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**The impact of ownership structure and corporate governance on capital  
structure decisions in the UAE**

***Forthcoming paper in International Journal of Accounting Auditing and  
Performance Evaluation***

Mohammed Elgammal\*

College of Business and Economics

Qatar University, Doha, Qatar

Tel: (+974) 4403 - 5098

m.elgammal@qu.edu.qa

Basil Al-Najjar

Huddersfield Business School

University of Huddersfield

[B.Al-Najjar@hud.ac.uk](mailto:B.Al-Najjar@hud.ac.uk)

# The impact of ownership structure and corporate governance on capital structure decisions in the UAE

## Abstract

This paper expands the capital structure literature by investigating how ownership shareholdings and corporate governance influence the capital structure decisions within an emerging market context, namely the United Arab Emirates (UAE). Our sample includes firms listed in both Abu Dhabi and Dubai Stock Exchanges for the period from 2008 to 2019. The UAE market is of interest due to the paucity of research on the capital structure choices within this context. We employ panel models as well as the Two Stages Least Squares (2SLS) technique. Our reported results show that board structure has a negative effect on capital structure decisions. We also detect a positive impact of institutional ownership and managerial ownership on capital structure, while government ownership is inversely associated to capital structure. Finally, we report that profitability negatively affects firm's capital structure. Thus, we argue that the main determinants of capital structure reported in the developed markets literature do hold in the UAE settings. Accordingly, this study contributes to previous studies in the capital structure context and adds to its puzzle by introducing new insights into the capital structure choice in a free tax environment.

JEL Classification: G32, C33,

Key words: Capital structure, Ownership Structure, Corporate Governance, Panel Data, UAE.

## 1. Introduction

Since the seminal work of Modigliani and Miller (1958), a significant number of papers empirically explore the antecedents of capital structure within the context of the developed markets (see among others: Rajan and Zingales (1995), Bennett and Donnelly (1993), and Moradi & Paulet (2019). The capital structure determinants in developing markets might be different from those in developed market as developing markets might suffer from lack of regulations, political instabilities and underdeveloped financial systems [see: Lunn (2014), and Chen, Harford & Kamara, (2019)]. Recently, there is a growing research evidence which examines capital structure decisions in developing countries [see for example, Chen et al. (2019), Gueny, Li, and Fairchild (2011), Zou and Xiao (2006), Booth, Aivazian, Demircug-Kunt, and Maksimovic (2001)]. However, the results of these studies are far from being conclusive. In addition, there is evidence suggesting that the capital structure decision is dynamic [Fischer, Heinkel, and Zechner (1989), Zwiebel (1996), Baker and Wurgler (2002), Elsas, and Florysiak (2015) and Klasa, Ortiz-Molina, Serfling, and Srinivasan, (2018)]. This will lead us to argue that the factors driving capital structure decisions are different from time to time and among the investigated markets. This motivates us to re-examine the capital structure puzzle within different institutional backgrounds to advance our understanding of capital structure mechanisms, which is very important for the decision makers, firms and money suppliers.

In so doing, this paper is not a replication of the previous studies; but it expands the literature to investigate how ownership shareholdings and governance practises influence capital structure decisions within the United Arab Emirates (UAE). The UAE market is interesting for

many reasons. First, there is a few studies examining the capital structure choices in the UAE. The Islamic culture in the UAE may affect the capital structure choices as Islam forbids interest rates and Islamic tools of debt are still growing. Moreover, the UAE market has been affected severely by the financial crises. In addition, Emeriti Firms have a high institutional ownership and governmental ownership. Finally, the UAE has a free corporate tax environment, which creates a challenge related to the leverage' benefits assumption. Thus, we contribute to the extant literature by empirically examining the link between ownership structure and governance practices on capital structure decisions in such setting.

We study a sample of nonfinancial firms listed in the UAE markets including Dubai and Abu Dhabi markets during the period of 2008-2019. Our sample period is up to date and include the period within and after the financial crisis when the stock market in UAE has down turn sharply with a steady decrease in the market capitalization and profits/ For example, Dubai Financial Market net profit dropped from 1,439.6 million in the period ended 2007 to a loss of AED 6.45 million in 2011. In 2012, the UAE stock markets start recovering from the financial crises, the Dubai Financial Market topped the best performing regional markets in 2012, with a growth rate of its index amounting to 20% and the value of total market trading increasing by 52% to reach AED 48.7 billion (for more details see: Dubai Financial Market )2017(). These dramatic changes may affect the capital structure choices and hence so we focus on the period from 2008 to 2019.

## **2. Literature Review and Hypothesis Development.**

Firms' capital structure is a very critical and strategic decision as it affects firms' cost of capital and risk structure. There is, indeed, a significant part of the literature investigating different theories of capital structure such as the trade off and the pecking order theories. However, there is

no conclusive evidence of one set of factors to influence capital structure decisions and how such factors affect the capital structure decision-making process [Myers (2001)]. The trade-off theory assumes that capital structure is driven by both bankruptcy related costs and profitability, and it has been empirically supported by different studies [See: Bradley, Jarrell, and Kim (1984), and Titman and Wessels (1988), Bronars and Deere (1991)]. Another part of the literature supports empirically the pecking order theory by reporting a negative association between operating profit and debt ratio [Rajan and Zingales (1995)]. The excess in cash flows from operating profits are usually used by firms to pay their obligations. On the other hand, when firms generate insufficient cash to cover investment needs, they tend to borrow rather than issue stocks to cover the shortfall.

