Debt Maturity and Shari'ah Compliance: Evidence from Malaysian Panel Data

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Abstract:

This paper investigates the effect of firm-specific characteristics on debt maturity in Malaysia.

We examine the impact of Shari'ah compliance on debt maturity structure by grouping companies based on compliance status as governed by the Securities Commission of Malaysia over the sample period of 2007 to 2016.

The results indicate that Shari'ah compliant firms tend to have longer debt maturity structure indicating that the nature of compliance determines the maturity structure of companies in Malaysia as managers of these firms tend to focus on mitigating liquidity risks potentially faced. In addition, Shari'ah compliant firms also tend to have lower bankruptcy costs.

Contrary to their non-compliant counterparts, managers of Shari'ah compliant firms tend to change debt maturity structure as a signaling tool whilst opting for longer structures in periods of positive share price performance. We also find that Shar'iah compliance has no impact on firms' strategy of matching debt to asset maturity structure.

Keywords: *Debt maturity, capital structure, Islamic Finance, Islamic capital markets, Shari'ah compliance, Malaysian firms.*

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1. Introduction

Studies in debt maturity stem from the seminal work of Modigliani and Miller (1958) which is extended in Kraus (1973) as well as in Stiglitz (1974). These studies argue for an irrelevance of capital structure as well as debt maturity structure. Morris (1976) provides a counter hypothesis under perfect capital market assumptions whereby increased reliance on short-term debt reduces risk exposure faced by shareholders' with the existence of fluctuating interest rates in the future.

The literature further provides several theoretical views on the debt maturity puzzle in capital structure. Brick and Ravid (1985 and 1991) as well as Lewis (1990) argue for a tax explanation whilst Diamond (1991) provide a liquidity risk hypotheses in explaining debt maturity choices amongst managers. In addition, the literature also documents explanations related to reductions in moral hazard problems (Myers, 1977; Barnea *et al.,* 1980). Flannery (1986) and Diamond (1991 and 1993) also show that the signaling hypothesis can further explain debt maturity structure choices.

Based on the literature as discussed above, it can be summarized that debt maturity does indeed influence firm value given that it impacts liquidity (Hussain, 2014). In addition, the differences between cost of financing for long-term versus short-term debt also provides a plausible explanation for optimal debt maturity levels which in turn affects firm value (Jindrichovska, 2013 and Guney and Iqbal-Hussain, 2014). Furthermore, agency costs can be controlled by the utilising the appropriate level of debt maturity.

Our paper thus is aimed at investigating the impact of Shari'ah compliance to debt maturity structure given that the nature of compliance exposes firms to differing risk structures. To test our hypothesis we utilise firm specific characteristics based on the explanations in the literature and regress against debt maturity structure for compliant versus non-compliant firms.

2. Literature Review

The literature on studies concerning debt maturity structures can be grouped into four main explanations which are the moral hazard view, taxation purposes, signalling theories as well as a management tool for reducing liquidity risks. Ravid (1996) provides a detailed survey on the four main view in explaining the debt maturity structure decisions.

Based on the first view of moral hazard, short-term borrowing reduces agency problems. Myers (1977) and Barnea *et al.* (1980) argue that increase in short-term debt reduces the underinvestment problem given that the maturity structure is shortened. Thus, in order to finance growth, firms would be forced to renegotiate debt contracts which would be priced to reflect potential increase in firm value. In

addition, reduced maturity leads to a reduction in the potential for asset substitution and thus lowers risk shifting potential. This in turn reduces incentives for shareholders' to accept high-risk projects (Shawtari *et al.*, 2016). The tax argument on the other hand is based on the net benefit of tax deductibility of interests, whereby firms would be inclined to increase debt maturity structure in the event that tax benefit of debt is greater than the flotation costs amortised over time (Kane *et al.,* 1985; Brick and Ravid, 1985; Lewis, 1990; Hussain *et al.*, 2016a, Suryanto and Thalassinos, 2017).

