

# Corporate characteristics and leverage: evidence from Gulf countries

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## Abstract

**Purpose** – This study aims to investigate the impact of corporate characteristics on leverage in the Gulf Cooperation Council (GCC) non-financial listed firms.

**Design/methodology/approach** – A sample comprising a balanced panel for eight years from 2009–2016 for four Gulf countries is used. In total, 85 non-financial listed companies have been selected using a non-probability sampling technique. Corporate characteristics are represented by return on assets (ROA), return on equity, return on capital employed, market value-added, Tobin-Q, liquidity and firm size. The study used fixed and random effect models to estimate the results.

**Findings** – The findings of the study revealed that both ROA and FSIZE have a significant negative effect on leverage. However, market value-added, return on capital employed and Tobin-Q exhibited a statistically significant positive effect on leverage. Further, the results indicated that Qatar is better than kingdom of Saudi Arabia (KSA), Oman and the UAE. In addition, evidence noted that KSA is better than both UAE and Oman in terms of the overall impact of corporate characteristics on the leverage. However, this effect is not statistically significant.

**Practical implications** – This study provides an open insight for managers, bankers, financial analysts in the GCC countries and some other developing economies by highlighting the relationship between corporate characteristics and leverage in an emerging market.

**Originality/value** – The current study provides an important insight into corporate characteristics and leverage. By so doing, it provides an attempt to identify the factors influencing corporate financing behavior taking into consideration different issues such as different proxies of firms' profitability, market capitalization, market value added and liquidity, which provides original evidence from Gulf countries emerging markets. These countries are characterized by low tax rates and high liquidity. High liquidity may reduce the cost of borrowing and debt financing may not be a huge burden on firms' profits. This makes the investigation of leverage and corporate characteristics, particularly, firms' profitability and liquidity, very important. Therefore, the study tries to bridge an existing gap in the body of literature of capital structure and debt financing in Gulf countries emerging markets.

**Keywords** Leverage, GCC, Capital structure, Corporate characteristics

**Paper type** Research paper



## 1. Introduction

Capital structure indicates to the mix of the various methods of funding sources that a firm maintains (Niu, 2008). Gómez *et al.* (2014) states that the way a firm is financed is very relevant for investors, directors and all other stakeholders. Accordingly, the financing decisions have a direct influence on the firm value. Prior evidences from financial literature showed that a firm's capital structure could be affected by different factors. Capital structure is one of the most broadly debatable areas of research in corporate finance. A central question was so long raised by Modigliani and Miller (1958), which evolve around how a mix of debt and equity in capital structure has an impact on firm value. Further, the determinants that can have an influence on a firm's capital structure are arguable in prior financial studies.

Bauer (2004) indicated that a firm's leverage is not influenced by its size. Further, some studies believe that there is a negative correlation between a firm's leverage and its profitability (Pratheepkanth, 2011; Rouf, 2015; Zeitun and Tian, 2007). While Ahmed *et al.* (2010) found that there is a positive link between leverage and liquidity, Sharif *et al.* (2012) reported a negative relationship. Ahmed *et al.* (2010) argue that high liquidity provides firms with greater capability to pay off its debt accordingly, such firms should opt for debt financing as a major contributor to their capital structure.

In another quest, Miguel and Pindado (2001) advocated that capital structure determinants can be explained by business characteristics and the institutional settings of countries. Jong *et al.* (2008) investigated capital structure in different countries and found that enterprise-level determinants that affect corporate capital structure vary among countries. However, country-level determinants have an indirect influence on capital structure because they have an impact on enterprise-level factors. Li and Islam (2019) indicated that prior studies have made numerous attempts to investigate the corporate characteristics that may have an impact on the capital structure of firms operating within a specific country. However, modern studies have been conducted based on country comparison taking in consideration country-specific determinants to explain sample firms' capital structure choice.

