

# Determinants of Debt Structure in Ace Market Bursa Malaysia: A Panel Data Analysis

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## Abstract

This study was conducted with the aim to examine the relevance of different financing theories namely Agency Theory, Trade-Off Theory and Pecking Order Theory to explain capital structure choices among firms in “Access, Certainty, Efficiency” (ACE) Market of Bursa Malaysia. The ACE Market is the financing source for the high-growth and technology requirements of middle-sized firms. The literature on debt policy decision making in the ACE market have been scant, leading the scholars to realize the necessity of performing more studies in this field. To further explain this issue, this study performed a quantitative analysis on a panel data sample of 60 ACE firms from 2005 to 2016. Three proxies for leverage namely total, long-term and short-term debts were examined based on the total assets and equity in six regression models. From seven variables examined in this study, findings indicated a significant relationship between warrant and debt in all models. In addition, liquidity, firm size, profitability and leverage showed significant relationship in all the models except for long-term debt. However, reputation, non-debt tax shield and interest tax shield were seen significant in some models. Trade-off Theory and Pecking Order Theory can jointly clarify determinants of firms’ capital structure in the ACE Market.

**Keywords:** ACE market; Agency theory; Capital Structure; Pecking order theory; Trade-off theory.



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## 1. Introduction

Capital structure decisions have the underlying objective of maximizing the worth of a company. Any happening that could accumulate needless costs such as liquidation, financial distress and bankruptcy would force firms to deviate from attaining the aforementioned objectives (Bradley *et al.*, 1984). Thus, a company with high leverage is required to allocate an efficient combination of capital that will ultimately decrease its cost (Stulz, 1990). In reality, numerous empirical facts and theories exist for providing the optimal capital structure. However, gray area is still present with no specific guidelines available to assist finance professionals in attaining an efficient mixture of debt and equity (Suhaila *et al.*, 2008). Despite enormous studies in the literature concerning determinants of capital structure, there is still a gap in studying this issue in emerging countries (Ramezanalivaloujerdi *et al.*, 2015). Even though modern capital structure theories can explain some capital structure differences in mature markets, the force behind the decision about capital structure in emerging countries is to be questioned for (Ramezanalivaloujerdi *et al.*, 2015). This current study focused on the Access, Certainty, and Efficiency (ACE) Market firms in Bursa Malaysia. While the main market of Bursa Malaysia includes established firms with a strong case history, the ACE Market facilitates the registration of the rising firms with excellent growth potential. No minimum prerequisite is set on the track record, size and operating history of the firms as well as on issue price. Based on the nature of the ACE Market, the determinant factors of debt structure may be different from the listed firms under the main market. Moreover, the composition of debt based on the length of repayment period is also unclear in the ACE Market. Moreover, since the nature of this market differs from main market of Bursa Malaysia, extending the debt structure characters of main market to this market may be questionable. To cover this gap, the present study particularly attempts to explore the factors influencing debt structure of the listed firms in the ACE Market in different periods. The purpose of this study is to investigate three classical theories of the capital structure namely Agency Theory (AT), Pecking Order Theory (POT) and Trade-off Theory (TOT) to identify the factors that influence the debt policy in the ACE Market. This exploratory study used panel data while the analysis was conducted using random and fixed regression models. Most of the theoretical selective variables were found efficient in this market.

## 2. Literature Review

Three main theories of the capital structure namely Agency Theory (AT), Pecking Order Theory (POT) and Trade-off Theory (TOT) have been developed to explain the function of debt in capital structure.

Agency Theory: capital structure can affect two types of conflict of interests; the conflict of interests between shareholders and managers on one side as well as the conflict of interest between shareholders and the creditor on the other side (Zenovia and Andrei, 2013). The use of debt influences the cost of the agency in some ways. Firstly, the use of debt decreases the free cash flow (FCF) available to executives (Zhang, 2009) since the promised instalments to debt holders reduce the FCF available for non-profit investments. This cut in FCF also assists curtailing overinvestment matters (Park and Jang, 2013). Secondly, the debt usage can enhance the monitoring of executives by debt holders including banks, which exert force on executives to manage a business-profitable debt (Sogorb-Mira, 2005). Thirdly, the use of debt increases the bankruptcy threat because in the bankruptcy condition, managers will lose the remunerations they received from firms and therefore avoid high debt (Singhal and Zhu, 2013).

