

The Effect of Financial Ratios and Macroeconomic Variables to Financial Distress of Agriculture Industry Listed in the Indonesia Stock Exchange from 2013 to 2018

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ABSTRACT: The purpose of this research is to find out and analyze the influence of financial ratios - current ratio, debt to equity ratio, and net income on total asset - and macroeconomic variables - gross domestic product, Indonesia Composite Index - on financial distress of agriculture companies listed in the Indonesia Stock Exchange (IDX) over the 2013- 2018 period. The purposive sampling was used as a sampling technique to obtain seven agriculture companies that meet the criteria and then was analyzed using the regression model and descriptive statistics. The results of this research showed that only the current ratio that affected the financial distress of those companies, while other financial ratios (debt to equity ratio, net income to total asset), and macroeconomic variables (gross domestic product, Indonesia Composite Index) did not affect financial distress.

Keywords: Financial ratios, macroeconomics variables, financial distress.

1 INTRODUCTION

Fourth Industrial Revolution does not only have the potential to change the industry, but also various aspects of human life. Many countries put this movement on the national agenda as a way to increase competitiveness in the global market.

For Indonesia, this phenomenon provides an opportunity to revitalize industries and become one of the ways to accelerate the achievement of Indonesia's vision to become the 10th largest economy in the world. To support this, companies need more capital by borrowing money from creditors or issuing shares in the capital market. The financial problem would arise if the company cannot fulfill the obligation to pay the interest and/or cannot pay the dividend to the shareholders, which leads to financial distress to happen. This situation reflects the poor performance of a company and illustrates the financial problems occurring within a company.

This research was conducted in order to know whether financial ratios and macroeconomic variables affect the financial distress of a company. The dependent variable, financial distress, was measured by using financial ratios and macroeconomic variables, while the independent variables were measured

by current ratio, debt to equity ratio, net income to total asset, gross domestic product, and Indonesia Composite Index.

This research aims to develop financial distress prediction in agriculture companies.

This paper is organized as follows. Section 2 discusses the literature review of financial distress prediction. Section 3 explains the methods of data collection and data analysis. Section 4 provides the results of the research using Logit Analysis, and finally, Section 5 summarizes the conclusion of the research.

When one party intends to give information to the other party, both should choose the way to communicate that information. Signaling theory is financing action by management that is believed to reflect its view of the firm's stock value; generally, debt financing is viewed as a positive signal that management believes the stock is "undervalued" and stock issue is viewed as a negative signal that management believes the stock is "overvalued" (Gitman & Zutter 2015).

The Agency cost theory (Jensen and Meckling 1976, Jensen 1986) in Chen et al. (2014) claimed that the optimal utilization of debt could increase the value of shareholders, but overwhelming debt fi-

nancing may cause damage. Firms incur agency costs to ensure agents (managers) acting in the best interests of principals (shareholders). When there is a separation between ownership and management, the conflict of goals between managers and owners and between different stakeholders emerges. For instance, equity holders with residual claims and limited liability concern more about profit from venture investment, while the debt-holders concern more about the security of their claims. Morellec et al. (2012) in Chen et al. (2014) examined the conflicts between shareholders and agents in capital structure decisions and confirmed the conflicts in choosing an optional capital structure and how governance mechanisms mitigate the issue.

A number of research had been done in predicting the financial distress experienced by companies. Nofsinger (2015) defined financial distress as a condition in which a firm is near bankruptcy. The determinants of bankruptcy and financial distress from the internal company can be measured by four main groups of financial ratios, which are asset management ratios, leverage ratios, liquidity ratios, and profitability ratios (Alifiah 2014). In this research, financial ratios are represented by the current ratio, debt ratio, and net income to the total assets. Isa (2004) in Alifiah (2014) also considered macroeconomic variables and found out that GDP is a significant variable in predicting financial distress in the company. In this research, macroeconomic variables represented by the Gross Domestic Product (GDP) and Indonesia Composite Index (ICI).