Theoretically, Li and Islam, (2019) indicated that capital structure theories such as the pecking order theory, the market timing theory, the trade-off theory and the agency theory suggest different capital structure determinants. Jaisinghani *et al.* (2017) stated that the asymmetric information theory and the tradeoff theory are the prominent theories pertaining to optimal capital structure. However, Cappa *et al.* (2020) argued that there are a number of competing theories that pertain to capital structure formation, which are, for example, trade-off, asymmetric information, pecking order, market timing and agency costs theories. According to Jaisinghani *et al.* (2017), tradeoff theory postulates that a firm determines its capital structure depending on a trade-off between the costs and benefits of debt. Miller (1977) indicated that there is a relationship between profitability and debt financing, based on the trade-off theory; firms that are more profitable would prefer debt over equity financing. In the same quest, pecking order theory suggests that a firm with higher profitability would prefer to opt for a low debt level due to the information asymmetric element involved in the pecking order theory (Hamid *et al.*, 2015). The asymmetric information theory proposed that a firm may use its capital structure as a signaling instrument to the market (Jaisinghani *et al.*, 2017). Also, agency theory proposed that financing decisions and capital structure mix depend on agency costs. The agency costs may arise from the conflict between shareholders and creditors accordingly, capital structure could be determined by minimizing such cost and balancing the interests of the

parties involved. Further, the theory states that firms with high returns and great potential are more likely to prefer equity financing over debt financing (Li and Islam, 2019).

Majority of prior research in this field have concentrated on developed stock markets. Even though there are some studies that have been conducted in some emerging countries. For example, Bhaduri (2002) investigated the same issue in India, Chen and Strange (2005) conducted a study on some firms in China, Correa *et al.* (2007) provided an evidence from some Brazilian factories, Crnigoj and Mramor (2009) concentrated on firms in Slovenia, Kim *et al.* (2006) examined this issue in the South Korean context, Fernández (2005) introduced evidence from Chilean corporates, Mazur (2007) sampled Polish firms, Omet (2006) focused on Jordanian firms and Salawu and Agboola (2008), Shah and Khan (2007) and Vasiliou and Daskalakis (2009) provided evidence from Nigeria, Pakistan and Greece, respectively. However, the results of these studies are greatly varied and widespread. Hence, the present study aims to investigate the corporate characteristics and leverage in some Gulf Cooperation Council (GCC) countries. The current study contributes to finance literature in several ways. First, the study provides a comprehensive investigation of some selected large firms (85 firms), which are covering all sectors of the economy except financial industry from 4 GCC countries over the years spanning from 2009 up to 2016 for 4 Gulf countries (Saudi Arabia, Oman, UAE and Qatar). Second, the study presents different statistical tools to understand the differences among the countries. Prior studies have used either the same or different statistical tools however, the differences among the GCC countries were not adequately provided. The present study used detailed descriptive statistics, and country wise effect comparison estimation. Third, the study contributes to the state of the art of capital structure, cost of finance, debt financing and finance in general especially from the context of developing countries. The study links corporate characteristics to leverage, and thus, it provides an attempt to identify the factors influencing corporate financing behavior taking into consideration, firm specific factors in the GCC. The study also provides evidence from different countries that are homogenous in their culture, economy and banking systems. Moreover, it attempts to provide evidence from oil-based and bank-based economies of the GCC countries. Several studies investigated different issues in debt financing and capital structure in GCC. However, the present study provides an investigation into firm-specific factors on leverage of GCC firms taking into consideration different issues such as different proxies of firms' profitability, market capitalization, market value added (MVA) and liquidity, which makes the investigation of the present study unique and different from prior studies.

The paper proceeds as follows. Section 2 explains the background of GCC. Section 3 discusses the literature review; this is followed by Section 4, which presents a collection of data, techniques and the study models. Section 5 provides empirical analysis and the related discussions. Section 6 comprises the conclusion, recommendations and prospective avenues that future authors can pursue in line of this research.

## 2. Background to Gulf cooperation council

The GCC region comprises fast-growing economies with government revenues fueled by sizeable oil rents, which are characterized by administrated consumer energy prices. Historically, GCC countries except Oman did not levy corporate taxes on owned domestic firms (Almutairi, 2014). The GCC financial markets are small in size and less developed by international standards and its emerging peers, they account for about 0.8% of the global financial markets (Zeitun and Saleh, 2015). In comparison of the GCC stock markets with the worldwide stock markets, they are considered young and small in size. They are lagging behind Asia and Latin America. They only account for 0.8% of the global financial markets.