The signalling effect on debt maturity is based on the fact that equilibrium is dependent on transaction or flotation costs (Flannery, 1986). In such cases, high quality firms opt for short-term debt given that the premium attached to longer term borrowing would be unattractive to these firms given that the pricing would be based on the average probability of default (Khaw and Lee, 2016). Conversely, low quality firms would prefer long-term debt given that the 'average' market price would attract a premium which would be lower than theirs (Pontoh, 2017). Thus, the author predicts that debt maturity has an inverse relationship with firm quality. Finally, the liquidity explanation of debt maturity is based on firms trading off the benefits of shorter debt structure in order to improve credit ratings versus liquidity (Diamond, 1991; Milanic *et al.,* 2013; Thalassinos *et al.,* 2015).

2.1 Shari'ah Compliance

Theories in capital structure predict that leverage tends to increase firm value due to several differing explanations (Ali *et al.,* 2018). In addition, empirical studies have found validated these predictions (Ju *et al.,* 2005). However, Islamic finance tends to have different views on the extent of usage of debt in financing as well as the nature of debt financing (Zaher and Hassan, 2001; Mohamed *et al.,* 2015; Kamarudin *et al.*, 2018). Several different regulatory bodies such as Accounting and Audit Organisation for Islamic Financial Institutions (AAOIFI), Dow Jones Islamic market and Financial Times Stock Exchange also places restrictions on the extent of debt financing as well as nature of debt financing (Abdul Rahman *et al.,* 2010; Hassan and Aliyu, 2017).

The Securities Commission of Malaysia has similar restrictions on debt financing as well as interest income. These restrictions would thus have an impact on financing behaviour as well as debt maturity structure of Shari'ah compliant firms in Malaysia (Thabet *et al.,* 2017; Iqbal Hussain, 2017; Hussain *et al.,* 2017a).

3. Methodology

Our studies measures debt maturity based on the balance sheet approach and thus we define debt maturity (DM) as the proportion of long-term debt to total debt (Barclay *et al.,* 2003; Deesomsak *et al.,* 2009).

3.1 Definition of Variables

Similar to Antoniou *et al.* (2006) and Deesomsak *et al.* (2009) we include leverage, firms size growth opportunities, earnings volatility, liquidity, profitability, share price performance, asset maturity and firm quality as explanatory variables. We summarise the variable definitions, predicted relationship based on the theoretical predictions discussed in the literature review section as well as proxies used in Table 1 (Hussain *et al.*, 2016b).

Table 1. *Definition of Variables and theoretical predictions of relationship to Debt Maturity (DM)*

Variable	Definition	"+"	"-"	Expectation
Leverage (LEV)	Total debt scaled by total debt plus MV of equity and BV of preference shares	Liquidity risk	Moral hazard	Positive
Firms Size (SIZE)	Natural logarithm of assets	Moral hazard, signalling, market access & transaction costs	Liquidity risk	Positive
Growth Opportunity (Growth)	Total assets minus book value of equity plus MV of equity scaled by total assets	Liquidity risk	Moral hazard, signalling	Negative
Earnings Volatility (VOL)	Absolute value of $\{[EBIT_t - EBIT_{t-1}]/EBIT_{t-1}\}$ minus average of $\{[EBIT_t - EBIT_{t-1}]/EBIT_{t-1}\}$	Liquidity risk	Moral hazard, bankruptcy costs	Negative
Liquidity (LIQ)	Current assets scaled by current liabilities	-	Capacity	Negative
Profitability (PROF)	EBIT scaled by total assets	Tax	-	Positive
Share price performance (SPP)	Changes in share price	Signalling, Market timing	Optimistic	Positive
Asset Maturity (AMAT)	Total fixed assets scaled by total assets	Moral hazard, signalling, financial distress, cash flow	Priority of claim	Positive
Firm Quality (QUA)	Altman's Z-score	-	Signalling, moral hazard, liquidity risk.	Negative / no relationship

Souce: *Adapted from Dessonsak et al. (2009).*

4. Data

Our sample is derived from all firms available in the Datastream database for the period of 2007-2016. In order to avoid survivorship bias, we included dead firms. Similar to the literature, we exclude financial firms (Thabet *et al.,* 2017) as well as missing observations (Hussain *et al.,* 2017b).

