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Capital Structure Determinants of Shari'ah-Compliant Firms: Evidence from the MENA Region

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Abstract: *Capital structure choice is vital in corporate financial management due to its effect on both investors' risk and return. Despite the various research that has investigated factors affecting the capital structure of companies, only a few studies have started to examine the capital structure of Shari'ah-compliant companies, especially in the MENA region. Indeed, the screening requirements for which shari'ah-compliant must adhere can affect their capital structure determinants. Hence, under those conditions, this study aims to determine the factors influencing the capital structure of a shari'ah-compliant listed firm in five MENA region countries. The importance of investigating shari'ah-complaint companies' capital structure emanates from the financial constraints on their debt capital structure. Accordingly, this study utilizes static panel data techniques on a sample consisting of Shari'ah-compliant firms over the period 2010–2018. The findings of this study were consistent with several previous studies as well as the theoretical background of capital structure determinants mainly, the trade-off and the pecking order theory. Our results give insight to managers on what determines their capital structure under shari'ah screening methodologies. However, more insight can be drought from the capital structure of shari'ah-compliant firms by extending the research into industry specifics.*

Keywords: *Capital structure; shari'ah-compliant; leverage; Shari'ah screening; Panel data.*

Paper type: *Research paper*

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Abstrak: *Pemilihan struktur modal sangat penting dalam manajemen keuangan perusahaan karena hal tersebut memiliki dampak terhadap risiko dan tingkat pengembalian bagi investor. Meskipun telah terdapat beberapa penelitian terdahulu yang menginvestigasi faktor-faktor yang memengaruhi struktur modal perusahaan, hanya sedikit penelitian yang mencoba menganalisis struktur modal dari perusahaan yang patuh syariah terutama di wilayah MENA. Tentu saja persyaratan shariah screening pada perusahaan-perusahaan patuh syariah dapat memengaruhi faktor penentu dari struktur modal tersebut. Oleh karena itu, berdasarkan beberapa kondisi, penelitian ini bertujuan untuk menganalisis faktor-faktor yang memengaruhi struktur modal dari perusahaan patuh syariah yang terdaftar di lima wilayah negara MENA. Pentingnya menganalisis struktur modal dari perusahaan-perusahaan patuh syariah berasal dari kendala keuangan yang didasarkan atas struktur modal utang. Bersadarkan hal tersebut, penelitian ini menggunakan teknik data panel statis dengan mengambil sampel yang terdiri dari perusahaan-perusahaan patuh syariah selama periode tahun 2010-2018. Penelitian ini menunjukan adanya konsistensi dengan beberapa penelitian sebelumnya juga sesuai dengan landasan teori terutama dari teori terkait faktor-faktor penentu struktur modal, juga teori trade-off dan teori pecking order. Hasil penelitian ini memberikan masukan dan wawasan kepada para manajer terkait faktor-faktor yang memengaruhi struktur modal pada metode penyaringan syariah. Namun demikian, masukan-masukan lain dapat lebih dihasilkan dengan mengembangkan penelitian ini dari analisis struktur modal perusahaan-perusahaan patuh syariah kepada spesifikasi industri.*

Kata Kunci*: Struktur modal; Kepatuhan syariah; Pengaruh; Shari'ah screening; Data panel.*

INTRODUCTION

The theory of capital structure is vastly debated in the corporate finance literature as it presents a crucial managerial challenge on how to choose the optimal capital structure. Indeed, the main objective of financial managers is to achieve the combination of debt and equity to reach optimum capital structure that would minimize the firm's cost of capital and improves return to owners of the business. Its leverage defines the capital structure of a firm; that is a mix of debt and equity financing, which is subject to different financial difficulties.

The work of Modigliani & Miller (1958) instigated the first theoretical framework for analyzing capital structure. Later on, various authors like Myers (1984) and Fama & French (2002) revealed the impact of taxation on the capital structure and also on the value of the firm, bringing forth the idea of asymmetry and cost agency into the capital structure framework. However, this theorem is questioned when other factors are considered. On the one hand, the tax advantages of the debt and on the other hand, the costs of bankruptcy and conflicts rising from agency costs. As a result, the company adjusts its current level of debt to an optimal ratio. This level is reached when the marginal gain of an additional unit of debt is equal to its marginal cost.

In the early seventies, Kraus & Litzenberger (1973) and Kim (1974) point to the relevance of bringing the hypothesis of business failure into the capital structure framework and give rise to the trade-off theory. The theory supports the existence of an optimal level of debt within the financial structure of companies. This optimal

level is reached through compromise between the marginal benefits of debt due to the tax-deductibility of debt expenses and its marginal disadvantages due to increased costs of financial distress. In addition to that, Jensen & Meckling (1976) add another perspective to the trade-off theory through their agency theory. According to them, the marginal benefit of debt is none other than the reduction of agency costs of equity while its marginal disadvantage is the increase in agency costs of debt.

