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Developing Financial Distress Prediction Model For Companies Going Public: Accounting, Macroeconomic, Market, And Industry Approaches

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A B S T R A C T

This research is to construct a model for an accurate prediction of financial distress by finding and including other variables outside the data/information derived the accounting reports. The population of this research is composed of all the non-financial companies listed on the Indonesia Stock Exchange. As for the samples, they are the companies experiencing financial distress which is indicated by their negative profits in two consecutive years; and the control group is composed of the companies in the same industry group with the total asset of almost the same as that of the companies experiencing financial distress; only that these companies do not experience financial distress.The model to construct the financial distress prediction is the Binary Logistic Regression. The results show that the variables of the group of financial ratios, namely liquidity, profitability, leverage, activity, and cash flow, can be used as the variables for the financial distress prediction. However, the variables of the group of market and macroeconomic ratios cannot be employed to predict. Meanwhile, the variable of the group of industry treated as a moderating dummy variable does not indicate to have any moderating influence on the variables of financial ratio that previously proved to have significant influence on the possibility of the financial distress of a company.

1. INTRODUCTION

This is the continuation of the previous research (Nilmawati 2011, Satoto 2008) which has explored the use of financial ratios to predict the condition of a company, especially its financial performance. The results show that financial ratios can predict the financial distress condition. The prediction helps to indicate the possibility of financial distress as early as possible, so that an anticipation/preventive action can be taken to save the company from bankruptcy/insolvency. The external parties of the company will usually react to the signals of the distress, such as the delay of delivery, problem of product quality, loss of trust of its customers, bills from banks or creditors, and so on.

If such a condition is not immediately resolved, it will put a major impact on the company, that is, the loss of the trust from stakeholders, which will lead the company into a bigger problem, and eventually to bankruptcy. The identification of the condition of the financial distress is more important than the

issue of bankruptcy itself (Brahmana 2004).This is because basically there is no company intended to end in bankruptcy. It applies especially to a company that has gone public, in which its ownership is widely shared by the public. A big number of people will suffer a substantial loss if the company goes bankrupt. If the bankruptcy occurs in the banking industry, it will increase the burden of the government. The government must guarantee the return of the customers' money and it certainly places a burden on the state budget.

The prediction model for early detection of financial distress used in previous research involved the financial ratios of the companies, especially those from the Loss/Profit Report and the Balance Sheet Report (Accounting Report). This is also found in the research by Angelina (2004), Herliansyah (2002), Almilia and Kristijadi (2003), Almilia (2006), Widarjo and Setiawan (2009), and other research in Indonesia. However, the use of the data from an accounting report actually can make a company late to detect its financial distress. This is because the accounting data is often found out of date due to the submission of the report that has missed the deadline (Ohlson 1980, Lennox 1999).

Keasey and Watson (1991) also state that a model that is based on historical/past data (financial data) poses caution because it is possible that a fundamental change has occurred in the company, one that has not been reflected in the financial report. The possible conditions are things like the macroeconomic and monetary changes, reflected in the changes in interest rates, the changes in the CBI (the Certificate of the Bank of Indonesia), the changes in inflation, the changes in exchange rate, and the changes in other sectors.

Marketwise, the changes can be resulted from the changes of the price of the company's stock, the changes of the market composite index, the adjustment of the value of company's share to the market price, and others. In addition, Beaver, McNichols, and Rhie (2005) provide more findings that the use of a financial report can make the prediction of the bankruptcy less effective. This is because of the following issues as: (1) the standard of accounting used (2) the enhancement of discretionary reporting (3) the increase of the assets which are not recorded (e.g. intangible assets) and the obligations which are not recorded (e.g. funding of derivatives). According to Ohslon (1980), the accuracy of the prediction of any models will be dependent on the time when the information is available and, in addition, to make the accuracy of the prediction, more variables need to be factored in.

Thus, it can be concluded that the model of accurate prediction for the financial distress can use financial data (as supported by some research reports), and current conditions that would probably affect the company's performance. This is because many changes might have occurred, those that have not been "recorded" in its financial report.

