

Prediction on Financial Distress of Mining Companies Listed in BEI using Financial Variables and Non-Financial Variables

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Abstract

This research was conducted to examine if financial variables and non-financial variables can be used to predict the condition of *financial distress* in public mining companies listed in Bursa Efek Indonesia during period 2008-2009. Based on seven variables used in this research, financial variables used were *current ratio*, *cash ratio*, *debt ratio*, *ROA*, *day sales in receivables ratio* while non-financial variables were managerial and institutional ownership variables. The research population was all public mining companies listed in Bursa Efek Indonesia and they do not have *delisting* during research period (2008-2010). Based on the criteria, there were 13 companies as research population. This research used saturated sampling technique. The research sources were financial report published by Bursa Efek Indonesia in 2008-2010 or during 3 years, while analysis model on this research was logistic regression. The research finding revealed that financial ratios have some significant effects toward the prediction on financial distress in mining company such as (1) *current ratio* (2) *cash ratio* and (3) *debt ratio* have significant effect on negative correlation coefficient, in predicting financial distress of companies while non-financial ratios which are managerial and institutional ownership do not give significant effect.

Keywords: Financial distress, current ratio, cash ratio, debt ratio, ROA, day sales in receivables ratio, managerial ownership, institutional ownership.

1. Introduction

1.1 Background of Problem

Global financial crisis beginning from housing credit in the United States leads to implication on the condition of global economic completely. The US crisis in the beginning and middle of 2008 caused decreasing of market demand so import volume drastically decreased as well as export volume from producing countries that are consumed and needed by US industry, one of them is Indonesia. The decreasing export gives impact on mining sector which count on exporting. Mining sector showing good performance until second kuartal 2008, commodity price has continuously been decreasing about 50% - 70% since the mid of 2008. If it continues, many companies will not survive and suffer financial distress, even bankruptcy.

Mining sector is the industry giving quite great contribution to the growth of national or international industries, in term of foreign direct investment, its contribution is more than pagef of total FDI (*Foreign Direct Investment*) per year. Mining is one of the industrial sectors that contributes so much to national investment, export and foreign exchange, so *financial stress* is expected to be avoided for the sustainable contribution of mining industry.

Prediction on *financial distress* as an initial warning is significant to anticipate *financial distress* in a company. According to Ross (2009) *financial stress* is a situation where a firm's operating cash flows are not sufficient to satisfy current obligations. *Financial distress* may lead a firm to default on a contract, and it may involve financial restructuring between the firm, its creditors, and its equity investors. Practically, prediction on financial distress is not only applied in companies having certain condition, but also all companies having either good or bad condition because the purpose of financial distress is as an *early awarning system* before bankruptcy happens and the companies can take action in avoiding it and correct the finance.

Review on companies' performance based on financial statement published by the companies is one of the information source containing position and performance of companies' finance. It can be used as supporting factor to decide the appropriate management. Financial statement analysis is necessarily carried out to make the information of financial statement easily understood as a factor of decision making. Model of financial statement analysis commonly used is financial ratio. It helps to identify the strength and weakness of company. Ratio has two methods used to compare financial data among companies, (1) ratio can be used to identify company trend. And (2) ratio can be used to compare ratio of another company from the same industry in the same year (Keown, 2011). Financial ratio analysis can be used to predict financial distress in industry or company.

According to some previous research conducted by Alessandra (2011), Bandyopadhyaya (2006) and Pang Tien Lieu (2008), the use of financial factors and non-financial factor in prediction on financial distress can increase the accuracy of corporate failure in a company. In his research finding, Bandyopadhyaya (2006) stated that the objective of his study not only developed a model of early awarning with the purpose of corporate default prediction in developing country such India, but also created a model that estimates the financial stress

probability using financial ratio and non-financial ratio that increases accuracy of prediction on financial distress indeed (Alessandra, 2011).

Corporate governance is closely related to mechanism in corporate company because application of GCG (*Good Corporate Governance*) in a company can decrease agency conflict commonly happening if there is a separation of ownership function. Benhart and Rosestein (1998) in Puspitasari (2010) stated that mechanism of corporate governance has internal mechanism such as structure and board of commissioner ownership, and external mechanism such capital market, so corporate governance is a system managing and controlling a corporate company that is expected to be able to increase the welfare of stakeholders. Siallagan and Mchfoeds (2006) in Widyasaputri (2012) stated that corporate governance which is effectively used in long period can improve corporate company performance and give advantages to stakeholders.

Managerial and institutional ownership are variables of GCG (*Good Corporate Governance*) mostly used in research conducted by Pang Tien Lieu (2008), Hong-Xia Li (2007), Puspitasari (2010), and Widyasaputri (2012). Both are important issues of non-financial factors of companies in maintaining and improving their performance.

Pang Tien Lieu (2008) said that managerial and institutional ownership are prominent variables influencing significance and having positive correlation to financial distress. However, research by Hong Xia Li (2007) showed that both factors do not significantly influence financial stress.

