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How Capital Structure Adjusts Dynamically during Financial Crisis

Abstract

The availability of a unique data set of financially distressed firms enabled this study to apply a dynamic capital structure adjustment model to study capital structure adjustment dynamics. In addition, the factors driving capital structure adjustment of financially distressed and of healthy firms were estimated. The results identified 13 significant variables, which included many macroeconomic variables previously not studied, thus providing new evidence on the impact of macroeconomic factors on the capital structure dynamics of firms. We also estimated the adjustment parameters using a new dynamic adjustment model applied to an unbalanced panel data set of distressed and healthy firms. It is found that the adjustment parameters are different in the short term and long term. These new findings add to the capital structure literature.

Key Words: Capital structure, Dynamic model, GMM, Distressed firms, Speed of adjustment and Financial Crisis.

JEL Classification: G32 & G33.

How Capital Structure Adjusts Dynamically during Financial Crisis

1. Introduction and Objective

A principal research question in corporate finance is "How do firms under financial crisis adjust their capital structure to finance their operations"? It will be ideal to observe this behavior if a sample of distressed firms can be found. This is what this paper attempts to do. Researchers have also raised another question: "What is the correlation between capital structure and potential factors affecting it"? A classic article by Modigliani and Miller (1958) provided some answers and yet contemporary researchers continue to address these same questions using newer ideas and methods of investigation.

In this paper, we report new findings obtained from the use of a population of a financially distressed firms - a unique data set - which were matched with healthy firms to address these same questions. In so doing, our use of the dynamic adjustment model (as in Ozkan, 2001 and Shyam-Sunder and Myers, 1998) enabled us to first test the dynamic adjustment proposition and then also to identify both firm-specific and macroeconomic factors driving the capital structure changes. Thus, the paper reports new findings by using a privately available data set of distressed firms. The distressed firms were identified by regulatory authorities in a major rescue attempt to save these firms from potential bankruptcies after these firms were adversely affected by the 1997-8 Asian financial crisis. For each distressed firm, we matched a healthy firm by industry and firm size.

Gilson (1989) reveals that high leverage is one important characteristic of financially distressed firms. This suggests that capital structure has important bearing on the financial distress of a firm. It was also observed that the *Chaebol* firms, which were

identified in Korea as financially distressed, had high leverage and these firms resorted more to short-term loans compared with the non-*Chaebol* firms. Due to these characteristics, the Chaebols became financially vulnerable just prior to the Asian financial crisis in Korea. Bongini, Ferri and Hahm (2000) studied the Korean listed companies before and after the financial crisis and found that highly leverage firms were more likely to become bankrupt than less leveraged firms, a findings consistent with bankruptcy prediction literature. Nikolaos *et al.* (2002) found a strong negative impact of capital structure on firm's profitability. This again suggests that a highly levered firm is prone to financial distress or bankruptcy. By applying known theoretical and empirical relationship model between capital structure and financial distress, we investigate in this study both financial and economic determinants of capital structure changes, which is made possible by the use of a new unbalanced panel regression method, which is used for the first time to study capital structure.

The rest of the paper is organized as follows: Section 2 provides a brief background to studies of capital structure during financial crisis periods. In Section 3 is to be found a quick review of the literature relevant to the dynamic capital structure ideas. The unique data set, test models, and hypotheses are explained in Section 4. The empirical results are discussed in Section 5 and the conclusions are in Section 6.

2. Financial Crises and Corporate Distress/Failure

To measure the potentially differing speeds of capital structure adjustment of distressed and healthy firms in an economy, we searched for data sets in financially distressed countries (Korea, Indonesia, Thailand and Malaysia). It was only in Malaysia, where an official committee in the Ministry of Finance was given the responsibility to identify the distressed firms that could be salvaged, that we were able to find a large and complete

data set for the period 1986-2001 of all 91 distressed firms listed on the stock market. The 1997-8 Asian financial crisis perpetrated large-scale failures of hitherto profitable firms, thus by the year 1999, there were identifiable firms that would go to receivership, if not rescued. The financial crisis exposed the financial weakness of firms, especially of the firms with high leverage, which were classified under *financial distress category*. The committee adopted a guideline known as the "Practice Notes 4/2001 (PN4)" for identifying distressed firms to be rescued and those to be permitted to fail: see IMF, 1997.[1] Some scholars (e.g. Ghani, 1999) provided evidence suggesting how these firms were adversely affected by the crisis.

Two aspects were noted in published reports: see Figure 1. Prior to the crisis, the debt ratio of distressed firms was 0.167 compared with 0.108 for healthy firms: the difference was not significant. Second, after the crisis had done its damage, debt level increased to 0.627- 0.740 for the distressed cases: 0.350 to 0.423 for the healthy firms. These differences in debt ratio are significant. Further, statistics show that the proportion of short-term debt dominatng the distressed firms, increased to about 0.509 - 0.669. In contrast, the healthy firms' share of short-term debt was 0.300. Argenti (1976) had pointed to the potential for instability when short-term debt begins to increase to these levels.

(Insert Figure 1 here)

An important limitation of prior research on the determination of capital structure is that there is no study of the impact of severe financial crisis that led to some healthy firms becoming financially distressed. The availability of data in an economy undergoing abnormal financial impact of a systemic disturbance enables us to obtain new findings to be reported on this missing area of research.

[1] International Monetary Fund (1997). *World Economic Outlook*, October, 1997.

3. Theories and Evidence

Theories

Excellent surveys on capital structure theories and empirical results can be found in Myers (1984), Harris and Raviv (1991) and Ranjan and Zingales (1995) among others. The traditional view is that capital structure could influence the cost of capital and thereby affect the value of firm. It holds that the *moderate or reasonable* use of leverage will reduce the overall cost of capital initially and hence also increase the firm's value. When leverage becomes too high, beyond an optimal point, the cost of capital will begin to increase and hence the firm's value will decline. There is no precise identification of how to measure either a moderate or reasonable or optimal capital structure. Some have accepted a moving average of historical capital structure: others have accepted an industry ratio (Ariff and Lau, 1996).

Hence the traditional view of optimality of capital structure is still largely unproven with direct evidence. Modigliani and Miller (1958) argued that if a firm's interest cost is not tax-deductible, its value will be independent of its capital structure changes: they then introduced tax deductibility of interest cost and developed a proposition that states that the value of firm is monotonically increasing with capital structure increases. Later writers brought in the agency and bankruptcy costs and showed that the value of a firm must decline when its debt reaches levels beyond the optimum. There is a continuing debate as to whether tax effect is in fact offset by the firm engaging in a number of tax-offsetting activities: Miller (1977).