Further, in 2010, they accounted for 1.3% of the global equity market capitalization. Furthermore, the GCC stock markets have some barriers such as low number of listed firms; 707 firms in 2013, restricted entry by foreigners and ownership concentration (Woertz, 2012). These characteristics have motivated the current study to investigate this issue to extend the evidence from prior studies to an emerging economy such as the GCC countries. The financial crisis negatively affected the global liquidity, which, in turn, affected banks and other financial institutions' ability to offer credit facilities. Therefore, the cost of borrowing increased tremendously as the accessibility of liquidity decreased and banks created tighter credit policies, which affected firms' performance negatively (Ellaboudy, 2010). While the majority of prior evidence on the relationship between corporate characteristics and leverage comes from capital structure determinants in both developed and developing countries, empirical research in this area did not specifically concentrate on the GCC countries (El-Khatib, 2017; Sbeiti, 2010; Twairesh, 2014). Further, the ambiguous results related to the relationship of corporate characteristics and leverage have motivated the present study to be conducted to investigate this relationship.

### 3. Literature review

The relationship between capital structure and firm performance is widely discussed and tested in prior research. However, this field of research still the most perplexing area in the strand literature of corporate finance (Brounen and Eichholtz, 2001). Different studies have been focused on the relationship between a firm's performance and capital structure (Champion, 1999; Ghosh *et al.*, 2000; Hadlock and James, 2002; Jensen and Meckling, 1976; Modigliani and Miller, 1963; Miller, 1977; Myers, 1977; Margaritis and Psillaki, 2010; Titman and Wessels, 1988). These studies contributed significantly to the literature of corporate finance, which started early with the research of (Hirshleifer, 1958; Lintner, 1956; Modigliani and Miller, 1958).

In the GCC context, different studies have highlighted the link between corporate characteristics and capital structure (El-Khatib, 2017; Sbeiti, 2010; Twairesh, 2014). Zeitun and Saleh, (2015) investigated the impact of financial leverage on a firm's performance in the GCC countries taking in consideration the effect of the last financial crisis. The results revealed that firm's performance is significantly influenced by leverage and negatively affected by the financial crisis. In the same context, El-Khatib (2017) studied conventional leverage determinants in some publicly listed firms in many GCC countries, namely; Qatar, Saudi Arabia and the United Arab Emirates over a period from 2005 up to 2014. The study found that conventional leverage is significantly influenced by some determinants such as the tendency to pay dividends, firm's size, tangibility, profitability and age. Both firm's size and Shari'ah principles were found to have the most significant effect but utilization of Sukuk as a financing vehicle has no significant effect. On the contrary, Sbeiti (2010) investigated the "determinants of capital structure in the context of three GCC countries and the impact of their stock markets' development on the financing choices of firms operating in these markets." The results suggested that stock markets in the sampled countries are regarded as an important option for financing decisions. Further, the results reveal that capital structure in the selected countries is not different from finance models of the developed countries.

Although there are few studies that addressed the relationship between firms' performance and financial leverage in the GCC countries, there are numerous studies that investigated this issue in other countries (Muritala, 2012; Ojo, 2012; Rehman, 2013; Zeitun and Tian, 2007). Gómez *et al.* (2014) investigated capital structure determinants of non-financial companies listed in the Stock Exchange of Lima. In the scope of trade-off theory

and pecking order theory and with utilization of panel data with random effect model, the results reveal that the level of firms' long-term debt is significantly influenced by their size, profitability, non-debt tax shields and collateral value of assets. [Soumadi and Hayajneh \(2011\)](#) investigated the "effect of capital structure on the performance of the public Jordanian firms listed in Amman stock market." The results indicated that there is a significant and negative relationship between both capital structure and firm performance and this relationship does not change in the case of firms with high or low financial leverage. In the same line, ([Pratheepkanth, 2011](#); [Rouf, 2015](#); [San and Heng, 2011](#); [Zeitun and Tian, 2007](#)) found that firms' performance is negatively linked with capital structure. [Salim and Yadav \(2012\)](#) provided evidence on the link between 237 Malaysian firms' performance and capital structure. They advocate a negative relationship between them.