This research also incorporates the influence of industry/business category on the model of prediction to be created as that conducted by Chava and Jarrow (2004). An indication of the need for the other

variables has been reflected in the research by Qurriyani (2012), Christidis and Gregory (2010), Campbell, Hilscher, and Szilagyi (2008), Chava and Jarrow (2004), and Agarwal and Taffler (2008). Research in Indonesia has not yet included the variables; those which are going to be identified and utilized in this research. This is because most research so far only utilizes financial reports.

1. REVIEW OF LITERATURE

2.1. Financial Distress

Some indications of financial distress can be found in a variety of research results, as it is stated by Chen, Weston, and Altman (1995). They said that distress is the state when the liquidity of the assets of a company is less than the total value of the company assets claimed by the creditors. Pranowo, Achsani, Manurung and Nuryartono (2010) reveal that a company is classified to experience financial distress when its cash flow is very minimal, and it is quite possible that the company may fail to pay and to meet its financial obligation. These researchers used the *Debt Service Coverage* (DSC) of 1.2 or less as the proxy of the financial distress in their research.

Platt, and Platt (2002) reveal that a company is said to experience financial distress if it undergoes one of these things: its net operating profit is negative for a few years; dividend payment is suspended; it undergoes financial restructuring; or it conducts mass lay-offs. According to Whitaker (1999), a company experiences financial distress if its cash flow is smaller than its long-term debt. Elloumi and Gueyie (2001) state that the financial distress of a company can be indicated by its negative *Earning Per Share (EPS)*. Brahmana (2004) indicates that financial distress is indicated by the delisting of its share from the Indonesia Stock Exchange.

Basically, the financial distress, with its various definitions, occurs before a company goes bankrupt. This will provide the company with early warning to help it avoid a worsening condition and bankruptcy.

2.2. Financial Report

A financial report gives an illustration of the operation of a company and the position of its funding. This report reveals what actually happens to the assets, earnings, and dividend (Brigham, Gapenski and Daves 1999). Through this financial report, other parties concerned can carry out a fundamental analysis to evaluate the condition of the company by utilizing the financial ratios that can be constructed from the financial reports of the company. This financial report is primarily composed of the Profit/Loss Report, the Balance Sheet Report, and the Cash Flow Report.

To predict the financial distress of a company, a financial report becomes the major source for the identification, analysis, and evaluation. The ratios generally used for the process of analysis can be divided into several main categories.

2.3. The Main Categories of Financial Ratios

2.3.1.Liquidity Ratios

The liquidity ratio illustrates the ability of a company to meet its short-term obligations. This ratio involves short-term assets that include: cash, securities, accounts receivable and the inventory of the company with its short-term debts which include: trade debt, salary debt, tax debt and so on. The low level of liquidity will drive the company to a crisis. The ratios which are commonly used as a measure of liquidity are *the current ratio* and *acid test ratio.* (Brigham, Gapenski, and Daves 2011). The higher the degree of the liquidity of the company is, the more capable the company will be to meet its obligations, and thus the probability of financial distress will be lessened. The research conducted by Mahdi and Bizhan (2009) shows that the liquidity ratio affects the probability of the financial distress.

2.3.2. Profitability Ratios

The profitability ratio demonstrates the ability of accompany to generate profits. This ratio also illustrates the effectiveness of the operation of the company, which combines the effect of the liquidity, the management of the assets and the management of the debts. The ratios which are often used are: the Profit Margin on Sales, the Basic Earning Power, the Return on Assets, the Return on Equity, and so on (Brigham, Gapenski, and Daves 2011). In research about financial distress, generally the profitability ratio becomes the measure of the performance of the company (Joseph and Lipka 2006).The high profitability reduces the possibility of the occurrence of financial distress. This is supported by the research conducted by Routledge and Gadenne (2000).

