# FACTORS AFFECTING FINANCIAL DISTRESS: THE CASE OF MALAYSIAN PUBLIC LISTED FIRMS

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### Abstract

A sample of 101 companies is selected randomly from Bursa Malaysia during the period 2005-2009 where two models are used to analyze the relationships between financial distress and firms' characteristics and risk. The dependent variables are long-term debt to total equity ratio and short-term debt to total equity ratio. The independent variables are profitability, liquidity, firm size, solvency, growth and risk. Size is found to be significant and has a positive relationship with financial distress. Interest coverage ratio has a positive relationship with financial distress, while growth of operating profits has a negative relationship with financial distress. Corporate managers should use these indicators to detect early signs of financial distress and take innovative actions to prevent such occurrences.

**Keywords:** Financial Distress, Risk, Financial Ratios

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## Introduction

A competitive and globalized business environment will only ensure the fittest firms will survive and the number of firms that faced financial distress will end up in corporate failure and total shutdown. It must be noted that although there are empirical studies on financial distress, the major issues of failure predictions are far from resolved. Zulkarnain and Shamsher (2004) stated that the problem is partially due to the nature of research findings from developed economies that cannot be generalized to different economic environments such as emerging markets like Malaysia. They also stated that dissimilarity in market structure, provision and implementation of law and accounting standards make it complicated to apply developed-economy prediction models in developing economies. Dewing (1952) provided four causes of business failures: excessive competition, unprofitable expansion, cessation of public demand for the companies' products or services, and excessive payment of capital charges. Donaldson (1969) defined failure as low "financial flexibility" and Newton (1975) stated that firms in financial distress has gone through four stages of deterioration before declaring bankruptcy, which are incubation, cash shortage, financial insolvency and total insolvency.

Empirical researches have shown that for a given financial profile, the occurrence of bankruptcy increases greatly in times of economic recession (Taffler, 1983). Ferri et al. (1998) stated that an important factor that led to the East Asian Financial Crisis and caused many corporations to wind-up is the problems of corporate financial structures in East Asian corporations including Malaysia. Firms in Malaysia are considered to be under financial distress when they apply to the relevant authorities requesting the restructuring of their organizations according to a scheme of arrangement pursuant to section 176 to 178 of the Malaysian Companies Act 1965.

Furthermore, the Asian financial crisis in 1997 had caused many financially strong companies to be financial distress and almost all had wound-up. Corporate incomes and cash flows declined, thus causing distressed firms to default on their financial obligations. These companies either fall into the category of financially distressed companies or force into bankruptcy when they failed to adapt to the unexpected change in the economy downturn. Thus, it is essential to study the factors that lead to corporate financial distress. The need for country specific models of corporate failure prediction is well developed (Taffler and Abassi, 1984) due to the differences in legal, cultural and regulatory systems. Differing financial ratio benchmarks have led to industry specific models. They have been advocated by Taffler (1983), El Hennawy and Morris, 1983), Jones (1987) and Houghton and Smith (1992). There are specific models in manufacturing sector (Altman, 1971); construction industry (Mason and Harris, 1979), retailing (Taffler, 1984) and financial institutions sector (Houghton and Smith, 1992).

On the other hand, Pandey (2002) stated that capital structure increases the probability of financial distress and bankruptcy. Firms will encounter costs of financial distress when they are not able to service periodic debt payments. Their debt ratios will be high if these costs are zero or trivial (Scott, 1976; Kim, 1978). Most of the studies on financial distress are focused in United States where researchers have identified several significant variables that caused financial distress. There are only a few studies that focus on the financial distress issues in Malaysia. Malaysia is not as developed as United States and the reasons identified may not be applicable to the companies in Malaysia. Thus, the following research question will be investigated: What are the factors contributing to financial distress in publicly listed firms in Malaysia?

The main aim in this study is to identify factors that cause financial distress in Malaysian companies. Once the factors are identify, companies in Malaysia will have an idea and outlook on which firms' characteristics that they need to observe as signs and symptoms of financial distress. This will trigger early warnings and initiatives can be taken to reduce the probability of financial distress.

## Literature Review

### Financial Distress

Debt-equity ratio has been used to measure a firm's level of financial distress. Debt is considered borrowings made by the business from outsiders who are paid a periodic amount of interest on the money borrowed (Madan, 2007). According to Upneja and Dalbor (2001), debt should not be thought as homogeneous. Total debt should be analyzed together with short-term and long-term debt.