Pecking Order Theory: (Myers and Majluf, 1984) explained that companies follow the hierarchy of financial policies when establishing their capital structure. Thus, POT is based on the existence of asymmetric information between outside investors and managers, as well as the assumption that managers will take action in the benefits of existing shareholders (Shen, 2014).

Trade-off Theory: TOT posits that firms are generally financed by equities and debts and attempt to determine an optimal level of the capital structure in which company value is made as large as possible (Chowdhury and P., 2010). Thus, this theory argues that a firm sets an optimal debt ratio target determined by the trade-off between the tax deductions (as a debt advantage) (Nyeadi *et al.*, 2017) and the risk of bankruptcy (as a debt disadvantage) (Myers and Majluf, 1984). At the optimal spot, the marginal debt benefit equals to the marginal debt cost, thus maximizing the performance of the company (Park and Jang, 2013; Xu, 2012).

Profitability: Theoretical prediction on the effects of profitability on leverage are contradictory (Morri and Cristanziani, 2009). Based on POT, firms prefer internal finance resources to external ones. Therefore, the existence of a negative relationship between leverage and performance is predictable (Ahmad and Aris, 2015; Imtiaz *et al.*, 2016; Pratheepan and Yatiwella, 2016). Jensen (1986) predicted a positive relationship between firm's profitability and financial leverage if the market for corporate control is successful since debt decreases the FCF generated by profitability. Based on TOT, more profitable companies are exposed to low threats of bankruptcy and have substantial incentive to use debt for using tax shield interests. This result is in agreement with that obtained by Qureshi *et al.* (2012) as well as Versmissen and Zietz (2017) determining that profitability is positive and significantly related to debt ratio.

Firm Size: A large firm tends to be more diversified and have less variation in its outcomes; therefore, the probability of bankruptcy decreases, which allows the firm to stand on high debt (Ahmad and Aris, 2015); (Odit and Gobardhun, 2011); (Tongkong, 2012). Moreover, a considerable amount of information on large firms is available, which reduces the level of information asymmetries in the market and enables the possibility of obtaining financial resources from lenders (Baharuddin, 2011) and large companies have advantage for a good bargain to get better credits for debt from lenders (Nyeadi *et al.*, 2017). POT also suggests a negative relation between company size and debt (Chakraborty, 2013); that is, large firms are more stable and profitable, thus prefer to finance their investments using internal funds.

Warrant: Creditors perceive firms with numerous fixed assets as less risky because these companies can simply supply collateral to creditors (Abu Mouamer, 2011). The forecast of TOT is also a positive relationship between the degree of debt and tangible asset. On the other hand, according to the Pecking Order Theory, the long-term debt is positively associated with fixed asset, whereas short-term debt is negatively associated with fixed asset (Butt *et al.*, 2013). Tangible assets provide insignificant collateral values in developing countries because of the weak and inefficient regulatory and legal systems and secondary market; hence, an inverse relationship is also predicted. (For example, the findings of a studies by Sheikh and Wang (2011) in Pakistan and Nyeadi *et al.* (2017)

Liquidity: Liquidity has a significant effect on conservative debt policy when the company has ample liquid assets; hence, conservative policies are necessary to ignore potential risks. The company will follow the "pecking order style" to finance investments (Deesomsak *et al.*, 2004). However, (Morellec, 2001) indicated that when bond covenants limit the assets' disposition, asset liquidity would increase debt capacity. An additional, in the condition of high agency costs of liquidity, outside creditors limit the amount of debt financing accessible to the firm (Myers and Rajan, 1998). TOT argues that an optimal mixture of the capital is specified by trading off the net cost of debt against the net cost of equity, whereas the latter is chiefly determined by the debt tax shield. Thus, liquidity can reduce the net cost of equity (Lipson and Mortal, 2009). In line with TOT, (Butt *et al.*, 2013) mentioned that the high liquidity ratio shows the ability of the firms to satisfy the short-term liabilities.

Reputation: Old firms may establish a great reputation, meaning that they can simply borrow at low-interest rate (Diamond, 1989). Hence, the reputation of a company may affect the capability of its leverage as it decreases the conflicts between the company and its money lenders (Ezeoha and Botha, 2012; Lien, 2005). By contrast, POT predicts an inverse relationship between the level of debt and business ages since an old firm is usually relatively stable and experienced with more ability to generate its funds internally, (Ahmad and Aris, 2015; Jahanzeb *et al.*, 2015; Nyeadi *et al.*, 2017).

