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Debt Determinants of *Shari'ah* Approved Firms: Empirical Evidence from Malaysia

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Abstract

The issue of high reliance on debt has raised major concern especially since its impact has been linked to the several corporate problems in United States' big corporations such as Enron and Lehman Brothers. On a wider scope, the impact of debt may also be evidenced by the Greek Depression in the year 2009. Various studies have been conducted to explain which factors determine debt of the firms, given different setting of periods, countries and methodologies. Uniquely, this study focuses on the firms which stocks are *Shari'ah* approved in accordance to the Malaysia's Securities Commission guidelines. This study covers a balanced panel of 239 *Shariah* approved firms listed on the Bursa Malaysia for the period of analysis from 2000 to 2014. To meet its objective, this study employs a static panel regression model which includes the pooled OLS, random effect model (REM) and fixed effect model (FEM). The study also conducts a robustness test to the empirical model. Several factors have been examined and the result shows that certain firm-specific variables like growth opportunity, size, bankruptcy risk, non-debt tax shield (NDTS) and Herfindahl-Hirschman Index are significant determinants of a firm's debt. Also macro variables such as inflation, GDP and economic crisis are also found to be significant determinants of *Shariah* approved firms' debt. In contrast with the prior studies that focuses on the non-*Shariah* approved firms, the output from this study provides new insight and understanding on the debt determinants of *Shariah* approved firms.

Keywords: Debt determinants, *Shariah* approved firms, Islamic finance, panel data

1. Introduction

Capital structure studies usually involve a discussion on what is the most efficient and optimal mixture of debt and equity a firm should pursue in its financial decisions to ensure maximum firm value. This area of study usually involves an interrelation and connection between firms' objectives, capital structure and value. Koller et al. (2011) argue that it is immensely important for the top level of management in firms to really understand how to craft a perfect and optimal capital structure to pursue firm value and how the value is measured. Uncertain and unstable economic atmosphere of a country creates and even aggravates pressure and tension to the top management of the firms in deciding and crafting the most effective strategic capital structure for the firms' survival as well as protecting the benefits of the stakeholders.

Therefore, a wise capital structure decision needs to be planned and executed properly and effectively, involving a process of balancing the debt repayment risk and making sure the availability of equity for future growth (Marks et al. 2009). Nevertheless, despites overwhelming studies being done on the capital structure of firms all over the globe, limited attention has been given to studies covering the *Shariah* approved firms. This scenario has thus motivated this study to explore further and give particular attention on the debt determinants of *Shariah* approved firms listed on the Bursa Malaysia. The findings of this study will contribute significantly to the understanding of the *Sharia*h approved firms financing behavior in Malaysia for these firms are known to be governed by the *Shariah* rules and principles that might influence their capital structure decision. This study also intends to address and tackle the issue of the

inconclusiveness of the capital structure decision regardless of the nature of the firms (Charalambakis and Psychoyios, 2012; Haron, 2014).

The next section of this study provides some overview of the *Shariah* approved firms listed on the Bursa Malaysia. Then the following section discusses the issues of capital structure and related issues regarding the capital structure from the Islamic perspective. This follows by a detail explanation on the determinants incorporated in this study as well as the hypotheses development. The methodology employed and the data analysis will be explained accordingly with a comprehensive discussion on the factors affecting the debt level of *Shariah* approved firms in Malaysia. The last section concludes the study.

2. An overview of the *Shariah* approved firms listed on the Bursa Malaysia

Malaysia practices a dual financial system making it a unique platform for investors to choose whether to invest in a non-*Shariah* or *Shariah* approved firms. The Securities Commission (SC) of Malaysia has set up the *Shariah* Advisory Council (SAC) to execute a very careful assessment and screening process for the stocks to comply with before they can be recognized as *Shariah* approved stocks. The *Shariah* screening is a crucial assessment to ensure the status of the *Shariah* approved stocks especially for the Muslim investors who are seeking *halal* and permissible stocks for trading. A qualitative and quantitative screening has been developed to access the *Shariah* status of the stocks. On top of that, the firm's core activities are monitored closely and must not involve any non-permissible activities like financial services based on *riba* (interest), gambling and gaming; manufacturing or selling of non-*halal* products or related products; involving in conventional insurance; involving in entertainment activities that are not in accordance with the *Shariah* principles; manufacturing or selling of tobacco-based products or related products; stockbroking or share trading in *Shariah* non-compliant securities; and other activities deemed in contrary to the *Shariah* principles.

Any firms with core activities involving with the non-permissible activities mentioned above will straight away be considered as non-*Shariah* approved firms and no further assessment is to be conducted. On the other hand, for mixed income firms, which core activities do not involve the above-said non-permissible activities but have a subsidiary that involves in such activities these firms need to be assessed qualitatively and quantitatively.

For the qualitative screening, the firm is required to have a good public perception and image. The quantitative screening nevertheless requires a thorough and strict examination and assessment. In this quantitative screening process, to be classified as *Shariah* approved stocks, two benchmarks need to be fulfilled which are the activity benchmark and the financial ratio benchmark. The activity benchmark assesses the firm's income from the non-permissible activities. This income must be examined and compared with the group revenue and the group profit before tax. At this stage, two benchmarks have been set as reference which are the 5% and the 20% benchmark following the different types of business activities. Income from these activities must be below the percentages given according to the types of the activities for them to be considered as *Shariah* approved. In term of the financial ratio benchmark, 33% has been set as the approved benchmark for the cash ratio and debt ratio. Anything beyond the 33% benchmark will not be approved as *Shariah* firms. The SAC has set the 33% benchmark for the financial ratio following the concept of *ihtiyat* (precautionary measure) based on the Prophet Muhammad (PBUH)'s words that '*one-third is enough'* or 33%. In this quantitative screening, firms are required to fulfill both the activity ratio and the financial ratio for failing to meet either one will deny the classification as *Shariah* approved firm.