The puzzle in capital structure is not related only to which theory we should accept, but also there is a question whether different firms in different markets share the same drivers of the capital structure. There is no conclusive answer for this question yet. For example, Booth et al. (2001), Giannetti (2003), Deesomsak, Paudyal, and Pescetto (2004) report that firm specific factors have identical impacts on capital structure across different markets. In contrast, De Jong, Kabir, and Nguyen (2008) find different determinants of capital structure in their sample of 42 developed and developing countries. These findings create a need for forthcoming investigation for the determinants of capital structure especially in the UAE context where there is a scarcity of research on capital structure and the interrelationship of governance activities on the strategic decision of opting for debt financing. In this paper our main interest is to understand the impact of corporate governance and ownership structure on the capital structure choices of the Emirates firms. The following section will discuss the most important drivers for capital structure documented in the literature to develop our research hypotheses.

## **2.1 Board structure and Capital structure**

There is a controversial debate in the literature about how the capital structure choices can be affected by corporate governance mechanisms. For example, Friend and Lang (1988); Berger, Ofek & Yermack (1997); Abor (2007) argue that corporate governance practices affect firm's financial structure. Empirically, Pfeffer and Salancick (1978), Lipton and Lorsch (1992), Wen, Rwegasira & Bilderbeek (2002), Abor (2007), Sheikh and Wang, (2012) and Bajagai, Keshari, Bhetwal, Sah & Jha (2019) report that increasing board size will raise the use of debt. They explain this positive association by claiming that large boards usually are accompanied by superior monitoring by the regulatory bodies, which encourage higher debt ratio to maximize firm value. However, large boards lead to difficulty in the decision-making process due to more discussions among the board and the free riding issue, leading to an increase in agency costs. Ranti (2013) suggests that the large boards weakens the corporate governance practices, which leads to more reliance on debt financing to decrease agency problems.

Contrariwise Berger et al. (1997) find large boards are associated with low leverage levels. Berger et al. (1997) claim that larger boards put pressure on managers to follow lower debt levels and enhance firm performance. Ranti's (2013) findings confirm a negative association between board size and the preference of using debt in firm's capital structure. In the same vein, Uwuigbe, Ranti, & Sunday (2014) confirm a negative relationship between board size and capital structure. Uwuigbe et al. (2014) argue that large boards encourage managers to increase the proportion of equity rather than debt to ensure improving the performance of the company. Al-Najjar and Hussainey (2011) indicate that reducing agency costs can be achieved by small boards , which in

turn will support the argument that the higher the size of the board, the lower reliance on debt . We argue that small size boards will be more active in discussing and monitoring strategic decisions and hence the board size will inversely affect debt levels. Our argument is based on the UAE governance code (2009) that requests boards to have an internal control system to evaluate the implementations of their decisions. According to this, our first Hypothesis is:

H1a: There is a negative relationship between board size and capital structure in the UAE market.

Governance structure affects the strategic financial decisions to align management with shareholders' interests. Kalyanaraman and Altuwaijri (2016) suggest that board of directors can control and monitor management decisions to match them with the requests of the shareholders and to enhance firm performance. When the governance structure is well allocated, board members will shift the debt structure from their interests to the shareholders' interests. Pfeffer and Salancick (1978), Duppati, Scrimgeour, and Sune (2019), and Bajagai, et al. (2019) claim that non-executive directors are more motivated to capture resources that will maximise the available funds or enhance its reputation. Hence, with high proportion of independent directors, firms will rely on more debt [Jensen (1986), Berger et al. (1997)]. There is evidence in the literature that board independence is advantageous for firms. For example, Saibaba (2013) reports that none-executive directors can enhance the decision-making process by providing better monitoring mechanism. Saibaba (2013) also argues that the board independence can reduce agency costs, which also improves firm performance. Al-Najjar and Hussainey (2011) state that the non-executive directors and the capital structure are strongly related. Consequently, employing non-executive directors will result in a more access to credit and greater choice of debt. Furthermore, Sheikh and Wang (2012) and Kalyanaraman and Altuwaijri (2016) suggest a positive relationship between independent directors and the debt. This is because the independent directors do not have a stake in the company and



they just worry about their reputation, and thus they want the company to improve its financial performance, hence they might encourage high level of debt to force managers to work harder, worrying from the risk of bankruptcy.

On the other hand, one of the most significant tools in mitigating agency conflicts is the existence of none-executive members in the board of directors (board independence). Wen et al. (2002) detect a negative association between board independence and using debt in China. Wen et al. (2002) explain such negative association by the ability of none-executives directors to control managers and force a reduction on debt levels to maximise shareholders wealth. In the same vein, Anderson, Mansi and Reeb (2004) report that debt level decreases with more independent directors and hence there is a negative association between debt and non-executive directors. Moreover, since the corporations in the UAE are dominated by high concentrated ownership with significant governmental stakes and are presented by powerful directors on the board, hence we argue that independent directors will play a key role in reducing debt ratio. Thus, we expect that independent directors will provide the right expertise to monitor financial decisions such as debt financing. This argument is based on the governance code (2009) in the UAE that requests the use of such non-executive directors to minimise agency issues, leading our second hypothesis to be:

H1b: There is a negative relationship between board independence and capital structure in the UAE market.

