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Determining Macroeconomic Factor of Financial Distress in Malaysia

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ABSTRACT

The companies that have financial distress will become a dangerous threat to many economic agents such as the investor, managers, client, employee and bankers that hold an interest in the companies. The financial failure or distress of the company not only affect many parties but also towards the company itself, as it needs a large amount of cost to be used to stabilize the condition of the company. Due to that, several researchers suggest the macroeconomic indicators do have a significant impact on the financial distress. However, the macroeconomic factors are rarely used in a study as a variable in predicting the financial distress of a company because of some researchers suggest that the macroeconomic variables have already been considered for the financial ratio variables. Therefore, the purpose of this study is to investigate the significant macroeconomic indicators on financial distress company in Malaysia by determining the relationship between each of the macroeconomic variables towards the financial distress company. This study will use a sample of a company from Bursa Malaysia which is from Practice Note 17 (PN17) with 10 years of periods. Thus, the result shows that the real interest rate (RIR), consumer price index (CPI), producer price index (PPI) and money supply (M2) have a significant effect on financial distress companies. While, for the non-financial distress, the macroeconomic indicators that have a significant effect on the non-financial distress companies are the gross domestic product

(GDP), consumer price index (CPI), producer price index (PPI) and money supply (M2). Therefore, the macroeconomic factor does have a high explanatory on the financial distress in Malaysia.

INTRODUCTION

Financial distress in Malaysia can be defined as a condition in which a company or individual cannot generate revenue or income because of unable to meet or cannot pay its financial obligations. This is generally due to high fixed costs, illiquid assets, or revenues sensitive to economic downturns. Ignoring the signs of financial distress can be distressing for a company. There may come a time when severe financial distress cannot be cured because the company or individual's obligations are too high and cannot be paid, and there is just not enough revenue to offset the debt. If this happens, bankruptcy may be the only option.

If a company or individual experiences a condition of time when it cannot pay its debts and other obligations by their due date, it is likely experiencing financial distress. Some of these expenses may include financing, opportunity costs of projects, and employees who aren't productive. Employees of a distressed firm usually have lower morale and higher stress caused by the increased chance of bankruptcy, which could force them out of their jobs. Besides that, investor of the company also might take back their shares from the company to avoid losses.

Companies under financial distress may find it difficult to protected financing. They may also find their market value falling significantly, customers cutting back orders, and suppliers changing their terms of delivery. Looking at a company's financial statement can help investors and others determine its financial health. For example, negative cash flow under the cash flow statements is one indicator of financial distress. This could be caused by a big difference between cash payments and receivables, high interest payments, and a drop in working capital.

LITERATURE REVIEW

The determinants of financial distress can be found either from an internal factor or external factor of a company's economic condition of the company or external factor which is the economic condition. According to several of Malaysia's economists or journalist studies for example Alifiah (2014), and Abdullah, Rus, and Ahmad (2009) have done studies on the factors that influence financial distress among the company. Besides, Mohmad Isa (2004) finds the determinants of financial distress can be divided into four (4) main groups of financial ratios which are the asset management, liquidity ratio, profitability ratio and leverage ratio, that can be obtained from the company financial position and financial performance. However, Mohmad Isa (2004) also considers macroeconomics variables in his research and he found that the Gross domestic product (GDP) is a significant variable in predicting financial distress in Malaysia. This result is also supported by other researchers such as Bunn and Redwood (2003) and Kritzerr (1985).

Moreover, there was research about the macroeconomic determinants of corporate failure in Malaysia by Halim, Mohd Daud, Rizal Mazlan and Marzuki (2008). They suggested that the macroeconomic variables such as Gross Domestic Product (GDP), Consumer Price Index (CPI), Average Lending Rate (ALR) and corporate birth are the determinants of corporate failure. However, they have found that only the Gross Domestic Product (GDP), Consumer Product Index (CPI) and Average Lending Rate (ALR) have a significant relationship with financial distress. In addition, a study from Alifiah (2013) on the prediction of financial distress companies in the trading and services sector in Malaysia using macroeconomic variables has found that only Base Lending Rate (BLR) has a positive relationship with the financial distress whereby the other macroeconomic variables such as the Gross Domestic Product (GDP), Consumer Product Index (CPI), Kuala Lumpur Composite Index (KLCI) & Money Supply (M2), have a negative relationship.