Concerning liquidity, while [Ahmed \*et al.\* \(2010\)](#) indicated a positive link between both leverage and liquidity. Firms with high liquidity have a capital structure mix that is characterized by debt. This observation is attributed to the ability of such firms to repay the cost of borrowing with financial ease. [Sharif \*et al.\* \(2012\)](#) advocated that the link between leverage and liquidity is negative.

Despite the fact, the prior studies have investigated corporate characteristics and leverage in different countries, however, studies conducted in the GCC countries are unreliable as the stock markets in these countries are not well-developed, and cannot be benchmarked with international standards. Further, the tax system in these countries have a notable impact on capital structure. Therefore, the present study attempts to explore this impact. Referencing [Table 1](#), prior studies have investigated different issues of capital structure and debt financing; the present study is different from prior studies in several ways. For example, [El-Khatib \(2017\)](#) investigated tangibility, market to book ratio, profitability, size, financial deficit and age of the company with relation to equity financing. He further examined firm size, liquidity, profitability, tangibility and growth opportunities and its relation with book leverage and market leverage. None of the studies conducted in GCC have investigated corporate characteristics such as liquidity, different proxies of profitability, Tobin Q and MVA with its relation to leverage. Thus, the present study bridges an existing gap in the debt financing and capital structure. Moreover, it provides a unique and comprehensive examination of the impact of corporate characteristics on leverage in emerging markets especially GCC countries. The study also extends the evidence on capital structure, leverage and debt financing by re-visiting the impact of corporate characteristics on leverage in GCC countries.

## 4. Data and methodology

### 4.1 Sample selection and data collection

This study focuses on examining the associations of corporate characteristics and leverage in GCC non-financial listed firms. We use a sample comprising balanced panel data for eight years from 2009 up to 2016 for four Gulf countries, which is covering all sectors of the economy except the financial industry. In total, 85 non-financial listed companies have been selected using a non-probability sampling technique. As a result, the final sample consists of 23 companies from Saudi Arabia, 19 companies from Oman, 23 companies from the UAE and 20 companies from Qatar. The study uses a sample of large firms from Saudi Arabia, UAE, Qatar and Oman. According to [KPMG \(2015\)](#), these four countries have the highest total banks assets and net profits. Further, according to [The World Bank \(2015\)](#), the gross domestic product annual growth in Saudi Arabia, UAE, Qatar and Oman is the highest among all GCC member states.

| Authors                       | Country  | DV   | IV  | Sample    | Period    | Results  |
|-------------------------------|--|--|---|-----------|-----------|--|
| Khan <i>et al.</i> (2020)     | Pakistan   | Leverage   | "Liquidity, profitability, age, tangibility"  | 183 firms | 2008–2017 | The research result found tangibility, profitability and age to be positively related to leverage among listed firms in Pakistan. However, size and liquidity are negatively related to leverage |
| Kvissima <i>et al.</i> (2019) | China  | "Book leverage, market leverage and net leverage"  | "Size, profitability and tangibility"   | 716 firms | 1990–2013 | Capital structure is significantly affected by profitability, investment opportunities and firm's size   |
| Yildirim <i>et al.</i> (2018) | US, UK, Canada, Japan, Taiwan, South Korea and India | "Book leverage and market leverage"  | "Profitability, growth O, firm size, tangibility, business risk, GDP and growth"                    | 756       | 2004–2014 | Most of the determinants do exhibit different effects among both firm types. Depending on the leverage measure, the effect of different independent variables on firms' capital structure varies |
| Sofat and Singh (2017)        | India  | Debt equity ratio  | "Firm size, asset composition/tangibility, debt service, capacity, business risk and Profitability" | 100 firms | 2003–2012 | Asset composition, business risk and return on assets are positively related to debt ratio whereas; firm size and debt service capacity are negatively related to debt ratio                     |
| El-Khatib (2017)              | Saudi Arabia, United Arab Emirates and Qatar         | "Ratio of debt to market equity, debt to book equity, long term debt to market equity and long term debt to book equity" | "Tangibility, market to book ratio, profitability, size, financial deficit and age"                 | 100 firms | 2005–2014 | Conventional leverage is significantly influenced by some determinants such as tendency to pay dividends, firm's size, tangibility, profitability and age  |