## **2.2 Ownership Structure and Capital Structure**

Most firms suffer from agency problems due to the lack of merging control and ownership. Managers may seek their own aims, which may not match with the shareholders' interests. Agency theory suggests that this conflict of interest can be alleviated by applying both optimal capital structure and ownership structure. Institutional investors are more able to monitor and analyse

firm performance. Thus, institutional investors keep high equity ratios to maximise their gains from the companies they invest in. Therefore, Jensen and Meckling, (1976) and Jensen (1986) expect a negative relationship between capital structure and institutional ownership. This negative association has been confirmed by different studies such as Chaganti and Damanpour (1991), Grier and Zychowicz (1994), Bathala, Moon, and Rao (1994), Crutchley and Marlin (1996) and Al-Najjar (2011). In contrast, Stulz (1988) suggests that large shareholders will follow the pecking order theory by preferring debt issuance if compared to equity to keep controlling the firm. In addition, large shareholders are less likely to exploit debtholders by investing in risky investments, resulting in more debt. Together, these two arguments lead us to expect a positive relationship between institutional ownership and debt. We argue that institutional ownership might provide the right access to lenders in the UAE, and hence firms will be more able to access debt financing. This argument leads us to expect that there should be a positive association between institutional investors and the access to debt.

The relationship between managerial ownership and capital structure is debatable in the academic literature. Empirically, Leland and Pyle (1977), Berger et al. (1997) and Chen and Steiner (1999) report a positive association between the managerial ownership and debt ratios. In addition, Dewenter and Malatest (2001), Khwaja and Mian (2005), and Li, Yue, Zhao (2009) suggest that firms with high governmental ownership will have more access to debt as the decisions of lending state-owned banks tend to be politically driven [Sapienza (2004) and Dinç (2005)]. The UAE government owns an important stake of the shares in the UAE firms. Therefore, we expect a positive influence of both management and government ownership on debt. This is especially the case in the UAE, where many of the banks are state-owned which allow easy access to debt financing for firms with a high government ownership.

The UAE Firms have a unique ownership structure with high institutional ownership ratio (27%) and governmental ownership (20%). In addition, there are some restrictions for the foreign ownership as the federal Law stipulates that firms must have 51% UAE national ownership with few exceptions for firms operating in extractions and oil refining, natural gas, and other raw materials. The controversial debate in the literature and the unique ownership structure in the UAE market motivate us to investigate the relationship between ownership attributes and capital structure in this context. Institutional investors in the UAE may reflect the insider ownership, as they are the main owners and can control the firm. Another crucial feature for the UAE market is that the ownership structure is derived from a tribal system. The typical ownership structure in the UAE firms is highly concentrated. Large shareholders play a key role in firm governance reflecting the insider model where there is little separation of ownership and control. Because of the concentrated share ownership in the UAE market, there is no threat of takeovers. There are three different types of large shareholders in the UAE: government, families (represented in the board of director as managerial ownership), and institutional ownership. The ownership structure variables considered in this piece of work are institutional, government, and managerial ownership ratios. Hence, we form three hypotheses according to the above discussion:

H2a: There is a positive relationship between institutional ownership and the capital structure in the UAE market.

H2b: There is a positive relationship between the managerial ownership and the capital structure in the UAE market.

H2c: There is a positive relationship between the governmental ownership and the capital structure in the UAE market.

## 1.1 Firm Characteristics and Capital Structure

There are different firm- specific factors that might affect the capital structure decisions we control for the following variables in our study.

*Firm Size:* Previous studies argue that capital structure is affected by firm size . For example, Rajan and Zingales (1995), Booth et al. (2001) and Al-Najjar (2011) report a positive relation between firm size and capital structure. In other words, big firms will rely more on debt financing because they have better access to debt market with lower transaction costs compared to small firms. In addition, the bankruptcy theory of capital structure assumes that large firms can be seen as more diversified and less likely to default. This leads us to expect a positive association between firm size and debt levels.

*Profitability:* The relationship between firm profitability and capital structure is well documented in the literature. However, there is a theoretical debate about the direction of the relationship between firm profitability and debt ratio. The trade-off theory claims a positive association between profitability and leverage as profitable firms protect their returns from paying tax by increasing leverage. On the other hand, the pecking-order theory argues for a negative association between profitability and capital structure as firms have normal tendency to use internal sources of funds if compared to external sources. Therefore, profitable firms will have lower need for external financing sources. Empirically, Titman and Wessels (1988), Rajan and Zingales (1995), Booth et al. (2001), Ozkan (2001), Huang and Song (2006), Delcours (2007), and Al-Najjar and Hussainey (2011) find a negative relationship between the profitability of the firm and its capital-structure. Thus, we expect to find a negative association between profitability and debt. This is because the trade-off theory might not be relevant within the tax-free environment

and thus we follow the argument of the pecking order theory of a negative association between debt and profitability, which means that profitable firms will rely more on internal source of financing if compared to the external sources.