Myers (1984) introduced the hypothesis of hierarchical financing; the company obeys to a specific hierarchical order to finance its assets. The theory of hierarchical financing specifically suggests that, in order of preference, the firm resorts to the internal resources generated by its exploitation, then to the financial debt and finally to the external equity if necessary. Also, the theory of hierarchical financing predicts a negative relationship between profitability and leverage. However, the empirical literature concerning this theory features contradictory results. (Booth et al., 2001; Frank & Goyal, 2009).

Size

From an empirical point of view, the first study conducted by Rajan & Zingales (1995) shows that the financial leverage of companies in the main industrialized countries is positively related to the size of the company and the tangibility of the assets. Antoniou et al. (2008) produced the same results for a sample of countries including Great Britain, the United States, Germany, France and Japan. Although the influence of the size of the firm on its level of financial structure is not clearly defined, many researchers agree that this criterion is one of the most discriminating factors in the financial choices of companies. (Long & Malitz, 1985; Harris & Raviv, 1991; Bradley et al., 1981).

Profitability

Profitability affects the capital structure of companies as companies with high profitability tend to use their internal resources rather than using debt financing, which is consistent with the pecking order theory. This implies a negative relationship between profitability and capital structure (Getzmann et al., 2014; Dang & Garrett, 2015; Trang et al., 2016; Nguyen et al., 2019). The trade-off theory suggests a positive relationship between profitable firms and debt financing as those firms are less risky and therefore, can contract more debts (Moyo et al., 2013; Chang et al., 2009). Similarly, a study on 10.242 Italian firms confirms the existence of a negative relationship between profitability and capital structure (Maurizio et al., 2011). Studies on the Vietnamese stock market (Nguyen et al., 2019) and the Indonesian stock market have also concluded to the same result (Sutomo et al., 2020).

Tangibility

The tangibility of assets plays a major role in determining the capital structure as firms with high tangible balance sheet have preferential conditions in accessing debt markets. Because when businesses provide tangible assets, collateral will create a positive signal for better creditors (Nguyen et al., 2019). Hence, both the trade-off

theory and the pecking order theory confirm the positive relationship between tangibility and capital structure. Accordingly, empirical studies have also confirmed this relationship (Lemmon et al., 2008; Hergli & Teulon, 2014; Dang & Garrett, 2015). Inversely, having poor quality of assets might render firms to contract more debt to mitigate agency costs. This implies a negative relationship between capital structure and tangibility (Irfan, 2011; Moyo et al., 2013; Bayrakdaroglu et al., 2013).

Growth

Growth is an important factor in determining the capital structure mix as growth mainly directs the financing model of firms. The trade-off theory suggests a negative relationship between debts financing as bigger firms tend to have lower debt levels. This is confirmed by many empirical studies supporting this view (Byoun, 2008 and Dang & Garrett, 2015). On the other hand, the pecking order theory supports the view that a positive relationship exists between capital structure and growth opportunities. Indeed, high growth companies tend to use debt in order to meet their financing needs (Son, 2011 and Trang et al., 2016). In addition to that, the study by Croquet & Colot (2007) on the determinants of the capital structure of Belgian companies confirmed the positive impact of the growth variable, which shows the importance of growth opportunities for companies' use of debt.

Macroeconomic factors

The relationship between capital structure and economic growth relates to the nature of business cycles. Indeed, during the time of economic ease, companies take opportunities in expansion and investment programs to generate more profits, thus enhancing the firm value (Yildirim et al., 2017). The trade-off theory would then support a positive relationship between GDP and capital structure. Nevertheless, relaxed economic periods are positively correlated with higher profits which will push firms to use their internal funds against debt financing according to the pecking order theory. Empirical evidence yield mixed results on the relationship between GDP and debt financing. Hanousek & Shamshur (2011) and Cekrezi (2013) find a positive relationship between the two variables while Haron, Ibrahim, et al. (2011) and Yildirim et al. (2017) find a negative relationship supporting the pecking order theory.