2.3.3. Activity Ratios

The activity ratio illustrates how effectively a company manages its assets. This ratio is designed to answer the question: Is the sum of each asset that is reported in the balance sheet report reasonable, too much, or too low to cover the level of the current and future sales? The ratios which are included in this category are: the Inventory Turnover, the Day Sales Outstanding, the Fixed Asset Turnover, the Total Asset Turnover, and so on (Brigham, Gapenski, and Daves 2011). The results of the research conducted by Jiming and Du (2011) show that the activity ratio affects the possibility of financial distress, and so do the results of the research conducted by Ardiyanto and Prasetionoto (2011).

2.3.4. Leverage Ratios

The leverage ratio is related to the use of loan in a company. According to Christidis and Gregory (2010), the main issue arising from the use of the loans is whether the company has sufficient profit to pay the interest and repay the loans. If the company relies heavily on the loan, its profit will be high when the profitability is growing, but in a poor condition, the profit will be low or even negative. Therefore, the

leverage ratio indicates the financial risk of the company. Thus, the higher the level of the leverage of the company is, the more likely the company is to experience financial distress condition. The results of the research that link the leverage with financial distress indicate that the leverage affects the financial distress. (Hodgin and Roberto 2011, Marchesini, Perdue, and Bryan 2004, Chava and Roberts 2008).

2.3.5. Cash Flow Ratios

The cash flow ratio provides more information about the capabilities of a company to pay its obligations. This ratio shows how much cash is generated when compared to the short-term liabilities. This ratio can be measured by: *the Operating Cash Flow (OCF), the Funds Flow Coverage (FFC), the Cash Interest Coverage, the Cash Current Debt Coverage* and so on. The higher this ratio is, the less likely the company is to experience the financial distress condition. The results of the research conducted by Qurriyani (2012) support this.

2.4. Influence of Market

The market ratio is related to the stock market price on the profit and the value of each share of the company. This ratio gives the management an indication of what the investors think about the performance of the company in the past and in the future (Brigham, Gapenski, and Daves 2011). The market price variables provide information that is more "timely"; and they also provide a direct measurement of volatility (Christidis and Gregory 2010). The following ratios are included in this category: Price Earning Ratio, Market/Book Ratio, and so on. The high market value shows a high perception of the market/investors upon the company, which results in a low probability of the occurrence of the financial distress. This is supported by Chava and Jarrow (2004), Beaver, McNichol, and Rhie (2005), and Christidis and Gregory (2010).

2.5. Influence of Macroeconomics

Ogden, Frank, and O'Conner (2003) mention that the macroeconomic variables are the external factors that can affect the financial distress. These variables include: inflation, interest rates, business cycle, economic recession, and so on. The research conducted by Subagyo (2007) shows that the macroeconomic variables can affect the financial distress condition of a company (Christidis and Gregory 2010).

2.6. Influence of Industry

Chava and Jarrow (2004) reveal that the influence of industry is an important component in the prediction of bankruptcy due to: 1) different industries will face different level of competition and, therefore, the cause of the bankruptcy will be different for different industries. 2) different industries

can have different accounting reporting system, and thus the causes/variables of the causes of the bankruptcy will also be different. The results of their findings show that the industry groups affect the magnitude of the slope and coefficient of the prediction model created. Similarly, the findings by Subagyo (2007), Christidis and Gregory (2010) support the conclusion.

3. ABSTRACT, KEYWORDS AND CORRESPONDING AUTHOR DETAILS

3.1. Population and Samples

The population in this research was all the non-financial companies going public listed in the Indonesia Stock Exchange (ISE) observed from 2009 to 2012. Meanwhile, the research samples were companies experiencing the financial distress. The companies placed under the criteria of those with financial distress were those that suffer losses for two consecutive years. The control group was composed of those running the industry group whose total assets were the same as those of the companies experiencing financial distress, only that these companies did not experience financial distress (the industry groups refer to the groups specified by the Indonesia Stock Exchange).

3.2. Research Variables

The variables used in this research were:

The dependent variables, in this case, are category /dummy variables, in which the companies that experience financial distress are given the score of 1 and the companies who do not experience any financial distress are given the score of 0.