*Dividend payout ratio:* this ratio might reflect the profitability position of the firm and its ability to distribute dividends to shareholders, Chang and Rhee (1990) suggest that the tax benefits from debt are greater in firms with high payout dividends. Therefore, they expect a positive relation between payout ratios and using debt in capital structure. This assumption is consistent with the pecking order theory which considers retained earnings and leverage as substitutes. On the other hand, Mulyania, Singh and Mishrab (2016) find that dividend payout ratio is negatively associated with leverage in developing market context. They justify their results by arguing that large family firms are more effective at utilizing their internal resources by relying more on leverage and reducing their dividend payments.

*Growth Opportunities:* Chang and Rhee (1990) argue firms with higher growth opportunities need more funds to finance its expansion, these will lead firms to retain most of their earning and also may motivate firms to raise their leverage. This has been supported by the results of Kester (1986), Huang and Song (2006) and Al-Najjar (2011). However, the trade-off theory assumes that firms with high growth rates prefer lower leverage to avoid asset substitution and under-investment that can arise from stockholder-bondholder agency conflicts. Furthermore, Titman and Wessel, (1988) suggest that the growth firms may prefer lower leverage to avoid the agency cost of debt. Empirically, Jensen and Meckling (1976), Myers (1984), Stulz (1990), Chung (1993), and Rajan and Zingales (1995) provide evidence for a negative relationship between growth opportunities and using debt. We also control for growth opportunities and expect a negative relationship between market to book and debt.

*Tangibility:* different previous studies expect a positive association between tangible assets own by the company and using debt [see for example, Titman and Wessels (1988), Rajan and Zingales (1995), Booth et al., (2001) and Al-Najjar (2011)]. These tangible assets can be used as collaterals; therefore, firms with more tangible assets are more able to access debt financing as it offers low risk and better liquidation value for the lenders.

On the other hand, contradicting arguments assume that firms with low tangible assets ratio use more debt to monitor managerial activities even though rising debt in such situation is costly because its higher credit risk. Accordingly, a negative relationship might be expected between leverage and tangible assets [Titman and Wessels (1988), Voulgaris, Asteriou & Agiomirgianakis (2004), and Huang and Song (2006)]. In the case of the UAE firms, we expect that the high percentage of governmental and institutional ownership provide a strong corporate governance mechanism that eliminates the need to control managerial activities through costly debts. Moreover, 25% of the banks working in the UAE are Islamic banks, and their main funding tools are Murabarah and Ijarah (both of which are asset backed). Therefore, we argue that, debt is heavily collateralised in the UAE and we expect a positive association between tangibility and debt

*Risk:* According to the trade-off theory, firms determine their optimal capital structure by trading off the benefits of tax savings against the risk of bankruptcy [Modigliani and Miller (1958)]. Al-Najjar and Hussainey (2011) report a negative relationship between risk and capital-structure in the UK context. They assume that firms with high-risk tend to have a higher risk of default and less access to debt financing. The story looks different in the UAE context, as firms listed in Dubai and Abu Dhabi are not subject to corporate tax, this invites us to think that the market risk of these firms can have more significant impact than bankruptcy risk has. In reality, high governmental

ownership, zero tax rate, and no-interest on loans (interest-free loans) in the UAE would reduce the probability of bankruptcy. On the other hand, firms in the UAE are vulnerable to systematic risk as they are working in oil and foreign trade-based sectors in a region characterised by a fragile political status and conflicts with neighbours. Therefore, we believe that firms with high market risk, which required higher rate of return by investors, will try to decrease their cost of capital by increasing their debt levels, and hence a positive relationship is documented by, Hamada (1972), Bowman (1979), Baker & Wurgler (2015) Babenko, Boguth & Tserlukevich (2016), and Boubaker, Hamza & Vidal-García (2018). Therefore, we expect that risk would be an important driver of debt, we include both beta and volatility to measure risk.

### 3. Methodology

We study a sample of nonfinancial firms listed in the UAE including Dubai and Abu Dhabi markets during the period of 2008-2019. The number of non-financial firms in the two markets are 86; however, after checking for the data related to corporate governance we ended with around 332 firm-year observations. To test the association between corporate governance, ownership structure and capital structure, we employ panel data modelling techniques. In addition, we also employ 2SLS models to control for any endogeneity issues in our models. Using panel data will be more appropriate given the type of data used in our analysis (governance tools and ownership structure variables). Hence, the following regression models are used:

$$\begin{aligned} \text{Capital structure}_{it} = & \beta_0 + \beta_1 \text{Board-size}_{it} + \beta_2 \text{Board independence} + \beta_3 \text{institutional ownership} \\ & + \beta_4 \text{managerial ownership} + \beta_5 \text{government ownership}_{it} + \beta_6 \text{firm specific factors}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Capital structure}_{it} = & \beta_0 + \beta_1 \text{institutional ownership} + \beta_2 \text{managerial ownership} + \beta_3 \text{government} \\ & \text{ownership}_{it} + \beta_4 \text{firm specific factors}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

$$Capital\ structure_{it} = \beta_0 + \beta_1 Board\text{-}size_{it} + \beta_2 Board\ independence + \beta_3 firm\ specific\ factors_{it} + \varepsilon_{it} \quad (3)$$