Capital structure determinants have been widely investigated in developed and developing countries. A study on Czech listed firms by Bauer (2004) using a static panel data analysis shows that size, profitability and growth determines the capital structure of firms. Similarly, Sheikh & Wang (2011) conducted an empirical investigation of Pakistani firms from 2003 to 2007. Their results show that profitability, liquidity, earnings volatility, and tangibility are related negatively to the debt ratio, whereas the firm size is positively linked to the debt ratio. M'ng et al. (2017) conducted a similar study on a sample of three South Asian developing countries. In addition to the common determinants, their results show that inflation is positively correlated to debt financing in Malaysia and Thailand. Additionally, Sutomo et al. (2020) investigated the capital structure of the coal mining industry

in Indonesia. Using a multiple regression model, they concluded that only profitability and tangibility determine the capital structure of the studied firms.

Regarding previous empirical papers on shari'ah-compliant companies, many studies have been conducted to investigate the determinants of capital structure and mostly focused on Malaysia. Jaafar et al. (2017) investigate the capital structure of SC companies on the Malaysian market; they find profitability and tangibility positively correlated to the companies' leverage. Also, they report a negative relationship between liquidity and leverage, showing that firms with greater liquidities prefer to use internally generated funds while financing new investments according to the pecking order theory. Ahmad & Azhar (2015) conduct a study of an empirical study on industrial SC companies. Their results suggest that both liquidity and tangibility are inversely related to debt financing. Both pecking order and agency theories were verified according to their results.

Also, Rehan & Hani (2019) investigate the capital structure of SC companies in Malaysia using a dynamic model. They conduct a comparative study and report that for SC companies, only liquidity ratio was significant. Whereas non-SC companies' result shows that both size and tangibility were significant.

This paper contributes to the literature by investigating the determinants of capital structure decisions of Shari'ah-compliant firms operating in five MENA region stock exchanges working under a different framework regarding their screening methodologies. The paper contributes to the literature on capital structure in a way that it sheds the lights on a new segment of the financial market, i.e. shari'ah-compliant firms. Indeed, the financial constraints on these firms regarding their debt limit thresholds and their balance sheets, in general, can offer a new perspective on how their financing choices are made. Shari'ah-complaint companies must adjust their capital structure to screening thresholds which adds another layer of constraints in addition to the existing determinants.

Accordingly, the first section will present a brief literature review on capital structure determinants and its empirical evidence. Data and methodology, along with our tested hypothesis, will be then explained in the second section. Also, we will highlight the specificities of SC companies through their screening methodology. Finally, the third section will present our results regarding the capital structure determinants of SC companies.

RESEARCH METHODS

This study involves a total of 132 companies across all sectors (except for financial and insurance sector) listed on five MENA stock markets (UAE, Oman, Jordan, Tunisia and Morocco) over nine years from 2010 to 2018. The secondary data is extracted from the Datastream database and the IMF database for the macroeconomic variables.

In order to screen our sample, we have adopted the Dow Jones shari'ah screening methodology.[1] The methodology includes a two-tier screening, i.e. ualitative and a financial screen. We first start by screening companies according to their activities to exclude all companies operating in impermissible sectors which are:

1) Alcohol;
2) Tobacco;
3) Pork-related products;
4) Conventional financial services (banking, insurance);
5) Weapons and defence
6) Entertainment (hotels, casinos/gambling, cinema, pornography, music).

After that, three financial screens were applied in our sample to get our financial sample of the study. The screen can be expressed as follow:

1) Total debt divided by trailing 24-month average market capitalization;
2) The sum of a company's cash and interest-bearing securities divided by trailing 24-month average market capitalization;
3) Accounts receivables divided by trailing 24-month average market capitalization.

All of the screens mentioned above must be less than 33%:

Consequently, our final sample has 57 companies in total, and we have excluded all companies that have more than three years of consecutive non-shari'ah-compliance for pure statistical purpose.

Technically, the research model is estimated using Static Panel Data Analysis (PDA) Under this method; the pooled data is collected by combining "the cross-sectional data represent by N spatial units to T times to produce a data set of N × T observations." The most common methodology involves the deployment of two static panel data analysis, namely the fixed effects model and the random-effects model. In selecting the credible model between these two, problems associated with the exogeneity of the explanatory variables must be sorted out, and the Hausman (1978) test shall be deployed. The model can be expressed as follows:

$$DR_{i,t} = \beta_0 + \beta_1 PROF_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 TANG_{i,t} + \beta_4 GRWTH_{i,t} + \beta_5 LQU_{i,t} + \beta_6 GDP_{i,t} + \beta_7 INF_{i,t} + \varepsilon_{i,t}$$

DR refers to the leverage ratio and is computed as the book value of debt on the total market value of equity. The first independent variable is profitability. Our study defined return on assets (ROA) as a proxy for profitability (PROF). The firm size variable is based on the natural logarithm of the firm's total revenue (SIZE). Following Frank and Goyal (2003) and many others, we used Market-To-Book as a proxy for growth opportunity (GRWTH). Tangibility (TANG) shall be computed as total tangible assets on total assets. Liquidity is measured as total current assets on total current liabilities.