A lot of research on financial stress uses MDA such as research by Papagea (2005), Westgard (2005), Bandyopadhyaya (2006), Ugurlu (2006), Ooghe (2007), and Alessandro (2011). Most research does not use logistic method in Indonesia particularly, whereas it is better method used to predict financial distress, especially in three years prior to failure, it also eliminates normality in data distribution (Papagea, 2005). It is clarified by research by Westgard (2005), his finding showed that of 4 methods used for prediction on financial distress MDA (*Z-Score*), Logistic (*Zavgren*), *Gambler's Ruin* and *artificial neural network*, Altman method has one weakness that is the appearance of assumption saying that all variables in data sample are normally distributed. In addition, the research revealed that logistic analysis can give bankruptcy probability (in percentage). The probability measurement also gives the degree of management effectiveness because companies having good management will not get bankrupt. Logistic analysis also shows failure effectiveness in 5 years to come.

It is interesting to know how those research findings were different and to obtain new understanding on how the use of financial ratios and non financial ratios in predicting financial distress happening in mining companies using logistic method. A lot of research analyzing *financial distress* prediction in Indonesia does not use logistic approach. Therefore, research on using logit approach is something new. *Financial distress* is dependent variable in this model. The contribution of this research is to give information to internal and external parties of the companies about financial ratio and non-financial ratio that give significant influence in predicting *financial distress*.

2. Literature Review

2.1 Financial Statement

Company financial statement is written to take the responsibility of company activities to the owner and give information about financial position achieved by company (Brigham, 2006). Therefore, particular parties who want to know the company development need to know and understand the financial statement.

The common instrument used is financial ratios because they can standardize financial information which can be used as comparative tool among companies with different size (Keown, 2011). Ratio analysis is a method used to know the correlation of certain posts in the balance or profit and loss statement in one statement or combination of both (S. Munawir, 1981).

2.2 Performance and Company Performance Evaluation

Financial information is useful to evaluate managers' performance responsibility because it is an evaluation of human behavior in playing his role to reach organization or company goals. Another probability is the integrated use of financial statement and non-financial statement to evaluate managers and CEOs' performance.

Based on Mulyadi (1997) performance evaluation is periodic determination of operational effectiveness on organization, organization part and employer according to target, standard and criteria that are previously arranged. Basically, organization is managed by man, so performance evaluation is the evaluation over man behavior in playing his role within organization.

Financial performance is determination of certain criteria that measure company success in making profit. In evaluating the performance, company and responsible managers should be correlated. Managers' responsibility of financial achievement can be known by observing the company. Nevertheless, managing responsibility and measuring financial achievement at the same time is not easy since there are some can be easily evaluated and conversely (Mulyadi, 1997).

According to Weston (2004) here are some categories used in evaluating company performance:

1. *Profitability ratios* measure management effectiveness based on profit obtained from sale and investment.
2. *Growth ratios* measure company ability in maintaining its economic position within economic growth and industry or product market where they run.
3. *Valuation measure* evaluates management ability in reaching market values which are more than cash expenditure.

2.3 Financial Distress

Financial distress is a condition where companies have bankruptcy potency because they cannot pay their need and make low profit. It gives impacts on capital change, so the companies should be restructured. Analysis on financial problem can help the companies to make decision and take action over companies having financial distress.

Financial distress can be used as an early warning for company problems. Companies with many debts could have financial distress sooner than companies with few debts (Ross, 2009). Therefore, the sooner prediction on financial problem conducted, the better companies run their operation and management can take initial steps to avoid bad condition. The information about bankruptcy prediction has some advantages to some parties (Lukman, 2004):

1. **Loaner**
Bankruptcy information can be reference to make decision to whom the loan is given and to monitor the existing loans.
2. **Investor**
Investors of companies bond and stock are willing to know the bankruptcy probability of the companies. Those who have active strategies will develop prediction method on the bankruptcy to see its signs as soon as possible and anticipate it.
3. **Government**
Government have responsibility to monitor some corporate companies, so they need to know bankruptcy alarms sooner to handle it better.
4. **Accountant**
Accountants need to know the information of corporate company progress since they will measure *going concern* ability of a company.
5. **Management**
Bankruptcy information can be used to do prevention so bankruptcy can be avoided and minimized.

3. Research Hypothesis

Hypothesis of this research is used as research guide to reach the objectives. Luciana (2003) stated that *current ratio* gave significant influence in predicting financial distress, the high *current ratio* showed companies financial distress probability is low. Bandyopadhyaya (2006) stated that *cash ratio* gave significant influence and the high cash ratio showed capacity of long term debt payment, so financial problem probability was decreased. Then, Pang Tien (2008) stated that *debt ratio* gave significant influence and high debt ratio will increase financial distress probability because it showed companies debt is more than asset. Taufan (2010) stated that ROA was ratio that can be used to predict financial distress one year before it happens. Research finding of Shuk Wern (2011) stated that high *days sales in receivables ratio* showed that the sale increased in credit aspect. It means that income could not be saved in cash record because financial distress increased. Pang Tien (2008) stated that managerial and controller ownership could be used as predictor and gave significant effect on companies' financial distress in Italy.