The independent variable, in this research, uses the information derived from the Financial Reports of the Companies, the Market Condition, the Macroeconomic Condition, and the Industry Groups.

From the Financial Reports which include the Profit/Loss Report, the Balance Sheet Report, and the Cash Flow Report, the following data was obtained: Liquidity Ratios, Profitability Ratios, Leverage Ratios, Activity Ratios, Cash Flow Ratios

From the market condition, such data as the ratio of the change of the stock price of the company, the ratio of the change of the composite index, the ratio of the change of the value of the assets of the company that goes along with the market price, etc. was obtained.

From the Macroeconomic Condition, it was obtained such data as the data that covers the changes in economic condition such as the inflation, the changes in investment interest rate, the changes in the loan interest rate, etc.

Regarding the industry groups, the data was from category of business that would then serve as dummy variables.

3.3. Method of Analysis

The stages of research and the analytical tools used in this research are as follows:

Identifying the required variables from the Financial Report of the Company, the Market Condition, the Macroeconomic Condition, and the Industry Groups. The process of identification was through the studies of relevant literature and the results of the research related to the problem of the financial distress prediction as well as the results of the questionnaires distributed to the companies listed on the Indonesia Stock Exchange.

After the variables of prediction are clearly identified, then the binary logistic regression test is done by gradually inserting the variables that exist in the group of the Financial Report of the Companies, the Market Condition, and the Macroeconomic Condition. The regression model used is as follows:

$$P_i Y = 1/[1 - \exp(\beta_0 \beta_{11} X_{11} \beta_{12} X_{12} \ldots \ldots \beta_{1k} X_{1k}]$$

Description:

$P_i Y$ = probability of the companies to experience financial distress,

β = intercept

$\beta_0 \ldots \ldots \beta_{1k}$ = coefficient of the regression

$X_{11} \ldots X_{1k}$ = variable in each group of ratio

After the complete model was met including all the data, then the variable of the industry groups treated as the moderating (dummy) variables was inserted the intercept and the coefficient slope of the dummy variables in any industry group.

4. RESULTS AND DISCUSSION

Theoretically, the following variables which can empirically affect the financial condition/performance of a company, particularly the financial distress, are then derived:

Liquidity Ratios, Current Ratio: Current Asset/Current Debt, Quick Ratio: (Current Asset-Inventory)/ Current Debt, Cash Ratio: (Cash& Securities)/ Current Debt.

Profitability Ratios, Gross Profit Margin: (Sales-Cost of Sales/Sales, Net Profit Margin: Net Profit After Tax/Sales, Economic Rentability/Basic Earning Power: Net Profit Before Tax/Total Assets, Return on Investment: Net Profit After Tax/Total Assets, Return on Equity: Net Profit After Tax/Equity.

Leverage Ratios, Debt Ratio: Total Debt/Total Assets, Debt to Equity Ratio: Total Debt/Total Equity, Ratio of Ability to Pay Interest (Times-Interest Earned Ratio): EBIT/Interest Expense, Total Debt to Total Capital Assets: (Current Assets + Long Term Debt)/Total Assets, Long Term Debt to Equity Ratio: Long-term Debt/Equity, Tangible Assets Debt Coverage: (Total Assets +Tangible + Current Debt) Long-term Debt.

Activity Ratios, Total Assets Turn Over: Sales/Total Assets, Working Capital Turn Over: Sales/(Current Assets-Current Debt), Ratio of Fixed Assets Turnover: Sales/Fixed Assets, Ratio of Inventory Turnover: Sales/ Inventory, Age of Accounts Receivable: Accounts Receivable/ Credit Sales, Accounts Receivable Turnover: Credit Sales/Average Accounts Receivable.

Cash Flow Ratios, Operating Cash Flow (OCF): EBIT (Earnings before Interest and Taxes) + Depreciation – Taxes, Funds Flow Coverage (FFC)/Cash Flow Coverage: EBITDA/(Interest + Liabilities After Tax + Dividends of Preference Stock After Tax), Cash Current Debt Coverage/Current Cash Debt Coverage: (Cash/Assets/) Current Liabilities).