Presently, the financial ratio benchmark is the revised version that has been introduced by the SAC which took effect in November 2013. Previously, there were four levels of activity benchmark before narrowing it to only two activity benchmarks as currently practiced by the SAC. The presently revised screening method is in accordance with other Islamic indices practices that incorporate a financial benchmark in their screening processes such as the Dow Jones Islamic Index (DJIM), Standard and Poor (S&P) Global *Shariah* Index and Financial Times Stock Exchange (FTSE) *Shariah* Index.

Figure 1 presents the number of *Shariah* approved firms traded on Bursa Malaysia from the year 1997 to 2015. The year 1997 is the year the SC firstly announced the list of *Shariah* approved firms traded on Bursa Malaysia. As at November 2015, 667 stocks are designated as *Shariah* approved stocks

representing 73.90% out of 903 of the total stocks traded in Bursa Malaysia. This figure holds about 64.10% market capitalization worth about RM 1,086.18 billion.

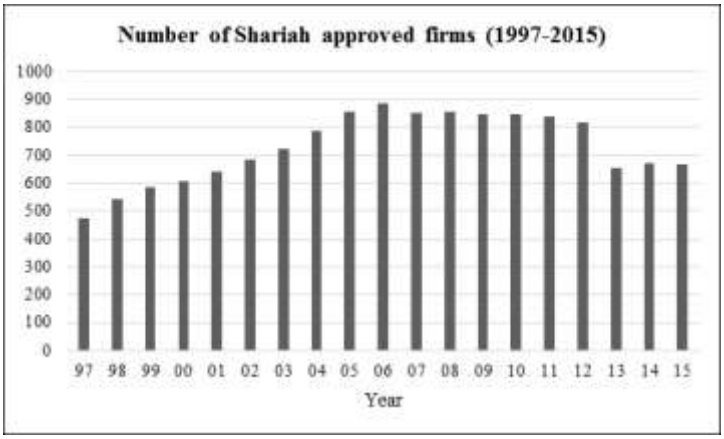

Figure 1: Number of *Shariah* approved firms (1997-2015) (Source: Various list of *Shariah*-compliant Securities by SC's *Shariah* Advisory Council: Retrieved from https://www.sc.com.my/data-statistics/list-of-shariah-compliant-securities-by-scs-shariah-advisory-council/)

From the above figure, a downward trend in the number of *Shariah* approved firms is recorded in 2013 and it may be seen as a result of the revised screening method being implemented by the SC. The firms' condition then may perhaps need extra time to adjust and necessary amendment to comply with the SC revised screening methods. In addition to that, some of the firms may at that time require a substantial amount of debt in their capital structure to ensure smooth running of their operation, thus adjusting to the maximum of 33% benchmark may pose operational problem to them to adjust.

The downtrend pattern of the number of *Shariah* approved firms may possibly limit the investment opportunities on *halal* stocks by certain investors who are inclined to *Shariah* principles. This is evidenced as argued by Zandi et al. (2014) that the SC did not put the financial ratio as part of its screening process then as it might reduce the number of *Shariah* compliant stocks traded in Bursa Malaysia. Nevertheless, it is inevitably true that the introduction of the financial ratio as one of the *Shariah* screening process will provide a better assessment of the firm's financial ratio. Too much debt in a capital structure is always translated to higher bankruptcy risk due to default in loan repayment. In view of that, the revised *Shariah* screening methodology is seen to be consistent with the aspirations of the Capital Market Master Plan 2 (CMP2), which is to build bigger scale of the *Shariah*-compliant equity and investment management segments and to instigate greater inflow of foreign Islamic funds to Malaysian *Shariah*-compliant equities (SC, 2013).

3. Underlying theories of capital structure

The modern capital structure theories came into existence in the attempt to understand further the capital structure after the seminal works of Modigliani and Miller (1958) of a well-known capital structure irrelevance theory of MM I and MM II. The MM theorem assumes that in a perfect capital market, the value of the firm is independence from any form of capital structure. The MM also assumes similar business risks among firms operating in a similar business environment and firms are also assumed to pay no tax with zero transaction cost.

The above argument has initiated debates among researchers where firm value being independence from capital structure may encourage 100% debt to maximize their shareholder profit. This may lead to higher bankruptcy risk should there be default in loan repayment. Researchers also argue that in reality, the economy is operating in an imperfect capital market and the value of firms are determined not only by looking at debt and equity but also the consideration of other factors too such as taxes, transaction costs, bankruptcy costs, agency conflicts, adverse selection, lack of separation between financing and

operations, time-varying financial market opportunities, and investor clientele effect (Frank and Goyal, 2008)**.**

Arguments and counter arguments raised from the MM theory has led to the development of other capital structure theories such as the trade-off theory (TOT), the pecking order theory (POT) and the agency theory.

The trade-off theory (TOT)

The original TOT was derived from the MM theorem of Modigliani and Miller (1958) and Modigliani and Miller (1963). The TOT is basically looking at the cost and benefit of debt. By opting for debt, firms can reap the tax shield advantage that comes with debt employment, where the higher the level of debt employed the bigger tax shield it will enjoy. Firms are expecting lower tax liability and thus increase the after-tax cash flow or profit. In other words, firms prefer high debt financing to reap the tax shield advantage.