Factors Correlated with Capital Structure

The following section explains briefly the variables used and the expected relationships.

The variables and the expected relationships. The dependent variable is the debt ratio, D_{it}, which is defined as the ratio of book value of long-term debt and the market value of equity plus the market value of long-term debts.[2] In calculating leverage ratio, both short-term debt and long-term debt are distinguished to enables us to examine which of the two constitutes a significant proportion of the total debt employed by public listed companies. Six measures of leverage, following Titman and Wessel, 1988, are used in the study.[3]

(Insert Table 1 here)

Table 1 is summary of the literature examining the factors correlated with capital structure. As is evident, there are both firm-specific factors (X_j in our model to be specified) and macro-economic variables (Y_t) that are suggested by the sources quoted in the table as likely to be correlated. Three of the 12 firm-specific variables are new: the study of distressed firms requires the use of these ratios. These variables were used by the regulatory authorities to identify firms for rescue operations. The remaining nine variables are literature-based.

Capital structure studies seldom included macroeconomic variables for two reasons: studies using cross-sectional regressions would find the use of time series difficult at best; in studying firms that had not undergone financial crisis,

[2] This approach is in line with many prior studies which have used book value of debt in measuring leverage (Friend and Lang, 1988; Titman and Wessels, 1988). In addition, Bowman (1980) argues that even if the market value of debt is an accurate measure of leverage, the use of book value of debt is not expected to distort leverage ratios.

[3] Six measures are, short-term debt (BV and MV), Long-term debt (BV and MV) and Total debt (BV and MV)

macroeconomic factors are less likely to be of importance. For the cases of distressed firms, these macroeconomic variables are pertinent and need to be included. Because of the need to use both cross-sectional and time series data, we also had to resort to newer method of fully using the panel data. To maximize the use of all available data, the panel regression done in this study resorted to a recently developed unbalanced panel regression method: see Ozkan (2001).

Assessment of Literature

It is evident, from the very cursory review of the large literature on this topic thus far, there is no consensus on what constitutes optimal capital structure in application although there is strong evidence from many studies of firm-specific factors being correlated with capital structure. Ozkan (2001) suggests that a firm adjusts its capital structure dynamically against its own target capital structure. It is further suggested that this adjustment process changes over time at different speeds of adjustment. Prior studies on capital structure have seldom used key macroeconomic factors: the exception is Drobetz, Wanzenreid (2004), which used interest rate and inflation.

The main reason for excluding macroeconomic factors is the use of cross-sectional regression, which does not permit the macroeconomic time series data to be included at the same time. Further, most studies used balanced panel data, which necessarily limits the use of all available data in a panel regression. A recent development of unbalanced panel regression procedure (Ozkan, 2001), if applied to any unbalanced capital structure data set, would enable researchers to overcome this limitation. To study financially distressed firms, as in this study, the macroeconomic variables are very important – given the impact of economic crisis in 1997-8 - besides

the special firm-specific financial variables already identified and discussed in the literature.

4. Data, Test Models and Methodology

As discussed in the previous section, the target debt level for a firm D^*_{it} depends on certain factors explained by theory and by country specific factor and overall economic conditions. This can be expressed:

$$D^*_{it} = \beta_1 + \sum \beta_i X_{it} + \sum \gamma_i Y_t + \varepsilon_{it} \qquad (1)$$

Where firms are represented by subscript i=1,….N, time by t= 1,…T, firms specific variables are represented by X_i and macroeconomics related variables are represented by Y_t. Leverage is defined differently and represented by 7 different specifications.

When considering the existence of transaction costs, firms do not automatically adjust their debt levels but instead follow a target adjustment process. The static tradeoff theory argued that managers are seeking optimal capital structures. Random events would bump them away from it, and they would then have to work gradually back. If the optimum debt ratio is stable, we would see mean reverting behaviour. The simple form of the target adjustment model states that changes in the debt ratio are explained by deviation of the current ratio from a target. Therefore when incorporating transaction costs, firms do not automatically adjust their debt level but instead follow a target adjustment model, according to which:

$$D_{it} - D_{it-1} = \beta\,(D^*_{it} - D_{it-1}), \quad 0 < \beta < 1 \qquad (2)$$

The regression specification is

$$\Delta D_{it} = \alpha + \beta(D^*_{it} - D_{it-1}) + e_{it} \qquad (3)$$

Where D^*_{it} is the target debt level for firm i at time t. we take β, the target-adjustment coefficient (defined as a speed of adjustment), as a sample-wide constant. If transaction is zero, i.e. β=1, then $D^*_{it} - D_{it-1}$ and the firm automatically adjust their debt level to the target debt level triggered by the absence of transaction costs. On the contrary, if β=0 then $D_{it} = D_{it-1}$, which implies that transaction costs are so high that no form adjusts it debt level, thus remaining in the debt level of the previous period. In intermediate situations, where value of β is between 0 and 1, firms adjust their debt level in a way that is inversely proportional to the transaction costs.

The firms included in the study are listed firms on the Main Board and Second Board of Bursa Malaysia, BM, over the period 1986 to 2001 (16 years). All data on proxies for various unobserved attributes are collected from annual accounting data, which are extracted from the firm's annual reports, namely from the audited financial statements[4] comprising of (i) the balance sheets, (ii) the income statements, and (iii) the cash flow statements. Since we are collecting financial data from the audited accounts, the consistency, reliability and accuracy of the information is ensured of high quality. The bulk of the financial data was obtained from the BM information centre. In addition, the year-end share market prices of the sample firms were collected from various issues of the Investors Digest.[5] This information is required in the computation of the market value of a firm.

Two restrictions regarding the inclusion of firms have been introduced. First, we exclude the financial companies due to its different accounting categories and rules. For

[4] These firm's reports are subjected to auditing by certified public accounting firm and shall comply with the standard accounting practices and regulations. Malaysian firms follow a variety of reporting standards that are congruent with the international standards in many aspects. The stock market is known to be Fama-efficient by reference to prior published studies.

[5] The Investors Digest was published by the Bursa Malaysia.

example, banks, insurance and finance companies are subject to special capital adequacy requirements, are highly regulated by the central bank and these companies have to comply with very stringent legal requirement on financing. Second, in the estimation of a dynamic capital structure model, it is required that all sample firms be observed at least over five consecutive years within 1986 to 2001 periods. These restrictions narrow the data set but it is unavoidable because we want to apply unbalanced panel data techniques under the framework of dynamic analysis. Given these restrictions and after dropping firms with incomplete data, the final data set consists of 182 companies comprises of 91 distressed companies and 91 non-distressed (or healthy) companies. The matching of these non-affecting companies was done based on the similar sector and firm's size.

