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DETERMINANTS OF FINANCIAL DISTRESS: THE CASE OF GOVERNMENT-LINKED COMPANIES IN MALAYSIA

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Abstract

This study examined the relationship between financial distress level and liquidity, profitability and leverage for the 30 Government-Linked Companies (GLCs) in Malaysia using financial data for the period of 2016 until 2020. Financial distress level is measured using Altman Z-score, while liquidity, profitability and leverage are proxied by current ratio, return on assets (ROA) and debt ratio, respectively. Total assets, representing company size, is also included as a control variable. Panel regression analysis was conducted using Eviews 13.0. The findings revealed that all three independent variables are significantly related to Altman Z-score, with the hypothesized relationships, supporting the theory and also previous empirical studies. This further reinforces the importance of profitability, liquidity and leverage in ensuring that a company does not experience financial distress. About three-quarter of the GLCs are in financial distress, as evidenced by the Altman Z-score of below 1.81, and it is recommended that the government take prudent measures to improve their financial conditions. The negative correlation between ROA and debt ratio suggests that optimal capital structure does not exist because the marginal increase in debt level erodes profitability, instead of increasing it through tax benefits. The findings of this study also reinforce the M&M Theory and Trade-off theory in which optimal debt level is imperative in ensuring that a company maximizes its value while at the same time minimizing the risk of financial default. Future studies are recommended to compare the GLCs with other public-listed companies and also to extend the time period.

Keywords: Altman Z-Score, Financial Distress, Government-Linked Companies, M&M Theory, Signaling Theory, Trade-Off Theory

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1. Introduction

Financial distress of large corporations is frequently discussed and studied by finance researchers. It is at the forefront of finance research because financial distress affect the value and sustainability of a company (Khaliq et al., 2014) and therefore is pertinent especially to the shareholders. According to Abdullah et al. (2016) when a company experiences financial difficulty, shareholders bear much of the risk on any capital investment made. It is therefore imperative that a company should be cautious in making capital budgeting and capital structure decisions, especially so when experiencing financial distress. Due to the many financial crises that have occurred, including the economic slowdown during the COVID-19 pandemic, many companies around the world, including in Malaysia, are vulnerable to experience financial distress. The implications of financial distress include eroded reputation and financial credibility that do not augur well to the financiers, customers and other stakeholders. In addition, the stock price will be devalued and further trading restrictions may be enforced by the regulators.

When a company is in financial distress, its cash flow is not sufficient to cover its commitment such as current liabilities and interest expense and drastic measures have to be taken to mitigate the problem. Its day-to-day operations may be affected as the company is preparing for financial restructuring. The severity of the distress impact depends on the company's profitability, liquidity and solvency levels (Chan et al., 2011). According to Brahmana (2007), negative profits and low equity book value also indicate financial distress and mitigating measures must be taken promptly. When a company experiences financial distress, various parties inside and outside of the company will feel the heat and start to initiate several actions. Shareholders and investors face the risk of losing equity values, creditors are concerned on the company's ability to repay the loans, while employees worry on their salary and wages. Therefore, in order to make good investment decisions, it is vital for investors to predict bankruptcy of companies, especially those that are showing distress signals (Yuliastary & Wirakusuma, 2014). According to Hanafi and Halim (2012), lenders and investors, among others, can benefit from bankruptcy or financial distress prediction. The company's management will be able to come up with effective mitigating measures to avoid further deterioration and eventually, bankruptcy.

Financial ratios are commonly used to assess and to forecast companies' financial performance. In addition, financial ratio analysis is used in valuation to obtain concise and realistic financial and accounting reports as well as to make comparisons with other companies in the same sector (Ahn et al., 2000). It also enables analysts to ascertain whether or not a company is facing financial difficulty, especially in facing a financial crisis (Muhammad & Triharyono, 2019). Leverage ratios are used to measure the proportion of debt versus equity in a company's capital structure. The most common ratio used is debt ratio, which is total debt divided by total assets, which gives a general idea about the company's degree of leverage and thus financial risk (Dambolena & Khoury, 1980). A high debt ratio shows the company is having an obligation to serve high interest payments and will face financial difficulty when it experiences cash flow problem in business downturn, especially during a financial crisis (Andrade & Kaplan, 1997) and can be an effective warning signal for financial distress.