Where *Capital structure*<sub>it</sub> is measured by debt over equity and debt to assets ratios. Board size is the total number of directors and *Board independence* is the number of non-executive directors divided by the total number of directors. The institutional ownership is the total number of stocks owned by institutions divided by the total number of stocks outstanding. Managerial ownership is the total number of stocks owned by managers divided by the total number of stocks outstanding. Government ownership is the total number of stocks owned by the government and government agencies divided by the total number of stocks outstanding. We control for firm specific factors including *Profitability*<sub>it</sub> is net income divided by total assets. *Tangibility*<sub>it</sub> is the net fixed assets divided by total assets; Firm size is measured by the logarithm of firm total assets, dividend payout ratio is measured as dividend per share to earnings per share, volatility is the daily return volatility for each firm, and Beta measured as the market risk factor calculated by regressing returns on the market index for each firm (CAPM), and market to book ratio is the market value of equity divided by book value of equity.;  $\varepsilon_{it}$  is an error term.

We have employed the Housman test for endogeneity and there was some evidence that there is an endogeneity issue between the ownership structure, governance factors and capital structure and hence we re-estimate the models using the 2SLS technique.

Table 1 reports the descriptive statistics, we find that the UAE firms rely more on equity financing as on average the debt to equity ratio is 36%, while debt to assets ratio is 21%. As regards board structure, we find that our sampled firms have an average board of 8 members and depend largely on independent directors (on average 81%). Finally, as expected, the institutional ownership has



the highest share in our sample with average of 27% of the total shares and government ownership has an average of 21% of the outstanding shares, and finally managerial ownership is on average 10% of the total shares.

Insert Table 1 here

We also report the correlation matrix in Table 2, which shows clearly that there are no high correlations among the independent variables, leading us to conclude that multicollinearity is not a problem.

Insert Table 2 here

#### **4. Findings and discussion**

In order to test our hypotheses (Table 3 shows a summary of our main hypotheses), we estimate different regression models. Table 4 reports the results of three different panel regression models. Model 1 is an overall model that includes all the variables. Model 2 is the ownership model that includes the ownership structure factors as well as the firm-specific control factors; and finally, the third model investigates the effect of board structure factors (corporate governance) alongside the firm-specific factors on capital structure. Our results report evidence of a negative relationship between board size and capital structure. This result supports our first hypothesis H1a, one possible explanation is that large boards might not reach to agreements easily and hence this might lead to less reliance on debt financing (Wen et al., 2002). This result is in line with Al-Najjar and Hussainey (2011) and Ranti (2013) who argue that there is a negative relationship between board size and independence. Therefore, we support the first hypothesis.

Insert Table 3 here

Insert Table 4 here

Moving to the board independence, the results show that there is a negative significant effect of the board independence on capital structure and hence independent directors will encourage firms to have less debt, leading us to support our hypothesis (H1b). One possible explanation is the important role of such directors on governing the firm. Our results are also consistent with the findings of Wen et al. (2002) who detect a negative association between independent directors and debt. Furthermore, our results in the first and the second model show a positive association between institutional ownership and capital structure. This is in line with our hypothesis (H2a) and the findings of Anderson et al. (2004). Our findings also show a negative impact of governmental ownership on debt financing. This contradicts our hypothesis (H2b) and the results of Leland and Pyle (1977) and Chen and Steiner (1999). This contradiction can be explained by the fact that the UAE government prefers to fund state owned firms using subsidiary systems and equity finance (through increasing capital) using the accumulated national wealth. Most of state owned firms in UAE are working in oil and gas, military sector, and other strategic sectors which do not welcome high level of debt.

As regards to firm-specific factors, we detect that profitability has a negative impact on capital structure. This result is consistent with both our hypothesis and the pecking-order theory that is more profitable firms are less in need for external financing (Rajan and Zingales, 1995; Huang and Song, 2006). We also find a negative impact of beta and tangibility on capital structure. This findings support the argument that firms with low tangible assets ratio use more debt to monitor managerial activities even though rising debt in such situation is costly because its higher credit risk [Titman and Wessels (1988), Voulgaris, Asteriou & Agiomirgianakis (2004), and Huang and Song (2006)]. on the other hand, our reported negative association between market

risk and capital structure is consistent with Al-Najjar and Hussainey (2011) who assume that firms with high-risk tend to have a higher risk of default and less access to debt financing.

We re-estimate our models by using debt to assets ratio as a proxy for capital structure, our results for the main independent variables, as shown in table 5, are similar to the findings in Table 3 for board independence and institutional ownership and hence supporting H1b and H2a, while board size and both managerial and government ownership are not statistically significant. Hence, our results support to some extent the importance of corporate governance tools and ownership structure on debt decisions.

Insert Table 5 here

Furthermore, we estimate our models for a sub-sample for the period from 2008 to 2012 to investigate the impact of financial crisis period on the effect of corporate governance and ownership structure on capital structure. The findings reported in Table 6, support the effect of board size on leverage. However, the other governance and ownership factors are not statistically significant. This shows the inverse effect of financial crisis period on the monitoring role of the boards and ownership structure on strategic financial decisions such as the debt decisions.