Based on the description, the research hypothesis as follow:

- H₁ : Variable x₁ *current ratio* can be used as prediction instrument of financial distress happening in mining companies listed in Bursa Efek Indonesia.
- H₂ : Variable x₂ *cash ratio* can be used as prediction instrument of financial distress happening in mining companies listed in Bursa Efek Indonesia.
- H₃ : Variable x₃ *debt ratio* can be used as prediction instrument of financial distress happening in mining companies listed in Bursa Efek Indonesia.
- H₄ : Variable x₄ *ROA* can be used as prediction instrument of financial distress happening in mining companies listed in Bursa Efek Indonesia.
- H₅ : Variable x₅ *days sales in receivables ratio* can be used as prediction instrument of financial distress happening in mining companies listed in Bursa Efek Indonesia.
- H₆ : Variable x₆ managerial ownership ratio can be used as prediction instrument of financial distress happening in mining companies listed in Bursa Efek Indonesia.
- H₇ : Variable x₇ institutional ownership ratio can be used as prediction instrument of financial distress happening in mining companies listed in Bursa Efek Indonesia.

4. Research Method

4.1 Research Type

This research is categorized as survey research of explanatory research which focuses on relational research, studying the relation among variables.

4.2 Population and Sample

The population of this research was mining companies listed in BEI with criteria: public mining companies listed in BEI and they did not have *delisting* during research period (2008-2010). Based on the criteria, there were 13 companies that met the criteria. The sampling technique used was saturated sample or census.

4.3 Research Variable and Measurement

The variables of this research were financial ratios and non financial ratios. To avoid vagueness of variables meaning in this research, here are some operational variables definitions.

4.3.1 Independent Variables

Independent variables of this research were:

1. *Current Ratio*, is liquidity ratio used to measure companies asset availability used in companies operational process. Here is the formula:

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

(Koes, 2010) (1)

2. *Cash Ratio*, is liquidity ratio used to measure cash proportion in asset total. The formula is:

$$\frac{\text{EBITDA}}{\text{Total Liabilities}}$$

(Pang-Tien, 2008) (2)

3. *Debt Ratio*, is a ratio indicating debt proportion to companies equity. It measures how many companies activities use fund through debt (creditor) are. Here is the formula:

$$\frac{\text{Liabilities}}{\text{Equity}}$$

(Pang-Tien, 2008) (3)

4. ROA, is a ratio used to measure rate of return over companies asset or companies ability in obtaining profit. Here is the formula:

$$\frac{\text{Netto Profit For Stockholder}}{\text{Asset Total}}$$

(Luciana, 2003) (4)

5. *Days sales in receivables ratio* measures how long companies debt can be paid. Here is the formula:

$$\frac{\text{Receivables}}{\text{Sales}/365}$$

(Shuk-Wern, 2011) (5)

6. Managerial ownership ratio is a situation where managers have company stock or they are the stockholders, this variable is collected using interval data of the company during 3 years (2008-2010) in the form of ratio and counted using this following formula:

$$\frac{\text{Number Of Stocks Possessed By Director And Commissionair}}{\text{Number Of Stock Out Standing}}$$

(Pang-Tien, 2008) (6)

7. Institutional ownership is ownership percentage of non management stock over companies stock such as bank, insurance, or other institutions. This variable is collected using interval data of companies for 3 years (2008-2010) in the form of ratio and measured using this following formula:

$$\frac{\text{Number Of Stocks Possessed By Institution}}{\text{Number Of Stock Out Standing}}$$

(Pang-Tien, 2008) (7)

4.3.2 Dependent Variable

Based on some previous research, companies have financial distress when cash flow is negative (Whitaker, 1999), net operating income is negative (Whitaker, 1999), and *earning per share* is negative (Eloumi, 2001). Based on the case, this research used three financial distress indicators:

- a. CF (*Cash Flow*)

Cash flow should be considered by company because it is the companies' ability to make cash. (Whitaker, 1999).

- b. NOI (*Net Operating Income*)

NOI is income obtained by companies during one period after minus by gross income and corporate company charge (Whitaker, 1999).

- c. EPS (*Earning per Share*)

EPS is net income received by stockholders for every piece of stock (Eloumi, 2001).

Here are some considerations of value of those indicators:

- a. CF (*cash flow*) is given 3 (very important), because the measurement of *financial distress* with CF is very prominent for companies, creditors and stockholders.

- b. NOI (*net operational income*) is given 2 (important), because *financial distress* measurement with NOI is prominent for creditors and stockholders.
- c. EPS (*earning per share*) is given 1 (important enough) because *financial distress* measurement with EPS is prominent enough for stockholders.

Then, in scoring, if the indicator is negative, the score is 1 and if it is positive, the score is 0. Multiplication between value and score is total number that decides whether the companies are categorized in financial distress or non-financial distress, $0 \leq \text{total number} \leq 6$. Based on the number, if:

- a. Total number ≥ 3 : companies are categorized in *financial distress* condition.
- b. Total number < 3 : companies are categorized in *non-financial distress* condition.

4.4 Logistic Regression

This research used logistic regression because dependent variables have nominal scale consisting two categories, while independent variables are multi variables that have interval scale, ratio, ordinal or mixed among four scale measures. It is similar to idea of Ooghe (2007) stating that logistic regression is a model describing the effect of independent variables X to dependent variables Y, if Y variables are qualitative data-binary (dummy) while X variables are mixture of category data (binary) or non category.