### Factors Contributing to Financial Distress
### Profitability

Campbell *et al.* (2005) studied the determinants of corporate failure and the pricing of financially distressed stocks by applying dynamic logit model. It shows lower profitability will lead to higher level of financial distress that increases that chance to fall into bankruptcy. Thus, it implies that there is a **negative** relationship between profitability and financial distress. Bankruptcy happens when the firms which face financial distress are unable to finance their financial obligations. One of the commonly used profitability ratios is the return on assets (Ohlson, 1980; Lo, 1986; and Gombola *et al.*, 1987). Therefore,

> **H₁: There is a negative relationship between financial distress and profitability.**

### Liquidity

Liquid assets are generally considered as a backing against crises, as they allow firms to save funds by not obliged to sell assets in unfavorable situations to pay their debt payments (Shleifer and Vishny, 1992). Also, liquid assets enable firms to avoid the higher cost of other sources of funds to fund their activities and investment (Mikkelson and Partch, 2003). In 2005, Weston, Butler and Grullon discovered that fees charged by investment banks are lower to firms with more liquid equity. The study has resulted that financial distress costs are **inversely** related to the holding of liquid assets. Therefore,

> **H₂: There is a negative relationship between financial distress and liquidity.**

### Size

Various studies have been done to analyze the concept of "too big to fail", for example, Ennis and Malek (2005). These studies propose that company's size can be employed as a negative indicator of probability of default and thus, as a proxy for risk. According to Denis and Mihov (2003), firm size is the most essential determinant in a firm's employment of public debt. In addition, both Chemmanur and Fulghieri (1994) and Bolton and Freixas (2000) argue that firm size is **negative**ly related to the probability of a firm going bankrupt and this is matching with ranking evidence in Horrigan (1966). Also, Palepu (1986) stated that firm size is anticipated to have a negative marginal impact on the probability of financial distress. According to Rajan and Zingales (1995), size would be a proxy for the inverse of the probability of financial distress, a traditional assumption that based on the negative correlation that may be existed between size and cash flow volatility. Therefore,

> **H₃: There is a negative relationship between financial distress and size.**

### Growth

Yosha (1995) suggested that companies with potentially valuable future growth projects would not raise public debt due to high disclosure costs of revealing sensitive information. Also, Mackie-Mason (1990) debates that research and development intensive firms, for example, firms with high-growth potential, should avoid issuing public debt. Thus, there should be a **negative** relationship between growth and debt financing. This means that high growth firms will face lower level of financial distress as they employ less debt financing. Assuming that firms are particular about the future as well as with current financing problems, there is high chance that firms with great expected growth opportunities will maintain a low risk debt capacity to avoid financing

future investment with equity offerings or passing the investment (Morri and Cristanziani, 2009). Hence,

**H$_4$: There is a negative relationship between financial distress and growth.**

### Solvency

Interest coverage ratio can be used to measure the severity of financial distress (James, 1996). It shows the capability of the firm to pay interest on borrowed money and the value 1 should be the minimum value for interest coverage ratio (Khan and Jain, 2004). Harris and Raviv (1990) suggest that leverage is **inversely** related to interest coverage ratio and they argue that an increase in debt will cause a higher default probability. Therefore, a high interest coverage ratio suggests a low probability of financial distress as default probability has a positive relation with the probability of financial distress. Hence,

**H$_5$: There is a negative relationship between financial distress and solvency.**

### Risk

Firms with high level of business risk have less capability to sustain financial risks and therefore, use less debt (Kim and Sorenson, 1986). Lower debt implies lower financial distress. Thus, there exists a **negative** relationship between business risk and financial distress. Also, several empirical studies have shown that there is a negative relationship between risk and debt ratio (Bradley *et al.*, 1984; Titman and Wessels, 1988; Friend and Lang, 1988; Kale *et al.*, 1991). Hence,

**H$_6$: There is a negative relationship between financial distress and risk.**

In Table 1, we expect the predictions of the relationship between the independent variables and the dependent variable.

**Table 1.** Financial Ratios Formulas and Expected Sign

| Ratios | Formula | Expected sign |
|---|---|---|
| | | |
| $X_1$ = ROA | Net Profit / Total Assets | - |
| $X_2$ = Current Ratio | Current Assets / Current Liabilities | - |
| $X_3$ = Size | Log Total Assets | - |
| $X_4$ = Earnings Growth Ratio | (Current Year Operating Profit – Last Year Operating Profit) / Absolute Value of Last Year Operating Profit | - |
| $X_5$ = Interest Coverage Ratio | Earnings Before Interest Taxes (EBIT) / Interest Expense | - |
| $X_6$ = Coefficient of Variation | Standard Deviation / Average EBIT | - |