Liquidity ratios are used to analyse a company's ability to pay its short-term obligations using its current assets. The most common liquidity ratio is current ratio, which is current assets divided by current liabilities. Campbell et al. (2010) stressed on the importance of maintaining an adequate level of liquid

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assets in order to prevent financial problems. This is especially so for GLCs because it also reflects on their financial status as companies that are linked to the government. Profitability ratios are used to determine a company's ability to generate income and indirectly measures the management's efficiency in managing the costs and expenses. The ratios measure overall financial performance and how efficient a company manages its resources (Fraser & Ormiston, 2004). Furthermore, higher profits indicate higher efficiency and liquidity, thus lowering the risk of default (Aghaei & Saeedi, 2009). High profitability increases the confidence of creditors and investors because it ensures that the company can meet its financial obligations such as interests on borrowings and dividends to shareholders. According to Duan et al. (2012), there is a significant negative relationship between profit and financial problems. This is supported by various studies that examine the relationship between companies' ability to generate profits and the difficulty they face in meeting the financial obligations (Fumani & Moghadam, 2015). The most commonly used profitability ratio is return on assets (ROA), which is net profit divided by total assets.

One of the early warning signals of financial distress is decline in revenue and profit, resulting in reduced cash flows and thus difficulty to repay debt. Therefore, profitability, liquidity and leverage indicators are the most prominent indicators of financial distress. According Kim-Soon et al. (2013), financial distress level increases as liquidity ratio declines because the company may default on its short-term payments to creditors. Profitability serves as a leading indicator of financial performance and its level indicates a firm's cash position. Researchers have examined financial distress issues over the past few decades and quite a number of them involved large reputable corporations in the developed countries (Bender, 2013).

2. Problem Statement

In Malaysia, Government Linked Companies (GLCs) comprise large corporations in which the government has substantial ownership and they are involved in key economic activities. Usually the government, through its agencies, have a say in the appointment of the directors and top management of the companies. Therefore, the governance structure of GLCs may differ from other private corporations and this may affect the financial performance of both types of entities (Ab Razak et al., 2008). Many studies have examined the financial distress determining factors and most of them focused on the overall public-listed companies. However, studies that focus on government-linked companies (GLCs) are scarce even though these companies play a significant role in key economic sectors of the country. Understanding the determinants of financial distress among GLCs is vital because it can provide the government valuable information that can assist in the management, restructuring, and policy ramifications. Furthermore, according to Azman (2004), although many GLCs are large in size, some of them have internal control problems and are lacking in terms of strategic competitiveness, thus resulting in lower return on capital and shareholder value, higher gearing ratios and lower productivity.

3. Research Questions

Based on the literature and also the problem statement presented above, the following research questions are developed for this study in the context of Malaysian GLCs:

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i. Is there a significant relationship between financial distress and liquidity?
ii. Is there a significant relationship between financial distress and profitability?
iii. Is there a significant relationship between financial distress and leverage?
iv. Is there a significant relationship between financial distress and total assets?

4. Purpose of the Study

The main purpose of this research paper is to examine the financial distress determinants of GLCs in Malaysia. The Altman Z-Score model will be used to measure the financial distress and the independent variables selected to be examined are liquidity, profitability, leverage and total assets.

5. Research Methods

The sample of the study consists of 30 public-listed GLCs in Malaysia. Annual financial data from 2016 to 2020 was collected from the annual reports published in Bursa Malaysia website. The dependent variable is the Altman Z score, and the independent variables are debt ratio (leverage), current ratio (liquidity) and return on assets (profitability). Total assets is also included as a control variable.

