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The Impact of Sharia Compliance on the Adjustment to Target Debt Maturity of Malaysian Firms

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Abstract:

This paper investigates the speed of adjustment to target debt maturity for a sample of Malaysian firms based on the sample period of 2007 to 2016.

We examine the impact of Sharia compliance on the speed of adjustment to target debt maturity structure by grouping companies based on nature of compliance to Sharia requirements which is categorised by the Securities Commission of Malaysia.

In line with our expectations, the analysis shows that firms classified as Sharia compliant tend to adjust at more rapid rates to target debt maturity when below target levels suggesting that compliant firms are able to issue long-term debt at cheaper levels relative to non-compliant counterparts. In addition, the reverse is observed when evaluating firms above target levels where non-compliant firms adjust at more rapid rates.

Our findings indicate that compliant firms are able to raise long-term debt at cheaper rates relative to non-compliant firms given the captive market situation observed in the Islamic capital markets in Malaysia. This does however indicate the potential for higher agency costs as well as greater levels of information asymmetry for compliant firms relative to non-compliant firms given that non-compliant firms are more willing to reduce maturity structures to reach target levels when above target levels.

Keywords: *Target debt maturity, speed of adjustment, Islamic capital markets, Sharia compliance, Islamic Finance.*

JEL code: *G32, D53.*

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1. Introduction

The seminal work by Modigliani and Miller (1958) propose a framework of capital structure irrelevance which proposes that firm value is not affected by debt levels as well as debt maturity structures based on the perfect capital market assumptions. However, Morris (1976) provides an alternative based on similar assumptions where debt maturity has a direct influence on shareholders' wealth given that it has an impact on the risk exposure due to fluctuating interest rates.

The literature provides several competing explanations of debt maturity structures ranging from the tax planning explanation (Lewis, 1990; Waluyo, 2018), a mechanism for reducing agency problems associated to moral hazards (Myers, 1977; Alias *et al.,* 2017), an internal mechanism for singalling (Effendi and Disman, 2017; Slepov *et al.,* 2017; Zainudin *et al.,* 2017a) as well as a tool to manage firms' liquidity positions (Iqbal-Hussain *et al.,* 2015; Arvanitis *et al.,* 2017; Kamarudin *et al.,* 2018).

Looking into the empirical literature, we find that an overwhelming majority of managers' do have a target level for debt maturity structures when making security issue choices (Nor *et al.,* 2011, Zainudin *et al.,* 2017b). In addition, the literature further documents that firms that opt for shorter maturity structures would be more exposed to shocks at the macro level given that they would be forced to renegotiate debt terms more frequently (Jindrichovska, 2013; Custodio *et al.,* 2013; Mallisa and Kusuma, 2017).

Therefore, our main aim in this article is to analyze the rate of adjustment to target debt maturity levels for a sample of Malaysian firms. The sample selection of Malaysia provides a unique opportunity to test our notion given the capital market for Islamic and the conventional system runs on a parallel basis. In addition, Malaysia also has the largest Islamic capital market in the world. Thus our model tests the adjustment to target levels based on a set of control variables derived from the literature as well as seggregating the nature of compliance to Sharia requirements as evaluated by the Securities Commission of Malaysia (Ali *et al.,* 2018).

2. Motivating the Study

There are four main competing explanations which work in a dynamic manner to explain debt maturity choices (Ravid, 1996). The first view is based on the agency theory where by shorter maturities provides an alternative governance mechanism to reduce moral hazards as frequent renewal of borrowing terms tends to limit the underinvestment problem (Myers, 1977; Barclay *et al.,* 2003; Almeida *et al.,* 2012; Iqbal-Hussain *et al.,* 2015). The tax explanation on the other hand proposes that firms prefer longer maturities in the event that the present value of interest tax shields are larger than issuing costs for constant renewal of short-term debt in the

long-term (Brick and Ravid, 1985; Brick and Ravid, 1991; Lewis, 1990; Guney and Iqbal-Hussain, 2010; Hussain *et al.,* 2015a).

The third view on maturity structures is derived from the liquidity needs of firms where managers are seen to be balancing the need for liquidity which is obtained via long-term borrowing versus improvement in credit ratings as a result of borrowing in the short-term (Brick and Liao, 2017; Shawtari *et al.,* 2016; Al Shubri and Jamil, 2017; Kamarudin *et al.,* 2018). Finally, the signalling theory predicts that managers are further balancing the benefit arising positive signal sent to the market by borrowing in the short terms versus the higher costs associated with frequent need to renew debt contracts (Iqbal-Hussain and Guney, 2011; Khaw and Lee, 2016; Pontoh, 2017; Suryanto and Thalassinos, 2017; Suryanto *et al.,* 2017).