A study from Moleong, (2018) stated that higher interest rates can reduce the economy when interest rates rise then it affects the calculation of interest for creditors in determining the burden interest. So that the higher the real interest, the higher it will be the interest for the company which means it can also make the company experience financial distress. However, Moleong (2018) found that the real interest rates did not affect the financial distress. This can be because of companies tend to choose to use own capital rather than capital from outside the company so that the rate is tribal interest does not affect financial distress Sapoetri (2013). The results of this Moleong study are in accordance with the results of research by Veronica and Anantadjaya (2006) as well Djumahir (2007) which shows that real interest rates do not affect financial distress. However, the results of this study are not consistent with Irvan and Kartika's (2016) statement, which states that real interest rates will have an impact on probability financial distress company.

Furthermore, studies from Alifiah and Sohail Tahir (2018) on predicting the financial distress companies in the manufacturing and non-manufacturing sector in Malaysia using macroeconomic variables such as Base Lending Rate (BLR), Gross Domestic Product (GDP), Money Supply (M2), Consumer Price Index (CPI) and Kuala Lumpur Composite Index (KLCI), have found that only the Money Supply (M2) has a significant impact to the financial distress for both manufacturing and non-manufacturing companies. In addition, a study from Ben Jabeur Sami (2014) on the macroeconomic variables in financial distress that used a macroeconomic variable such as Consumer Product Index (CPI), Industrial Price Index (IPI), Money Supply (M2), and Producer Price Index (PPI). He has found that the Money Supply (M2) and Producer Price Index (PPI) have a high regression coefficient towards financial distress.

Therefore, this paper attempts to investigate whether the proposed macroeconomic indicator could explain the financial distress in Malaysia companies. Once the macroeconomic indicator is identified, the companies in Malaysia will have an outlook and idea on which macroeconomic indicator that they need to observe as signs and symptoms of financial distress in Malaysia.

METHODOLOGY

This study sample consists of panel data for 21 companies in Practice Note 17 (PN17) in Bursa Malaysia, with the period from 2008 – 2017 (10 years). The dependent variable data was obtained from the annual report each of the companies. While for the independent variables which are the macroeconomic variables was obtained from world bank data.

Altman Z-score Model

Various financial distress prediction model has been developed, such as multivariate discriminant analysis (MDA), genetic logarithm, logistic and neural networks. In this paper, the model that has been used is the Altman Z-score model developed by Dr Altman in 1968. The Z-scores model defined as a "linear analysis in five measures is objectively weighted and summed up to arrive at an overall score that then becomes the basis for classification of firms into one of the priori groupings" Altman (1968).

The Z-score model is a combination of five types of financial ratio. Namely, the working capital to total assets, retained earnings to total assets, earnings before tax and interest to total assets, market value of equity to book value of total liabilities and sales to total assets. Furthermore, the application of z-score model needs to follow four procedure:

1. Each of the independent variables needs to be observed and determine the statistical significance of various alternative functions.
2. Evaluate the intercorrelations among the variables.
3. Observe the prediction accuracy.
4. Based on the researcher intuitive judgement.

The Z-score is calculated as follows:

$$Z\text{-}Score = 1.2T_1 + 1.4T_2 + 3.3T_3 + 0.6T_4 + 0.999T5$$

T_1 = Working Capital to Total Assets
T_2 = Retained Earrings to Total Assets
T_3 = EBIT to Total Assets
T_4 = Price to Debt
T5 = Sales to Total Assets

Zone of discrimination is as follows:

Z > 2.99	"Safe" zone
1.80 < Z < 2.99	"Grey" zone
Z < 1.80	"Distress" zone

Macroeconomic Factor

Gross Domestic Product (GDP) can be defined as the monetary value of all the finished goods and services that produce within the country's boarders in a specific period. Usually, the GDP will be calculated based on an annual basis or quarterly basis.