The sample is based on unbalanced panel data which leads to improved inference of the parameters estimated from the model and thus is able to capture managerial actions in a more accurate manner given the gains in econometric efficiency (Hussain, 2016c). In addition, this allows us to reduce the bias caused by omitted variables in order to control for variables that might be potentially missing or even unobservable (Guney and Iqbal-Hussain, 2009). We further winsorise our data by eliminating observations in the bottom 1 percentile as well as top 99th percentile (Iqbal-Hussain *et al.,* 2015). Our final sample comprises of 806 firms with 6,989 firm-year observations. The summary statistics of our sample and the variable utilised on our models are reported in Table 2.

Table 2. *Average values of variables utilized in regression model*

Variable	Average	T-stat
Debt Maturity (DM)	0.5480***	(3.2483)
Leverage (LEV)	0.2344***	(9.8991)
Firm Size (SIZE)	12.8933	(1.2410)
Growth Opportunities (GROWTH)	-3.1811***	(2.4310)
Earnings Volatility (VOL)	2.9871	(1.0801)
Liquidity (LIQ)	2.6899	(0.5622)
Firm Profitability (PROF)	0.0652	(0.3109)
Share Price Performance (SPP)	0.1055***	(2.9645)
Asset Maturity (AMAT)	0.4108*	(1.7089)
Firm Quality (QUA)	-0.3992***	(4.1088)

*Note: *,** and *** denote significance at 10%, 5% and 1% level respectively.*

In order to evaluate the impact of firm specific characteristics on debt maturity, we regress the following model:

$$DM_{it} = \alpha_0 + \gamma [Explanatory\ Variables]_{it} + \varepsilon_{it} \tag{1}$$

where DM_{it} is the debt maturity for firm i at time t, α_0 is the intercept and γ[Explanatory Variables]$_{it}$ is the vector of explanatory variables to test the theoretical predictions discussed above. In order to capture the effect of Shari'ah compliance on the debt maturity structure based on the firm specific characteristics, each explanatory is interacted with a Shari'ah compliance dummy (SCD) which takes the value of 1 if the firm is compliant in a given year and 0 if otherwise. In

order to capture potential differences across time based on the compliance status, we allow firms to jump in between compliant and non-compliant status throughout the sample observed. We utilise the compliance status as reported by the Securities Commission of Malaysia and thus modify the model to be as follows:

$$DM_{it} = \alpha_0 + \gamma[Explanatory\ Variables + Explanatory\ Variables \times SCD]_{it} + \varepsilon_{it} \quad (2)$$

5. Results and Discussion

The results for regressing model 1 are reported in the first column of Table 3. Our regressions control for firm fixed effects and include time and industry dummies. In addition, we cluster standard errors based on unit of observation (firm) level as well as the time dimension (year) (Peterson, 2009) rather than utilising Rogers (1993) standard errors. Our findings are robust to White (1980) standard errors.

Table 3. *Panel data results for determinants of debt maturity and impact of Shari'ah compliance*

	1	2
Constant	-0.0809***	-0.0308***
	(0.0024)	(0.0145)
LEV_{it}	0.1289***	0.0924***
	(0.0208)	(0.0308)
LEV_{it} x SCD	-	0.0506***
	-	(0.0099)
$SIZE_{it}$	0.0818***	0.0798***
	(0.0194)	(0.0208)
$SIZE_{it}$ x SCD	-	0.0091
	-	(0.0366)
$GROWTH_{it}$	0.0108	0.0099
	(0.0322)	(0.0411)
$GROWTH_{it}$ x SCD	-	0.0008
	-	(0.0051)
VOL_{it}	0.0091	0.0082
	(0.1091)	(0.0704)
VOL_{it} x SCD	-	0.0033***
	-	(0.0008)
LIQ_{it}	0.0480***	0.0451***
	(0.0119)	(0.0188)
LIQ_{it} x SCD	-	0.0102***
	-	(0.0025)
$PROF_{it}$	0.1418***	0.1322***
	(0.0399)	(0.0463)
$PROF_{it}$ x SCD	-	0.0382***
	-	(0.0082)
SPP_{it}	0.0211	0.0091
	(0.2433)	(0.1922)
SPP_{it} x SCD	-	0.0196**
	-	(0.0019))
$AMAT_{it}$	0.3699***	0.3201***