Market Ratios, Earning Per Share: Net income for common stockholders/Number of outstanding shares, Price to Book Value Ratio: Market price per share/Book value per share, Dividend Yield Ratio: Dividend per share/Price per share, Dividend Payout Ratio (DPR): Dividend per share/Earnings per share.

Macroeconomic Condition: Inflation, Interest Rate Announcement, Changes in Exchange Rates, Change in JSPI(Joint Stock Price Index), Gross Domestic Product

4.1 Testing Variables Determining Financial Distress Condition of Companies

After the variables which serve as the indicators to determine a financial condition of a company are retrieved, then statistical testing is conducted to see which variable is estimated to be the most influential or at least which can predict the possibility of a financial distress. For this purpose, the binary logistic regression test is conducted, and its recapitulation is presented in Table 1.

Equation 1 with the variables of the group of liquidity ratios as indicated in Table 1 shows that the cash ratio variables produce the value of regression coefficient of-0.416. It indicates that the variable carries a significant negative influence on the possibility of financial distress. As for the value of Hosmer and Lemeshow Test, it is at 8.01868 with the level of significance of 0.4316 (bigger than 0.05). This value indicates that the model is indeed able to predict its observation data or that it is acceptable since it conforms to the observation data. Regarding the value of Nagelkerke R Square Test, the test gives the value of 0.034 which indicates that the variability of the dependent variables can be explained using the variability of the independent variables at the rate of 3.4%. Since the prediction power of the model is found at the level of 57.317, it indicates that it can be used to correctly predict to which group of companies a company should belong.

Equation 2 with the variables of the group of liquidity ratios and the variables of profitability shows that the GPM and ROI produce the value of regression coefficient of-2.699 and -4.745. It indicates that the variable carries a significant negative influence on the possibility of financial distress. As for the value of Hosmer and Lemeshow Test, it is at 6.754 with the level of significance of 0.563 (bigger than 0.05). This value indicates that the model is indeed able to predict its observation data or that it is acceptable since it conforms to the observation data. Concerning the value of Nagelkerke R Square Test, the test gives the value of 0.156 which indicates that the variability of the dependent variables can be explained using the variability of the independent variables at the rate of 15.6%. Since the prediction power of the model is found at the level of 60.976, it indicates that it can be used to correctly predict to which group of companies a company should belong.

Equation 3 with the variables of the group of liquidity ratios added by profitability variables and leverage variables shows that the GPM and ROI produce the value of regression coefficient of-3.156 and -5.528. It indicates that the variable carries a significant negative influence on the possibility of financial distress. The TIE variables produce the value of regression coefficient of 0.0329. It indicates that the variable carries a significant positive influence on the possibility of financial distress. As for the value of Hosmer and Lemeshow Test, it is at 3.637 with the level of significance of 0.888 (bigger than 0.05). This value indicates that the model is indeed able to predict its observation data or that it is acceptable since it conforms to the observation data. Regarding the value of Nagelkerke R Square Test, the test gives the value of 0.178 which indicates that the variability of the dependent variables can be explained using the variability of the independent variables at the rate of 17.8%. Since the prediction power of the model is found at the level of 60.736, it indicates that it can be used to correctly predict to which group of companies a company should belong.

Equation 4 with the variables of the group of liquidity ratios added by profitability variables, leverage variables, and activity variables shows that the GPM produce the value of regression coefficient of-4.514 which indicates that the variable carries a significant negative influence on the possibility of financial distress. The ROE produce the value of regression coefficient of 0.508 which indicates that the variable carries a significant positive influence on the possibility of financial distress. In addition, the TIE variables produce the value of regression coefficient of 0.043 which indicates that the variable carries a significant positive influence on the possibility of financial distress, and the WCTO variables produce the value of regression coefficient of -0.035 which indicates that the variable carries a significant positive influence on the possibility of financial distress. As for the value of Hosmer and Lemeshow Test, it is at 9.657 with the level of significance of 0.289 (bigger than 0.05). This value indicates that the model is indeed able to predict its observation data or that it is acceptable since it conforms to the observation data. Regarding the value of Nagelkerke R Square Test, the test gives the value of 0.271 which indicates that the variability of the dependent variables can be explained using the variability of the independent variables at the rate of 27.1%. Since the prediction power of the model is found at the level of 67.484, it indicates that it can be used to correctly predict to which group of companies a company should belong.

