

Signaling theory is useful for describing behavior when two parties (individuals or organizations) have access to different information (Connelly et al., 2010). According to Gumanti (2018), signaling theory is the process of a company delivering general information in which there is a specific information content that is then communicated to investors and stakeholders hoping the company gets positive feedback from that information.

In its implementation, the results of financial distress predictions in this study can also be used as a signal to external parties (investors, customers, government, etc.) about how the company is in the following year.

Definitions of financial distress vary across different countries owing to the different accounting treatments and rules. According to Platt and Platt (2002), financial distress is a decline in the company's financial condition that occurred before bankruptcy and reflects the problems with liquidity. Wruck (1990) in Tinoco (2013) defines financial distress as the situation where the cash flow of a firm is not enough to cover its current financial obligations such as debts to suppliers and employees, and principal or interest payments. This situation results in the firm's failure to meet its financial commitments in the long term.

When the company is heading to the financial distress, the chances of them to lead to bankruptcy are higher and this will bring bad reputation to the company. It is because, where the business is heading to financial distress, the potential of the shareholder to draw back their shares is higher, and also it might prevent potential shareholder from investing in the company (Khaliq et al., 2014).

The financial distress prediction has been attracting a great interest to researchers because of the importance of prediction towards potential and current investor, stock market regulators and also for the company itself (Alifiah, 2014) and the prediction is capable to provide a signal regarding the company's financial performance (Roslan, 2014).

Generally, the models for financial distress prediction are divided into two main categories, according to previous research (Fallahpour et al., 2017): Statistical approaches like analysis of the univariate and multivariate, logit, etc; and techniques for learning machines including the neural network, supporting vector machines, etc.

For this study, financial ratio analysis and sensitivity of macroeconomic indicators as the predictors of financial distress are chosen based on their popularity and significance in the previous study. Financial ratio analysis is the process of observing indexes related to accounting on financial statements such as balance sheets, income statements and cash flow statements with the aim of assessing the financial performance of a company.

Various studies have been conducted to examine the benefits that can be drawn from financial ratio analysis because financial ratio analysis plays an important role in provide an overview of information about the company's financial position and performance that can be used as a guide in making business decisions (Wern Ong, 2011).

Corporate sensitivity to macroeconomic variable measures the company resistance to the macroeconomic indicators. Macroeconomic conditions have a significant impact on the operations of a firm. Economic slowdown has an adverse impact on demand, which in turn affects the firm's ability to generate cash flows and meet payment obligations in time. Hence, recessionary conditions in the economy lead to financial distress and may even cause massive. These macroeconomic sensitivities are estimated using a linear regression of the monthly stock return of the individual firm on the monthly changes in each of the macroeconomic variable.

Literature examining the effectiveness of macroeconomic variables in predicting financial distress can be seen as early as the work of Agrawal and Maheshwari (2014), who developed the effect of macroeconomic factors at the firm level. The model was able to bridge a firm's sensitivity to macroeconomic conditions and its financial characteristics to explore financial distress.

Uncertainty of macroeconomic condition such as inflation and interest rate are examples of

systematic risks of macroeconomic condition that influences financial distress probability. Inflation sensitivity is sensitivity variable of companies to inflation. Boediono (1992:161) defines inflation as cost tendency to increase generally and continuously. Increasing cost in goods only, a few cannot be categorized as inflation, except if the increase widespread or it causes other product cost increase. Thus, inflation is change of cost rate generally and happens continuously. Interest sensitivity is sensitivity variable of companies over interest. Interest is policy-representing stance of monetary policy that Bank Indonesia decided and announced to public.

3. Research Methodology

This research method uses causal associative research methods (cause and effect) with a quantitative approach. The objects in this study are financial distress as the dependent variable and current asset turnover, asset turnover, day's sales in receivables, cash flow to total debt, total liabilities to total debts as a proxy of financial ratios then inflation sensitivity and interest rate sensitivity as proxy for macroeconomic indicators as independent variable. Meanwhile, the subjects in this study were consumer goods companies listed on the Indonesia Stock Exchange in the 2014-2018 period.

The type of data is secondary data which is data obtained indirectly from research subjects that have been collected and presented by other parties (Suliyanto, 2018:156). This study indirectly obtained the data from www.idx.co.id. The population of this research are consumer goods companies listed in Indonesia Stock Exchange (IDX). This study uses purposive sampling in determining the sample. Purposive sampling is a sampling technique by considering certain criteria (Suliyanto, 2018:226). The criteria used in determining the sample in this study are: a). Consumer goods companies listed on the Indonesia Stock Exchange during the 2014-2018 period, b). Companies fully published its annual report on the Indonesian stock exchange by 2014 to 2018, c). Companies that have complete data related to research variables.