The pecking order theory (POT)

The early development of the POT begins with the study of Donaldson (1961) on the financing practices of a sample of large corporations. This then drives Myers and Majluf (1984) and Myers (1984) to extend further and introduce the POT. The POT is basically a hierarchical financing with internal financing being the first option of financing as compared to the external financing.

The POT is derived from the asymmetric information problem. The managers of a firm are believed to have more information and access to the real value of the firms' asset and growth opportunity in comparison to the shareholder. As such, in the event of the stock price being overvalued, the firms will issue new stock to raise capital as the issuance of new stock transfers the value from new investors to the existing shareholders of the firms. On the other hand, when the stock is undervalued, the firms would opt for debt instead of issuing new equity in order to minimize the bargain handed to new investors.

However, the POT does not always–hold true to explain the firm's preferences in choosing their financing mode. Leary and Roberts (2010) share evidence of firms violating the hierarchy of either by issuing external securities when internal resources are sufficient or issuing equity in place of debt.

Vasiliou et al. (2009) suggest that even with significant difference between number of firms that preferred retained earnings and firms that preferred long-term debt or the issuance of new stocks, the ordering of debt and equity is not determined, thus the POT influence is not significant. In addition to that, the methodological weaknesses during the analysis may also lead to the inappropriate conclusions.

The agency theory

The agency theory initiated by Jensen and Meckling (1976) is an extension to the earlier work of Fama and Miller (1972). Agency conflict may occur between the stockholders and the managers and between the stockholders and the debt holders. There have been arguments proposed by previous literature regarding the linkages between the agency conflict and the capital structure choice like the high bargaining power of debt holders (Yu, 2012)**,** the human capital protection (Fama, 1980) and to avoid pressure from the interest payment (Jensen, 1986).

4. Islamic perspective on the firm's capital structure

Both the conventional and the Islamic perspective see debt through a different lens. Conventionally, (Davis, 1995) described debt as a highly complex contract entailing a promise to repay principal with the interest incurred on a loan or advance. Similar with the time value of money concept, where interest is included either explicitly or impliedly in all deferred payment transactions (Lokken, 1986). This concept views money as having greater benefits if received today rather than later. In debt contract, interest charged to the borrower in order to compensate the risk to the lender. The lender has an absolute power on the interest rate charged to the borrower and in any case of default in loan repayment, the lender will charge for penalty and even charging extra interest. This is basically the mechanism of a conventional contract protecting only the interest of the lender and transferring the risks to the borrower. In contrast, from the Islamic perspective, debt is indispensable. However debt should not be encouraged for non-essential and wasteful consumption and unproductive speculation (Ahmed, 2010). Moreover, debt must be

asset backed and must be created from the sale or lease of real assets that the firms have by means of *Murabahah, Ijarah, Salam, Istisna*' and *Sukuk* modes of financing.

It is worth to discuss the concepts of time value of money and opportunity cost in relation to debt from the Islamic perspective. Interest (*riba'*) is strictly prohibited in Islam. Nevertheless, the concept of time value of money is still relevant in Islamic finance (Bacha and Mirakhor, 2013). As explained by Kahf (1994) the prohibition of interest is not a *sine qua non* to the denial of recognition of time value of money but an objection to an unfair and unjust approach to its evaluation. Time value of money is essential in evaluating cash flows, investment appraisals and financial decision-making—not only in conventional finance, but in Islamic finance as well. In Islam, opportunity cost according to Suharto (2014) is incurred only when the available option is an equally good choice. If a person faces both a good choice and a bad choice, discarding the bad choice is not regarded as opportunity cost. Thus, the bad choice is not even considered a choice in Islam. The Islamic notion of the opportunity cost of capital and the time value of money can be clearly understood by reviewing the distinctions between investment and lending (Iqbal and Mirakhor, 2011).

Money can be used both for investment purposes and to be lent to those in need. A party to an investment contract, such as in *Mudarabah* or *Musharakah*, will be compensated accordingly with the specific profit and loss agreed on in the contract. Money, in this case, acts as a medium of exchange to facilitate an economic activity over a certain time period. Islam does recognise return from this investment activities thus the investors are compensated accordingly. Even though the concept of time value of money is permissible in the Islamic finance, it is not so in the context of debt (Obaidullah, 2005) due to *riba'*.

Islam sees the act of lending money as a charitable act based on the *qardul hassan*, or charitable contract. Conventionally, interest on a loan is perceived as a reward to the lender (as at the same time the recipient's opportunity cost). Nevertheless, the Islamic scholars see this as an unlawful act. Islam regards lending as solely a charitable act without expecting any monetary reward in return. Lending money without expecting anything in return is an act done for the sake of receiving Allah's blessing (*barakah*) and to uphold the spirit of helping each other (*ta'awun*).

Based on the arguments above, it is clearly seen that debt is allowable in Islam. Even, our prophet Muhammad (PBUH) himself also engaged with debt in his investments and business. Nonetheless, too much reliance on debt triggers bankruptcy risk. The impact of having a high debt level not only affects the individual level but also even worst to the whole economic system. Since debt has the capability to create problem, certain benchmark or guideline is definitely needed. This is where the benchmarking concept comes in. In Islam, the level of debt is set following the Prophet Muhammad (PBUH)'s words that 33% or '*one-third is enough'*. This is evidenced by the hadith narrated by Imam Muslim in his book, The Book of *Wasaya* (Khan, 1997).