Table 1. Results of Binary Logistic Regression

Group	Variables	Coefficient b for equation:						
		1	2	3	4	5	6	7
Accounting Variables	**Liquidity**							
	CR	0.106	0.154	0.203	0.224	0.216	0.232	0.235
	QR	-0.006	-0.015	0.004	-0.013	-0.010	-0.012	-0.013
	Cash	-0.416 *	-0.168	-0.147	-0.266	26.912	26.159	24.807
	Profitability							
	GPM		-2.699 **	-3.156 **	-4.514 ***	-4.462 ***	-4.179 ***	-4.173 ***
	NPM		0.176	0.252	0.141	0.131	0.166	0.159
	RE		-2.435	-2.327	-1.351	-2.092	-2.096	-2.063
	ROI		-4.745 *	-5.528 **	-4.585	-5.257 *	-4.259	-4.228
	ROE		0.172	0.231	0.508 *	0.471	0.4867	0.481
	Leverage							
	DR			0.461	0.052	-0.131	-0.0398	-0.058
	DER			-0.041	-0.016	-0.035	-0.046	-0.0472
	TIE			0.0329 *	0.043 **	0.037 *	0.0368	0.0368
	TDTCA			-0.889	-0.150	-0.046	-0.060	-0.051
	LTDA			0.122	0.157	0.192	0.207	0.215
	TADC			5.930	0.001	0.002	0.002	0.002
	Activity							
	TATO				-0.486	-0.426	-0.418	-0.419
	WCTO				-0.033 *	-0.035 **	-0.035 *	-0.036 *
	FATO				-0.018	-0.015	-0.016	-0.016
	ITO				0.009	0.009	0.009	0.009
	RAA				2.069	2.076	2.199	2.178
	RTO				-0.001	-0.001	-9.644	-0.001
	Cash Flow							
	OCF					0.096	0.0969	0.099
	FFC					1.065	0.866	0.890
	CCDC					-27.217	-26.502	-25.161
Market Variables	**Market**							
	EPS						-0.003	-0.003
	PBV						0.0243	0.019
	DY						0.243	0.244
	DPR						-0.066	-0.067
Macro Variables	**Macro**							
	Inflation							
	Interest							68.948
	Kurs							
	IHSG							
Nagelkerke R Square		0.034	0.156	0.178	0.271	0.283	0.3	0.301
Hosmer and Lemeshow Test		8.019	6.7543	3.6376	9.6572	12.962	11.8	6.789
Sig		0.432	0.5634	0.8882	0.2899	0.1132	0.16	0.559
Overall Percentage Classification		57.32	60.98	60.74	67.48	66.87	68.71	69.94

Note: *** sig. 1%, 5%, dan 10%
      ** sig. 5%, dan 10%
      ** sig. 10%

Source: Processed   Secondary Data

Equation 5 with the variables of the group of liquidity ratios added by profitability variables, leverage variables, activity variables and cash flow variables shows that the GPM and ROI produce the value of regression coefficient of-4.462 and -5.257 respectively. It indicates that the variable carries a significant negative influence on the possibility of financial distress. The TIE variables produce the value of regression coefficient of 0.037 which indicates that the variable carries a significant positive influence on the possibility of financial distress, whereas the WCTO variables produce the value of regression coefficient of -0.035 which indicates that the variable carries a significant negative influence on the possibility of financial distress. As for the value of Hosmer and Lemeshow Test, it is at 12.962 with the

level of significance of 0.113 (bigger than 0.05). This value indicates that the model is indeed able to predict its observation data or that it is acceptable since it conforms to the observation data. Regarding the value of Nagelkerke R Square Test, the test gives the value of 0.283 which indicates that the variability of the dependent variables can be explained using the variability of the independent variables at the rate of 28.3%. Since the prediction power of the model is found at the level of 66.871, it indicates that it can be used to correctly predict to which group of companies a company should belong.