Each firm would thus be motivated to adjust to target debt maturity levels which motivates the jist of our empirical analysis (Barnea *et al.,* 1980; Gonzalez, 2017; Hussain *et al.,* 2018a). Our study uniquely studies the impact of Sharia compliance on firms target adjustment behaviour for differing maturity structures given that the literature documents compliance plays a role in maturity structures (Mohamed *et al.,* 2015; Thabet *et al.,* 2017; Hussain *et al.,* 2018b).

2.1 Islamic Debt Markets: The Malaysian Context

There are several explanations of firms borrowing levels. The trade-off view is based on managers constantly adjusting leverage levels in order to reach optimal (target) levels (Ali *et al.,* 2018). However, the ability of managers to adjust to target levels is restricted due to market imperfections (Hussain *et al.,* 2016a; Thalassinos *et al.,* 2015). Islamic views on debt on the other hand tends to restrict borrowing levels which could impede firms ability to adjust to target debt maturities (Setyawati, 2017; Iqbal-Hussain, 2017). This view is resonated on a global scale by international bodies such as the Dow Jones Islamic market, Accounting and Audit Organisation for Islamic Financial Institutions (AAOIFI) based in Bahrain, as well as the Financial Times Stock exchange based in the UK (Rahman *et al.,* 2010).

In Malaysia, the borrowing of firms which are classified based on compliance to a set of restrictions as determined by the Securities Commission are referred to as Sharia compliance (Thabet *et al.,* 2017). This is given that Islamic finance views usage of debt financing in a negative manner given that there are restrictions on interest based transactions (Zaher and Hassan, 2001; Hassan and Aliyu, 2017; Hussain *et al.,* 2018b). However the literature is critical on whether such nobel intentions have been overcome by secularism (Hassan and Sirajo, 2010; Haniffa and Hudaib, 2010).

Firms which are able to raise long-term debt which are compliant or via 'Sukuk' issues would have the ability to adjust to target levels at more rapid rates (Mohamed

et al., 2015). In addition, the captive markets observed in Malaysia provide a unique opportunity to study the ability to adjust to target debt maturities given that it would alter the dynamics of the difference between costs of short-term versus long-term debt (Godlewski *et al.*, 2013; Zulkhibri and Rani, 2016; Sherif and Erkol, 2017). Thus our study looks at the impact of Sharia compliance on the ability of firms to adjust to target debt maturities relative to their non-compliant counterparts (Hadi *et al.*, 2018a; 2018b).

3. Estimation Methods

We utilise balance sheet figures in order to measure debt maturity which is defined as the ratio of long-term debt to total debt (Mallisa and Kusuma, 2017; Hussain *et al.*, 2018b).

3.1 Control Variables

In line with the literature, we include current debt levels (DEBT), size of the firm (FSIZE), potential future growth (MTB), the volatility of earnings (ΔEAR), current levels of liquidity (LIQUID), firm earnings to indicate profitability (PROFIT), the performance of share prices (SHARE), maturity structure of assets (MATURITY) as well as the Z-SCORE to measure firms' quality (ZSCORE) (Iqbal-Hussain, 2013; Hussain, 2014; Hussain *et al.*, 2016b; Natocheeva *et al.*, 2017). Definition of control variables are provided in table 1 below.

Table 1. *Control variables and their definitions*

Variable	Definition
Debt Levels (DEBT)	Total debt scaled by total debt plus MV of equity and BV of preference shares
Size of the Firm (FSIZE)	Natural logarithm of assets
Potential Future Growth (MTB)	Total assets minus book value of equity plus MV of equity scaled by total assets
Volatility of Earnings (ΔEAR)	Absolute value of $\{[EBIT_t - {}_{EBIT t-1}]/EBIT_{t-1}\}$ minus average of $\{[EBIT_t - EBIT_{t-1}]/EBIT_{t-1}\}$
Current level of liquidity (LIQUID)	Current assets scaled by current liabilities
Firms Earnings (PROFIT)	EBIT scaled by total assets
Performance of Share Prices (SHARE)	Changes in share price
Maturity Structure of Assets (MATURITY)	Total fixed assets scaled by total assets
Quality of the Firm (ZSCORE)	Altman's Z-score