Literature relating to the Islamic capital structure is still very few and limited. Among the few is Ahmed (2007). Ahmad suggests that being *Shariah* approved firms, debt employed must be asset-backed and the level of debt must not exceed its tangible assets. In addition to that, Obaidullah (2006) explains that the TOT is not relevant to the *Shariah* approved firms due to the element of interest tax shield. To minimize the cost of financing, he proposes that *Shariah* approved firms to choose internal equity, debt, *Mudarabah*-based equity and *Musharakah*-based equity. The order of choice proposed is similar to that of the POT. Nevertheless, depending on the objectives of the firms together with the constraints facing the firms and the different size and status, the preference of the financing sources may differ (Ahmed, 2007).

5. Debt determinants and hypotheses development

Profitability

A mixed relationship between debt and profitability is reported in the literature. A positive relationship between the variables is consistent with the TOT while the negative relationship is in support with the POT.

The TOT suggests that lenders are reluctant to lend to low profitable firms as these firms are seen as risky firms. As a result, less profitable firms tend to have lower debt level and vice versa. There is also argument that the low-profit firms implies poor shareholders' return and by taking on higher debt will make the equity evaluation less attractive (Prasad et al. 2001). High-profit firms also choose debt over equity as to reap the tax shield advantages (Frank and Goyal, 2003). Meanwhile, the POT suggests that

profitable firms will opt to internal funds comparative to the external funds (debt and equity) to avoid high transaction costs of issuing equity (Myers and Majluf, 1984).

In the context of Malaysia, there are evidences that Malaysian firms following the POT such as Ting and Lean (2011), Md-Rus and Samiran (2012) and Ahmad and Rahim (2013). Hassan et al. (2012) and Haron (2017) in their studies using multiple regression analysis on the listed *Shariah* approved firms on Bursa Malaysia, where profitability is significantly negatively related to debt. Therefore, for this variable, the study hypothesizes that:

$H_{1:}$ There is significant negative relationship between debt and profit.

Asset tangibility

Asset tangibility is an important determinant of capital structure as it can explain why firms leverage change substantially. It can also explained the issue of low leverage puzzle (Rampini and Viswanathan, 2013; Ramli and Haron, 2017). Tangibility also recorded mixed relationship in the literature.

The positive relationship between tangibility and leverage is following the TOT hypothesis. Firms with higher asset tangibility, can engage with higher debt level as tangible assets can act as collateral. Hall (2012) in his study on firms in the Central and Eastern Europe, reported a positive significant relationship between asset tangibility and the level of debt. Mustapha et al. (2011) and Baharuddin et al. (2011) share the same result for firms in Malaysia. Hassan et al. (2012) in their comparative analysis between listed *Shariah* and non-S*hariah* approved firms in Malaysia, conclude that tangibility does have positive significant roles in influencing debt level for *Shariah* approved firms but not the conventional.

Nevertheless, Al-Najjar and Hussainey (2011) and Psillaki and Daskalakis (2008) record a negative relationship between tangibility and leverage. A study by Joeveer (2013) on the nine Eastern European countries of transition economies conclude the same outcomes supporting the agency theory. Therefore, for asset tangibility, the research hypothesis that:

$H_{2:}$ There is significant positive relationship between debt and tangibility.

Growth opportunity

The relationship between the growth of the firms and the leverage also remains inconclusive. The mix positive and negative relationship reported is mainly due to the different measurement of growth opportunities used by researchers to capture the effect (Chipeta et al. 2012)

Growth is expected to have a positive relationship with leverage supporting the POT theory. As firms are growing, the investment level will increase thus larger funds are needed. Byoun (2011) explains that, the tendency of the firms to utilize its financial flexibility to fund their future growth may also influence the impact of growth on leverage. In addition to that, financial flexibility does play a part as it allows firms to maintain a low level of debt. When the firms decide to expand they can use and rely on their financial stability to engage on more debt. The positive relationship between growth opportunity and level of debt are evidenced in Al-Najjar and Taylor (2008), Al-Najjar and Hussainey (2011) and Tongkong (2012).

The TOT on the other hand, hypothesizes an inverse relationship between growth and leverage. As the firm grows, the costs of financial distress also increase. Bankruptcy cost will consequently increase thus the level of debt will be reduced. This is also consistent with Myers and Majluf (1984), Deesomsak et al. (2004) and Eriotis et al. (2007).

In the context of Malaysia, evidences show a positive relationship between growth and leverage (Md-Rus and Samiran, 2012; Ahmad and Rahim, 2013). Due to that, this study hypothesizes the following:

$H_{3:}$ There is significant positive relationship between debt and growth.

Size

Previous studies on the relationship between the size of the firms and leverage recorded mix results. The positive relationship between size and leverage is consistent with the TOT. Large firms are usually more diversified with a more stable earning thus are keen to employ debt in their capital structure as to reap the tax shield that comes with debt employment. The positive relationship between firms' size and leverage can be seen in Psillaki and Daskalakis (2008) and Tongkong (2012).

On the other hand, studies by Ting and Lean (2011) and Ahmad and Rahim (2013) on the listed government-linked companies (GLCs) in Malaysia support the POT suggesting an inverse relationship between size and the level of leverage. This is perhaps large firms usually have low information asymmetry problem thus, can afford to opt for equity financing rather than debt financing.