Besides, the aggregate macroeconomics data such as (i) economic growth, (ii) money supply, (iii) exchange rates, (iv) interest rates, and (v) inflation rates are gathered from various issues of Bank Negara Malaysia's annual reports.

Description of Methodology

The theoretical model of capital structure, which is a function of internal and external variables, can be written in its simple general forms as:

$$D_i = f(\text{Internal \& External}) = f(X_{ij}; Yi_j) \ldots \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

Where,

D_i = Firm's debt ratio;

Internal: internal factors such as firm specific characteristics; and

External: external factors such as macroeconomic conditions.

The regressors in Equation (4) can be broadly categorized into two groups, i.e. (i) internal factors (X_1, X_2, X_3, ….X_{13}) which are the firm-specific characteristics and (ii) external factors ($X_{14}, X_{16}, \cdots, X_{18}$), which are the macroeconomics variables.

Capital structure decisions are dynamic by nature and should be modelled as such in empirical analysis. Many earlier empirical studies on the determinants of capital structure decision have tended to limit to static modelling. Estimating parameters under such a static framework, in fact, relies on the strong assumption that all the coefficients of any possible lagged variables are not different from zero. This assumption restricts the importance of previous period's exogenous variable so that they have no impact at all on current adjustment. Econometrically, this blinkered analysis would only reveal short-run determinants. Therefore, to provide additional insight into the long-run capital structure determinants and the adjustment process toward optimal capital structure, this study extends the empirical research on the dynamic of capital structure decisions and the nature of adjustment process. Under the dynamic framework, the present study will estimates the dynamic capital structure model by employing a much stronger GMM estimation technique as proposed by Anderson and Hsiao (1982) and Arellano and Bond (1991).

To illustrate, we consider a linear dynamic fixed effects model of the form:

$$Y_{it} = \rho Y_{i,t-1} + X_{it}^{'}\beta + \alpha_i + \varepsilon_{it} \qquad \textit{(The original dynamic model)} \qquad (5)$$

To remove the individual fixed effects component, α_i from the original dynamic model, they first difference Equation (5) to obtain:

$$Y_{it} - Y_{i,t-1} = \rho(Y_{i,t-1} - Y_{i,t-2}) + (X_{it}^{'} - X_{i,t-1}^{'})\beta + \varepsilon_{it} - \varepsilon_{i,t-1}$$

$$\textit{(The first differenced form)} \quad \ldots \qquad (6)$$

Equation (6) can be rewritten as:

$$\Delta Y_{it} = \rho \Delta Y_{it-1} + \Delta X_{it}\beta + \Delta \varepsilon_{it} \quad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (7)$$

Notice that Equation (7) cancels the individual fixed effects, in which we assumed to be possibly correlated with the exogenous variables, $E(X_{it}^{'}\alpha_i) \neq 0$ (Detail derivation of the Anderson and Hsiao (1982) and Arellano and Bond (1991) is in Appendix 1).

5. Results and Discussions

Factors Correlated with Capital Structure

The results are presented in this section. The statistics relating to the samples are summarised in Table 2. The panel data relate to 182 firms (91 distressed and 91 healthy firms) and the data are annual time series over 1986-2001.

(Insert Table 2 here)

For comparative purposes, this study estimated the dynamic capital structure model using three different methods: (i) OLS; (ii) Anderson-Hsiao (AH); and (iii) GMM (Arellano and Bond approach). These estimates are heteroscedaticity consistent where the covariance matrix is adjusted using White's correction. The results and diagnostic tests are reported in Table 3. The data covers the period of 1986-2001. However, the estimation period was reduced to 1988-2001 for both the GMM and the AH estimates as a result of losing two cross-sections in constructing one lag for each variable and for taking first differences for the instruments.

Besides, the fixed effects in both models are eliminated by first differencing and treating all the variables including the lagged dependent variable as endogenous: see Ozkan (2001). One example of potential endogeneity problem is as follows. If the leverage of a firm increases, one could then observe a negative relation between leverage and the market-to-book ratio, assuming leverage decreases a firm's market value since increased capital structure increases financial risk. This study thus employs

an instrumental variable estimation technique, specifically GMM, where all variables, including the lagged dependent variable, are treated as endogenous (Wooldridge 2002 p. 50).

In Model 3, which gives the pooled OLS estimates, the lagged dependent variable is treated as exogenous and thus the unobservable fixed effects on the firm remain. The study reports five test statistics as follows: *First order autocorrelation* (Correlation-1) and *Second order autocorrelation* (Correlation-2) of residuals, which is asymptotically distributed as standard normal N(0,1) under the null hypothesis of no serial correlation; *Wald test 1* is a Wald test of joint significance of the estimated coefficients, which is asymptotically distributed as chi-square under the null hypothesis of no relationship; *Wald test 2* is a Wald test of the joint significance of the time dummies; and *Sargan test* of overidentifying restrictions, which is asymptotically distributed as chi-square under the null hypothesis of instrument validity (Sargan, 1976).

(Insert Table 3 here)

Comparing the GMM and AH estimates, it can be seen that the coefficient estimates, including those for the lagged dependent variable, under GMM are determined better. **T**he GMM results reveal substantially small variance (standard error) than that for the AH, suggesting a gain in efficiency compared to the AH estimate.[6] This is consistent with the findings of Arellano and Bond (1991). Also, there is evidence that the OLS level specification is inappropriate for estimating the dynamic model. First, the serial correlation tests reveal that the assumption of uncorrelated errors is violated, which suggests some degree of misspecification. Second, there is a strong evidence of an upward bias on the coefficient of the lagged dependent variable in OLS level

[6] 15 out of 21 GMM standard errors are smaller than AH.

specification. The estimated coefficient of the lagged dependent variable under OLS is 0.686 compared to 0.529 under the GMM specification. This is unsurprising since the lagged dependent variable is expected to be biased upward due to correlation with the unobservable fixed effects in the residual term of OLS model. This result can also be seen as an indication of the presence of firm-specific effects (Arellano and Bond, 1991). When these firm-specific effects exist and are unobservable, OLS estimation in levels leads to an omitted variables bias because of the potential correlation between fixed effects and the included regressors.

In addition, the diagnostic tests show that the Wald test of the joint significance of the regressors and the time dummies are both significant at the 0.01 level. Secondly, the correlation test results for the presence of first order correlation and the absence of the second order correlation also fulfilled the GMM requirement at 0.01 level. The presence of the negative first order autocorrelation is expected and the absence of the second order autocorrelation is important for the consistency of the GMM estimators when the lagged variables are instrumental. Finally, the Sargan test reveals that the instruments used in the GMM estimation may not valid. The result shows that the null of the instrument validity is rejected at the 0.01 level. However, this is not critical as Arellano and Bond (1991) noted that the Sargan test has a tendency to reject too often in the presence of heteroscedasticity. Therefore, based on all the test results and arguments, this study concluded that GMM estimation is preferred as a dynamic model specification for capital structure. In summary, the GMM estimates and test results are robust.