Real Interest Rate (RIR) can be defined as an interest or lending interest rate that has been adjusted to remove the effects of inflation as measured by GDP deflator in order to reflect the cost of funds to the borrower and the real yield to the lender or investor.

Consumer Price Index (CPI) is a comprehensive measure that used for estimation of price changes of goods and services. Where it represents the consumption of expenditure in an economy.

Producer Price Index (PPI) is to measure the changes price of commodities that charged by the domestic producers and also paid by those importers for importing goods in Malaysia.

Money Supply (M2) Money Supply (M2) is used to represent the liquidity of the country. The increase in the money supply (M2) will upwell the liquidity of a country and also can cause the interest rate to decline

Empirical Model

$$FD_{it} = \beta^0 C + \beta^1 GDP_{it} + \beta^2 RIR_{it} + \beta^3 PPI_{it} + \beta^4 CPI_{it} + \beta^5 M2_{it} + \in$$

Where,

$\beta^0 C$	=	CONSTANT
$\beta_1 - \beta_4$	=	COEFFICIENT OF SLOPE
FD	=	FINANCIAL DISTRESS
GDP	=	GROSS DOMESTIC PRODUCT
RIR	=	REAL INTEREST RATE
PPI	=	PRODUCER PRICE INDEX
CPI	=	CONSUMER PRICE INDEX
M2	=	MONEY SUPPLY
$\in$	=	STANDARD ERROR

FINDINGS

Table 1 presents the regression result about the impact of macroeconomic variable toward the financial distress based on Financial Distress Company. Meanwhile, Table 2 presents the regression results in the Non-financial Distress Company. From the result of Breusch Pagan Lagrange Multiplier (BPLM) test in the previous sub-topic have stated that both financial distress company and non-financial distress company data cannot use Pooled Ordinary Least Square (OLS) and the Hausman test where it recommended that the data is more efficient to be analysis by using the Random Effect (RE) regression.

Before analysis the result, the researcher needs to conduct the diagnostic check to ensure the findings of the regression data will

not suffer from heteroskedasticity problem and autocorrelation problem. The Modified Wald test to check the heteroskedasticity and the Wooldridge test to check the autocorrelation problem whereby for both null hypothesis (H0) is there is no heteroskedasticity and no autocorrelation. Findings from the test stated that the data for financial distress company and non-financial distress company data are suffering the heteroskedasticity data. The researcher conducts a robust technique in the regression to solve the heteroskedasticity data.

In the regression after robust stated that out of five independent variables in the financial distress company data, only one variable that is Gross Domestic Product is an insignificant result at any level. On the other hand, the Real Interest Rate (RIR), Consumer Price Index (CPI), Product Price Index (PPI) and Money Supply (M2) are significant at 1% confident level. The RIR, PPI and M2 have been proved to positively impact towards the financial distress modal where it indicates that for every 1% increase for RIR, PPI and M2 will increase the financial distress by 1.4993%, 0.24222% and 0.0754% respectively. However, the CPI is a negative sign of coefficient which mean that every 1% increase in the consumer price index will lead to decline the financial distress by 0.8012%.

Zooming towards the non-financial distress company, four out of five independent variables are significant at a different level. The RIR, CPI and PPI are significant at 1% level while GDP and M2 are significant at 5%. All the five significant independent variables are positively influencing the financial distress modal which means that every 1% increase in the GDP, RIR, CPI, PPI and M2 will increase the financial distress by 0.1126%, 0.0254%, 0.0515%, 0.0566% and 0.0754% respectively.