While, with regard to the *Shariah* approved firms, Hassan et al. (2012) show evidence that size does affect debt level of the firms positively. However, Ahmad and Azhar (2015) are not able to provide evidence on any significant relationship between size and debt for the *Shariah* approved firms in Malaysia from the consumer sector. Therefore, this study hypothesizes that:

$H_{4:}$ There is significant positive relationship between debt and size.

Bankruptcy risk

The study on bankruptcy risk increases due to the Enron's collapse in 2002 (Swanson et al. 2003). Altman (1968) proposes the Z-score to measure the distance to the bankruptcy and the likelihood of the firms to fall bankrupt.

The Z-score measures five important financial ratios commonly used to measure the financial standing of firms which are the firms' earnings, assets turnover, profitability level, and liquidity and share performance. A set of benchmarks has also been set as to measure the financial standing of the firms quantitatively. A score of below 1.81 points is an indicator of a bankrupt firm. Firms are in the gray area if the scores are between 1.81 to 2.99 points. The Z-score of more than 2.99 is a good signal, being highly unlikely to be bankrupt. A low Z-score indicates high bankruptcy risk to the firms and in contrast, a high Z-score proves that the firms are in good financial standing and far from bankruptcy risk.

The TOT proposes a negative relationship between bankruptcy risk and leverage where high bankruptcy risk firms tend to have low leverage and vice versa. Byoun (2008) provided evidence supporting the TOT. Mitani (2014) on the other hand, found a significant negative relationship between debt and Z-score depending upon the nature of the competitive interaction whether Cournot (quantity) or Bertrand (price) competition for the listed firms on Tokyo Stock Exchange. The study, however only found a significant relationship for the Cournot. At a larger scale, latest evidence by Belkhir et al. (2016) demonstrates a significant negative relationship between Z-score and debt in their study on MENA countries over the period of 2003 to 2011. Following literature, the hypothesis is:

$H_{5:}$ There is significant negative relationship between debt and bankruptcy risk.

Non-debt tax shield (NDTS)

The TOT explains that firms employ debt financing to enjoy tax shield benefit (Modigliani and Miller, 1963). Nevertheless, higher debt level means higher cost of debt like bankruptcy risk and agency cost. This may offset the benefits from the tax shield. Deangelo and Masulis (1980) explain that NDTS such as depreciation deduction and investment tax credit provide alternatives to tax shield benefit that comes with debt. Firms may therefore utilize their NDTS as their tax saving strategy instead of opting for debt financing.

Literature recorded a negative relationship between NDTS and leverage (González and González, 2012 ; Chang et al. 2014; Nejad and Wasiuzzaman, 2015; Haron, 2017) following the TOT. Chakraborty (2010) on the other hand found a positive relationship between debt and NDTS and may possibly due to the tax shield advantages. Using a different leverage definition, Uddin (2015) found that NDTS positively significantly affected the long-term debt of firms. With respect to the *Shariah* approved stocks, Hassan et al. (2012) depicted a positive relationship between NDTS and debt level. The relationship between debt and NDTS is hypothesized as below; -

$H_{6:}$ There is significant negative relationship between debt and NDTS.

Industry concentration

The HH index is a measurement of industry concentration. It is an economic concept introduced by Herfindahl and Hirschman and is widely used in the competition law and antitrust discipline. Mitani (2014) used the HHI to measure the effect of industry concentration on the interaction between capital structure and market structure. However, the HHI shows no significant impact on market share. Smith et

al. (2015) and Haron and Adewale (2016) also used the HHI to measure the influence of industry concentration on debt.

Industries with high HH index (highly concentrated industry) will have higher level of leverage and lower intra-industry dispersion (Mackay and Phillipis, 2005). Haron and Adewale (2016) state that *Shariah* firms investing in high risk projects pursue high returns when debt is high implying a positive relationship. The positive relationship is supporting the POT while negative relationship supports the TOT (Kayo and Kimura, 2011; Haron and Adewale, 2016). Following POT, the hypothesis is:

$H_{7:}$ There is significant positive relationship between debt and industry concentration.

Controlled variable

Despite the above said explanatory variables, the study also includes three economic determinants namely inflation, GDP and dummy economic crisis to assess the determinants affecting debt level of the *Shariah* approved firms in Malaysia. This study hypothesizes that inflation will have a negative relationship with debt due to the inflationary environment creating uncertainties to the business causing them to avoid debt (Huizinga et al. 2008 ; Shah and Jam-e-Kausarb, 2012).

$H_{8:}$ There is significant negative relationship between debt and inflation.

As for the GDP that measures the growth in the country, this study hypothesizes that GDP will have a positive relationship with debt. Growth in GDP signifies active economy and thus provides a better investment opportunity. Business will grab this opportunity to expand their business by taking debt. This is consistent with theTOT while negative relationship is in support of the POT.

$H_{9:}$ There is significant positive relationship between debt and GDP.

In addition to the above, this study also employs one dummy variable to represent 2008 global economic crisis. We would expect that the global economic crisis affects debt in a positive way.

$H_{10:}$ There is significant negative relationship between debt and 2008 global economic crisis

6. Data and methodology

Sample

The study covers the period of 15 years from 2000 to 2014. The sample firms in this study is a consistent designated *Shariah* approved non-financial firms from various sectors listed on the Bursa Malaysia during the period.