The panel regression model for the study is shown here:

$$Z_{i,t} = \alpha + \beta_1 DR_{i,t} + \beta_2 CR_{i,t} + \beta_3 PRF_{i,t} + \beta_4 LNTA_{i,t} + \varepsilon$$

Where,

$Z_{i,t}$ = Altman Z-score of firm i at year t
$DR_{i,t}$ = Debt Ratio (Leverage) of firm i at year t
$CR_{i,t}$ = Quick Ratio (Liquidity) of firm i at year t
$ROA_{i,t}$ = Return on Assets (Profitability) of firm i at year t
$LNTA_{i,t}$ = Natural log of Total Assets of firm i at year t
α = Intercept
ε = Error term

Altman Z-score measures the financial distress level of a company and is measured using the following equation (Altman, 1968; Khaliq et al., 2014):

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5$$

Where,

X_1 = Working capital/Total assets
X_2 = Retained earnings/Total assets
X_3 = Earnings before interest and taxes/Total assets
X_4 = Market value of equity/Book value of liabilities
X_5 = Sales/Total assets

Z-score of above 2.99 indicates that the company is in good financial condition and save from financial distress and bankruptcy. Z-score between 1.81 and 2.99 is a warning sign that indicates that the firm starts to face financial difficulty. Z-score of less than 1.81 is an alarm signal that indicates financial

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trouble. Diagnostic tests to check on normality and multicollinearity were conducted. Descriptive analysis, correlation analysis and multiple regression analysis were performed using Eviews 13.0.

6. Findings

6.1. Diagnostic tests

Jarque-Bera test was conducted and there was no problem of normality for the data. For multicollinearity, the Variance Inflation Factor (VIF) shows that there is no serious multicollinearity among the independent variables in this study. Meanwhile, the durbin-watson statistic shows that there's no problem of autocorrelation.

6.2. Descriptive statistics

Table 1 shows the descriptive statistics of all the variables in the study.

Table 1. Results of descriptive analysis

	CR	DR	LNTA	ROA	Z
Mean	1.665262	0.554595	8.946078	0.028045	1.609330
Median	1.453570	0.553190	9.612334	0.035350	1.224830
Maximum	7.042340	1.199810	12.10864	0.183930	7.297110
Minimum	0.302460	0.146780	6.142661	-0.376120	-1.280970
Std. Dev.	0.995415	0.179388	1.539653	0.067714	1.483565

The mean for Altman Z-score is 1.609, showing that on average, over the 5-year period, the 30 GLCs included in the sample of the study exhibit financial trouble. The highest Z-score, 7.297, is recorded by Petronas Gas Bhd. in 2016, while the lowest Z-score, -1.2809, is recorded by Air Asia Bhd. in 2020. The high standard deviation 148% shows that there is a big discrepancy in the Z-score between the high performing and low performing GLCs. The means for current ratio, debt ratio, ln total assets and return on assets are 1.665, 0.554, 8.946 and 0.028, respectively. Average current ratio of 1.665 shows that on average, all the GLCs are able to maintain a sufficient level of liquidity and have no problem paying their short-term obligations. The average return on assets of 2.804% shows that over the 5-year period, the average profitability of the GLCs is relatively low. Only a handful of companies recorded double-digit ROA, and quite a number recorded losses. The highest return on assets, 18.39%, is recorded by Pasdec Holdings in 2020, while the lowest return on assets, -37.61%, is recorded by Media Prima Bhd. in 2017. The best year is 2016, with average ROA of 4.15%, while the worst year is 2019, with average ROA of only 1.96%.

Table 2 shows the average figures (2016 to 2020) for Altman Z-score, liquidity ratio, debt ratio, profitability ratio, and total assets of all 30 GLCs selected for this study. The companies are arranged from the highest to lowest Altman Z-scores.

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Table 2. Detailed figures for all 30 GLCs