Logistic analysis model by (Westgaard, 2005):

$$L_i = \text{Ln} \left[\frac{P(Y=1|x)}{P(Y=0|x)} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_{10} X_{10} + \mu$$

L_i = dummy dependent variable or log odd where :

Y = 1, companies having financial distress

Y = 0, companies do not have financial distress

Ln = natural logarithm, \log_{exp} where $\text{exp} = 2.71828 \dots$

Pi = probability with occurrence Y = 0 dan Y = 1 will appear

$P(Y=1)/P(Y=0)$ is "*the odds ratio*" (probability of occurrence is divided by no probability of occurrence)

$\text{Ln} [P(Y=1)/P(=0)]$ is "*log odds ratio or logit*"

β_0 =Constantan

β_{1-10} =Slope

X_{1-10} =Independent variable

μ =Error term

Constanta and coefficient of independent variables of the equation cannot be searched by OLS method because logistic regression is non-linier so *Maximum likelihood* approach is likely to be used (Papagea, 2005). It is used to measure intercept and constantan coefficient, so observation probability on Y (dependent variables) is conducted well and close to real value. With *logistic treatment*, p will be different in about 1 and 0.

4.5 Data Collection Method

Data used in this research was mining companies data in BEI in the form of general description of company or company profile, financial statement such as balance, profit-loss statement and cash flow statement during 2008-20120 which were taken from statement published by BEI.

5. Finding and Analysis

5.1 Logistic Regression

Data analysis and hypothesis test in this research were conducted using logistic regression model which was used to know the effect of independent variables on dependent variables under condition, value on dependent variables is 0 and 1 (binary). Data was analyzed using SPSS version 17 based on data of mining companies' financial statement from BEI.

Table 1 Comparison result -2 Log Likelihood

-2 Log Likelihood		Nagelkerke R ²
Block 0	Block 1	
Constantan	Constantan + Independent variables	
42,136	11,248	0,828

Source : Processed Data 2013

Value -2 log likelihood in this model involves independent variables (11, 248) which is lower than model not involving independent variables (42, 136). It shows that addition of independent variables on this model is better than without independent variable, so this model is appropriate. Value of Nagelkerke R² (0,828) shows that independent variables of this model in explaining response diversity is 0, 828 or 82, 8 % and the rest is 17, 2 % which is explained by other factors.

Table 2 Omnibus Test Result

χ^2_{test}	Significance	$\chi^2_{table (7,5\%)}$	Info
30,888	0,000	14,067	Influenced

Source : Processed Data 2013

Chi-Square test value is 45, 086 with significance value 0, 000. Because of Chi-Square value is higher than table Chi-Square (30,888>14,067) and significance value is lower than alpha 5% (0,000<0,050), it is concluded that the model involving independent variables is better and can be used in the model. Thus, there is significant influence simultaneously.

Table 3 Hosmer and Lemeshow Test Result

χ^2_{hitung}	Significance	$\chi^2_{table (8,5\%)}$	Info
5,092	0,748	15,507	Not significance

Source : Processed Data 2013

Chi-Square test value is 5,092 with significance value is 0,748. Because of Chi square is lower than table chi square (5,093<15,507) and significance value is higher than alpha 5% (0,748>0,050), it is concluded that the model used has similar prediction probability to observed probability. Thus, the model formed can predict the observation data well and it is appropriate to be used.

Table 4 Model Prediction Result

Observation	Prediction		Percentage
	FD	NFD	
FD	29	1	96,7%
NFD	1	8	88,9%

Percentage Total = 94,9%

Source : Processed Data 2013

On the Table 5.4.1.4 in 30 observations of Financial Distress (FD), there are 29 accurate predictions and 1 wrong prediction with accuracy percentage is 96,7%, in 9 observations of Non Financial Distress, there are 8 accurate predictions and 1 wrong prediction with accuracy percentage is 88,9%, so overall prediction accuracy is 94,9%.

Table 5 Multicollinearity

	Current	Cash	Debt	ROA	Receivables	Managerial	Institutional
Current	1						
Cash	0.716	1					
Debt	-0.743	-0.482	1				
ROA	-0.123	-0.016	0.314	1			
Receivables	-0.216	-0.281	0.227	0.039	1		
Managerial	-0.443	-0.436	0.362	-0.147	0.156	1	
Institutional	0.048	0.078	-0.077	-0.259	-0.039	0.196	1

Source : Processed Data 2013

From the test result, there is no correlation value of independent variables which are more than 0, 90, so there is no correlation among independent variables and multicollinearity assumption is accepted.

5.2 Hypothesis Test

Table 6 Hypothesis Test Result

Variable	Coefficient B	Exp (B)	Wald	Sig	Info
Constanta	10.498	3.624	3.439	0.064	No
Current	-0.159	0.853	3.981	0.046	Influenced
Cash	-0.495	0.609	4.747	0.029	Influenced
Debt	-0.509	0.601	5.106	0.024	Influenced
ROA	-0.482	0.617	1.637	0.201	No
Receivables	0.000	1.000	0.013	0.910	No
Managerial	-0.189	0.828	0.100	0.752	No
Institutional	0.130	1.139	1.221	0.269	No

Source : Processed Data, 2013

Based on the test result in Table 5, here is the explanation :

1. Constanta variable has Wald value (3, 439) higher than Chi Square (3, 842) and significance value (0, 064) higher than alpha 5% (0, 050), so if there is no influence from independent variables, there will be no real