Insert Table 6 here

#### 4.1 Endogeneity Issue and 2SLS

To control for any endogeneity issue, we re-estimate the models using 2SLS and report the results in Table 7. We have three models; model one, which investigate the impact of corporate governance and institutional ownership on the capital structure choices. The second model is investigating the effect of board size and independence on capital structure and finally, model 3

examines the effect of institutional ownership on Capital Structure. We find a negative association between board size and capital structure, which is consistent with our hypothesis (H1a) and our previous findings. However, we cannot confirm the result for board independence. Consistent with our previous results, we report a positive effect of institutional ownership on debt. In addition, managerial and government ownership have the same positive effect on debt. Thus, our second hypotheses H2a H2b and H2c are supported. We also find a positive link between market systematic risk and using leverage as a source of fund. This result is expected as increasing the market risk increase the cost of equity that may encourage firms to immigrate to leverage.

Finally, we report that profitability is negatively related to capital structure, which is consistent with the pecking-order theory assumption that profitable firms need lower external financing as they already have available internal funds. Another interesting explanation for the negative association between financial leverage and profitability is that the operating leverage engenders a negative association between profitability and financial leverage because the operating leverage increases profitability and reduces optimal financial leverage (Chen et al. 2019). The results also show a positive effect of firm size on leverage while a negative effect of beta is reported.

Our results also support the findings in the western context such as, Titman and Wessels (1988), Rajan and Zingales (1995), Booth et al. (2001), Huang and Song (2006), Delcours (2007) and Al-Najjar and Hussainey (2011) who confirm a negative relationship between the profitability of the firm and its capital-structure.

## **5. Conclusions**

Different studies have investigated the strategic decision of firms' capital structure. UAE settings provide an interesting dimension to the capital structure literature as it has a unique tax-free

environment and a dual finance system (Islamic and conventional finance). With no corporate tax in Islamic culture, different theoretical underpinnings of capital structure might be violated. For example, we argue that the trade-off theory might not hold for such setting.

We employ panel data analysis as well as 2SLS techniques to control for any endogeneity issue between our main variables (ownership and governance factors) and capital structure. Our results show that there is a negative effect of board size and board independence on leverage, which consistent with our expectations. As regards, the ownership structure factors, we find a positive impact of institutional ownership and managerial ownership on capital structure. These results are consistent with our expectations. As regards, government ownership we report inclusive evidence. Finally, we detect a consistent negative effect of profitability and beta on capital structure.

To recap, this study finds that the main determinants of capital structure reported in the developed markets literature do hold in the UAE settings, however with different directions and signs. Hence, we argue that this study will complement the previous studies in the capital structure context and adds to its puzzle by introducing new insights of the capital structure in a free tax environment. Therefore, after nearly two decades from Myers (2001) suggestion that there is no one unique theory to explain capital structure, there should not be an expectation to have one, is valid and supported by our study.

Similar to other studies, this study has some limitations. First, our sample size is small due to the availability of the governance information in the UAE market; hence, we strongly recommend studies to employ bigger sample size. Cross-country analysis within the gulf region would enhance our knowledge in the capital structure, yet we acknowledge the scarcity of the governance information in the Gulf region and thus researchers can expand their samples to include a wider

MENA region. Finally, other governance factors such as CEO characteristics or board diversity in the Gulf countries might be of interest for the future research.

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Table 1 Descriptive Statistics

Variable	Mean	standard deviation	Minimum	Maximum
Debt to Equity	0.361	0.459	0	0.75
Debt to Assets	0.212	0.170	0.01	0.713
Board size	8.290	2.069	5	18
Board independence	0.809	0.237	0	1
Institutional ownership	0.271	0.298	0	1
Managerial ownership	0.100	0.181	0	0.8
Government ownership	0.206	0.253	0	1
Return on Assets	0.020	0.044	-0.49	0.19
Tangibility	0.874	1.020	-0.430	0.98
Firm size	20.625	1.496	18.160	24.281
Dividend payout	0.692	0.340	0	0.58
Volatility	0.426	0.182	0	2.013
Beta	0.870	0.572	1.02	3.410
Market to book	1.102	1.089	0.163	11.021

Note: Debt to equity is total debt to equity ratio, Debt to assets is total debt to assets ratio; Board size is the number of directors serving in the board; board independence is the percentage of independent directors; Institutional ownership is the percentage of shares owned by institutions; Managerial ownership represents the insider ownership measured as the percentage of shares owned by managers; government ownership is the percentage of shares owned by the government and its agencies; Return on Assets is the Net income to total assets ratios; Tangibility is Fixed assets to total assets ratio; Firm size is the logarithm of total assets; dividend payout is the dividend per share to earnings per share ratio; volatility represents the volatility of daily returns, Beta is the systematic risk based on the CAPM and market to book ratio represents the market price to book ratio.