The coefficient of determination, R^2, and its adjusted value are routinely used in most regression models both as a measure of goodness of fit and as a criterion for model selection. However, there are problems of using R^2 in a regression model estimated by

the instrumental variable methods: see Pesaran and Smith (1994). As an alternative, there are two possible indicators of goodness of fit, namely Pesaran and Smith (1994) generalised R-squared commonly denoted as GR^2, and the square of the correlation between predicted and actual values of the change in dependent variable of GMM estimation. This study used the second measure because it is more common and less complex to compute. The results of the goodness of fit of GMM models are shown in Table 4.

(Insert Table 4 here)

The statistics indicates that there is evidence of different goodness of fit for the different capital structure models. The best three models in term of goodness of fit are for Lev2 (short-term leverage, book value), Lev6 (Total debt leverage) and Lev4 (short-term debt, market value) models. For example, the explanatory variables in the capital structure model of Lev2 could explain 26.84 percent of the variation in the dependent variable. The analysis of the estimated coefficient emphasizes the results of the market value model because theoretical literature of capital structure is not discussed in book value but it was always referred to in term of market value.

The estimation shows a positive coefficient for lagged leverage. The results indicate that the firms adjust to long-term financial targets. As shown by Shayam-Sunder and Myers (1999), this can well be consistent with a pecking order of financing activities. The distressed company dummies, which are designed to test whether financially distressed firms have significantly higher leverage than non-financially distressed firms, is significantly positive. The parameter estimate of the NDTS is negative and statistically significant in two of the market models, which is similar to the findings in DeAngelo and Masulis (1980). It confirms that the firms rather utilize other tax shields than be involved in the issuance of debt. Hence, tax shield is not an

important incentive for the firms to increase leverage. The relationship between the tangibility (X_2) and long-term debts turns out to be significantly positive for the long-term market value model. This finding is similar to those for the developed countries, US and OECD (Harris and Raviv, 1991; Rajan and Zingales, 1995) which suggests that firms use tangible assets as collateral when negotiating borrowing especially long-term borrowing.

The estimated coefficient for firm size in all market value models is positively significant. This is consistent with the findings of many prior empirical studies (Rajan and Zingales, 1995; Booth *et al.* 2001; Frank and Goyal, 2002). The direct relationship is valid regardless of the source or maturity of the debt. The effect of growth opportunities on long-term debt is significantly negative at 0.10 percent level for the market value model. It means that companies with growth opportunities are forced to resort to short-term debt financing and thus this resulted in mismatch in financing their investments. The auditor's opinion dummy variables has a significantly negative relationship with leverage in two of the market value model, which is contradicts the general expectation that firms with clean report could have excess loan easily from the financial institutions. However, this can be interpreted to mean that once the company obtained a clean report, it provides positive signals to the market, as a result, investors invest more in the company through equity participation, and this lowers the leverage of the firm.

The influence of firm under receivership on long-term debt is found to be positive and significant at 0.05 level for the market model. At first this result is puzzling because it conflicts with the general expectation that firms with receivers would usually face difficult time when asking for loans. However, circumstantial evidence shows that firm with receivers received special assistance to avoid bankruptcy because of the

financial crisis. If the firm goes bankrupt, not only the shareholders would suffer, but also it would have a systematic risk on banking institutions, hence the support and rescue.

For the deficit in shareholders' equity as a determinant of capital structure, the result reveals that the estimated coefficients of these dummy variables are positive and significant at 0.10 level. An increase in the level of deficit in shareholder's equity always increases the level of debts. This is another interesting finding because it indicates that the distressed firm resorts to debt financing to restore itself and finance its business operations although the firms are in bad shape (similar to the cases of distressed airlines in the US). This finding also confirmed the notion of moral hazard[7] related to excessive loans in the banking system as postulated by Krugman (1998) in explaining the genesis of the financial crisis.

The estimated coefficient for GDP is negative and is significantly related at 0.01 level to leverage in two of the market value models. This result indicates that during the period of low growth, firms borrow more. This financing behavior could be due to the profitability factor. It means that during economic downturns, the number of profitable investments declines and firms tend to increase short-term borrowing to maintain normal dividend policy. The money supply coefficient is negative and significant at the 0.01 level in two of the market value model results. The inverse relationship means that as the money supply reduced, the firm increased their level of leverage. This indicates that the monetary policy via reduced money supply did not affect much the costs of borrowing, at least for the troubled firms as hey were treated with softer-term loans to save them. This financing behavior persists probably due to survival reason in particular for distressed firms after the crisis. Thus, this survival factor has increased the level of

[7] Krugman argued that a system of implicit guarantees and not very transparent credit assessment lead to incentive to choose the highest return investment regardless of risk.

leverage despite the cost of funds increasing. The interest rate coefficient is negative and significant at the 0.01 level with the long-term debt of market value model. The inverse relationship implies that as the interest rate increases, firm resorted to less long-term debt.

The exchange rate coefficient is positive and significant in all the market value models. This indicates that when there is an exchange rate appreciation, firms increase their level of debt. Due to exchange rate appreciation, firm, which used imported raw materials as inputs, will not need to pay extra in order to get the same amount of materials.

The Speed of Adjustment

As discussed in an earlier section, the speed of adjustment (β) is defined as one minus the value of the estimated coefficient of the lag leverage variable in the dynamic capital structure model. The values of the speeds of adjustment by maturity of debt were estimated: see Table 5.

(Insert Table 5 here)

The results indicate that a differential speeds of adjustment for short-term and long-term borrowing. Besides, the speed of adjustment at book value is consistently higher than the speed of adjustment using market values. The speeds of adjustment for short-term, long-term, and total debt using market values are 0.427, 0.408, and 0.471 respectively. Since the speed of adjustment is inversely proportional to the transaction costs, it implies that it is costly to achieve optimal capital structure. In addition, the results show that any interpretations are sensitive to the exact definition of leverage employed in the model because the speed of adjustment differs significantly across regressions.