No	COMPANY	Z-score	Current Ratio	Debt Ratio	ROA	Assets (Mil)
1	Petronas Gas	5.94	4.67	0.28	0.13	18,106.66
2	Time Dotcom	5.85	2.28	0.22	0.07	3,284.86
3	Atlan Holdings	4.23	2.94	0.32	0.08	934.24
4	Sime Darby	2.82	1.76	0.42	0.03	41,970.20
5	Pharmaniaga	2.18	0.79	0.72	0.03	1,674.21
6	UMW Holdings	2.14	1.82	0.51	0.01	11,944.39
7	KPJ Healthcare	2.00	1.06	0.60	0.06	5,017.91
8	KUB Malaysia Bhd	1.75	1.59	0.41	0.02	531.97
9	Bintulu Port	1.71	3.48	0.58	0.07	3,036.03
10	Gamuda Berhad	1.67	2.01	0.51	0.03	16,455.85
11	IJM Corp Berhad	1.56	2.36	0.50	0.04	21,629.82
12	Telekom Malaysia	1.52	1.19	0.71	0.04	24,669.22
13	Tenaga Nasional	1.47	1.38	0.63	0.05	157,778.02
14	Glomac Berhad	1.23	1.28	0.42	0.05	1,931.05
15	Ranhill Berhad	1.17	1.51	0.75	0.06	2,921.33
16	FGVH	1.10	1.08	0.64	0.00	19,114.48
17	Pasdec Holdings	1.09	2.00	0.36	0.03	531.40
18	Malaysia Airports	1.08	1.59	0.59	0.03	21,645.61
19	SP Setia	1.05	1.83	0.49	0.03	28,381.38
20	Axiata Group	1.04	0.58	0.62	0.03	67,802.92
21	MRCB Berhad	1.00	1.62	0.48	0.02	8,600.60
22	Bina Darulaman	0.92	1.23	0.42	0.01	871.27
23	MMC Berhad	0.87	0.96	0.58	0.03	24,677.58
24	Air Asia Berhad	0.79	0.82	0.87	0.00	21,493.77
25	Boustead Holdings	0.71	0.60	0.54	0.01	17,517.60
26	Malakof Berhad	0.66	2.26	0.76	0.03	27,970.63
27	TH Plantations	0.54	1.82	0.60	- 0.03	3,102.54
28	Media Prima Berhad	0.37	1.97	0.47	- 0.09	1,570.78
29	DRB-Hicom	0.14	0.55	0.78	0.00	43,217.67
30	Perak Corp	- 0.30	0.89	0.84	- 0.06	918.45

Based on the figures shown in table 2, we can clearly see that only three companies score high Altman Z-score, namely, Petronas Gas, Time Dotcom and Atlan Holdings. Four other companies scored medium Altman Z-score, namely, Sime Darby, Pharmaniaga, UMW Holdings and KPJ Healthcare. The remaining 23 companies scored low Altman Z-scores (below 1.81), indicating that 76.7% of the GLCs in Malaysia are experiencing financial distress. The highest Z-score is recorded by Petronas Gas (5.94), while the lowest Z-score is recorded by Perak Corp (-0.30), which is the only company with negative Z-score.

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6.3. Correlation analysis

Table 3 shows the results of correlation analysis among the independent variables in the study.

Table 3. Results of correlation analysis

	CR	DR	ROA	LNTA
CR	-	-0.5185	0.35178	-0.1183
DR	-	-	-0.3217	0.2614
ROA	-	-	-	0.1119

Based on the correlation analysis, current ratio is negatively correlated with debt ratio (-0.5285) and total assets (-0.1183), and positively related with return on assets (0.3517). Return on assets is negatively correlated with debt ratio (-0.3217) and positively related with total assets (0.1119). No correlation coefficient above 0.70 is recorded, showing that there's no problem of multicollinearity among the independent variables.

6.4. Panel regression

Table 4 shows the results of panel regression between the Altman Z-score as the dependent variable, against the independent variables, namely, current ratio (DR), debt ratio (DR), return on assets (ROA) and Ln total assets (LNTA) from 2016 to 2020.

Table 4. Results of regression analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.293501	0.558788	4.104421	0.0001
CR	0.380507	0.093998	4.048045	0.0001
DR	-3.513597	0.535663	-6.559340	0.0000
ROA	7.074302	1.277348	5.538275	0.0000
LNTA	0.048335	0.053662	0.900736	0.3692
R-squared	0.600662	Mean dependent var		1.609330
Adjusted R-squared	0.589646	S.D. dependent var		1.483565
F-statistic	54.52520	Durbin-Watson stat		0.343779
Prob(F-statistic)	0.000000			

The R-squared of 0.6006 shows that altogether, on average, the independent variables selected for this study are able to explain 60.06% of the variation in the dependent variable, which is the Altman Z-score. This shows that 40% of the variation in the Altman Z-score is explained by other variables not included in the study. All three independent variables selected for the study are significantly related to Altman Z-score at 1% significance level. Current ratio (0.3805) and return on assets (7.074) are positively related, and debt ratio (-3.5135) is negatively related to Altman Z-score. The findings support the

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hypotheses and are in-line with many previous studies. The control variable, ln total assets, is not significantly related to Altman Z-score.