Sampling procedure

Some criterion and assumptions have been introduced and imposed during the selection of the firms. However, the main criteria that need to be fulfilled by the firms are the firms must be *Shariah* approved firms. There are also other criteria as below:

a) The firms must be Shariah-approved firms consistently from the year 2000 until 2014 according to the SC Malaysia *Shariah* listing.
b) The study assumed that some *Shariah*-approved firms would change their corporate firms' name due to merger and acquisition (M&A) and take-over (T&O) exercise. This issue was ignored, as it was not the main concern of the study.
c) The study also assumed that some *Shariah*-approved firms would encounter changes in their trading board and/or the trading sector. This issue also was ignored, as it was not the main concern of the study.
d) Financial institutions were excluded, as they pose a different set of rules and guidelines established by relevant authorities such as by Central Bank of Malaysia.

The selection of the firms is a challenging task as some firms might suffer survivorship issues throughout the study period. Some factors such as economic condition, firms' internal and management problem, unexpected events and others are among possible factors that hinder the firms to continue to operate and are forced to close down. Unfortunately, the issue of survivorship of the firms is difficult to remedy (Welch, 2007). However, with some criterion and assumptions imposed during the selection process, the biased impact resulting from the survivorship issue can be minimized. In relation to the *Shariah* approved firms in Malaysia specifically, maintaining the *Shariah* status according to the SC requirement is also another challenge facing the study during the selection of the firms.

The study relies heavily on the November 2014 *Shariah* approved firms list as announced by the SC to generate the list of the *Shariah* approved firms. The next step involved a backward process whereby the *Shariah* approved firms are identified with their *Shariah* status remains consistently from the year 2014 and ended with the year 2000. This is a very crucial task as we need to assess the *Shariah* status of the firms, individually, for 15 years' period of analysis. Since the study focuses only on the consistently *Shariah* approved firms from 2000 to 2014, only 239 firms are remaining at the end of the cleaning procedure as compared to the initial number of 586 *Shariah* approved firms as at November 2014. The study focuses on only firms with a consistent *Shariah* status as we believe consistent *Shariah* approved firms will provide a more meaningful outcome in understanding the debt determinants of the *Shariah* approved firms. This study argues that use of inconsistent *Shariah* status firms may lead into a misleading conclusion and a bias result.

Empirical model

The empirical model develops to investigate the factors affecting the capital structure of the *Shariah* approved firms listed on Bursa Malaysia. A general panel data regression adopts in modeling the relationship and the econometric model is written as the following: -

$$Y_{it} = \beta_0 + \sum_{i=1}^{6} \beta_{1it}\, firm + \beta_{2it}\, industry + \sum_{i=1}^{3} \beta_{3it}\, economy + \varepsilon_{it} \dots\dots (1)$$

$$\mathbf{i = 1,\ldots,N}$$

$$\mathbf{t = 1,\ldots,T}$$

Where:

Y_{it} is the debt measure of the firms *i* in the year *t*.

β_0 denotes constant.

β_1 denotes column vector of firm-specific determinants for firms *i* in year *t* (Profitability, asset tangibility, growth opportunity, size, bankruptcy risk, NDTS).

β_2 denotes column vector of industry determinant for firms *i* in year *t* (HHI).

β_3 denotes column vector of economic determinants for firms in year *t* (Inflation, GDP and 2008 global financial crisis).

ε_{it} denotes random error.

The independent variable measures debt level of *Shariah* approved firms. The firms-specific determinants are measured by seven explanatory variables that include profitability, asset tangibility, growth opportunity, bankruptcy risk, size, NDTS and HHI. Meanwhile, the economic determinants are represented by GDP, inflation and dummy variable of 2008 economic crisis.

The above empirical model between the dependent variables and the explanatory variables is tested using three-panel regression models inclusive of pooled OLS, Random Effect Model (REM) and Fixed Effect Model (FEM). The empirical model is also tested for robustness by adjusting the standard error to be clustering at the firm level. Diagnostic tests of the Wald test and the Wooldridge are performed and the models are corrected for heteroskedasticity and autocorrelation problem with robust standard errors.

Variable measurement

After reviewing the prior literature thoroughly, Table I below summarizes the variables being studied. Details on how to measure the variables and what are the variables are provided below.

Table I: Variable Measurement

	WHAT TO MEASURE	HOW TO MEASURE	EXPECTED RESULT
DEPENDENT VARIABLES (Y)			
Debt ratio	Firm's total debt	Firm's total debt / Firm's total asset	
FIRMS DETERMINANTS (X)			
Profitability	Firm's net profit margin	Firm's operating income / Firm's total asset	-
Tangibility	Firm's asset structure	Firm's fixed asset / Firm's total asset	+
Growth	Firm's growth opportunities	Annual percentage change in total assets	+
Size	Firm's size	Log of sales	+
Z-score	Bankruptcy risk	3.3(EBIT/total assets) + 1.0(sales/total assets) + 1.4(retained earnings/total assets) + 1.2(working capital/total assets) + 0.6(MV of equity/total liabilities)	-
Non-debt tax shield (NDTS)	Alternatives to tax shields as provided by debt financing	Annual depreciation expenses / Firm's total asset	-
Herfindahl-Hirschman Index (HH Index)	Industry concentration	Sum of the squares of the market shares of firms within a given industry	+
CONTROL VARIABLES (X)			
Inflation	Annual inflation		-
GDP	GDP growth		+
Economic crisis	2008 economic crisis	Dummy 1= 2008 economic crisis 0= Other than the year 2008	+

7. Result and Analyses

The initial number of observations in the study is 3585. After the dataset was treated for the outliers and the missing data, the number of observations is left to only 3277. The analysis is conducted using the Stata application. The panel data regression results are presented in Table II.