Based on the category of the company's financial condition, a healthy company is coded as 0, and a company that experience financial distress is coded as 1. The company has negative earnings per share is said to experience financial distress (Elloumi and Gueyie (2001).

Data analysis technique used in this research covered two stages; logistic regression and sensitivity analysis. Before using direct test, researcher searched sensitivity of every company on macro indicators such as inflation and BI rates by using equation of multiple linier regression:

$$Y_{Stock\ return} = \beta_0 + \beta_1 X_{INF} + \beta_2 X_{BI} + \varepsilon \tag{1}$$

Where,

β_0 = Intercept
β_1, β_2 = Companies sensitivity on inflation and BI rates
X_{INF} = Monthly inflation
X_{BI} = Monthly BI rates
ε = error

This multiple regression analysis in each company was applied for every month. Regression results that were β_1 and β_2 would become new variables in logistic analysis and then identified with new name:

β_1 = S_Inflation, β_2 = S_BI (2)

Then, new variables were entered as companies' sensitivity proxy toward macroeconomic indicator in logistic regression.

Logistic regression model is used to build equations and to make predictions using those equations. The model is used because the dependent variable is dichotomous, the two-category scale of nominal data (Healthy and Unhealthy) (Wern Ong et al., 2011). The analysis models used is:

$$\text{Ln}\frac{p}{1\text{-}p} = \alpha + \beta_1\text{CAT} + \beta_2\text{ATO} + \beta_3\text{DSR} + \beta_4\text{CFD} + \beta_5\text{LTA} + \beta_6\text{SOI} + \beta_7\text{SBI} + \epsilon \qquad (3)$$

Where,

p = Probability of Financial Distress
α = Regression Constant
βi = Regression Coefficients
CAT = Current Asset Turnover
ATO = Asset Turnover
DSR = Days Sales in Receivables
CFD = Cash Flow to Total Debt
LTA = Total Liabilities to Total Assets
SOI = Sensitivity of Inflation
SBI = Sensitivity of BI Rates
ε = Error

4. Results

Based on the sample selection criteria, then obtained 36 companies that used as samples of the object research with an acquisition period of 5 years from 2014-2018. Therefore, the total sample in this study is 180 samples.

Predictions about the probability of consumer goods companies listed on the Indonesia Stock Exchange for the period 2014-2018 experiencing financial distress are based on a constant value (β_0) that is -0,294. The regression coefficient (βi) variable of the current assets turnover (CAT) namely -1,762, assets turnover (ATO) is -0,957, days sales in receivables (DSR) is 0,000, cash flow to total debt (CFD) is -4,869, total liabilities to total assets (TLA) is 0.061. Meanwhile sensitivity inflation (SOI) is 0,000. and BI rate (SBI) sensitivity is 0,000 which can be seen through the logistic regression equation as follows:

$$\text{Ln}\frac{p}{1\text{-}p} = \text{-0,294-1,762CAT-0,957ATO} + \text{0,000DSR-4,869CFD} + \text{0,061TLA} + \text{0,000SOI} + \text{0,000SBI}$$

From the logistic regression above it can be seen that the log odds of the probability of a company experiencing financial distress are negatively affected by current assets turnover (CAT), asset turnover (ATO) and cash flow to total debt (CFD). While, the probability of a company experiencing financial distress is positively influenced by days sales in receivables (DSR), total liabilities to total assets (TLA), sensitivity inflation (SOI) and BI sensitivity variable

(SBI). The interpretation of the causal relationship is the higher the current assets turnover (CAT), the higher the asset turnover (ATO) and the higher the cash flow to total debt (CFD), the lower the probability the consumer goods company experiences financial distress. Conversely, the higher the days sales in receivables (DSR), the higher the total liabilities to total assets (TLA), the higher the sensitivity of inflation (SOI) and the higher the sensitivity of BI rates (SBI), the higher the probability level of consumer goods companies experiencing financial distress.

Overall, the level of accuracy of the classification of the logistic regression model in this study was 90.6 percent (Table 2). This shows that the resulting logistic regression model is feasible to predict the causal relationship between independent variable.