## Methodology

### Sampling

The data were sampled from the Kuala Lumpur Stock Exchange (KLSE) for the period 2005-2009. A total of 101 companies are randomly chosen for this study. The companies chosen must incur long term and short term debt during the period of study. All these companies must deliver financial statements from year 2001 to 2009. Financial statements from year 2001-2004 are used to calculate the averages of some variables. Among the 101 companies, 32 companies are in the industrial products sector, 21 companies in consumer products sector, 17 companies in properties sector, 12 companies in services industry, 7 companies in each constructions sector and plantation sector, 3 companies in technology sector and one company each in finance and hotel sector. Besides

that, banks are excluded from the sample. This is due to the reason that banks' financial statements are considerably different from other companies. Therefore, overall there are 505 observations in the pooled data. Financial statements obtained from KLSE must be audited. After obtaining the relevant years of financial statements, the dependent and independent variables are keyed-in to the Microsoft Excel spreadsheet.

### Empirical Model and Proxy Variables

There are two models that needed to be estimated in this study:

### Model 1 (Long Term Debt)

The Model 1 : (LTD/TE) = $\alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 X_6 + \varepsilon_t$

## Model 2 (Short Term Debt)

The Model 2: $(STD/TE) = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 X_6 + \varepsilon_t$

| Dependent Variable | Independent Variable | Area of Observation of Independent Variable |
|---|---|---|
| LTD/TE = Long Term Debt / Total Equity | $X_1$ = Return on Assets Ratio (ROA) | Profitability |
| STD/TE = Short Term Debt / Total Equity | $X_2$ = Current Assets Ratio | Liquidity |
| | $X_3$ = Log Total Assets | Size |
| | $X_4$ = Earnings Growth Ratio | Growth |
| | $X_5$ = Interest Coverage Ratio | Solvency |
| | $X_6$ = Coefficient of Variation | Risk and volatility |

## Data Analysis and Results

Based on the regression results obtained from EViews after excluding the outliers, the coefficient and standard error of the estimated model 1 is as below:

$(LTD/TE) = -1.416697 - 0.262304X_1 - 0.010734X_2 + 0.183488X_3 + 0.000122X_4 - 4.62E{-}06X_5 + 0.000430X_6 + \varepsilon_t.$

Table 2. Results and Interpretations for Model 1

| Dependent variable | Long-term debt to total equity ratio | | |
|---|---|---|---|
| Independent variables | Coefficients | t-statistics | Probability |
| $X_1$ = ROA | -0.262304 | -8.529336 | 0.0000 |
| $X_2$ = Current Ratio | -0.010734 | -6.135406 | 0.0000 |
| $X_3$ = Log Total Assets | 0.183488 | 36.78004 | 0.0000 |
| $X_4$ = Earnings Growth ratio | 0.000122 | 1.954367 | 0.0521 |
| $X_5$ = Interest Coverage ratio | -4.62E-06 | -0.365052 | 0.7155 |
| $X_6$ = Coefficient of Variation | 0.000430 | 0.950529 | 0.3430 |
| R-squared | 0.891202 | | |
| Adjusted R-squared | 0.887837 | | |
| F-statistic | 264.8535 | | |

As seen in Table 2, ROA, current ratio and log total assets have significant relationship with the dependent variable, which is the long-term debt to total equity ratio. It means that profitability, liquidity and size are firms' characteristics that will determine whether a firm will fall in the dilemma of financial distress. This also confirm that $H_4$, $H_5$, and $H_6$ are not supported by the results obtained in Model 1, as all three variables (growth, solvency and risk) do not possess a significant relationship with financial distress that was due to employment of long-term debt.

Profitability has an inverse relationship with financial distress. This is consistent with $H_1$, which stated there is a negative relationship between financial distress and profitability (Campbell *et al,* 2005; Ohlson, 1980; Lo, 1986; and Gombola *et al.*, 1987). Firms with low profit have a higher probability in facing financial distress; consistent with pecking order theory, firms with high profit may not prefer to acquire debt financing as they have enough resources to use internal financing. Also, firms with high profit

have a higher chance to obtain debt financing at lower interest rate as they have a higher credit rating.

Liquidity also has an inverse relationship with financial distress and supports $H_2$, which stated that there is a negative relationship between financial distress and liquidity (Shleifer and Vishny, 1992; Mikkelson and Partch, 2003; Weston, Butler and Grullon 2005). Firms with high liquidity can liquidate their assets when they are in need of funds to finance a project or investment. Also, assets can be liquidated quickly when firms short of cash to pay the interest payment or principal of their debt financing.

The estimated sign for size is also consistent from expected (Ennis and Malek, 2005; Denis and Mihov, 2003; Chemmanur and Fulghieri, 1994; Bolton and Freixas, 2000; Horrigan 1966; Palepu 1986; Rajan and Zingales, 1995). This implies that large firms will face lower level of financial distress compared to small firms. The remaining variable; earnings growth ratio, interest coverage ratio, coefficient of variation; all are not statistically significant to this study.