The results of the speed of adjustment are compared with the findings on similar research in the US, UK, Germany and other developed countries. However, caution has to be exercised in comparing the results because of structural differences of the different general microstructure and banking institutions of countries. Comparing the results in Table 6, it seems that the adjustment process (value of speed of adjustment is 0.47 in this study is about 14.41 percent slower than in Spain, the US, the UK and Germany. For example, a high speed of adjustment of 0.79 for Spain is reported, which is due to low transaction costs when borrowing funds in Spain. Since for Spanish firms, bank credit is important and represents the main source of credit to Spanish firms, such financing also leads to lower agency costs between creditors and shareholders. Shyam-Sunder and Myers (1999) obtained a value of 0.59 for the US, Ozkan (2001) obtained a value of 0.55 for the UK. Kremp *et al*. (1999) documented a value of 0.53 for Germany. As for France, the speed of adjustment is 0.29 (Gaud *at al*., 2003), which is comparable to that of Swtizerland with 0.28 as reported by Kremp *et al.* (1999). These values were derived using healthy firms and balanced panel data regressions: our results are for distressed firms included using unbalanced panel.

(Insert Table 6 here)

The Long Run Parameters

One advantage of applying the dynamic capital structure model is that we can arrive at the long-term coefficients. The long-run values are then obtained by dividing each estimated coefficient on the right hand side of the dynamic regression equation by one minus the value of the estimated coefficient of the lagged dependent variable. The results reported above showed that the coefficient of the lagged total debt variable is 0.529. This means that the firm maintains 52.90 percent of the debt they had in the last year and changed only 47.06 percent. Also note that subtracting from 1 (1-0.529), we

get 0.471. This value is about equal to multiplying each short-term coefficient by 2.125 (the constant in the model). Therefore in Table 7, the long-term parameter of the variable X6 would therefore be 0.135 (see Lev6), not 0.063 as estimated and reported in earlier tables, which is the short-term coefficient. The long-run parameters of all the dynamic capital structure models are derived in the same manner and as shown in Table 7.

(Insert Table 7 here)

So far, the parameters estimated by the capital structure model reported in the literature have only been short-term ones, especially in this tested market. This statistic is a seriously underestimated value of the impact of the explanatory variables in the long-term perspective, which is what the Miller-Modigliani proposition is all about. The new evidence from this study clearly indicates the underestimation of the short-term coefficient relative to the more important longer term coefficients.

7. Conclusions

This study investigates the capital structure determinants and speed of adjustment to target debt ratio by firms under distress and firms not under distress. Both firm specific and macroeconomics variables were used for the first time in the modelling, using new dynamic capital structure model because the inclusion of financially distressed firm sample necessitated the use of macroeconomic factors. The empirical results reveal interesting findings and shed new insights in the financing behavior of firms. The findings are compared with those documented in developed countries and are consistent with a few of the capital structure theories.

We find the results from this dynamic model are superior compared with the results from prior capital structure studies in a number of ways. First, the model accommodates

the possibility that the firms may not be at their optimal capital structure at any point in time. Therefore, it is possible to identify the determinants of optimal capital structure rather than observed capital structure, the latter being the approach taken in the empirical literature. Second, this study also estimated the speed at which firms adjust their leverage towards their target capital structure. Finally, under the dynamic framework, this study could obtain estimates for the long-run coefficient of the capital structure instead of the estimates by the static model, which are strictly short term estimates.

The dynamic analysis is conducted using a combination of GMM and instrumental variable approaches. Under the GMM, the Anderson and Hsiao (AH) and Arrelano and Bond (AB) methods were employed to estimate the dynamic capital structure models. The results from the dynamic models are also compared with those obtained from the pooled OLS estimation simply to document the errors in the OLS method as an inappropriate method for target capital structure measurement. This study concluded that the Arellano and Bond's method is the most appropriate approach for estimating capital structure adjustment estimators with least variances, suggesting that there is a gain in efficiency compared to Anderson and Hsiao's approach.

On the determinants of capital structure choice the results are as follows: lagged leverage (Lev-1), distressed firm (DC), NDTS (X_1), firm size (X_6), auditor's opinion (X_8), deficit in shareholders' equity (X_{12}), GDP (ME_1), money supply (ME_2), and exchange rates (ME_4) are important. We find that NDTS (X_1), the lagged leverage (Lev-1), and money supply (ME_2) are the three most significant determinants of the financing decision in the tested market. That there exists a target level of leverage is again documented. However, the adjustment process is shown to be slow comparatively with developed countries. This could be due to the relative inefficiency of lending

institutions compared to those in developed countries. Besides, it seems that the cost of deviating from the optimal leverage is not large enough to motivate costly external capital market transactions. Instead, leverage is slowly changed by resorting to internal financing sources such as retained earning most of the time, a result consistent with the pecking order theory of financing. In addition, the results also show that any interpretations of results depend crucially on the exact definition of leverage used in the model – book value versus market value - because the speed of adjustment differs significantly across specifications and also across the type of financial conditions.

Appendix 1

To illustrate how the AB estimation technique performs, we consider the dynamic model to be estimated in level as follows:

$$Y_{it} = \rho Y_{i,t-1} + X_{it}^{'}\beta + \alpha_i + \varepsilon_{it} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{(A1)}$$

Where differencing, eliminates the individual fixed effects, α_i:

$$Y_{i,t} - Y_{i,t-1} = \rho(Y_{i,t-1} - Y_{i,t-2}) + (X_{i,t}^{'} - X_{i,t-1}^{'})\beta + \varepsilon_{i,t} - \varepsilon_{i,t-1} \quad \ldots \quad \text{(A2)}$$

Rewritten Equation (A2), we have:

$$\Delta Y_{it} = \rho \Delta Y_{it-1} + \Delta X_{it}\beta + \Delta\varepsilon_{it} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{(A3)}$$

For each year, now we look for a set of instruments available for instrumenting the difference equation as in Equation (A3).

For t = 3, the dynamic equation to be estimated is:

$$Y_{i3} - Y_{i2} = \rho(y_{i2} - Y_{i,1}) + (X_{i3}^{'} - X_{i2}^{'})\beta + (\varepsilon_{i3} - \varepsilon_{i2}) \quad \ldots \quad \ldots \quad \text{(A4)}$$

or

$$\Delta Y_{i3} = \rho \Delta Y_{i2} + \Delta X_{i3}\beta + \Delta\varepsilon_{i3} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{(A5)}$$

Where the instruments (again assuming X being at least predetermined) $Y_{i,1}$, $X_{i1}^{'}$ and $X_{i2}^{'}$ are available to be used for the estimation.

For t = 4, the equation is:

$$\Delta Y_{i4} = \rho \Delta Y_{i3} + \Delta X_{i4}\beta + \Delta\varepsilon_{i4} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \text{(A6)}$$

And the instruments, Y_{i1}, Y_{i2}, $X_{i1}^{'}$, $X_{i2}^{'}$ and $X_{i3}^{'}$ are available.