- influence on response variables.
2. Current variable (X1) has Wald (3, 981) higher than Chi Square value (3, 841) and significance value (0, 0641) lower than alpha 5% (0, 050) so, current variable gives significant influence on response variable. Negative correlation coefficient indicates that the higher current ratio, the lower the financial distress probability of the companies because current ratio describes the availability of companies' asset used for operational companies activities.
 3. *Cash* variable (X2) has Wald value (4,747) higher than Chi Square value (3,841) and significance value (0,029) lower than alpha 5% (0,050), so *cash variable* (X2) will give significant influence to response variable. It indicates that the higher the cash ratio, the lower the financial distress probability of companies.
 4. *Debt* Variable (X3) has Wald value (5,106) higher than Chi Square value (3,841) and significance value (0,024) lower than alpha 5% (0,050), so *debt* variable (X3) will give significant influence to response variable. It indicates that the higher the debt ratio, the lower the financial distress probability of companies.
 5. ROA Variable (X4) has Wald value (6,159) higher than Chi Square value (3,841) and significance value (0,013) lower than 5% (0,050), so ROA variable (X4) will give significant influence to response variable. The negative correlation indicates that the higher the companies' profitability, the lower the financial distress probability of companies. However, ROA variable does not give significant influence to the financial distress probability of the companies. It indicates that the degree of profitability does not influence financial distress of mining companies.
 6. *Receivables* Variable (X5) has Wald value (0,013) lower than Chi Square value (3,841) and significance value (0,910) higher than alpha 5% (0,050) so, *receivables variable* (X5) does not give significant influence to response variable. This positive correlation indicates that the higher the *day sales in receivables ratio*, the higher the financial distress probability of companies. However, *day sales in receivables ratio* does not give significance influence to financial distress probability of companies. It indicates that the degree of *day sales in receivables ratio* does not give influence to financial distress of mining companies.
 7. *Managerial* Variable (X6) has Wald value (0,100) lower than Chi Square (3,841) and significance value (0,752) higher than alpha 5% (0,050) so, *managerial* variable (X6) does not give significant influence to response variable. This negative correlation indicates that the higher the managerial ownership ratio, the lower the financial distress probability of companies. However, managerial ownership ratio does not give significant influence to financial distress probability of companies. It indicates that the degree of the managerial ownership ratio does not influence the financial distress of mining companies.
 8. *Institutional* Variable (X7) has Wald value (1,221) lower than Chi Square value (3,841) and significance value (0,269) higher than alpha 5% (0,050), so *institutional* variable (X7) does not give significant influence to response variable. This positive correlation indicates that the higher the institutional ratio, the higher the financial distress probability of companies. However, institutional ratio does not give significant influence to financial distress probability of companies. It indicates that the degree of institutional ratio does not influence financial distress of mining companies.

Thus, the equation of logistic regression is:

$$\ln p/(1 + p) = 10,498 - 0,159\text{Current} - 0,495\text{Cash} - 0,509\text{Debt} - 0,482\text{ROA} + 0,000\text{Receivables} - 0,189\text{Managerial} + 0,130\text{Institutional}$$

5.3 Discussion

5.3.1 The Effect of *Current Ratio* on *Financial Distress* Condition

The use of current asset in mining companies is different from other common companies since they have characteristics such as capital intense, high risk, and long time for *revenue* (Agung, 2008). Based on the fact, the measurement of current ratio in mining companies is very important as they have low current ratio that it is hard for them to cover current debt in due date.

The low *current ratio* can show the problems within companies' liquidity. On the other hand, companies with too high current ratio are not good enough because it shows that their fund is not used that can decrease their profit gaining finally (Taufan, 2010). Luciana (2006) found that the higher the current ratio, the lower the financial distress of the companies. This research finding supported previous theories and research finding such Taufan (2010) studied *food and beverages* companies, Koes (2010) studied all manufacturing companies, and Pasaribu (2008) studied manufacturing companies listed in Bursa Efek Jakarta that found current ratio gave significant influence to negative correlation coefficient and its accuracy was 98%. It meant that the higher the current ratio, the lower the financial distress probability.

5.3.2 The Effect of *Cash Ratio* to *Financial Distress* Condition

Cash ratio describes companies' liquidity with more liquid asset. So, the measurement of cash ratio in mining companies is very significant as they have capital intense that makes them have low liquidity. Therefore, it will be hard for them to cover current asset if the due date comes. Besides, mining companies also have quite long time for *revenue* so their liquidity is lower.

Cash ratio shows companies ability in paying short term debt with cash and stock and assess how cash proportion in asset total (Brigham, 2006). Companies with high proportion cash have capacity in paying short term debt, so financial distress probability decreases. This theory is similar to Bandyopadhyaya (2006) who found the higher the cash ratio, the lower the financial distress probability of companies and the lower the cash ratio, the higher the financial distress probability of companies. This research finding supported previous finding such as Papagea (2005) studied prediction on bond payment failure, Ugurlu (2006) studied *emerging market* in Turkey, Taufan (2010) studied *food and beverages*, Shuk-Wern (2011) studied public companies in Malaysia, Luciana (2006) studied *go public* companies and found cash ratio gave positive significance with accuracy was 58%, and Pang Tien (2008) studied *cross-holding groups* in Italy and found that 3 years prior to financial distress, cash ratio influenced significantly to negative correlation coefficient which means the lower the cash ratio, the lower companies' working capital and the higher the financial distress probability.