2 RESEARCH METHODS

The sampling method used in this research was purposive sampling. The requirements for the sample of this research are the agriculture company listed on the Indonesia Stock Exchange from 2013 to 2018 and published its annual report and accessible by the public. The research method used in this paper was the logit analysis. Financial distress was measured by using financial ratios and macroeconomic variables. The liquidity ratio was measured by the proportion of current assets to current liabilities. The leverage ratio was measured by the proportion of total debt to total equity. The profitability ratio was measured by net income compared to total assets. The equation for base model may follows as:

$$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \mu_i \quad (1)$$

Where X_i = the explanatory variable (s); $Y_i = 1$, if the event occurs (a company is financially distress);

$Y_i = 0$, if the event does not occur (a company is not financially distress)

Hence, the probability that an event may occur and company experiences financial distress is calculated by :

$$P = \frac{1}{1 + e^{-(\alpha + \rho_1 X_1 + \rho_2 X_2 + \dots + \rho_n X_n)}} \quad (2)$$

Equation 2 is estimated using the Maximum Likelihood method. Assuming that 1 indicates financial distress, the higher the resulting decimal fraction is above 0.5 (which implies an equal chance of a company being financially distressed or non-financially distressed), the higher the chance of the subject company will experience financial distress. It should be stated that the negative coefficients of ratios in the developed logit model indicate that these ratios are negatively correlated with the probability of financial distress (they decrease the risk of financial distress), while the ratios with positive coefficients have a positive effect on the probability of financial distress (they increase the risk of financial distress).

In order to get reliable results in Logit Analysis, it is necessary to find primary explanatory financial ratios that can discriminate between the two groups. The stepwise procedure was applied to finalize the appropriate explanatory variables to be used in the maximum likelihood estimate. The score and significant value of the ratios must be statistically significant. An overall significance test of the variables based on the likelihood ratio was also done to confirm the significance of the variables. Maximum likelihood estimates of the variables should also be obtained (Nam & Taehong, 2000).

Optimal sig. (weights) can be estimated where the likelihood value is maximized. The probability of bankruptcy is obtained by substituting sig. into the cumulative probability function. If the calculated probability from the Logit Analysis model is over 0.5, the company is classified as financial distress, otherwise as non-financial distress (Nur Adiana, Rohani, & Abd. Halim 2007, Ohlson 1980).

Companies that are financially distressed are matched with non-financially distressed companies that are selected within the criteria that they are from the same industry or sector as the financial distress companies and they are approximately similar in terms of total asset size (Alkhatib & Al Bzour 2011, Lakshan & Wijekoon 2012, Li 2012, Monti & Garcia 2010, Wang & Campbell 2010). These criteria were set as control factors to guarantee the lowest amount of bias in choosing the basic or estimation sample that is employed in the development of the financial distress prediction model (Chin, 2005).

3 RESULTS AND DISCUSSIONS

The data for the agriculture industry includes a total of 7 companies involving 2 financial distress companies and 5 non – financial distress companies over the 2013 to 2018 period. Stepwise logit analysis was conducted to evaluate the impact of a number of independent variables on the likelihood that companies will be financially distressed. The final model contains five independent variables that are current ratio, debt ratio, net income to total asset ratio, Gross Domestic Product, and Indonesia Composite Index. The final model was statistically significant, whereby the chi-square value is 74.38 with eight degrees of freedom and $p < 0.005$. This indicates that the model was able to distinguish between financially distressed and non-financially distressed companies.

The model correctly classified 71.4% of overall cases or also known as the percentage accuracy in classification, which is higher than the 50% when the analysis was conducted without any of the independent variables that are used in the model. The classification table is shown in Table 1.

Table 1. Classification table

Observed	Predicted		Percentage
	Financial Distress		
Distress	30	0	100.0
	12	0	.0
Overall Percentage			71.4

As shown in Table 2, five independent variables made a statistically non-significant contribution to the model. The five independent variables are the current ratio, debt ratio, net income to total asset ratio, Gross Domestic Product, and Indonesia Composite Index. This is based on the Wald test, a test that shows the contribution or importance of each of the predictor or independent variables. Variables that contribute significantly to the models should have a significant value of less than 0.05 (Pallant, 2007). Table 2 shows all variables have negative B coefficient values, which mean that companies with high debt ratio, net income to total asset ratio, Gross Domestic Product, and Indonesia Composite Index are less likely to be in financial distress.

Table 3 shows though all independent variables - current ratio, debt ratio, net income to total asset ratio, Gross Domestic Product, and Indonesia Composite Index - altogether have a positive relation (.999) with the dependent variable, which is financial distress.

Table 2. Estimation Result of Logit Analysis

IV	B	S.E	Wald	Sig.
CR by DER by GDP by ICI by NITA	-.001	.002	.652	.419
Constant	-.750	.356	4.432	.035

Table 3. Variables in the Equation

IV	Exp (B)	95% C.I for Exp (B)	
		Lower	Upper
CR by DER by GDP by ICI by NITA	.999	.996	1.002
Constant	.473		

4 CONCLUSION

The results of this research showed that all independent variables could give a real effect to the dependent variable, signifying the model is fit. The ability of independent variables to explain the dependent variable is 69.7 %, while the other 30.3 % factors outside model could explain the dependent variable.

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