As can be seen, when the time periods for instrumentation enlarge, the set of instrument available also extended. Therefore for the equation in the final period T:

$$\Delta Y_{iT} = \rho \Delta Y_{iT-1} + \Delta X_{iT}\beta + \Delta\varepsilon_{iT} \quad \ldots \quad \ldots \quad \ldots \quad \text{(A7)}$$

The set of instruments available under AB approach are as follows:

$$Y_{i,1}, Y_{i2}, \ldots, Y_{i,T-2}, X_{i1}^{'}, X_{i2}^{'}, \ldots, X_{i,T-1}^{'}$$

To enhance the validity of GMM estimation, the study also used heteroscedasticity and autocorrelation consistent covariance matrices.

References

Argenti, J.. "*Corporate Collapse: The Causes and Symptoms"* (London, McGraw-Hill. 1976).

Anderson, T.W. and Hsiao, C. "Formulation and Estimation of Dynamic Models Using Panel Data" *Journal of Econometrics*, 18(1982), 47-82.

Arellano, M. and Bond, S.. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations". *The Review of Economics Studies*. 58(1991), 277-97

Ariff, M., and Kenneth lau (1996). "Relative capital structure and firm value", *International Journal of Finance*, 8 (1996), 391-410.

Bongini, P., Giovanni Ferri, and Hongjoo Hahm. Corporation Bankruptcy in Korea; Only the Strong Survive? *The Financial Review*, 35 (2000), 31-50.

Bowman, R. The Important of a Market Value Measurement of Debt in Assessing Leverage, *Journal of Accounting Research* 18 (1980), 242-252.

Booth, L., Aivazian, V., Demirguc-Kunt, A., and Maksimovic, V., (2001). Capital Structure in Developing Countries, *The Journal of Finance*, 56: 87-130.

DeAngelo, H., Masulis, R. (1980). Optimal Capital Structure under Corporate and Personal Taxation, *Journal of Financial Economics*, 8(1): 3-30.

Drobetz W. and Wanzenried G. "What Determines the Speed of Adjustment to the Target Capital Structure?" Available at http://www.vwi.unibe.ch/publikationen/download/dp0415.pdf , 2004

Friend, I. and Lang, L.H.P. An Empirical Test of the Impact of Managerial Self-Interest on Corporate Capital Structure, *Journal of Finance*, 43 (1988)., 271-281.

Frank, M. and Goyal. (2002). Testing the Pecking Order Theory of Capital Structure, *Journal of Financial Economics*, 30: 37-48.

Gaud, P., Jani E. Hoesli M. and Bender A. "The Capital Structure of Swiss Companies: An Empirical Analysis using Dynamic Panel Data." *European Financial Management*. 11 (2005), 51-69

Ghani, A. S and A. U. Sanda. The Effects of the Economic Downturn on the KLSE-Listed Companies, *Malaysian Management Review*, 34(1999), 23-43.

Gilson, Stuart, C. Management Turnover and Financial Distress, *Journal of Financial Economics*, 25 (1989), 241-262.

Harris, M. and Raviv, A. "The Theory of Capital Structure," *Journal of Finance*, 46 (1991), 297-355.

Johnson, S.A. "An Empirical Analysis of the Determinants of Corporate Debt Ownership Structure" *Journal of Financial Quantitative Analysis*, 32 (1997), 47-69.

Kremp, E., Sto¨ ss, E., and Gerdesmeier, D.(1999). Estimation of a debt function: evidence from French and German firm panel data', in A. Sauve´ and M. Scheuer (eds), *Corporate Finance in Germany and France* (Frankfurt-am-Main and Paris: Deutsche Bundesbank and Banque de France).

Krugman, Paul.. "What Happened to Asia"? Available at http://web.mit.edu/krugman/www/DISINTER.htm / (1998)

Krugman, Paul. "*Balance Sheets, the Transfer Problem, and Financial Crises.*" Massachusetts Institute of Technology, Cambridge, Mass. Available at http://web.mit.edu/krugman/www/#other (1999).

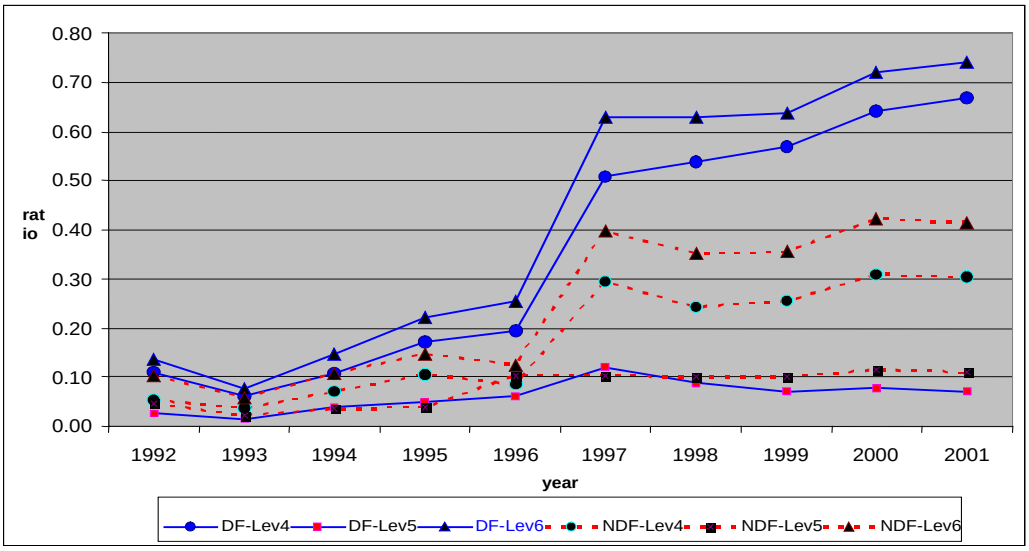
Masulis, Ronald W. "The Effects of Capital Structure Change on Securities Prices: A Study of Exchange Offers." *Journal of Financial Economics*, 8 (1980), 139-178.