5.3.3 The Effect of Debt Ratio to Financial Distress Condition

Debt ratio describes how much companies' fund coming from long term debt, the low ratio shows there is a higher protection for long term creditors. If companies loan too much, they will get difficulty in paying installment and interest. It shows the indication of financial distress (Pang-Tien, 2008). The higher the *debt to equity* ratio, the higher the financial distress probability, while the lower the ratio, the lower the financial distress probability.

This research finding is based on the theory taken from MM (Modigliani-Miller) they stated that the amount of long term debt in this term is the long term debt number until optimal rate of companies. So, the high long term debt number to optimal rate of companies can increase companies value, while if it is more than optimal rate, financial distress will happen. Miller (1961) stated that interest coming from debt can decrease tax so loaner can take advantage from the debt. It can be seen in figure 5.5.3 below:

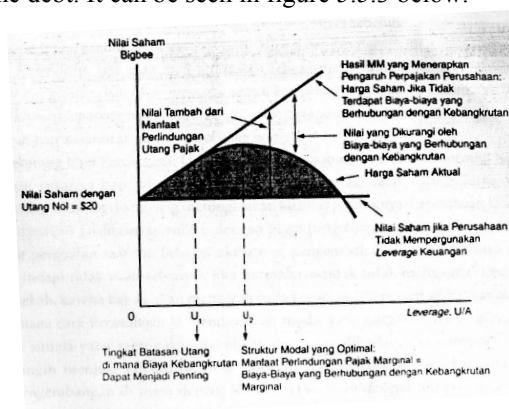


Figure 1 Exchange Theory of MM

This research finding supported theory and previous research such as Papagea (2005) studied *food and beverages* industry, Filia (2010) studied all corporate company in BEI, Alessandra (2011) studied manufacturing companies in Italy and found debt ratio has significant effect on negative correlation coefficient. This finding was different from Shuk-Wern (2011) studied public companies in Malaysia and found debt ratio has significant effect on positive correlation coefficient.

5.3.4 The Effect of ROA to Financial Distress Condition

ROA measures companies' ability in achieving profit with all assets they have in companies. When they have high ROA, it shows that they have greater ability in increasing profit. The fact gives positive to stock investors to get greater stock *return* (Aryati, 2002). The insignificant result in this research is caused by most mining companies during research period show profit margin retained by negative. The profit comes from corporate company loss or too high dividend. This loss is caused by too high dividend payment as companies sell their stocks to investor to obtain fund. It can be seen from equity proportion dominated by paid capital.

According to BEI No. 1B year 2000 and 2001, companies will be considered *delisting* if they do not pay cash dividend (for stock) for 3 years gradually. It indicates that although mining companies have negative profit, they are still able to pay dividend. Therefore, ROA ratio cannot be used as financial distress predictor in mining companies.

This research finding supported previous research finding such as Gibson (1998) studied XYZ company, Ying-Zhou (2007) studied manufacturing companies in Europe, Pang-Tien (2008) studied *cross-holding groups*, Pasaribu (2008) studied manufacturing companies in BEJ, Alessandre studied manufacturing companies in Italy, and Shuk-Wern (2011) studied public companies in Malaysia and found that ROA did not give significant effect, the rate of ROA did not influence financial distress probability.

5.3.5 The Effect of *Day Sales in Receivables Ratio* on *Financial Distress Condition*

Days sales in receivables ratio is one of the ratios which measures companies effectiveness in managing assets (Brigham, 2006). If *Days sales in receivables ratio* is high, its receiving to supply circulation will decrease. It indicates that sale increases in credit form and much income still does not become cash so it can decrease cash amount and companies try hard to add supply or production in increasing sale. Thus, short term liquidity risk and financial probability increase.

Generally, mining companies projects are processed with long term exploration funding (Agung, 2008). Therefore, loaners pay their debt completely or gradually. Complete payment displays bad financial statement because companies show high debt amount and low debt amount at the same time (Shuk-Wern, 2011). Because debt activity written on financial statement is in fluctuation, *day sales in receivables ratio* is not significant to be used as predictor of financial distress in mining companies.

This research finding supported some previous research such as Luciana (2003) studied manufacturing companies in BEJ, Ying Zhou (2007) studied manufacturing companies in Europe, Pang-Tien (2008) studied *cross-holding groups*, Alessandra (2011) found *days sales in receivables ratio cannot be used to predict financial distress condition*.

5.3.6 The Effect of *Managerial Ration* on *Financial Distress Condition*

Christiawan (2007) in Puspitasari (2010) viewed that companies having managerial ownership, managers who also become stockholders will harmonize their concern as managers and stockholders, so they decide funding carefully. While companies do not have managerial ownership, managers who do not become stockholders will concern their own self.

However, one of the reasons why this ration does not give significant influence to mining companies is the low average of companies performance without managerial ownership compared to those with managerial ownership. Although average of companies performance managed by managers who become stockholders tend to be better, the managers' ownership awareness to company cannot make big difference in achieving good performance. It is different from pure managers as professional workers who are salaried by company. It happens because of the low managerial ownership in mining companies.