Based on the regression results obtained from EViews after excluding the outliers, the coefficient and standard error of the estimated Model 2 is as below:

$$(STD/TE) = 0.387604 - 0.437190X_1 - 0.073541X_2 - 0.05986X_3 - 0.000671X_4 + 7.37E\text{-}05X_5 - 0.000234X_6 + \varepsilon_t.$$

Table 3. Results and Interpretations for Model 2

| Dependent variable | Short-term debt to total equity ratio | | |
|---|---|---|---|
| **Independent variables** | **Coefficients** | **t-statistics** | **Probability** |
| $X_1$ = ROA | -0.437190 | -10.46411 | 0.0000 |
| $X_2$ = Current ratio | -0.073541 | -22.91537 | 0.0000 |
| $X_3$ = Log of total assets | -0.005986 | -1.108675 | 0.2692 |
| $X_4$ = Earnings Growth ratio | -0.000671 | -8.121398 | 0.0000 |
| $X_5$ = Interest Coverage ratio | 7.37E-05 | 3.801728 | 0.0002 |
| $X_6$ = Coefficient of Variation | -0.000234 | -0.484539 | 0.6286 |
| **R-squared** | 0.843236 | | |
| **Adjusted R-squared** | 0.837570 | | |
| **F-statistic** | 148.8199 | | |

Table 3 shows the ROA, current ratio, earnings growth ratio and interest coverage ratio have significant relationships with the dependent variable, which is the short-term debt to total equity ratio. Different from Model 1, not only profitability and liquidity are factors affecting financial distress; growth and solvency are also factors that are related to financial distress. Thus, $H_3$ and $H_6$ are being rejected, as both size and risk do not have a significant relationship with financial distress in listed companies in Malaysia.

Profitability has a negative relationship with financial distress and supports $H_1$, which is consistent with the review of above mentioned literature. As for liquidity, it has a negative relationship with short-term debt to total equity ratio. This is consistent with $H_2$ that suggests that there is a negative relationship between financial distress and liquidity as per above mentioned researchers. High level of liquidity, they can convert their current assets to cash easily to pay their interest and principal payment. This means that they do not require to acquire other external financing that will increase their probability in facing financial distress.

Another independent variable which is significant with short-term debt to total equity ratio is the earnings growth ratio. Thus, growth is having a negative relationship with financial distress and supports $H_4$. Operating income is used to measure growth of the company (Yosha 1995; Mackie-Mason 1990; Morri and Cristanziani, 2009). Firms with favorable earnings growth ratio indicate a better future performance. Thus, with their good reputation, there is high probability that they will able to obtain short-term debt financing at a lower interest rate. Thus, this lowers their probability of facing financial distress. The remaining variable; log of total size and coefficient of variation; all are not statistically significant to this study.

## Discussion and Conclusions

In Model 1, the dependent variable is long-term debt to total equity ratio. This implies that financial distress is measured via long-term debt in the company. Result reveals that firms with low profitability, low liquidity and small size will have a higher probability of financial distress. By using these significant variables as indicators, corporate managers who observed that the profitability, liquidity ratio and size of their companies are lower than the optimal industry ratio should be aware and investigate the financial condition of their companies. This initiative might prevent the solvent of companies.

Model 2 implies that firms with low profitability, low liquidity ratios, low earnings growth ratio and a high interest coverage ratio will have a higher probability of financial distress. Model 2 focuses on the employment of short-term debt and its impact on financial distress. Firms with low profitability, low liquidity ratios and low earnings growth ratio may implies that firms are not generating enough profit and do not own enough liquid assets to finance their short-term debt obligations. Thus, corporate managers should be aware of these weaknesses to ensure that their companies are financially stable. Managers should be more observant if their companies employed massive amount of short-term debt as the maturity for short-term debt is only one year. Thus, creditors and bankers will start to request companies to pay back their debts when the debts are due. In other words, shorter time is available for firms to prepare the funds needed to cover their debts.

Interestingly, the study reveals that firms with high interest coverage ratio will be more likely to face financial distress. This is totally against the basic finance principle and almost all researchers' findings. However, it could also provide an interesting area to be further studied and investigated. Combining the results obtained from Model 1 and Model 2, firms

with low profitability, low liquidity, large size, low growth in operating profit and high solvency will face a higher level of financial distress. Thus, this can be served as indicators for managers to monitor their financial position in their corporations. Corporate managers must realize the importance of early detections to avoid facing distressed and total lost in corporate values of their firms.

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