	(0.1244)	(0.1081)
$AMAT_{it}$ x SCD	-	0.0245
	-	(0.2199)
QUA_{it}	0.0199	0.0124
	(0.0315)	(0.0411)
QUA_{it} x SCD	-	0.0086
	-	(0.0265)
Adjusted R^2	0.2861	0.3145
Wald (p-values)	0.00	0.00

Results report coefficients with standard errors in parenthesis. All regressions include time and year dummies

Similar to the literature, we find the leverage (LEV_{it}) coefficient to be positive suggesting that firms with higher levels of leverage tend to avoid short-term debt and thus providing support for the liquidity risk view of explaining debt maturity structure (Zainudin *et al.*, 2017a). Barclay *et al.* (2003) further argue that the positive coefficient can be interpreted as a mechanism to reduce the underinvestment problem. Furthermore, in line with our expectations, firms size ($SIZE_{it}$) is also positively significant indicating that larger firms are less exposed to the agency problem of debt and thus reduce reliance on short-term borrowing (Deesomsak *et al.*, 2009).

In addition, larger firms tend to have lower degrees of information asymmetry, confirming the signalling theory view in explaining debt maturity structures. We further find that growth opportunities ($GROWTH_{it}$) and earnings volatility (VOL_{it}) does not influence the debt maturity choice given that Malaysian firms tend to have concentrated ownership and given the low bankruptcy costs for Malaysian firms as documented in the literature (Deesomsak *et al.*, 2009; Zainudin *et al.*, 2017b). Liquidity (LIQ_{it}) and profitability ($PROF_{it}$) has a positive coefficient as predicted (Mimouni *et al.*, 2018). Share price performance (SPP_{it}) on the other hand has no significant relationship indicating that spare prices play a significant role in conveying information to the market (Deesomsak *et al.*, 2009). Asset maturity and firms quality also has a significant and positive coefficient indicating that Malaysian firms are practising the maturity-matching principle (Oman and Koksal, 2017). Overall, it is found that liquidity risk, moral hazard and signalling are strong determinants of debt maturity.

The next column reports the regression results for equation (2). We find that the coefficients for interactions with leverage and firms size are significant indicating that Shari'ah compliant firms tend to avoid short-term borrowing in order to reduce liquidity risks. In line with the earlier results, growth opportunities remain insignificant. Earnings volatility however is now significant and positive indicating that Shari'ah compliant firms tend to have lower bankruptcy costs. One plausible explanation would be that borrowing from compliant sources tends to have physical and tangible asset backings (Thabet *et al.*, 2017; Ali *et al.*, 2018). Liquidity and profitability remains positive and significant indicating Shari'ah compliant firms are

trying to avoid potential cash shortages and reduce bankruptcy costs whilst reducing their tax (or zakat) liabilities by opting for longer-term borrowings. Contrasting to results in the first column, share price performance is positive and significant indicating that Shari'ah compliant firms tend to opt for short-term debt in the event that their share prices under-perform as a signalling tool to the market and would be inclined to take advantage of share price over-performance by shifting to longer term borrowing. The matching principle holds similarly for Shari'ah compliant firms whereby the asset maturity interaction term is not significant indicating that managerial actions do not differ across compliant status.

6. Conclusion

Our paper utilises unbalanced panel data of Malaysian firms to investigate the impact of Shari'ah compliance on the debt maturity structure. The status of compliance is based on the list published by the Securities Commission of Malaysia. Several conclusions emerge from the empirical tests. The overall results are consistent with the literature. However, examining the impact of compliance provides insightful findings which indicate that managers tend to opt for differing strategies based on the compliance status. We find that Shari'ah compliant firms are concerned with managing liquidity risks and tend to have lower levels of bankruptcy costs, in line with the requirements of Shari'ah whereby borrowings must be backed by physical and tangible assets. In addition, managers of Shari'ah compliant firms are also concerned with potential cash shortages as well as reducing their tax (or zakat) liabilities. Furthermore, our findings indicate that managers of Shari'ah compliant firms are inclined to reduce information asymmetry by shifting maturity structures whilst exploiting potential over-performance of share prices. Compliance status however, does not impact managers' attempts to match debt to asset maturity structures.

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