[1] The Dow Jones Islamic Market Index family includes thousands of broad- market, blue-chip, fixed-income and strategy and thematic indices that have passed rules-based screens for Shari'ah compliance. The indices are the most visible and widely-used set of Shari'ah-compliant benchmarks in the world. It has the unique feature of being a stable methodology with no significant changes over the years.

Following (Demirguc-Kunt & Maksimovic, 2002) our study used the GDP growth (annual %) as a proxy for economic growth (GDP) and the Consumer Index Price IPC to measure the inflation (INF).

After describing the dataset and the dependent and independent variables, we move on to a formal depiction of the regression models that are utilized. The following section will detail the results of our model.

RESULTS AND DISCUSSION

Table 1 presents the descriptive statistics for our sample from 2009 to 2018. The first conclusion drawn from the descriptive is the mean value of .047 for the debt ratio. It reflects shari'ah restrictions on debt level for SC companies. Also, the tangibility ratio's mean stand at 48%, which shows that companies are forming our sample hold at least half of their total assets as tangibles.

Table 1. Descriptive statistics of our sample

Variable	Obs	Mean	Std.Dev.	Min	Max
DR	417	.047	.06	0	.285
TANG	418	.471	.214	.016	.961
PROF	408	.107	.117	-.482	1.375
LQU	417	2.145	1.569	.16	12.315
SIZE	418	12.595	3.263	7.945	20.253
GROW	417	10.643	18.897	0	113.094
GDP	418	.053	.067	-.15	.21
INF	418	.022	.017	-.009	.073

Table 2 reports the correlation coefficients between the variables. The results of our correlation test revealed that there is a relatively strong correlation between tangibility and growth. The rest of the results show no significant correlation between the variables. Nevertheless, observations for all variables show that all of the correlation coefficients are below 80%. A correlation coefficient of more than 80% indicates serious multicollinearity problem (Brooks, 2014).

Table 2. The correlation coefficient of all variables studied

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) dr	1.000							
(2) tang	0.073	1.000						
(3) prof	-0.211	-0.146	1.000					
(4) lqu	-0.112	-0.193	0.029	1.000				
(5) size	-0.158	-0.211	0.277	-0.253	1.000			
(6) grow	-0.208	0.007	0.210	-0.235	0.728	1.000		
(7) GDP	0.089	-0.000	0.001	0.033	-0.091	-0.062	1.000	
(8) inf	0.141	-0.055	-0.086	-0.052	-0.249	-0.236	0.354	1.000

Also, this study runs the variance inflation factor (VIF) table 3 test to confirm the presence of multicollinearity among the independent variables. The result displayed VIF statistic lower than 10 indicating that there is no need to eliminate any independent variables for reasons of multicollinearity.

Table 3. Variance Inflation Factor Results

	VIF	1/VIF
size	2.599	.385
grow	2.271	.44
inf	1.268	.789
tang	1.215	.823
lqu	1.19	.84
gdp	1.151	.869
prof	1.104	.906
Mean VIF	1.542	.

The pooled OLS estimation method table 4 results show that only profitability, liquidity and growth are significant. The estimation gave us a p-value greater than the F value, which indicates the existence of heterogeneity within our sample. Hence, we should use a different estimation method, i.e. random or fixed effects estimation to take into account the heterogeneity effects.

Table 4. Pooled OLS estimation results

dr	Coef.	St.Err.	t-value	p-value	95% Conf	Interval	Sig
tang	.01	.015	0.65	.517	-.02	.039	
prof	-.083	.026	-3.24	.001	-.133	-.033	***
lqu	-.005	.002	-2.74	.006	-.009	-.002	***
size	.001	.001	0.47	.641	-.002	.003	
grow	-.001	0	-3.02	.003	-.001	0	***
gdp	.057	.046	1.24	.215	-.033	.148	
inf	.206	.194	1.06	.288	-.175	.588	
Constant	.055	.022	2.43	.015	.011	.099	**

Mean dependent var	0.047	SD dependent var	0.060
R-squared	0.105	Number of obs	405.000
F-test	6.685	Prob > F	0.000
Akaike crit. (AIC)	-1159.170	Bayesian crit. (BIC)	-1127.139

*** *p<.01*, ** *p<.05*, * *p<.1*

In order to decide in between fixed and random effect, we used the Hausman (1978) test. The results presented in table 5 showed a p-value less than .005 making us rejects the null hypothesis, which makes the fixed effect best fit to estimate our model.