Interest Tax Shield: (Modigliani and Miller, 1963) showed that tax saving benefits are associated with borrowing and that using these benefits can allow a firm to increase its market value. Static TOT assumes that companies have target levels of debt attained when the tax gains of debt financing are traded off against the cost of financial distress (Myers and Majluf, 1984). Several empirical studies observed that such relationship is either relatively weak or insignificant (Pontoh, 2017; Qureshi *et al.*, 2012; Tse and Rodgers, 2011) or positive and significant (Frank and Goyal, 2003; Wu and Yue, 2009).

Non-Debt Tax Shield: Non-debt tax shield (NDTS), which consists of the investment tax credits and depreciation, can act as a substitute for interest tax shield. Consequently, firms with a large NDTS are expected to finance lower level of debt in their capital structure (Chairunnisa *et al.*, 2018; Hadi and Suryanto, 2017; Pratheepan and Yatiwella, 2016). A few studies also suggested a direct relationship between NDTS and leverage (Bayrakdaroglu *et al.*, 2013), while others showed an insignificant relation between NDTS and leverage (Sheikh and Wang, 2011; Voutsinas and Werner, 2011). According to the theories and empirical studies explained in the above paragraphs, Table 1 shows the signs of the potential effects for each variable on leverage based on the three mentioned theories.

**Table-1.** Predicted effects of Variables based on theories studied

	Agency Theory	Trade-Off Theory	Pecking Order Theory
Profitability	Positive	Positive	Negative
Liquidity	Positive	Short-term debt: positive Long-Term debt: Negative	Negative
Firm Size	Positive	Positive	Negative
Reputation	Positive	Positive	Negative
Warrant	Positive	Positive	Short-term debt: negative Long-term debt: positive
Non-Debt Tax Shield	-----	Negative	-----
Interest Tax Shield	-----	Positive	-----

### 3. Research Methodology

The sample data used in the current study cover a nine-year period (from 2005 to 2016). These data are from the financial statements of the listed Malaysian firms derived from the DATASTREAM and OSIRIS databases. Excluded from the sample are all firms that ceased to be quoted in the stock market prior to 2016 and those entering the stock market after the year 2005. A total of 112 companies were listed on the ACE Market in 2016. Only 60 firms were qualified for inclusion in the sample based on the continuity and accessibility of the published financial statements. Table 2 displays the variable descriptions and measurements in this study.

**Table-2.** Variables and Their Proxies

Variable	Proxy	Variable	Proxy
Dependent			
TDA	Total Debt /Total Asset Ratio	TDE	Total Debt / Total Equity Ratio
LDA	Long-Term Debt /Total Asset Ratio	LDE	Long-Term Debt / Total Equity Ratio
SDA	Short-Term Debt / Total Asset Ratio	SDE	Short-Term Debt / Total Equity Ratio
Independent			
TS	Interest Payment/Gross Profit	SIZE	Natural Logarithm of Total Asset
ROA	ROA= Net Profit/ Total Assets	Age	Number of Years Established
LIQ	(Current Asset-Current Liability)/Total Assets	WAR	Tangible Assets/Total Assets
NDTS	Total Depreciation/ Total Assets		

The following six models were formulated based on the review of prior studies with respect to the most important determinants of debt policies and capital structure.

$$TDA_{it} = \beta_0 + \beta_1 TS_{it} + \beta_2 NDTS_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 WAR_{it} + \beta_6 REP_{it} + \beta_7 LIQ_{it} + \varepsilon_{it} \quad (\text{Model 1})$$

$$LDA_{it} = \beta_0 + \beta_1 TS_{it} + \beta_2 NDTS_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 WAR_{it} + \beta_6 REP_{it} + \beta_7 LIQ_{it} + \varepsilon_{it} \quad (\text{Model 2})$$

$$SDA_{it} = \beta_0 + \beta_1 TS_{it} + \beta_2 NDTS_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 WAR_{it} + \beta_6 REP_{it} + \beta_7 LIQ_{it} + \varepsilon_{it} \quad (\text{Model 3})$$