Mehran, H. "*Executive Incentive Plans, Corporate Control, and Capital* Structure." *Journal of Financial and Quantitative Analysis*, 32 (1992), 47-69.
Miguel, A.D. Pindado, J. "Determinant of Capital Structure: Evidence from Spanish Panel Data." *Journal of Corporate Finance*, 7 (2001), 77-99.
Miller, M.H. "Debt and Taxes." *Journal of Finance*, 32 (1977), 261-275.
Modigliani, F. and Miller, M. "The Cost of Capital, Corporation Finance, and the Theory of Investment." *American Economic Review*, 48 (1958), 261-297.
Modigliani, F. and Miller, M. "Corporation Income Taxes and Cost of Capital: A Correction." *American Economic Review*, 53(1963), 433-443.
Modigliani, F. and Miller, M. "Corporation Income Taxes and Cost of Capital: Reply." *American Economic Review*, June (1965), 524-527.
Myers, S.C. "Determinants of Corporate Borrowing." *Journal of Financial Economics*, 5(1977), 147-175.
Myers, S.C. "The Capital Structure Puzzle." *Journal of Finance*, 39(1984), 575-592.
Myers, S.C. and Majluf, N.S. "Corporate Financing and Investment Decisions when Firms have Information that Investors do not have." *Journal of Financial Economics*, 13(1984), 187-221.
Nikolaos, P.E., Zoe, F., and Zoe Ventoura, N. "Profit Margin and Capital Stucture: An Empirical Relationship." *The Journal of applied Business Research*, 18(2002).
Ozkan, A. "Determinants of Capital Structure and Adjustment to Long Run Target: Evidence from UK Company Panel Data." *Journal of Business Finance and Accounting*, January/ March, 28 (2001), 175-198.
Pesaran, H and R.J. Smith. (1994). A Generalised R^2 Criterion for Regression Models Estimated by the Instrumental Variables Method, *Econometrica*, 62: 705-710.
Rajan, R.G and Zingales, L. "What Do We Know About Capital Structure? Some Evidence from International Data." *Journal of Finance*, 50 (1995), 1421-1460.
Rose, R.S., Andrews, W.T., and Giroux, G.A. "Predicting Business Failure: A Macroeconomic Perspective." *Journal of Accounting, Auditing, and Finance*, Fall (1982), 20-31.
Ross, S.A. "The Determination of Financial Structure: The Incentive-Signalling Approach." *Bell Journal of Economics*, 8(1977), 23-40.
Ross, S.A. "Debt and Taxes and Uncertainty." *Journal of Finance*, July, 40(1985), 637-656.
Ross, S.A. "Comments on the Modigliani-Miller Propositions." *Journal of Economic Perspective*, 2(1988), 127-134.
Sargan, J.D. "Econometric Estimators and the Edgeworth Approximation." *Econometrica*, 44(1976), 421-448.
Shleifer, A., and R. Vishny. "Large Shareholders and Corporate Control." *Journal of Political Economy*, 95(1986), 461-488.
Shyam-Sunder, Lakshmi, and S.C. Myers. "Testing Static Trade-Off Against Pecking Order Models of Capital Structure." *Journal of Financial Economics*, 51(1999), 219-244.
Stiglitz, J.E., Weiss, A., "Credit Rationing in Markets with Imperfect Information." *American Economic Review*, 71 (1981), 393-410.
Stutz, R. "Managerial Discretion and Optimal Financing Policies." *Journal of Financial Economics*, 26 (1990), 3-28.
Titman, S and Wessels, R. "The Determinants of Capital Structure Choice." *Journal of Finance*, 43(1988), 1-19.
Whited, T. "Debt, Liquidity Constrains and Corporate Investment: Evidence from Panel Data." *Journal of Finance*, 47 (1992), 1425-1460.

Wooldridge, J.M. “Econometric Analysis of Cross Section and Panel Data.” (The MIT Press, Cambridge, Massachusetts, London, England 2002).

Figure 1

Short-term, Long–term and Total Debt Levels of Two Groups of Firms



Notes: DF = Distressed Firms and NDF = Non-Distressed (or healthy) Firms

Table 1

Explanatory Variables and Their Expected relationship with Leverage Factor

Authors	**Variables Code**	**Name of the Variable**	**Definition**	**Expected Sign**	**Rationale**
Titman and Wessels (1988)	X1	Non-Debt Tax Shields (NTDS)	The ratio of annual depreciation expenses to total assets, as a proxy for NDTS	-	Previous studies indicated that firms, which have high NDTS, are likely to use less debt.
Johnson (1997)	X2	Tangibility	Fixed asset ratio is used to measure the value of tangibility	+	higher the value of tangible assets a firm owned, the more likely that a firm will have a high leverage ratio
Titman and Wessels (1988)	X3	Profitability	The proxy used for profitability is return on assets (ROA)	-	Highly profitable firms should have a smaller debt ratio
Mehran(1992) and Johnson (1997)	X4	Business Risk	defined as the standard deviation of the firm operating income	-	High-risk companies have lower borrowing
Ohlson(1978)	X5	Probability of Bankruptcy	*Ohlson's O-score* as a measure of likelihood of bankruptcy	-	Firms with a high score value should be forced to borrow less
Titman and Wessels (1988)	X6	Size of Firm	Natural logarithm of total assets as a proxy for the size	+	
Whited (1992)	X7	Growth Opportunities	market value to the book value of asset	±	
PN4 Criteria	X8	Auditors' opinion	Any qualified or negative report would be interpreted as increasing in the business risk of a firm		Introduce by Malaysian government and Security commission to prevent bankruptcy
Emilio (2001)	X9	Managerial Ownership	Percentage of shares held by the directors	-	Proportion of management's ownership increase, the more the interest of shareholders and management are aligned
Berger *et al.* 1997	X10	Size of Board of Directors	The natural logarithm of the number of directors	+	A positive relation between the size of board directors and leverage.

Continued

Authors	Variables Code	Name of the Variable	Definition	Expected Sign	Rationale
PN4 Criteria	X11	Receivers	It is set to one if receiver or managers had been appointed over the firm	-	Introduce by Malaysian government and Security commission to prevent bankruptcy
PN4 Criteria	X12	Deficit in Shareholders' Equity	It is set to one if the firm has a deficit shareholders' equity	+	Introduce by Malaysian government and Security commission to prevent bankruptcy
Ozkan (2001)	X13	Gross Domestic Product	Real GDP as proxy for economic growth	+	During the good time, the firm resort to debt financing to finance their expansion programs
Ozkan (2001)	X14	Money Supply	Annual change of M2 to represent the money supply	-	The increase in money supply would boost the liquidity in the market and eventually reduce the effective interest rates
Ozkan (2001)	X15	Interest Rates	The BLR of commercial banks used as the proxy for interest rates	-	The BLR for commercial banks is chosen because the bulk of the Malaysian corporate sector loans are obtained from commercial banks
Ozkan (2001)	X16	Exchange Rates	Trade-weighted nominal effective exchange rate (NEER) to proxy for exchange rates	+	The high exports volume recorded to these countries
Ozkan (2001), Gordon and Malkiel (1981)	X17	Inflation Rates	CPI is measured as a proxy for inflation	+	During an inflationary period, firm employs more debt in their capital structure as the real cost of debt falls

The lagged D will be used as another independent variable in addition to the 17 specified in the table.