Equation 6 with the variables of the group of liquidity ratios added by profitability variables, leverage variables, activity variables, cash flow variables and market variables shows that the GPM produce the value of regression coefficient of-4.179. It indicates that the variable carries a significant negative influence on the possibility of financial distress. The WCTO variables produce the value of regression coefficient of -0.035 which indicates that the variable carries a significant negative influence on the possibility of financial distress. As for the value of Hosmer and Lemeshow Test, it is at 11.8 with the level of significance of 0.16 (bigger than 0.05). This value indicates that the model is indeed able to predict its observation data or that it is acceptable since it conforms to the observation data. Regarding the value of Nagelkerke R Square Test, the test gives the value of 0.3 which indicates that the variability of the dependent variables can be explained using the variability of the independent variables at the rate of 30%. Since the prediction power of the model is found at the level of 68.711, it indicates that it can be used to correctly predict to which group of companies a company should belong.

Equation 7 with the variables of the group of liquidity ratios added by profitability variables, leverage variables, activity variables, cash flow variables and macroeconomic variables shows that the GPM produce the value of regression coefficient of-4.173. It indicates that the variable carries a significant negative influence on the possibility of financial distress. The WCTO variables produce the value of regression coefficient of -0.036 which indicates that the variable carries a significant negative influence on the possibility of financial distress. As for the value of Hosmer and Lemeshow Test, it is at 6.788 with the level of significance of 0.550 (bigger than 0.05). This value indicates that the model is indeed able to predict its observation data or that it is acceptable since it conforms to the observation data. Regarding the value of Nagelkerke R Square Test, the test gives the value of 0.301 which indicates that the variability of the dependent variables can be explained using the variability of the independent variables at the rate of 30.01%. Since the prediction power of the model is found at the level of 69.938, it indicates that it can be used to correctly predict to which group of companies a company should belong.

4.2 Discussion

The binary logistic regression test indicates that when variables belonging to the group of liquidity ratios are included in the equation, the cash ratio variable has a significant negative influence on the possibility of financial distress of the companies in the future. It shows that the liquid asset contributes to the

detection of the possibility of the financial distress in the future. The illiquid asset is then the asset that will serve as a guarantee of the ability of the company to meet its short-term obligations. The lower the ratio is, the more likely the company is to experience financial distress. According to Zavgren (1985), a company with insufficient liquidity will easily experience a crisis. The results of this research support the research done by Platt and Platt (2002), Almilia and Kristijadi (2003), Mahdi and Bizhan (2009).

When the variables of the group of profitability ratios are included in the regression equation, it is found that the GPM and ROI variables show a significant negative influence on the possibility of distress of a company in the future. This means that the profit generated by the company from its operation is able to predict the possibility of financial distress. The lower the ratio of the profit is, the more possibly the company is to experience financial distress in the future and, conversely, the high profitability results in a low probability for the occurrence of financial distress. The results of this research confirm the research by Routledge and Gadenne (2000).

When the variables of the group of leverage ratio is then included to the regression equation, the same results are obtained that ROI and GPM variables show a significant negative influence on the possibility of financial distress of a company in the future. In addition, it is found that TIE variable is one of measurements of the leverage ratios that have a significant positive influence on the possibility of financial distress experienced by the company. This means that the bigger the TIE is, the more likely the company is to experience financial distress in the future. Theoretically, TIE shows the availability of the business profit to be used to pay interest as a result of using debt. This might cause the creditors to have confidence in the company that has high TIE. Baral (2004) mentions that the higher the ability of a company to pay the interest of the loan, then the higher the capacity of its debt. In the research, the results show that the companies with high TIE are more likely to experience financial distress, possibly it is because the companies that become the samples of the companies experiencing financial distress have the average TIE that is much smaller compared to the average TIE of the sample companies which do not experience financial distress, i.e. $6.97 < 42.54$. It is demonstrated in this research that even though the companies have operation profit to pay interest, if the profit is not big enough there is still a possibility of financial distress.