$$TDE_{it} = \beta_0 + \beta_1 TS_{it} + \beta_2 NDTS_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 WAR_{it} + \beta_6 REP_{it} + \beta_7 LIQ_{it} + \varepsilon_{it} \quad (\text{Model 4})$$

$$LDE_{it} = \beta_0 + \beta_1 TS_{it} + \beta_2 NDTS_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 WAR_{it} + \beta_6 REP_{it} + \beta_7 LIQ_{it} + \varepsilon_{it} \quad (\text{Model 5})$$

$$SDE_{it} = \beta_0 + \beta_1 TS_{it} + \beta_2 NDTS_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 WAR_{it} + \beta_6 REP_{it} + \beta_7 LIQ_{it} + \varepsilon_{it} \quad (\text{Model 6})$$

### 4. Results and Discussion

Table 3 illustrates the descriptive statistics of the dependent and independent variables.

Table-3. Descriptive Statistics

Independent	LIQ	NDTS	REP	ROA	SIZE	TS	WAR
Mean	0.360	0.027	8.117	-2.161	10.535	0.046	0.349
Maximum	1.500	0.207	19	50.930	14.094	0.939	1.211
Minimum	-0.451	0	0	-95.00	3.737	-0.867	0.003
Std. Dev.	0.268	0.027	3.694	18.854	1.088	0.113	0.283
Dependent	TDA	LDA	SDA	TDE	LDE	SDE	
Mean	0.095	0.043	0.053	0.185	0.085	0.105	
Maximum	0.602	<b>0.515</b>	0.394	1.582	<b>1</b>	1.038	
Minimum	0	0	0	0	0	0	
Std. Dev.	0.118	<b>0.072</b>	0.076	0.277	0.163	0.182	

The variance inflation factor (VIF) figures for all the independent variables were generated by Stata and are significantly below 10, indicating that multicollinearity is not a problem. The Breusch–Pagan Lagrange Multiplier Test was applied to select between the pooled and random effects which showed that random effect is preferred for all 6 models. To select a model between the fixed and random effect, Hausman Test was applied. The results of the Hausman Test indicating that the fixed effect is suitable for the all models except long-term debts (model 2 & model 5) where these two models are fitted by the random effect estimator. The Modified Wald Test for group-wise heteroskedasticity in the fixed effects regression model was conducted and the results showed all fixed models had heteroscedasticity problem. The results of the Wooldridge Test for autocorrelation in the panel data revealed that all six models have serial correlation problems.

Table 4 presents the results of this study. The ROA was significant and negatively related to Model (1), Model (4) and Model (3), and Models (6), which could be interpreted as a preference of managers for self-financing in accordance with POT. This result is consistent with earlier findings in Malaysia (Ahmad and Aris, 2015; Mustapha *et al.*, 2011) and some other developing market such as Chairunnisa *et al.* (2018) in Indonesia, (Imtiaz *et al.*, 2016) in Bangladesh. Liquidity was determined to be negatively and significantly related to all the models except Model 2. This result indicates that firms with high liquidity use that liquidity to pay off short-term debt, which is consistent with POT and the finding of Abu Mouamer (2011).

Table-4. Estimation Results

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
ROA	-0.0006 (0.0003) <sup>b</sup>	-0.0002 (0.0005)	-0.0006 (0.0004) <sup>b</sup>	-0.0016 (0.0009) <sup>b</sup>	-0.0002 (0.0003)	-0.0011 (0.0004) <sup>a</sup>
LIQ	-0.0716 (0.02606) <sup>a</sup>	-.0363 (0.0319)	-0.0492 (0.0255) <sup>b</sup>	-0.0153 (0.0574) <sup>a</sup>	-0.0378 (0.0226) <sup>b</sup>	-0.1179 (0.0374) <sup>a</sup>
SIZE	0.0310 (0.0083) <sup>a</sup>	.01365 (0.0118)	0.0358 (0.0092) <sup>a</sup>	0.0598 (0.0201) <sup>a</sup>	0.0084 (0.0094)	0.0369 (0.0126) <sup>a</sup>
REP	-0.0022 (0.0019)	0.0088 (0.0027) <sup>a</sup>	0.0007 (0.0024) <sup>a</sup>	-0.0069 (0.0045)	0.0007 (0.0021)	-0.0013 (0.0028)
WAR	-0.0663 (0.0275) <sup>a</sup>	0.1572 (0.0443) <sup>a</sup>	-0.0414 (0.0246) <sup>b</sup>	-0.1504 (0.0636) <sup>a</sup>	0.0396 (0.02187) <sup>b</sup>	-0.0812 (0.0397) <sup>a</sup>
NDTS	0.2091 (0.2588)	-0.3697 (0.26315)	-0.4001 (0.2373) <sup>b</sup>	0.4889 (0.6318)	0.1356 (0.2179)	0.1929 (0.3500)
TS	0.0146 (0.0437)	0.0965 (0.0614)	0.3029 (0.1175) <sup>a</sup>	-0.0859 (0.0820)	-0.0475 (0.0227) <sup>a</sup>	-0.0891 (0.0518) <sup>b</sup>
R- squared	0.1225	0.2368	0.2194	0.1128	0.0323	0.0947