The Breusch Pagan Lagrangian Multiplier (BPLM) test is found to be statistically significance (p=0.05) and this leads to the conclusion that the REM is more appropriate than the pooled OLS. It is also confirmed that the country specific effects exist in the model. Then, the study proceeds to the Hausman test to confirm either the REM or FEM is the most appropriate model. The Hausman test is statistically significant (p=0.05) and thus the null hypothesis is rejected which confirmed that the FEM is the best model. Since the FEM is the best model as per the specification test results, further discussion on the results of the variables is based on the FEM.

Overall, using the FEM; the most appropriate econometric model in this study, the study found that all explanatory variables inclusive of profitability, tangibility, growth opportunity, size, bankruptcy risk, NDTS, HHI, inflation and economic crisis are having a significant relationship on leverage (DEBT), except for one economic variable, GDP. The result of the coefficient of determination (R-squared) depicts

that 17.75% of DEBT variation can be explained by the explanatory variables. The *F*-statistic proves the validity of the model.

A positive significant relationship is observed between PROF and DEBT (p=0.01). The result is contradicting with the earlier expectation thus H_1 is not supported. The positive results confirm that high profitable *Shariah* approved firms opt to use external financing which is debt as opposed to their own internal financing to finance their firms. The result supports the TOT. Looking at the development of the Malaysian Islamic capital market and the variety of the financial products that are available in the market such as banking facilities and capital market products justifies the result. Given higher profit and more stable firms, the variety of the capital market products will surely attract them to opt for external financing rather than using their internal financing. This result is illustrated further by the increase in demand for funding from the bond market from RM66 billion in 2014 to RM79.9 billion in 2015 and the increase in business loan disbursement for the SMEs from a monthly average of RM65.6 billion in 2014 to RM67.1 billion in 2015 (Central Bank of Malaysia, 2015). The result, however, does not support Hassan et al. (2012) in their study on the *Shariah* approved firms in Malaysia.

The statistical tests prove that the asset tangibility significantly influenced the level of DEBT (p=0.01). From the Islamic finance perspective, debt must be asset backed and the level of debt cannot exceed the tangible asset of the firms (Ahmed, 2007; Haron and Adewale, 2016). It implies that firms that have a low level of asset will have a low level of debt and vice versa. The positive result between asset tangibility and debt of the *Shariah* approved firms is consistent with the *Shariah* principle. The positive sign is in favor of the TOT. The result is also consistent with our earlier prediction thus H_2 is supported. The same finding is also concluded by Haron and Ibrahim (2012) and Matemilola and Rubi Ahmad (2015).

GROW shows a positive significant relationship with DEBT (p=0.05) supporting the POT. The results suggest that as the *Shariah* approved firms are growing, they will increase their debt. Financial flexibility that allows firms to maintain low debt level and exploit it when decided to grow may also be the factor that increases the firms' debt level (Byoun, 2011). A variety of the financial products being offered in the market may also make debt financing more attractive. The result is consistent with other literature that focuses on Malaysian firms such as Md-Rus and Samiran (2012), Ahmad and Abdul Rahim (2013) and Haron and Adewale (2016). Further, the result reveals that there is a positive significant relationship between SIZE and DEBT (p= 0.01). The result is in tandem with our earlier expectation thus H_4 is supported. The positive relationship concludes that bigger *Shariah* approved firms tend to have more debt as compared to small size *Shariah* approved firms. As large firms are more stable and generate more income, given a variety of financial instruments available in the market, debt instruments look more attractive. The findings are similar to Mohmad Hassan et al. (2012) and Balios et al. (2016).

Furthermore, as expected, the ZSCORE proved to have a negative significant relationship with DEBT. The result is consistent with the TOT as when the ZSCORE is low, the probability to bankrupt is high implying a low bankruptcy risk thus makes debt financing more attractive. Here, like conventional firms, the *Shariah* approved firms demonstrate the same financing behavior as the bankruptcy risk reacts in the same motion to debt. This proves that there are no differences in the effect of bankruptcy risk to the debt determinants of *Shariah* approved firms, especially in Malaysia. Thus, our H_5 is supported and consistent with prior literature such as Mitani (2014) and Belkhir et al. (2016)

Meanwhile, for NDTS, the results are contradicting with the early expectation of the study. NDTS recorded a significant positive relationship with DEBT (p=0.01). The result is a contradiction to the TOT that proposes NDTS negatively related to DEBT. The positive result is most probably due to the firms with high NDTS having high collateral-able fixed assets (Uddin, 2015). Looking at the asset structure of the *Shariah* approved firms as evidenced by the positive relationship between asset tangibility and debt, there is a consistency in both relationships. Thus, H_6 is not supported. The result is consistent with a recent study of Köksal and Orman (2015) and Chadha and Sharma (2015). In addition to that, Obaidullah (2006) advocates that the TOT is irrelevant for the *Shariah* approved firms due to the element of interest tax shield that is non-existence in Islam.

The HHI records a positive significant relationship with DEBT (p= 0.01). The positive significant relationship is inconsistent with (Mackay and Phillipis, 2005) which suggests that the highly concentrated industries (high HHI) tend to have a high debt while less concentrated industry (low HHI) prefers low debt level. *Shariah* approved firms in Malaysia, on average, operates in an non concentrated industry (average HHI of 0.0794) and due to that, this study concludes that, given the industry characteristics, the *Shariah* approved firms in Malaysia tend to have a low level of debt. The HHI result is consistent with the

finding on profitability and size as highly concentrated industries usually have high profit and relatively bigger in size (Mackay and Phillipis, 2005). Thus, H_7 is supported.