(continued)

**Table 1.**  
Review of related literature

Table 1.

| Authors                        | Country    | DV   | IV   | Sample      | Period       | Results  |
|--------------------------------|------------|--|--|-------------|--------------|--|
| Güner (2016)                   | Turkey     | Leverage   | "Size, growth opportunities, non-debt tax shields, profitability and liquidity"  | 131 firms   | 2008–2014    | Companies that have a free float rate between 50% and 75% have lower degrees of leverage   |
| Bandyopadhyay and Barua (2016) | India      | "Total borrowings to total assets, short term bank borrowings to total borrowings, long term borrowings to total assets, bank borrowings to total assets, long term bank borrowings to total borrowings" | "Firm age, firm size, tangibility, turnover, liquidity, price to book ratio, sales volatility, intercept"  | 1,594 firms | 1998 to 2011 | Financing decisions are widely influenced by macro-economic cycle  |
| Chadha and Sharma (2015)       | India      | "Total debt to total capital and total debt to total assets"   | "Size, age, growth, tang, profitability, risk, dividend payout ratio, NDTs, liquidity, uniqueness, ICR, CFCR, ownership, inflation and GDP"                                  | 422 firms   | 2004–2012    | Leverage has a significant relationship with "size, age, asset tangibility, growth, profitability, non-debt tax shield, business risk, uniqueness and ownership structure" |
| Rouf (2015)                    | Bangladesh | "Total liabilities divided by total assets"  | "Total assets (TA), total sales (TSE), return on assets (ROA), return on sales (ROS), liquidity, age, debt-to-equity ratio, current debt ratio, proprietary of equity ratio" | 106 firms   | 2011–2015    | There is a negative and significant relationship between leverage and ROA, size and AGE  |
| Gómez <i>et al.</i> (2014)     | Peru       | "Long-term liabilities to total assets ratio"  | "Profitability, size, business risk, collateral assets value, depreciation to total assets ratio, growth and liquidity"  | 64 firms    | 2004–2008    | The level of firms' long-term debt is significantly influenced by their size, profitability, non-debt tax shields and collateral value of assets                           |

(continued)

| Authors                         | Country                       | DV   | IV  | Sample       | Period        | Results   |
|---------------------------------|-------------------------------|--|---|--------------|---------------|---|
| Benkraiem and Guraou (2013)     | French                        | "Total, long-term and short-term debt"   | "Size, profitability, growth and tangibility"   |              | 2003 and 2006 | Capital structure is significantly affected by size, profitability, growth and tangibility of assets  |
| Matemilola <i>et al.</i> (2013) | South Africa                  | "Long term debt and total debt"  | "Fixed assets, net profit, size, growth opportunity and non-debt tax shield"                      | 600          | 2004–2009     | The empirical findings indicate that models that include unobservable firm-specific effects are correctly specified   |
| Sbeiti (2010)                   | Kuwait, Saudi Arabia and Oman | "Book leverage and market leverage"  | "Firm size, liquidity, profitability, tangibility and growth opportunities"                       | 142 firms    | 1998–2005     | Capital structure in the selected countries is not different from finance models of the developed countries   |
| Morri and Cristanziani, (2009)  | Europe                        | "Total debt/total equity, total debt/total asset, total liabilities/total asset, total debt/capital, short-term debt/total debt, long-term debt/total debt, short-term debt/total asset" | "Size, profitability, growth opportunities, cost of debt, ownership structure, risk and category" | 97 companies |               | Non-REIT companies are significantly more leveraged than REITs. The negative relationship between operating risk and leverage demonstrates that the managers of riskier firms tend to reduce the overall company's uncertainty by adopting a more careful capital structure |
| Kim and Berger (2008)           | Korea and USA                 | "Market value-based leverage ratio"  | "Profit, company size, non-debt tax shields, growth and business-risk"                            | 36 firms     | 1987–1991     | There is no significant difference between Korean and Japanese firms  |