Note: *Table above provides control variables and their respective defintiions.. All variables are adopted from Hussain et al., 2018.*

3.2 Target Debt Maturity and the Speed of Adjustment

In order to estimate the speed of adjustment to target debt maturity, we initially estimate the target levels which is measured based on the fitted values of estimations in the lead time (t+1). The estimation is done based on a static approach as well as dynamic approach (Fama and French, 2002; Blundell and Bond, 1998). The dynamic model includes a lagged regressor which allows to control for endogeneity concerns potentially arising as well as tackle any bias of panel data estimation methods. All regressions include 14 industry dummies as reported in Appendix 1. The static model is expressed as follows:

$$DM_{it+1} = \beta_1 INTERCEPT_{it} + \beta_2 DEBT_{it} + \beta_3 FSIZE_{it} + \beta_4 MTB_{it} + \beta_5 \Delta EAR_{it} + \beta_6 LIQUID_{it} + \beta_7 PROFIT_{it} + \beta_8 SHARE_{it} + \beta_9 MATURITY_{it} + \beta_{10} ZSCORE_{it} \quad (1)$$

The dynamic model on the other hand based on the auto-regressive version is expressed as follows (Ju *et al.*, 2005):

$$DM_{it+1} = \beta_1 INTERCEPT_{it} + \beta_2 DM_{it} + \beta_3 DEBT_{it} + \beta_4 FSIZE_{it} + \beta_5 MTB_{it} + \beta_6 \Delta EAR_{it} + \beta_7 LIQUID_{it} + \beta_8 PROFIT_{it} + \beta_9 SHARE_{it} + \beta_{10} MATURITY_{it} + \beta_{11} ZSCORE_{it} + \pi_{it+1} + \tau_{it+1} + \varepsilon_{it+1} \quad (2)$$

3.3 Explanatory Variables and Shari'ah Compliance

In order to estimate the impact of Shari'ah compliance as discussed in the motivation section above, we utilse the first difference at (*t+1*) and (*t*). This is termed as the GAP variable which documents the difference between the actual values at (*t+1*) and (*t*). The dependent variable is the difference between fitted values from regressing model (1) and (2) above at (*t+1*) versus actual data at (*t*). The model is thus expressed as follows (Hovakimian and Li, 2010; Hovakimian and Li 2011, Warr *et al.*, 2012):

$$DM_{it+1} - DM_{it} = \beta_1 INTERCEPT_{it} + \beta_2 GAP_{it} + \gamma[CONTROLVARIABLES]_{it} + \varepsilon_{it+1} \quad (3)$$

The coefficient β_2 captures the amount debt maturity levels must change in order for firms to reach optimal (target) levels (Hussain *et al.*, 2017a). Theoretical predictions from the trade-off theory posit that if firms do not adjust to target levels, then the coefficient would be insignificant (i.e. zero) (Orman and Koksal, 2017; Hussain *et al.*, 2017b). However, in perfect capital markets firms would be able to adjust completely and thus lead to a unity in the coefficient β_2. Given market imperfections, we expect the value to be in between. In addition, we further split the sample into firms which are below optimal debt maturity levels as well as above debt maturity levels. Thus firms whose maturity structures are above optimal levels would have a negative GAP and vice-versa. In order to evaluate the impact of

compliance to Shari'ah requirements, we interact the GAP variable with a Shari'ah compliance dummy (SCD) which takes the value of 1 if firms are categorised as compliance by the Securities Commission of Malaysia and zero otherwise for firms below optimal levels. For firms above optimal levels the interaction term is switched to a non-compliance dummy (NSCD). The model is thus expressed as follows:

$$DM_{it+1} - DM_{it} = \beta_1 INTERCEPT_{it} + \beta_2 GAP_{it} \times SCD \; or \; NSCD + \gamma[CONTROL VARIABLES]_{it} + \varepsilon_{it+1} \quad (4)$$

4. Sample Selection

We utilise an unbalanced panel data sample for all firms listed on the Bursa Malaysia for the period of 2007 – 2016. In line with the standard practise of studies in capital structure, we eliminate financial firms from our sample (Thabet *et al.,* 2017). Furthermore, due to the dynamic panel data method utilised, we introduce a requirement of minimum three-years of continuous observations. In addition, missing observations are also dropped from the sample. Our final sampel consists of 638 firms with 5,856 firm-year observations for the period of 2007 to 2016. The sample structure is unbalanced panel data in order to capture efficiency gains as well as reduction of bias in omitted variables (Guney and Iqbal-Hussain, 2009; Iqbal-Hussain *et al.,* 2015; Hussain, 2016c).