Table 2

The Statistics Relating to the Samples in the Panel Data

Number of record on each firms	Number of Firms			Number of observations		
	Distressed	Healthy	Total	Distressed	Healthy	Total
5	4	18	22	20	90	110
6	13	13	26	78	78	156
7	5	11	16	35	77	112
8	9	12	21	72	96	168
9	8	7	15	72	63	135
10	8	5	13	80	50	130
11	10	3	13	110	33	143
12	6	3	9	72	36	108
13	3	1	4	39	13	52
14	2	0	2	28	0	28
15	0	1	1	0	15	15
16	23	17	40	368	272	640
Total	91	91	182	974	823	1797

Notes: We used the Winsorian criterion of 2.5% level to control the effect of the outlier effect.

Table 3 Estimation of target capital structure under three alternative methods

Ind.	Dependent Variable: Lev6					
Var.	Model 1: GMM		Model 2: AH		Model 3: OLS	
Lev6(-1)	0.529	***	0.485	***	0.686	***
	(0..051)		(0.169)		(0.027	
DC	0.0000	*	0.000	*	0.015	*
	(0.000)		(0.000)		(0.008)	
X1	-1.0288	*	-1.009	*	-0.537	**
	(0.532)		(0.572)		(0.226)	
X2	0.048		0.008		0.046	**
	(0.058)		(0.061)		(0.020)	
X3	-0.002		-0.010		-0.036	***
	(0.020)		(0.021)		(0.012)	
X4	0.003		0.002		0.004	**
	(0.003)		(0.003)		(0.002)	
X5	0.0466		0.0419		0.0151	
	(0.0497)		(0.0541)		(0.0310)	
X6	0.0633	***	0.0745	***	0.0331	***
	(0.0184)		(0.0212)		(0.0042)	
X7	0.0007		0.0022		-0.0011	
	(0.0023)		(0.0026)		(0.0012)	
X8	-0.0788	***	-0.0544	***	-0.0681	***
	(0.0219)		(0.0256)		(0.0132)	
X9	0.0112		-0.0026		0.0103	
	(0.0200)		(0.0298)		(0.0074)	
X10	-0.0050		-0.0003		-0.0151	
	(0.0249)		(0.0244)		(0.0134)	
X11	0.0216		0.0027		0.0008	
	(0.0428)		(0.0510)		(0.0221)	
X13	0.0837	*	0.1176	*	0.0305	
	(0.0507)		(0.0624)		(0.0253)	
γ 1	-0.0092	***	-0.0093	***	0.0039	***
	(0.0028)		(0.0032)		(0.0014)	
γ 2	-0.0992	***	-0.0949	***	0.0167	**
	(0.0231)		(0.0189)		(0.0072)	
γ 3	-0.0271		-0.0375	*	0.0000	
	(0.0256)		(0.0225)		(0.0000)	
γ 4	0.0654	***	0.0699	***	0.0000	
	(0.0124)		(0.0100)		(0.0000)	
γ 5	0.0066		0.0152		-0.0638	***
	(0.0435)		(0.0282)		(0.0107)	
Corr. 1	-6.3410	***	-3.7560	***	-1.3410	
Corr. 2	1.6480		1.8490		2.75	***
Wald test 1	651.20	***	755.70	***	7,602.00	***
Wald test 2	426.60	***	406.70	***	398.20	***
Sargan test	206.70	***	NR		NR	

*Notes: ***-significance at 1% level, **-significance at 5% level, *-significance at 10% level. NR- Not relevant.*

Table 4:

The Results of the Goodness of Fit of GMM Models

Independent Variables	Dependent Variables					
	Book Value			Market Value		
	Lev1	Lev2	Lev3	Lev4	Lev5	Lev6
Correlations (PCLev, CLev)	.0001	0.268	.019	0.136	.0002	0.250

Table 5:

Speed of Adjustment by Maturity of Debts

	Dependent Variable					
	Book Value			Market Value		
	Lev1	Lev2	Lev3	Lev4	Lev5	Lev6
Speed of Adjustment	0.559	1.250	0.896	0.427	0.408	0.471

Table 6:

Comparison of Speed of Adjustment by Countries

Country	Speed of Adjustment	Reference
1 Spain	0.79	De Miguel and Pindado (2001)
2 US	0.59	Shyan-Sunder and Myer (1999)
3 UK	0.55	Ozkan (2001)
4 Germany	0.53	Kremp at al (1999)
5 **Malaysia**	**0.47**	Isa, Taufiq, Shamsher & Annuar (2005)
6 Switzerland	0.29	Gaud at al (2005)
7 France	0.28	Kremp at al (1999)

Table 7

The Long-Run Parameters of the Dynamic Capital Structure Model

Ind. Var.	Dependent Variable					
	Book Value			Market Value		
	Lev1	Lev2	Lev3	Lev4	Lev5	Lev6
Lev (-1)	0.788	-0.199	0.117	1.161	1.447	1.125
DC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
X1	-53.04	7.51	36.99	-0.344	-1.56	-2.186
X2	-3.394	-0.246	-4.608	-0.055	0.137	0.102
X3	1.128	0.198	3.04	-0.042	0.030	-0.004
X4	-0.279	0.005	-0.174	0.003	0.003	0.007
X5	0.594	0.438	0.251	0.057	0.072	0.099
X6	0.503	0.064	0.509	0.066	0.048	0.135
X7	-0.113	0.004	-0.067	0.005	-0.004	0.002
X8	0.597	-0.032	0.331	-0.157	-0.004	-0.167
X9	-1.86	-0.083	-1.432	0.030	-0.040	0.024
X10	29.05	0.144	21.69	-0.207	0.317	-0.177
X11	0.570	-0.066	-1.138	0.016	-0.020	-0.011
X12	9.38	-0.067	4.966	-0.017	0.096	0.046
X13	14.21	0.074	12.507	0.011	-0.044	-0.045
X14	-2.00	0.100	-1.032	0.202	-0.100	0.178
γ 1	0.037	0.002	0.106	-0.012	-0.002	-0.020
γ 2	0.151	0.005	0.829	-0.134	-0.030	-0.211
γ 3	-0.307	-0.019	-0.542	-0.032	-0.073	-0.058
γ 4	0.258	0.013	0.443	0.116	0.045	0.139
γ 5	0.134	0.036	1.73	0.077	0.045	0.014

Note: Lev1 … Lev7 indicates different definitions of leverage used in this study.