**Source:** Prepared by the authors based on literature survey



4.2 Variables description

Corporate characteristics represented by return on assets (ROA), return on equity (ROE), return on capital employed, MVA, Tobin-Q, liquidity and firm size are considered as the independent variables and leverage is the dependent variable. The relationship between corporate characteristics and leverage in the present study is viewed and motivated by different studies (Gómez *et al.*, 2014; Kim and Berger, 2008; Rouf, 2015).

4.3 Model specification

Consistent with previous literature (Al-ahdal *et al.*, 2020; Almaqtari *et al.*, 2019; Rouf, 2015), we developed the following model to investigate the impact of corporate characteristics on leverage in the GCC non-financial listed firms:

$$Y = \beta_0 + \beta \text{ fit} + \text{eit} \tag{1}$$

Where *Y* is the dependent variable.  $\beta_0$  is the constant,  $\beta$  is the coefficient of the explanatory variable (corporate characteristics), *fit* is the explanatory variable and *eit* is the error term.

By adopting the economic model as in equation (1) specifically in this study, we can estimate a fixed effects model using equation (2) as follows:

$$\begin{aligned} \text{LEV}_{it} = & \beta_1 \text{ROE}_{it} + \beta_2 \text{TQ}_{it} + \beta_3 \text{LIQ}_{it} + \beta_4 \text{ROCE}_{it} \\ & + \beta_5 \text{ROA}_{it} + \beta_6 \text{FSIZE}_{it} + \beta_7 \text{MVA}_{it} + \alpha_i + u_{it} \end{aligned} \tag{2}$$

Where all variables are as defined in Table 2,  $\alpha_i$  ( $i = 1 \dots n$ ) is the unknown intercept for each entity ( $n$  entity-specific intercepts) and  $u_{it}$  is the error term.

5. Analysis and finding

5.1 Descriptive statistics

Table 3 provides a summary of panel descriptive statistics for the variables used by the current study using *xtsum* command in Stata. *Xtsum* generates additional descriptive statistics to the normal one. It provides an analysis for the variables into an overall, between and within descriptive statistics. The overall and within descriptive statistics are calculated over 680 ( $N = 680$ ) firm-years observations. The between descriptive statistics is calculated over 85 firms ( $n = 85$ ) and the average number of years a firm was observed in the variable data ( $T = 8$ ). Overall, descriptive statistics reports common descriptive statistics in which the average value of a variable across all firms for the entire time period is calculated. Besides, minimum, maximum and the standard deviation values are given for the variables. While the minimum values of a variable denote the lowest value of a variable across the sample over the study time period, the maximum values are calculated as the highest values across the sampled firms during the time period.

The average ROA of the sampled firms has a mean value of 8.57, which varies between a minimum of -65.13 and a maximum of 75.23 with a standard deviation (SD) of 9.83. This indicates that there is no high variation in ROA of the sampled companies. Further, the overall average of ROE for 680 firm years' observations is 11.95 with an SD of 35.05 (min = -655.22 and max. = 106.54). The results also show that the mean value of return on capital employee (ROCE) across the 860 firm years observations is 9.72 with a minimum of -516.44, a maximum of 86.89 and SD of 27.61. MVA has an overall mean of 184,600 with a min. of -3,200,000 and a maximum of 12 million. Similarly, Tobin's Q has