Table 2. *Differentiating mean values for Shari'ah compliant versus non-compliant firms*

Variables	Shari'ah Compliant Firms	Non-compliant Firms
DM	0.3368	0.2582
(t-stat)	(5.6802)***	
DEBT	0.1824	0.3318
(t-stat)	(3.9602)***	
FSIZE	16.7823	21.0891
(t-stat)	(1.9928)**	
MTB	2.2386	1.6902
(t-stat)	(2.9804)***	
ΔEAR	2.2408	3.2891
(t-stat)	(4.5806)***	
LIQUID	1.9022	1.4882
(t-stat)	(3.6308)***	
PROFIT	0.08241	0.0893
(t-stat)	(1.2455)	
SHARE	0.1528	0.1482
(t-stat)	(0.9826)	
MATURITY	0.3428	0.3628
(t-stat)	(1.1081)	
Z-SCORE	1.9082	1.8632

(t-stat)	(0.6902)

Note: *Table above provides mean comparison of both categories of firms. Significance levels of difference are denoted as ***,** and ** for 1%, 5% and 10% level, respectively.*

We present mean value of the firm specific determinants which act as control variables in our study in table 2 above. The two columns provide a basis for comparing the values for Shari'ah compliant versus non-compliant companies. Our comparison indicates that compliant firms tend to have longer maturity structure, i.e. heavier reliance on long-term debt. Total leverage for compliant firms are however lower suggesting that the motivation to borrow differs for non-compliant firms. Shari'ah compliant firms are also smaller, have more growth opportunities, less volatile earnings and have higher levels of liquidity. Profitability, share price performance as well as asset maturity structures do not differ for both categories of firms.

5. Findings

The results for regressing equation (1) and (2) are presented in table 3 below. We report coefficients and t-values of the results based on the time series approach in Fama and French (2002) for the first column. The second column reports the dynamic model which utilises robust standard errors whilst controlling for the bias introduced by panel data with short observation periods with many firms (White, 1980; Windmeijer, 2005).

Table 3. *Modelling target debt maturity levels at lead time$_{(t+1)}$*

Variables	**Fama and French approach**	**Blundell and Bond approach**
Constant	0.1982***	-
(t-stat)	(4.2804)	-
Lagged DM	-	0.4506***
(t-stat)	-	(10.2909)
DEBT	0.3244***	0.1928***
(t-stat)	(2.9602)	(3.0891)
FSIZE	0.1092***	0.0369**
(t-stat)	(3.5422)	(2.3808)
MTB	0.0472	0.0001
(t-stat)	(0.9801)	(0.0098)
ΔEAR	0.0102	0.0005
(t-stat)	(1.2321)	(0.0129)
LIQUID	0.0691***	0.0925***
(t-stat)	(3.8921)	(4.2891)
PROFIT	0.3582***	0.1020
(t-stat)	(6.8231)	(1.3081)
SHARE	0.0205	0.0086
(t-stat)	(1.4220)	(0.0506)
MATURITY	0.3281***	0.0624
(t-stat)	(6.8902)	(1.5320)

Z-SCORE (t-stat)	0.0002 (0.0368)	0.0001 (0.0092)
Average R^2	0.3206	-
F-Test (p-values)	0.00	-
Adjusted R^2	-	0.5256
AR (1)	-	-5.5690***
AR (2)	-	0.9691
Wald Test (p-values)	-	0.00
Sargan Test (p-values)	-	0.18
Observations	5,856	5,856

Note: *Table above provides basis for fitted model. Figures are reported for coefficients whilst t-values are reported in paranthesis. Column 1 is based on the static approach whereas column 2 is based on the dynamic appraoch. Significance levels of difference are denoted as *,** and *** for 10%, 5% and 1% level, respectively.*

The lagged dependent variable is significant in the second column suggesting that firms do indeed adjust to target debt maturity levels. The diagnostics of the 2-step sytem GMM employed to estimate target debt maturity levels are also within expectations based on the figures reported for AR 1, AR 2, Wald test as well as Sargan test.

We utilise the fitted values from both columns to measure the DM_{it+1} which forms part of the dependent variable in equation (3) and (4). The results for both are reported in table 4 below for both the static approach (fitted values from column 1 in table 3) as well as the dynamic approach (fitted values from column 2 in table 3). The table reports coefficients as well as t-statsitics which are measured based on standard errors clustered on year as well as firm levels (Petersen, 2009). This represents major econometric gains relative to Rogers (1993) or White (1980) standard errors.