Standard errors are presented in parentheses. a indicates the statistical significance at 5%. b indicates the statistical significance at 10%. Please refer to Table 2 for the definition of the six dependent variables.

Firm size was seen significant and positively related to Models 1, 3, 4, and 6. These results corroborate the arguments presented by TOT and AT. The results of other studies in several Malaysian (Ahmad and Aris, 2015; Mustapha *et al.*, 2011). The aforementioned results further indicate that only warrant has a positive and significant influence on all models. Table 10 shows that reputation and non-debt tax shield have insignificant relationship with leverage for most of the models. Meanwhile, the impact of NDTS on leverage is inconsistent in different markets; for instance, Jahanzeb *et al.* (2015) and Hadi and Suryanto (2017) showed negative effect in Pakistani and Egyptian markets, whereas Ramezanalivaloujerdi *et al.* (2015) in Malaysia and Nyeadi *et al.* (2017) in Ghana showed insignificant relationship between NDTS and leverage for most term periods of debt. Reputation factor gave a significant positive impact on leverage based on models 2 and 3. The interest tax shield ratio was seen positively correlated with the first three models and negatively correlated to three second models. However, these impacts were significant for Model 3, Model 5 and Model 6. This finding exactly confirmed the claim of POT and was consistent with arguments presented by AT and TOT for positive effects of warrant on Long-term debt. Besides, positive/negative effect of warrant on long-term/short-term debt has been reported by Jahanzeb *et al.* (2015) in Pakistan and Pontoh (2017) in Indonesia.

## 5. Conclusion

The methodology of the panel data models has been applied to investigate whether warrant, profitability, reputation, non-debt tax shield, interest tax shield, and liquidity can be considered the determinant factors of the leverage of firms listed on the ACE Market from 2005 to 2016. This study has decomposed the total debt ratio into the long-term debt ratio and short-term debt ratio to gain a better insight of the effects of seven important financial variables on debt structure. In addition, leverage has been calculated based on the debt to asset ratios and debt to equity ratios. Therefore, this study has examined six leverage models. Significant inverse relations have been discovered between performance and liquidity with leverage support POT, thus suggesting that firms attempt to finance their projects using internal sources. However, the significant direct relationship between leverage and firm size was seen consistent with AT and TOT. The warrant factor has a significant relationship with all debt models predicted by all three theories (AT, TOT, and POT). With respect to the results of the six models, the analysis indicated that Reputation (firm age) and Non-Debt Tax Shield were not considered in debt policy among firms in the ACE Market. Hence, it can be stated that there is no association of firm reputation and Non-Debt Tax Shield strategy with the capital structure decision of companies of ACE in Bursa Malaysia. Moreover, the results of Tax Shield effect were inconsistent and theories could not infer them. Therefore, empirical evidence from this study reveals that most of firm decisions about debt structure can be explained jointly by POT and TOT. It means that firms with high asset liquidity or generating high profit will prefer using internal source or retain earnings that are in line with POT. However, the firm size is considered by companies when they want to finance from sources of debt, which are consistent with TOT & AT. In addition, the negative/positive relationships between warrant with total & short-term debt/long-term debt were in line with POT and TOT. This study has examined only the influence of financial factors on debt policy; further studies can be conducted to investigate the effects of corporate governance factors on debt policy in the ACE Market. It is suggested that a separate study should clarify the factors considered to be the causal interrelation with debt decision.

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