| Variable type                | Variable name              | Symbol | Proxy measure   | Evidence from prior studies                                    |
|------------------------------|----------------------------|--------|---|--|
| <i>Dependent variable</i>    | Leverage                   | LEV    | "It is measured by dividing the total liabilities upon total assets"  | Güner (2016), Yıldırım <i>et al.</i> (2018)                    |
| <i>Independent variables</i> | Return on equity           | ROE    | "ROE is calculated by profit after tax divided total equity shares at the end of the year"                                | Al-ahdal <i>et al.</i> (2020), Rouf (2015)                     |
|                              | Tobin-Q                    | TQ     | "Tobin's Q can calculate by the ratio of the market capitalization plus total debt divided by total asset of the company" | Al-ahdal <i>et al.</i> (2020), Yameen <i>et al.</i> (2019)     |
|                              | Liquidity                  | LQ     | "Current assets divided by current liabilities"   | Güner (2016), Rouf (2015)                                      |
|                              | Return on capital employed | ROCE   | "It is calculated by comparing net profit after tax with capital employed"  | Al-Matari <i>et al.</i> (2014), Yameen <i>et al.</i> (2019)    |
|                              | Return on assets           | ROA    | "It is measured by the percentage of the net profit of one year for the total assets of the same year"                    | Almaqтари <i>et al.</i> (2019), Rouf (2015)                    |
|                              | Firm size                  | FSIZE  | "The natural logarithm of total assets"   | Matemilola <i>et al.</i> (2013), Yıldırım <i>et al.</i> (2018) |
|                              | Market value added         | MVA    | "It can be calculated by the difference between the market value and book value of equity"                                | Al-Matari <i>et al.</i> (2014), Imberman and Lovenheim (2016)  |

**Table 2.**  
Variables description

**Table 3.**  
Descriptive statistics

| Variable | Panel   | Overall descriptive statistics |           |            |            |          |        |          |           |           |  |
|----------|---------|--------------------------------|-----------|------------|------------|----------|--------|----------|-----------|-----------|--|
|          |         | Mean                           | SD        | Min        | Max        | Variable | Mean   | SD       | Min       | Max       |  |
| ROA      | overall | 8.57                           | 9.83      | -65.13     | 75.23      | TQ       | 1.66   | 2.94     | 0.32      | 74.66     |  |
|          | between |                                | 8.50      | -6.64      | 52.18      |          |        | 1.40     | 0.45      | 12.07     |  |
| ROE      | within  |                                | 5.02      | -49.91     | 36.65      |          |        | 2.59     | -8.34     | 64.25     |  |
|          | overall | 11.95                          | 35.05     | -655.22    | 106.54     | FSIZE    | 6.79   | 1.43     | 2.19      | 10.99     |  |
| ROCE     | between |                                | 17.68     | -96.30     | 56.23      |          |        | 1.39     | 3.50      | 10.13     |  |
|          | within  |                                | 30.32     | -546.97    | 119.09     |          |        | 0.36     | 5.00      | 11.52     |  |
| MVA      | overall | 9.72                           | 27.61     | -516.44    | 86.89      | LVR      | 47.81  | 110.51   | 2.51      | 2,869.03  |  |
|          | between |                                | 15.43     | -66.94     | 75.25      |          |        | 44.47    | 8.32      | 411.46    |  |
| MVA      | within  |                                | 22.94     | -439.78    | 84.33      |          |        | 101.27   | -343.56   | 2,505.37  |  |
|          | overall | 184,600                        | 1,203,803 | -3,200,000 | 12,000,000 | LIQ      | 241.89 | 1,377.38 | 0.02      | 21,645.40 |  |
|          | between |                                | 1,094,914 | -2,700,000 | 7,875,000  |          |        | 1,210.75 | 0.10      | 10,986.26 |  |
|          | within  |                                | 512,508   | -4,890,400 | 4,309,600  |          |        | 668.11   | -6,551.41 | 10,901.02 |  |

**Notes:** 1- Observations (Overall:  $N = 680$ , between:  $n = 85$ , within:  $T = 8$ ) 2- LEV is leverage, ROE is return on equity, TQ is Tobin-Q, LIQ is liquidity, ROCE is return on capital employed, ROA is return on assets, FSIZE is firm size and MVA is market value added

a minimum of 0.32, maximum of 74.66 with an average of 1.66. FSIZE shows a mean of 6.79 with a min. of 2.19 and a max. of 10.99. Importantly, LEV demonstrates a variation among the sampled companies. It has an average of 47.81 with SD of 110.51 (Min. = 2.51 and Max. = 2,869.03) (Figure 1). The value of SD is much higher than the mean value indicating that the mean does not represent the average values of the sampled firms. Finally, LIQ has an average value of 241.89 with a minimum of 0.02, a maximum of 2,1645.40 and SD of 1,377.38.