Table 2 Correlation Matrix

	Board size	Board independence	Institutional ownership	Government Ownership	Managerial Ownership	Returns on Assets	Tangibility	Firm size	Dividend payout	Volatility	Beta	Market to book
Board size	1											
Board independence	-0.044	1										
Institutional ownership	0.036	0.131	1									
Government ownership	-0.002	0.304	-0.304	1								
Managerial Ownership	-0.184	0.071	0.001	-0.287	1							
Return on Assets	0.007	0.065	-0.004	0.324	-0.058	1						
Tangibility	-0.198	0.233	-0.068	0.211	0.127	0.198	1					
Firm size	0.376	0.007	-0.158	0.299	-0.275	0.131	-0.116	1				
Dividend payout	-0.054	0.038	0.129	0.039	0.245	0.118	0.091	0.025	1			
Volatility	-0.113	0.083	0.159	-0.088	-0.004	0.018	-0.259	0.163	-0.038	1		
Beta	0.075	0.013	0.004	-0.171	0.005	-0.144	-0.029	0.092	0.009	0.024	1	
Market to book	0.162	-0.134	-0.096	-0.044	0.015	-0.076	-0.294	0.090	-0.042	0.038	0.064	1

Note: Debt to equity is total debt to equity ratio; Debt to assets is total debt to assets ratio; Board size is the number of directors serving in the board; board independence is the percentage of independent directors; Institutional ownership is the percentage of shares owned by institutions; Managerial ownership represents the insider ownership measured as the percentage of shares owned by managers; government ownership is the percentage of shares owned by the government and its agencies; Return on Assets is the Net income to total assets ratios; Tangibility is Fixed assets to total assets ratio; Firm size is the logarithm of total assets; dividend payout is the dividend per share to earnings per share ratio; volatility represents the volatility of daily returns, Beta is the systematic risk based on the CAPM and market to book ratio represents the market price to book ratio.

Table 3 Hypotheses summary

Variable	Hypothesis	Empirical Evidence	Expected sign
Board size	H1a	Berger et al. (1997); Ranti (2013); Uwuigbe et al. (2014)	Negative
Non-executive directors (Board independence)	H1b	Wen et al. (2002); Anderson et al. (2004)	Negative
Institutional Ownership	H2a	Anderson et al. (2004); Stulz (1988)	Positive
Managerial Ownership	H2b	Leland and Pyle (1977), Berger et al. (1997) and Chen and Steiner (1999)	Positive
Government Ownership	H2c	Dewenter and Malatest (2001), Khwaja and Mian (2005), and Li, et al. (2009)	Positive

Debt to equity is total debt to equity ratio, Debt to assets is total debt to assets ratio; Board size is The number of directors serving in the board; board independence is the percentage of independent directors; Institutional ownership is the percentage of shares owned by institutions; Managerial ownership represents the insider ownership measured as the percentage of shares owned by managers; government ownership is the percentage of shares owned by the government and its agencies.

Table 4: Panel Models- Using Debt to Equity Ratio as Dependent Variable

VARIABLES	(1) M1	(2) M2	(3) M3
Board size	-0.021* (0.010)	-0.018* (0.010)	
Board independence	-0.134** (0.06)	-0.0998 (0.061)	
Institutional ownership	0.090** (0.04)		0.044 (0.041)
Managerial ownership	0.082 (0.104)		0.093 (0.105)
Government ownership	-0.210** (0.105)		-0.215** (0.106)
Return on Assets	-0.870*** (0.256)	-0.838*** (0.253)	-0.822*** (0.258)
Tangibility	-0.016 (0.013)	-0.022* (0.013)	-0.018 (0.013)
Firm size	0.002 (0.037)	-0.001 (0.037)	0.023 (0.036)
Dividend payout	0.001 (0.003)	0.001 (0.003)	0.001 (0.003)
Volatility	0.076 (0.060)	0.094 (0.060)	0.076 (0.061)
Beta	-0.087*** (0.023)	-0.086*** (0.023)	-0.090*** (0.023)
Market to book	-0.015 (0.010)	-0.018* (0.010)	-0.019* (0.010)
Constant	0.652 (0.787)	0.638 (0.792)	-0.044 (0.763)
Observations	332	332	332
R-squared	0.147	0.124	0.119
Number of observations	332	332	332
firm year-dummies	yes;	Yes	Yes

Note: Debt to equity is total debt to equity ratio; Board size is the number of directors serving in the board; board independence is the percentage of independent directors; Institutional ownership is the percentage of shares owned by institutions; Managerial ownership represents the insider ownership measured as the percentage of shares owned by managers; government ownership is the percentage of shares owned by the government and its agencies; Return on Assets is the Net income to total assets ratios; Tangibility is Fixed assets to total assets ratio; Firm size is the logarithm of total assets; dividend payout is the dividend per share to earnings per share ratio; volatility represents the volatility of daily returns, Beta is the systematic risk based on the CAPM and market to book ratio represents the market price to book ratio. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 and numbers in brackets are the standard errors.