This research finding supported some previous research such as Hong-xia (2007) studied manufacturing companies in China, Filia (2010) studied corporate company and Erlindasari (2012) found managerial ratio cannot be used to predict financial distress condition.

5.3.7 The Effect of *Institutional Ratio* on *Financial Distress Condition*

One of the factors of *corporate governance* is institutional ownership. That companies owned by institution provide more effective control since institution is professional organization that has ability in evaluating companies' performance (Christiawan, 2007). However, one of the reasons why institutional ratio is not significant in mining companies is the unsuccessful target in increasing companies' margin. Institutional investors are not primary owners so they cannot monitor managers' performance well. Therefore, institutional ownership decreases public trust over the companies (Hong-Xia, 2007). Thus, institutional ratio is not significant to be used as financial distress predictor in mining companies.

This research finding supported some previous research such as Hong-Xia (2007) studied manufacturing companies in China, Filia (2010) studied corporate company in BEI and Erlindasari (2012) found institutional ratio is not significant to be used as financial distress predictor.

6. Conclusion

Variables that give significant influence to predict *financial distress* of mining companies listed in BEI during 2008-2010 are financial variables such as *current ratio*, *cash ratio*, and *debt ratio*. According to research finding, *financial distress of mining companies cannot be predicted by using non-financial variables such as managerial and institutional ownership variables, because of the low proportion of stock ownership possessed management and institution*.

Despite this research provided some finding, it has limit out of researcher's scope that should be studied further. This research finding cannot be generalized to all types of company and research period. It is different from research in certain period and industry. For next researchers, they are supposed to lengthen research period to see *trend* of research sample, they need to consider sample number that is used and data collection method so sample really represent population. They are also required to concern with the rate of research variable contribution, other predictors and methods that are used in this research.

References

- Al-Tamimi, Hussein A. Hassan. (2012). "The Effects Of Corporate Governance On Performance And Financial Distress", *Journal of Financial Regulation and Compliance*, Vol. 20, No. 2, page 169-181.
- Alessandra Amendola, Marco Bisogno, Marialuisa Restaino and Luca Sensini. (2011). "Forecasting Corporate Bankruptcy: Empirical Evidence On Italian Data", *Euro Med Journal of Business*, Vol. 6,