Table 5. Hausman test results

	Coef.
Chi-square test value	20.222
P-value	.005

Hence, the estimation of the model comes with results, as shown in table 6.

Table 6. Fixed Effects Estimation Results

dr	Coef.	St.Err	t-value	p-value	95% Conf	Interval	Sig
tang	-.006	.015	-0.37	.711	-.035	.024	
prof	-.095	.026	-3.66	0	-.145	-.044	***
lqu	-.005	.002	-2.26	.024	-.008	-.001	**
size	.007	.002	3.09	.002	.003	.011	***
grow	0	0	-1.46	.145	-.001	0	
gdp	.044	.046	0.97	.332	-.045	.134	
inf	.431	.226	1.91	.057	-.014	.875	*
Constant	-.026	.031	-0.83	.409	-.087	.035	

Mean dependent var	0.047	SD dependent var	0.060
R-squared	0.087	Number of obs	405.000
F-test	5.337	Prob > F	0.000
Akaike crit. (AIC)	-1179.186	Bayesian crit. (BIC)	-1147.155

*** $p<.01$, ** $p<.05$, * $p<.1$

Results show that only growth, profitability, liquidity and inflation are significant. The results show that the debt ratio of SCCs is negatively associated with profitability. Our results report a strong negative relationship between debt leverage and profitability. This is consistent with the predictions of the Pecking Order Theory, which posits that higher profitability should enable the company to retain more earnings which is the preferable source of funding. This result is consistent with previous empirical studies conducted by Haron et al. (2013), Al-Ani & Al-Amri (2015), Nnadi (2016) and Sutomo et al. (2020).

Our studies confirmed a positive relationship between leverage and size. This finding went along with the trade-off theory and was empirically supported by other studies like Bauer (2004); Handoo & Sharma (2014) and Onofrei et al. (2015). It indicates that bigger firms tend to use debt financing as they grow firmer and benefit from preferential debt financing.

Also, a negative relationship exists between debt financing and liquidity. This means that SCCs that are in liquid position prefer to use less debt. Also, the threshold of 33% fixed by the screening methodology constraints companies to opt for debt financing and preferred equity financing confirming the pecking order theory.

Our results indicate a positive and significant relationship between capital structure and inflation. Mn'g et al. (2017) explain that during the inflationary period, the real value of the cost of leverage decreases thereby enhances the real value of the tax advantage. Hence, companies would be inclined to increase their debt financing during the inflationary period.

Tangibility and growth have no significant impact on Shari'ah-compliant firms which does not match previous empirical studies like Nnadi (2016) and Handoo and Sharma (2014).

Technically, the low R^2 may not warrant desirable goodness of fit for this estimated model. However, this statistical limitation is not an alarming issue for static panel data modelling, particularly in the case of cross-section dominant like Shari'ah companies. Generally, the R^2 is expected to take a lower value when the panel data is more cross-section dominant.

CONCLUSION

The present paper investigates factors determining the capital structure of Moroccan shari'ah-compliant listed companies. We have used profitability, tangibility, liquidity and size are identified as firm-specific variables, while GDP and inflation are used as macroeconomic variables. Empirical results indicate that profitability, liquidity, growth and inflation have a significant relationship with the debt financing decision of SC companies in the MENA region.

The significant relationship between the liquidity ratio and debt financing for SC companies shows that SC companies' managers tend to manage their liquidity through short-term borrowings efficiently. This supported by the Trade-off Theory, so long as the benefit of debts outweighs the cost of debts, the firm is expected to move towards its optimal point of capital structure.

Our study provides several implications, mainly showing that managers tend to use hierarchical capital structure decision and prefer to avoid agency conflicts with their shareholders. This might further support firm executive managers in their financing decisions to add value to the companies, especially those willing to the shari'ah-compliance sphere. In addition to that, our results reporting similar findings as for NSC companies show that SC companies still opt for debt financing as many countries' tax-shelter provision attracts debt financing as a cheap financing option. On the other hand, Islamic finance encourages equity-based financing, but the current favouring debt-based financial system impedes its application. Hence, policymakers must undertake actions in order to favour equity-based financing through tax stimulus to grasp the full potential of Islamic finance.

Avenue for future research could look into the determinants of capital structure as a comparison between shari'ah-complaint and non-compliant listed companies which may give more insights on the capital structure choices in the MENA region. Also, further studies may explore in details the capital structure determinants by going into industry specifics to get more insights on the debt decision making for SC companies.

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