Table 5: Panel Models Debt to Assets as Dependent Variable

VARIABLES	(1) M1	(2) M2	(3) M3
Board size	-0.006 (0.004)	-0.005 (0.004)	
Board independence	-0.081*** (0.029)	-0.067** (0.027)	
Institutional ownership	0.034* (0.019)		0.009 (0.018)
Managerial ownership	0.018 (0.045)		0.025 (0.046)
Government ownership	-0.066 (0.046)		-0.0707 (0.0471)
Return on Assets	-0.374*** (0.113)	-0.360*** (0.112)	-0.346*** (0.115)
Tangibility	-0.012* (0.006)	-0.014** (0.006)	-0.013** (0.006)
Firm size	0.012 (0.016)	0.012 (0.016)	0.023 (0.016)
Dividend payout	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Volatility	0.032 (0.026)	0.039 (0.026)	0.032 (0.027)
Beta	-0.037*** (0.010)	-0.037*** (0.010)	-0.039*** (0.010)
Market to book	-0.009** (0.005)	-0.011** (0.005)	-0.012** (0.005)
Constant	0.103 (0.349)	0.092 (0.349)	-0.226 (0.339)
Observations	332	332	332
R-squared	0.163	0.150	0.131
firm year-dummies	Yes	Yes	Yes

Note: Debt to assets is total debt to assets ratio; Board size is the number of directors serving in the board; board independence is the percentage of independent directors; Institutional ownership is the percentage of shares owned by institutions; Managerial ownership represents the insider ownership measured as the percentage of shares owned by managers; government ownership is the percentage of shares owned by the government and its agencies; Return on Assets is the Net income to total assets ratios; Tangibility is Fixed assets to total assets ratio; Firm size is the logarithm of total assets; dividend payout is the dividend per share to earnings per share ratio; volatility represents the volatility of daily returns, Beta is the systematic risk based on the CAPM and market to book ratio represents the market price to book ratio. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  and numbers in brackets are the standard errors.



Table 6: Determinants of Debt to Equity Ratio in 2008-2012

VARIABLES	(1) M1	(2) M2	(3) M3
Board size	-0.079** (0.029)	-0.081** (0.034)	
Board independence	-0.201 (0.515)	0.122 (0.426)	
Institutional ownership	0.285 (0.249)		0.159 (0.203)
Managerial ownership	0.277 (0.461)		0.354 (0.409)
Government ownership	0.235 (0.408)		0.254 (0.391)
Return on Assets	-1.738 (1.126)	-1.979 (1.208)	-2.069 (1.298)
Tangibility	-0.071** (0.030)	-0.063** (0.029)	-0.060** (0.029)
Firm size	0.214** (0.080)	0.203** (0.086)	0.182* (0.090)
Dividend payout	-0.007 (0.008)	-0.002 (0.002)	-0.006 (0.006)
Volatility	0.350 (0.301)	0.301 (0.314)	0.466 (0.334)
Beta	-0.207*** (0.055)	-0.166** (0.067)	-0.167** (0.066)
Market to book	0.003 (0.024)	0.001 (0.022)	-0.041* (0.023)
Constant	-3.261* (1.622)	-3.105* (1.725)	-3.423* (1.951)
Observations	137	137	137
R-squared	0.445	0.420	0.331
firm year-dummies	Yes	Ye	yes

Note: Debt to equity is total debt to equity ratio; Board size is the number of directors serving in the board; board independence is the percentage of independent directors; Institutional ownership is the percentage of shares owned by institutions; Managerial ownership represents the insider ownership measured as the percentage of shares owned by managers; government ownership is the percentage of shares owned by the government and its agencies; Return on Assets is the Net income to total assets ratios; Tangibility is Fixed assets to total assets ratio; Firm size is the logarithm of total assets; dividend payout is the dividend per share to earnings per share ratio; volatility represents the volatility of daily returns, Beta is the systematic risk based on the CAPM and market to book ratio represents the market price to book ratio. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 and numbers in brackets are the standard errors.

Table 7: Controlling for Endogeneity using 2SLS

VARIABLES	(1) M1	(2) M2	(3) M3
Board size	-0.072*** (0.016)	-0.063*** (0.012)	
Board independence	-0.122 (0.127)	0.121 (0.089)	
Institutional ownership	0.261* (0.151)		0.222 (0.144)
Managerial ownership	0.362* (0.193)		0.468** (0.199)
Government ownership	0.550*** (0.157)		0.582*** (0.141)
Return on Assets	-3.078*** (0.837)		-3.059*** (0.898)
Tangibility	-0.335 (0.231)		-0.379 (0.239)
Firm size	-0.061** (0.030)	-0.035 (0.025)	-0.055* (0.032)
Dividend payout	0.159*** (0.018)	0.165*** (0.016)	0.120*** (0.018)
Volatility	0.0106 (0.180)	0.176 (0.114)	0.014 (0.191)
Beta	-0.129*** (0.045)	-0.111*** (0.038)	-0.143*** (0.050)
Market to book	0.051* (0.030)	0.027 (0.024)	0.0364 (0.031)
Constant	-2.135*** (0.422)	-2.621*** (0.312)	-1.976*** (0.438)
Observations	303	303	303
R-squared	0.194	0.306	0.043
firm year-dummies	Yes	Yes	Yes

Note: the table reports of the results 2SLS regressions. Debt to equity is total debt to equity ratio; Board size is the number of directors serving in the board; board independence is the percentage of independent directors; Institutional ownership is the percentage of shares owned by institutions; Managerial ownership represents the insider ownership measured as the percentage of shares owned by managers; government ownership is the percentage of shares owned by the government and its agencies; Return on Assets is the Net income to total assets ratios; Tangibility is Fixed assets to total assets ratio; Firm size is the logarithm of total assets; dividend payout is the dividend per share to earnings per share ratio; volatility represents the volatility of daily returns, Beta is the systematic risk based on the CAPM and market to book ratio represents the market price to book ratio. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 and numbers in brackets are the standard errors.