- No. 3, page 294-312.
- Aryati Titik dan Hekinus Manao. (2002). "Rasio Keuangan sebagai Prediktor Bank Bermasalah di Indonesia", *Jurnal Riset Akuntansi Indonesia*, Vol. 05, No. 02, page 137-147.
- Bandyopadhyay, Arindam. (2006). "Predicting Probability Of Default Of Indian Corporate Bonds: Logistic And Z-Score Model Approaches", *The Journal of Risk Finance*, Vol. 7, No. 3, page 255-272.
- Brigham, Eugene F dan Joel F. Houston. (2006). "Dasar-dasar Manajemen Keuangan Edisi 10 Buku 1", Alih Bahasa: Ali Akbar Yulianto, Salemba Empat, Jakarta.
- Eloumi dan Gueyie. (2001). "Financial distress and corporate governance: an empirical analysis", *Corporate Governance* 1 (1): 15-23. *MCB university press*.
- Foster, George. (1986). "Financial Statement Analysis". Prentice Hall, Englewood Cliffs, New Jersey.
- Gibson, N. Brian. (1998). "Bankruptcy Prediction: The Hidden Impact of Derivatives", (<http://www.ssrn.com>).
- Pageim, Syahrul. (2010). *Kilas Balik Ekonomi Dunia dan Indonesia Tahun 2008-2010*, Makasar, (<http://www.profitunitytrade.blogspot.com>).
- Hong-xia Li, Zong-jun Wang and Xiao-lan Deng. (2007). "Ownership, Independent Directors, Agency Costs And Financial Distress: Evidence From Chinese Listed Companies", *Corporate Governance*, Vol. 8, No. 5, page 622-636.
- Ikatan Akuntansi Indonesia. (2004), "Pedoman Standart Akuntansi Keuangan". Salemba Empat, Jakarta.
- Juliana, Arista Verawati. (2013). *Pengaruh Kinerja Keuangan terhadap Return Saham (Sektor Pertambangan di BEI 2009-2012)*. <http://repository.upi.edu>
- Keown, J. Arthur, John D. Martin, J. William Petty, and David F. Scott, Jr. (2001), "Financial Management Principles and Applications", Prentice Hall, New Jersey.
- Koes Pranowo, Noer Azam Achsani, Adler H. Manurung, Nunung Nuryartono. (2010). "The Dynamics of Corporate Financial Distress in Emerging Market Economy: Empirical Evidence from the Indonesian Stock Exchange 2004-2008", *European Journal of Social Science*, Vol. 16, No. 1.
- Koes Pranowo, Noer Azam Achsani, Adler H. Manurung, Nunung Nuryartono. (2010). "Determinant of Corporate Financial Distress in an Emerging Market Economy: Empirical Evidence from the Indonesian Stock Exchange 2004-2008", *International Research Journal of Finance and Economics*, Vol. 52, No.1.
- Luciana, Spica Almilia. (2003). "Analisis Rasio Keuangan Untuk Memprediksi Kondisi Financial Distress Perusahaan Manufaktur Yang Terdaftar di Bursa Efek Jakarta", *JAAI*, Vol. 7, No.2, Desember 2003.
- Luciana, Spica Almilia. (2006). "Prediksi Kondisi Financial Distress Perusahaan Go public Dengan Menggunakan Analisis Multinomial Logit", *Jurnal Ekonomi dan Bisnis*, Vol. 7, No. 1.
- Miller, M.H., and F.Modigliani. (1961). Dividend policy, growth, and the valuation of shares. *Journal of Business*. 34: 411- 433.
- Mott, Graham, (2005), "Akuntansi Praktis bagi Non-Akuntan", Dahara Prize, Semarang.
- Moeljadi. (2006), "Manajemen Keuangan Pendekatan Kuantitatif dan Kualitatif Jilid 1", Bayumedia Publishing, Malang.
- Mulyadi, (1997), "Akuntansi Manajemen", YKPN, Yogyakarta.
- Ooghe, Hubert and Sofie Bakaem, (2007), "Are Failure Prediction Models Widely Useable? An Empirical Study Using a Belgian Dataset", *Multinational Finance Journal*, Vol. 11, No. 1, page 33-76.
- Papagea Nainggolan dan Latifah Hanum. (2005). "PrediksiGagal Bayar Obligasi Tahun 1998-2004 Dengan Analisis Diskriminan dan Regresi Logistik", *Jurnal Bisnis dan Manajemen*, Vol. 5, No. 1, page 79-90.
- Pang-Tien Lieu, Ching-Wen Lin and Hui-Fun Yu. (2008). "Financial Early-Warning Models On Cross-Holding Groups", *Industrial Management and Data System*, Vol. 108, No. 8, page 1060-1080.
- Pasaribu, Rowland Bismark Fernando. (2008). "Penggunaan Binary Logit Untuk Prediksi Financial Distress Perusahaan Yang Tercatat Di Bursa Efek Jakarta", *VENTURA*, Vol. 11, No. 2.
- Prastowo, Dwi. (2002), "Analisis Laporan Keuangan Konsep dan Aplikasi", AMP YKPN, Yogyakarta.
- Puspitasari, Filia dan Ernawati, Endang. (2010). "Pengaruh Mekanisme Corporate Governance Terhadap Kinerja Keuangan Badan Usaha", *Jurnal manajemen Teori dan Terapan*, Vol. 3, No. 2.
- Iramani. (2007). *Model Prediksi Financial Distress Perusahaan Go Public di Indonesia*. Disertasi, Program Doktor Manajemen, Program Pascasarjana Fakultas Ekonomi dan Bisnis Universitas Brawijaya.
- Ross, Stephen A., Randolph W. Westerfield, and Jeffrey F. Jaffe, (2009), *Corporate Finance*, Richard D. Irwin Inc, America.
- Salim, Ubud. (2011), *Manajemen Keuangan Strategik*, UB Press, Malang.
- Sekaran, Uma, (2007), *Metodologi Penelitian Untuk Bisnis Edisi 4 Buku 1*, Salemba Empat, Jakarta.
- Shuk-Wern Ong, Voon Choong Yap and Roy W.L. Khong. (2011). "Corporate failure prediction: a study of public listed companies in Malaysia", *Managerial Finance*, Vol. 37, No. 6, page 553-564.
- S. Munawir, (1981), *Analisis Laporan Keuangan Edisi Kedua*, Liberty, Yogyakarta.

- Lukman, Syamsuddin. (2004), *Manajemen Keuangan Perusahaan*, PT Raja Grafindo Persada, Jakarta.
- Taufan, Mohammad. (2010). "Pengaruh Rasio Keuangan Terhadap Prediksi Kebangkrutan Perusahaan Industri Makanan dan Minuman yang Terdaftar di BEI Tahun 2007-2010", (<http://www.google.com>).
- Ugurlu, Mine and Aksoy, Hakan. (2006). "Prediction of corporate financial distress in an emerging market: the case of Turkey", *Cross Cultural Management: An International Journal*, Vol. 13, No. 4, page 277-295.
- Walsh, Ciaran. (2003), *Key Management Ratios Edisi 3*, Alih Bahasa: Spageahuddin Haikal, 2003, PT Gelora Aksara Pratama, Jakarta.
- Westgaard, Sjur. (2005). "What Can Modern Statistical and Mathematical Techniques Add to the Analysis and Prediction of Bankruptcy?", *Beta*, Vol. 2, No. 5.
- Weston, J. Fred & Thomas E. Copeland, (2004), *Manajemen Keuangan*, Alih Bahasa: Drs. A. Jaka Wasana MSM, Binarupa Aksara, Jakarta.
- Whitaker, R. B. (1999). "The Early Stages of Financial Distress". *Journal of Economics and Finance*. 23: 123-133
- Widyasaputri, Erlindasari. (2012). "Analisis Mekanisme Corporate Governance Pada Perusahaan Yang Mengalami Kondisi Financial Distress", *Accounting Analysis Journal*, Vol. 1, No. 2.
- Zhou, Ying and Taha M.S. Elhag, (2007), "Apply Logit Analysis in Bankruptcy Prediction", *International Journal of Beijing*, Vol. 15, No. 2.

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