Table 2. Classification results of logistics regression analysis

Observed		Company	Predicted	Percentage Correct
Company	0	148	144	59.4
	1	32	19	97.3
Overall Percentage		180	163	90.6

The statistical value of -2log likelihood becomes 95,369 or a decrease of 73,113. Because the difference value (73.113) is greater than the X_2 value of the table (14.07), it can be stated that the difference in decreasing -2 Log likelihood is proven significant. This shows that the addition of independent variables namely current assets turnover, asset turnover, day's sales in receivables, cash flow to total debt, total liabilities to total assets, sensitivity inflation and sensitivity of BI rates proved to be able to improve the model fit.

Based on testing the omnibus test of model coefficients, the chi-square goodness of fit value was 73,113 with a degree of freedom (df) = 7, then a significance value of 0,000 was less than α (0.05). Therefore, it can be stated that current assets turnover, asset turnover, days sales in receivables, cash flow to total debt, total liabilities to total assets, sensitivity inflation and sensitivity of BI rates simultaneously have a significant effect on the probability of a company experiencing financial distress.

The assessments of effect the independent variables on the dependent variable can look through the Nagelkerke's R square value that is a modification of the cox and Snell coefficients that are interpreted as well as R^2 in multiple squares.

The value of cox and Snell's R square is 0.334 and the Negelkerke R square coefficient is 0.549. It means that the ability of current assets turnover, asset turnover, days sales in receivables, cash flow to total debt, total liabilities to total assets, the sensitivity of inflation and the sensitivity of the BI rates in predicting the probability of a company experiencing financial distress of 54.90 percent. While the remaining 45.10 percent can be explained by variations in changes in other variables that are not included in the model.

Goodness of fit test is done to test the null hypothesis that empirical data is suitable or in accordance with the model (there is no difference between the model and data so that the model is said to be fit). It can be seen that the statistical value of Hosmer and Lameshow's goodness of fit test is seen from the chi square value of 4.862 with a significance value of 0.772 greater than α (0.05). Thus, it can be stated that the logistic regression model formed in this study proved to

be appropriate (fit) with the results of research or fulfill goodness of fit.

Hypothesis testing in logistic regression is carried out using the Wald test. The statistical value of the Wald test is the same as the t test, which serves to test whether the variable under study significantly influences the model. In making decisions, the Wald test is also the same as the t test, by looking at the significance value.

5. Discussion

The results of this study found evidence that current assets turnover has a negative and significant effect on financial distress. The causal relationship proves that the higher the ratio of current assets turnover, the lower level of probability of companies experiencing financial distress. This is because when the company is productive in generating sales or income, there will be cash flow that goes to the company, and this cash inflow will reduce the risk of the company experiencing financial distress. Empirically, the results of this study are consistent with the findings of previous studies conducted by Ugurlu et al. (2006) and a study conducted by Boentoro (2015) that current assets turnover has a negative and significant effect on financial distress.

The results of this study prove that asset turnover has a negative influence on financial distress. The findings of this study provide evidence that the higher the ratio of asset turnover, the lower level of probability of companies experiencing financial distress. Total asset turnover variable is a ratio that shows the effectiveness of a company in using its assets to generate sales. Companies that do not operate at an adequate volume of investment capacity accompanied by a large decline indicate that the assets used are inefficient so that this can cause delays or reduced refunds in cash that indicates a low turnover of total assets (Rasminiati et al., 2018). The results of this study are consistent with the findings of previous studies conducted by Jiming and Weiwei (2011), Wern Ong et al., (2011) and Alifiah et al., (2013) stated that asset turnover has a significant negative effect on financial distress.

The factor of insufficient capital or lack of capital and imbalance in the receipt of cash flow that originates from the sale and/or collection of accounts receivable by spending money to finance company operations are unable to attract funds to cover the shortfall. Then, the company will be in a non-liquid condition (Wulandari, 2017). However, the results of this study indicate that days sales in receivables has insignificant effect on financial distress, meaning that the higher the days sales in receivables are not always followed by a higher probability of companies experiencing financial distress due to sales at consumer goods companies listed in The Indonesia Stock Exchange for the period 2014-2018 continues to increase. This research is in line with research conducted by Boentoro (2015) and not research conducted by Ying Zhou (2007), Wern Ong et al., (2011) and Bhunia et al., (2011).