Table 1 Regression for financial distress companies

Variables	POOLED OLS	FE	RE	RE WITH ROBUST
GDP	-.0074021 (0.1409613)	-.0074021 (0.097280)	-0.0074021 (0.097280)	-0.0074021 (0.0466947)
RIR	1.499371 * (0.8823587)	1.499371 *** (0.6089322)	1.499371 *** (0.6089322)	1.499371 *** (0.3896111)
DCPI	-.8012008 *** (0.2554646)	-.8012008 *** (0.1763009)	-0.8012008*** (0.1763009)	-0.801200 *** (0.2448860)
PPI	.2422206 *** (0.066860)	0.2422206 *** (0.0461414)	0.2422206 *** (0.0461414)	0.2422206 *** (0.0466227)
M2	.0754381 (0.079555)	0.0754381 (0.0549024)	0.0754381 (0.0549024)	0.0754381 ** (0.0242869)
CONSTANT	-35.78703 *** (10.32762)	-35.78703 *** (7.127284)	-35.78703 *** (7.140038)	-35.78703 *** (6.269336)
R-SQUARE	0.2212	0.4010		0.2212
ADJ R – SQUARE	0.1999			
F – STATISTICS	0.0001	0.0001	0.0001	0.0001
WALD CHI2 (5)			109.11	152.48
MODIFIED WALD			0.0001	
WOOLDRIDGE			0.4930	

Notes: The value of parenthesis is standard errors, then *p*-value represents by ***, **, and * indicate significant at 1%, 5% and 10% significance levels, respectively

Table 2 Regression for non-financial distress companies

Variables	POOLED OLS	FE	RE	RE WITH ROBUST
GDP	0.1125999 (0.1661964)	0.1125999 (0.0828397)	0.1125999 (0.0828397)	0.1125999 ** (0.0595299)
IR	0.0253951 (0.0900541)	0.0253951 (0.0448870)	.0253951 (.0448870)	0.0253951 (0.0289901)
DCPI	0.0514873 (0.0406011)	0.0514873 *** (0.0202374)	0.0514873 *** (0.0202374)	0.0514873 *** (0.0216669)
PPI	0.0565299 (0.0504949)	0.0565299 *** (0.0251689)	0.0565299 *** (0.0251689)	0.0565299 *** (0.0150236)
M2	0.0753972 (0.0464085)	0.0753972 *** (0.0231321)	0.0753972 *** (0.0231321)	0.0753972 *** (0.0330270)
CONSTANT	-12.9187 (9.725812)	-12.9187 *** (4.847781)	-12.9187 *** (4.858359)	-12.9187 *** (5.253757)
R-SQUARE	0.2652	0.2652	0.2652	0.2652
ADJ R – SQUARE	0.2451			
F – STATISTICS	0.0001	0.0001	0.0001	0.0001
WALD CHI2 (5)			265.80	276.77
MODIFIED WALD			0.0001	
WOOLDRIDGE			0.0001	

Notes: The value of parenthesis is standard errors, then *p*-value represents by ***, **, and * indicate significant at 1%, 5% and 10% significance levels, respectively

CONCLUSION

In conclusion, this paper attempts to determine the macroeconomic indicator in financial distress in Malaysia based on a sample from PN17. The companies were divided into two groups which are financial distress companies and non-financial distress companies. The reason why the company being segregate into two types because of this study want to know whether different companies' status would have a different macroeconomic indicator.

Based on the result from the finding, it shows that the financial distress companies have four (4) significant macroeconomic indicator out of five (5). Namely, the RIR, CPI, PPI and M2, that have been proved to positively impact the financial distress. While the GDP is insignificant towards financial distress. The real interest rate (RIR) result is in accordance with Irvan and Kartika's (2016). While the consumer price index (CPI) result is supported by Halim, Mohd Daud, Rizal Mazlan and Marzuki (2008) study that stated the consumer price index have a significant impact towards the financial distress in Malaysia. A study from Ben Jabeur Sami (2014) found the same result as this paper where the producer price index (PPI) and money supply (M2) have a significant impact on the financial distress. Meanwhile, for the non-financial distress companies, the result shows that all of the macroeconomic indicators have a significant impact on the financial distress. The overall result in this paper following the statement from Liou and Smith, (2006) where they state that the economic factor is also considered as a good indicator in predicting a company's financial distress.

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