Meanwhile, as for the controlled variable, the study found that only inflation and economic crisis play significant roles in determining debt level of the *Shariah* approved firms in Malaysia. The study supports H_8. During inflation, the *Shariah* approved firms reduce their debt level due to uncertainties in the market. In addition to that, the 2008 global economic crisis proved to play significant role in affecting the debt level of the *Shariah* approved firms and H_{10} is thus supported. As for the GDP, there is no significant relationship between DEBT and GDP and thus H_9 is rejected.

The study conducts robustness test on the model by adjusting the standard errors for clustering at the firm level. The result is slightly different to the FEM result as discussed above. Profitability, tangibility and HHI are found to be non-robust determinants in identifying debt level of *Shariah* approved firms in Malaysia. However, other determinants like growth, size, bankruptcy risk, NDTS, inflation, GDP and global economic crisis are robust evidence in determining debt level of *Shariah* approved firms in Malaysia.

Table II: Panel data regression result on debt determinants

Dependent Variable (DEBT)	Pooled OLS	REM	FEM	FE robust cluster	VIF
Constant	-0.1469***	-0.3613***	-0.4893***	-0.4893***	
	(-6.8600)	(-10.4100)	(-11.9900)	(1.4600)	
PROF	-0.1367***	0.0674**	0.0934***	0.0934	2.01
	(-3.2800)	(1.9700)	(2.6800)	(1.4600)	
TANG	-0.0035	0.0302**	0.0412***	0.0412	1.50
	(-0.2600)	(2.2400)	(2.9300)	(1.4800)	
GROW	0.0151***	0.0093**	0.0093**	0.0093**	1.04
	(2.6600)	(2.5100)	(2.5000)	(1.99000)	
SIZE	0.0810***	0.1173***	0.1384***	0.1384***	1.42
	(19.2300)	(18.2200)	(18.4100)	(8.4800)	
ZSCORE	-0.0695***	-0.0898***	-0.0948***	-0.0948***	2.55
	(-19.5400)	(-23.1100)	(-23.0600)	(-9.0500)	
NDTS	0.9853***	0.8597***	0.8398***	0.8398***	1.31
	(8.2600)	(6.6500)	(6.1800)	(3.0800)	
HH	-0.2837***	0.1280	0.3478***	0.3478*	1.07
	(-4.8800)	(1.4800)	(3.5500)	(1.7900)	
INF	-0.0033	-0.0042**	-0.0046**	-0.0046***	2.35
	(-1.1700)	(-2.3400)	(-2.5600)	(-2.6900)	
GDP	0.0009	0.0008	0.0008	0.0008*	1.17
	(0.8500)	(1.2500)	(1.2600)	(1.8800)	
ECO	0.0171	0.0215***	0.0222***	0.0222***	2.20
	(1.2900)	(2.5700)	(2.6500)	(3.1000)	
BPLM	7162.3500***		-	-	
Hausman	-	53.9300***		-	
Wald test	-	-	55397.0100***	-	
Wooldridge test	-	-	221.3120***	-	
R-square	0.2303	0.2000	0.1775	0.2000	
F-stat	-	-	22.54***	-	

Note. 1) ***, **, * denote significance at 1%, 5% and 10% level, respectively; the numbers in parentheses are the t-statistics.
2) The Wald test statistics test for group-wise heteroskedasticity in fixed effect regression model where the H_0: all coefficients = 0.
3) The Wooldridge test statistics test for autocorrelation problems in the panel data where the H_0: no first-order autocorrelation.
4) Fixed effect robust cluster is where the standard error is adjusted to be robust to heteroskedasticity and clustered at firm level

8. Conclusion

The study investigates debt determinants of *Shariah* approved firms listed on Bursa Malaysia. The revised *Shariah* methodology in 2013 that introduces the financial ratio as one of the tools to assess the *Shariah* status of the *Shariah* listed firms motivates this study.

The study finds that certain firm-specific variables like profitability, growth opportunity, tangibility, size, bankruptcy risk, NDTS and HHI, while the macro variables that include inflation and economic crisis play significant roles in determining the debt level of *Shariah* approved firms in Malaysia. Profitability, tangibility and size are found to be consistent with the TOT. Meanwhile, in support of the POT, the study concludes that growth and bankruptcy risk have a significant effect on firms' debt level. The macro variables like inflation and economic crisis are also proven to have significant roles in determining the debt level of *Shariah* approved firms in Malaysia. However, given the robustness test, the study found that growth, size, bankruptcy risk, NDTS, inflation, GDP and global economic crisis are robust evidences in determining the debt level of *Shariah* approved firms in Malaysia.

The results contribute largely to the understanding of the financing behavior of the *Shariah* approved firms in Malaysia. Given the variation in the result, this study supports Haron (2014) that the issue of the inconclusiveness in the capital structure decision does exist in the *Shariah* approved firms context. Thus, further investigation focusing on the capital structure of the *Shariah* approved firm is in need given the different sampling procedure and method of analysis.

In future, the study recommends exploring further on the roles of the management team such as Muslim board of directors in determining *Shariah* approved firms' capital structure. It is believed that it will provide more valuable information on the financing behaviour of the *Shariah* approved firms which are currently dominated by studies on the financial figures only. Being important position in the firms, their significant roles at least will play a part in determining the *Shariah* status of the firms.

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