The results of this study provide evidence that cash flow to total debt has a negative effect on financial distress. The causal relationship shows that the higher the cash flow to total debt ratio, the lower level of probability that the company will experience financial distress. Companies that are unable to use the cash flow they have to pay the company's debt will experience financial distress. The results of this study are consistent with the findings of previous studies conducted by Wern Ong et al., (2011), Yap et al., (2012) and Fawzi et al., (2015) that cash flow to total debt has a significant negative effect on financial distress.

A high value of total liabilities to total assets also means that it has a high risk because the

company assets used cannot cover its total debt so that the company has more responsibility to pay off or cover its debts (Waqas et al., 2018). The high number of total liabilities to total assets variable indicates that the company is not in a good condition because the costs used for the company are increasing, causing potential financial distress (Wern Ong et al, 2011). However, a high total liability to total assets value does not always indicate that the company has a high cost and causing low profit, because the company can generate high profits so that the company can avoid potential financial distress (Marlin, 2017). This study shows the results that total liabilities to total assets have a positive but not significant effect on financial distress in consumer goods companies listed on the Indonesia Stock Exchange in the period 2014-2018. This research supports research conducted by Marlin (2017) and does not support research conducted by Wern Ong et al., (2011), Bauer et al., (2014) and Waqas et al., (2018).

The result indicates that sensitivity inflation has a positive but not significant effect on financial distress. This causal relationship indicates that the higher the sensitivity inflation is not always followed by the higher the probability of the company experiencing financial distress because the company can still control and anticipate the company's financial health because the inflation rate during the research year is controlled at a fairly stable level (Priyatnasari, 2019). According to Adeputra & Wijaya (2016) in Suriyani (2018), inflation only consistently affects price increases continuously and has no effect on stock returns, which is a measure of a company's resilience to financial distress in this study. This research supports research conducted by Priyatnasari (2019) and does not support research conducted by Tsai et al., (2009) and Agrawal et al., (2014).

The results of this study indicate that the sensitivity of BI rates has a positive but not significant effect on financial distress. An increase in interest rates will increase the cost of capital in the form of interest expenses that the company must bear and it will reduce profits. Second, when interest rates are high, production costs will increase and product prices will be more expensive so that consumers may delay their purchases and save their funds in the bank, so that it will decrease sales, decreased sales will also reduce profits, which will have an impact on the probability of the company's financial distress. However, the result of this study indicates that interest rate sensitivity has no effect on the possibility of financial distress because companies tend to use their own capital rather than from outside the company so that interest rates do not affect financial distress. In addition, because the average interest rate is below 9%, which is 6%, the interest rate has no effect on the company's financial condition (Moleong, 2018). This study supports research conducted by Kumalasari (2014) and Moleong (2018) and does not support research conducted by Tsai et al., (2009), Bonfim (2009), Figlewski et al., (2012) and Alifiah (2014).

6. Conclusion

Based on data analysis and discussion, financial ratios and macroeconomic indicators can be used as predictors of financial distress. Partially, the effects of each variable as predictors are as follows:

- Current assets turnover has a significant negative effect on financial distress.
- Asset turnover has a significant negative effect on financial distress.
- Day's sales in receivables has a positive but not significant effect on financial distress.
- Cash flow to total debt has a significant negative effect on financial distress.
- Total liabilities to total assets has a positive but not significant effect on financial distress.

- Sensitivity inflation has a positive but not significant effect on financial distress.
- Sensitivity of BI rates has a positive but not significant effect on financial distress.

The implications that can be suggested based on the conclusion above are as follows:

- The management of companies need to prioritize policies related to current asset turnover, asset turnover and cash flow to total debt as an effort to minimize the occurrence of financial distress by conducting periodic evaluation measures of current assets, total assets, and cash flow to total debt of the company.
- The management must also be able to use current assets, total assets and total debt proportionately and control operational costs more efficiently in order to increase the company's revenue and net profit so that the company is able to pay installments and interest costs from the debt.
- Despite not having a significant effect on total liabilities to total assets and days sales in receivables, companies still need to maintain efficiency and effectiveness in managing of company's asset that are financed through debt and the amount of time needed by a company to receive payments from customers that can be used to settle debts.
- The company's resilience to macroeconomic variables, namely sensitivity of Inflation and sensitivity of BI rates, may not be a cause for concern about changes in value that occur in inflation and BI rates because it does not directly affect financial distress. However, it is important to consider monitoring and considering the impact of these variables and understanding, the relevant effects on the risk of financial difficulties. Policymakers need to pay attention to the impact of policy changes on macroeconomic variables and the subsequent impact on corporate debt capacity.

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