Next, when the group of activity ratios is included in the equation, the results obtained are the same, that is, GPM variable has a significant negative influence on the possibility of financial distress, and TIE has a significant positive influence. It is also found that ROE has significant positive influence on the possibility of financial distress to be experienced by the companies in the future. Meanwhile, WCTO variable as one of the measurements of the activity ratios has a significant negative influence. It shows that the smaller this ratio is, the less effectively a company is in managing its asset and thus the possibility of experiencing financial distress is bigger. The results of this research support the research by Jiming and Du (2011), Ardiyanto and Prasetionoto (2011).

When the variables of the market ratios are included to the regression equation, it is found that the GPM and WCTO variables have a significant negative influence on the possibility of financial distress of a

company. Likewise, when the variables belonging to the microeconomics are included in the equation, only the two ratios have an influence on the possibility of financial distress, in which both have a significant negative influence.

Overall, the results show that the variables included in the group of financial ratios, namely the group of liquidity ratio (cash ratio), profitability ratio (GPM, ROI and ROE), leverage ratio (TIE), and activity ratio (WCTO) can predict the probability of financial distress in the future. Meanwhile, the variable that is most consistently influential in the equation is GPM variable, followed by WCTO variable. For the variables belonging to the group of market and macroeconomics ratios, no variables are found capable of statistically predicting the financial distress in the future.

Because the GPM and WCTO variables were considered to be consistent in predicting the possibility of financial distress, the two variables were then used in the equation. They would include the industries as the moderating dummy variables. The test was conducted to find out whether the influence of the GPM and WCTO variables in predicting the financial distress will vary for different lines of industry. In this research, the non-financial companies in the Indonesia Stock Exchange were classified into 9 (nine) groups of industry namely: 1) Agriculture, Animal Feed, 2) Mining, 3) Construction, 4) Manufacture, 5) Transportation & Communication, 6) Wholesale and Retail), 7) Real Estate &Property, 8) Investment, 9) Others. The result indicates that there is no significant moderating coefficient between the industry groups and the WCTO and GPM variables. It shows that the variation/type of the industry group in the Indonesia Stock Exchange does not affect the slope/change of influence of the GPM and WCTO variables in predicting the possibility of financial distress. These results, in fact, do not support the findings by Chava and Jarrow (2004) who state that an industry group has an influence on their prediction model even though not all industry variables are significant. The results of this research neither support the research conducted by Christidis and Gregory (2010), who offer different results within the lines of industry for the variables that have an influence in the prediction model of financial distress.

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5. CONCLUSION

The results of this research indicate that, overall, the financial ratios which consist of Liquidity ratios, Profitability ratios, Leverage ratios, Activity ratios, and Cash Flow ratios can be used to predict the possibility of financial distress in the future. The predictors can be represented by Cash Ratio, Gross Profit Margin, Return on Investment, Return on Equity, Times Interest Earning, and Working Capital Turn Over. These results are in line with the findings of the previous researchers such as those of Qurriyani's (2012), Almilia's (2006), Almilia and Kristijadi's (2003), Subagyo's (2007).

However, overall, the variables of the Gross Profit Margin and the Working Capital Turn Over are the variables that are consistently present in every prediction model tested in this research. It turns out that

the ratios of the Market and Macro conditions cannot be used as predictors for the possibility of financial distress, due to the absence of significant ratios in both groups.

As for the variable of industry used as moderating dummy variables, the significant moderating influence is not at all found among the industry groups with the significant variables of WCTO and GPM. Thus, these results do not support the findings by Chava and Jarrow (2004) who state that the lines of industry have an influence on their prediction model even though not all the industry variables are significant. These results neither support the research by Christidis and Gregory (2010), who find different results in the industry group for the variables which have an influence on the prediction model of financial distress.

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