Motivated by our empirical priors, we split the sample to firms which have a negative *GAP* (below target levels) as well as a p *GAP* (above target levels). Columns 3 and 5 are based on the static approach whilst columns 4 and 6 are based on the dynamic approach.

Table 4. *Speed of Adjustment to Target Debt Maturity Levels based on the GAP Measure*

	1	2	3	4	5	6
			Firms with negative GAP		Firms with positive GAP	
GAP	0.3508***	0.5103***	-	-	-	-
	(4.8502)	(5.6530)	-	-	-	-

GAP x SCD	-	-	0.2908***	0.3244***	-	-
	-	-	(3.8956)	(3.9828)	-	-
GAP x NSCD	-	-	-	-	0.4682***	0.6244***
	-	-	-	-	(4.2488)	(5.6328)
Adjusted R^2	0.3624	0.4088	0.2891	0.3406	0.4325	0.4826
Wald (p-values)	0.00	0.00	0.00	0.00	0.00	0.00
Observations	5,856	5,856	2,863	3,204	2,953	2,508
Period	2007 – 2016					

Note: *Table above provides the rate at which firms close the gap in order to adjust to target debt maturity levels. Figures are reported for coefficients whilst t-values are reported in paranthesis. Column 1, 3 and 5 are based on the static approach whereas columns 2, 4 and 6 are based on the dynamic appraoch. Significance levels of difference are denoted as *,** and *** for 10%, 5% and 1% level, respectively.*

The results for the interaction term for the positive GAP is significant indicating that Shari'ah compliant firms are able to adjust at more rapid levels. This indicates that the cost of issuing long-term debt is lower for compliant firms. Our findings to however indicate that non-compliant firms would be more inclined to maintain short-term debt in order to reduce agency costs, suggesting the potential for greater agency costs in Shari'ah compliant firms (Hussain *et al.,* 2015b). In addition, greater reliance on long-term debt reduces the frequency for renegotiation of contracts which leads to potentially greater levels of information asymmetry for compliant firms relative to their non-compliant counterparts. Looking at the results in columns 5 and 6, the interaction term for negative GAP with the non-compliant dummy is also significant. This indicates that non-compliant firms are more likely to adjust to taget levels by reducing debt maturity structures. The indication from this results could suggest that compliant firms tend to have higher bankruptcy costs and thus would be inclined to preserve financial slack. In addition, compliant firms tend to have more tangible asset structures. Furthemore, managers of Sharia compliant firms would be reluctant to opt for short-term borrowing as a precaution in order to better manage liquidity risks as well as reduce the likelihood of cash shortages.

6. Conclusion

Our study evaluates the adjustment to target debt maturity for a sample of Malaysian firms based on the unbalanced panel data approach. We distinguish adjustment behavior based on the nature of compliance to Sharia requirements as determined by the Securities Commission of Malaysia. Our results allow us to draw several interesting inferences from the empirical tests. We find that managers of Malaysian firms tend to adjust at different rates depending on the nature of compliance. The findings indicate that compliant firms with a positive GAP are able to adjust at more

rapid rates to target maturity structures by increasing reliance on long-term debt. Our findings point towards a lower cost structure for compliant firms when issuing long-term debt which however does indicate the tendency for greater agency problems. In addition, the findings do point that managers of compliant firms are unable to reduce information asymmetry levels relative to their non-compliant counterparts. For firms with negative GAP, non-compliant firms tend to reduce maturity structures by opting for short-term debt. This does paint a positive picture where compliant firms tend to have lower bankruptcy costs. In addition, managers of compliant firms are also more concerned with liquidity management issues.

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Appendix A: Classification of Industry Dummies

Number	**Industry name**
1	Automotive, Aviation and transportation
2	Beverages, Tobacco
3	Building and Construction
4	Chemicals, Healthcare, Pharmaceuticals
5	Computer, Electrical and electronic equipment
6	Diversified industry
7	Engineering, Mining, Metallurgy, Oil and gas exploration
8	Food producer and processors, Farming and fishing
9	Leisure, Hotels, restaurants and pubs
10	Other business
11	Paper, Forestry, Packaging, Printing and publishing, Photography
12	Retailers, Wholesalers and distributors
13	Services
14	Textile, Leather, Clothing, Footwear and furniture
15	Utilities

Source: *Thomson Reuters Datastream.*