The coefficient value shows that, on average, when current ratio increases by 1%, the Altman Z-score increases by 0.3805%, on average, while holding other independent variables constant. Increase in current ratio occurs when there is an increase in current assets or a decrease in current liabilities, which results in an increase in the net working capital level, the first component in the Altman Z-score formula. It is imperative for companies to have a positive net working capital level, hence a current ratio above 1.0 in order to maintain sufficient liquidity level so that they have no problem paying their short-term obligations to the creditors and suppliers. The finding is consistent with the assertion made by Hill et al. (2011), whereby companies must maintain a high liquidity ratio to avoid experiencing financial problems.

For profitability, when ROA increases by 1%, the Altman Z-score increases by 7.074%, on average, while holding other independent variables constant. Increase in net profit is resulted from an increase in earnings before interest and taxes (EBIT), which is the third component in the Altman Z-score formula, and the one with the highest weightage (3.3). The result supports the findings by various studies that show that profitability is the most important criteria in assessing the financial health of a corporation and is negatively related to financial distress, hence positively related to Altman Z-score (Aghaei & Saeedi, 2009; Duan et al., 2012; Fraser & Ormiston, 2004; Fumani & Moghadam, 2015).

For leverage, the results shows that when debt ratio increases by 1%, the Altman Z-score decreases by 3.51%, on average, while holding other independent variables constant. Leverage is incorporated in the Altman Z-score formula in component number four vis-à-vis market value of equity/market value of liabilities ratio, with a weightage of 0.999. The higher the level of debt, the higher would the interests be, and in that respect, increases the risk of default for the company. This is in-line with the assertion made by Andrade and Kaplan (1997), whereby a high debt ratio shows the company is having an obligation to serve high interest payments and will face financial difficulty when it experiences cash flow problem and can be an effective warning signal for financial distress.

The fact that total asset is not significantly related with Altman Z-score shows that company size does not significantly influence financial distress. A large corporation is susceptible to financial distress as a small company, if the profitability and liquidity is low and leverage is high. What matters is the ability to generate profits, maintain high liquidity and strive for optimal debt level in the capital structure, regardless of the size of total assets.

7. Conclusion

This study analyses the relationship between financial distress level, which is proxied by Altman Z-score, and selected independent variables, namely, debt ratio, return on assets, current ratio and total assets, for a period of 5 years from 2016 to 2020. Panel regression analysis shows that there is a significant relationship between Altman Z-score and debt ratio, return on assets and current ratio. The results support the hypotheses whereby Altman Z-score is positively related to liquidity (current ratio) and profitability (return on assets); and negatively related to leverage (debt ratio). These findings are in-line with many earlier studies that examine the determinants of financial distress in companies. For correlation analysis, the fact that ROA is negatively related to debt ratio shows that as far Malaysian

GLCs is concerned, on average, optimal debt ratio does not occur because the marginal increase in debt level erodes the profitability, instead of increasing it through tax benefits. The findings of this study also reinforces the M&M Theory and Trade-off theory in which optimal debt level is imperative in ensuring that a company maximizes its value while at the same time minimizing the risk of financial default.

The findings of this study have supported the existing theories and literature on financial distress, as far as Altman Z-score model is concerned. It is recommended that the government can take several measures to ensure that the profitability and liquidity of the GLCs are improved and the optimal debt level is achieved. Detailed data show that many GLCs are in dire need of restructuring and improvement whereby 76.7% of them scored Altman Z-score below 1.81, which indicate that they are in financial distress. Evidently, the profitability and liquidity level is considerably low, while the leverage is quite high. As the backbone of government's economic agenda, it is imperative for the GLCs to have good financial standing and set good example to other public-listed companies.

Future studies may want to include other independent variables that may influence financial distress such as corporate governance factors. Comparison with other non-GLCs could also be conducted and sectorial analysis can be performed to better understand the determinants of financial distress. Finally, future studies may want to have longer study period that includes financial crisis to assess the gravity of financial distress during crisis.

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