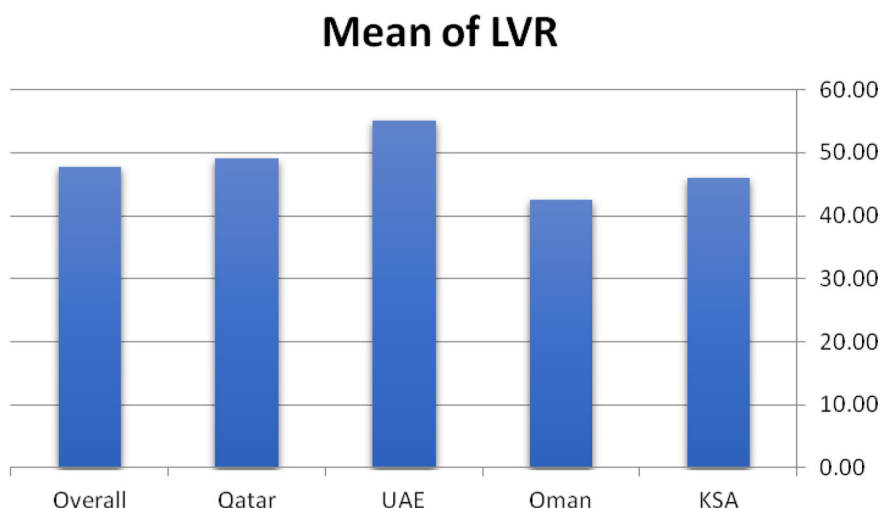
Table 4 reports country wise descriptive statistics. As we have seen in Table 3, there is a variation between the standard deviation and the average values of some variables. This prompts us to conduct country-wise descriptive statistics to know the characteristics of the data of each country. Table 4 presents country-wise descriptive statistics in the form of mean, median, minimum, maximum and standard deviation for all the variables of the study. The results show the variation among the countries in LIQ, MVA and TOBINQ. All other variables have slight variation.

### 5.2 Unit root analysis

Unit root analysis is applied to confirm the stationarity of the variables as a pre-requisite requirement for analysis of the models of the study. Three tests were conducted to check the stationarity of the variables; Levin, Lin and Chu test, Im Pesaran and Shin test and Augmented Dickey-Fuller test. Each variable was tested individually at the first level. As shown in Table 5, all variables used in the models are found to be stationary at level in all the tests applied. This leads to reject the null hypothesis of the unit root test at the level.

### 5.3 Correlation analysis and multicollinearity diagnostics

Table 6 shows the results of Pearson correlation matrix for the variables of the present study. The results of Pearson correlation demonstrate that there is a positive and negative relationship between dependent and independent variables. While LEV has a significant



**Figure 1.**  
Average values of leverage across the countries

| KSA       | Country wise descriptive statistics |        |           |           |          |                                  |        |           |           |          |
|-----------|-------------------------------------|--------|-----------|-----------|----------|----------------------------------|--------|-----------|-----------|----------|
|           | Mean                                | Median | Maximum   | Minimum   | SD       | Mean                             | Median | Maximum   | Minimum   | SD       |
|           | <i>KSA: observations = 184</i>      |        |           |           |          | <i>Oman: observations = 182</i>  |        |           |           |          |
| FSIZE     | 6.67                                | 6.84   | 10.00     | 3.98      | 1.33     | 6.88                             | 6.76   | 10.36     | 2.19      | 1.79     |
| LIQ       | 13.88                               | 2.90   | 273.73    | 0.07      | 28.51    | 122.65                           | 19.10  | 5,237.22  | 0.15      | 453.14   |
| LEV       | 46.00                               | 45.90  | 102.53    | 9.93      | 19.98    | 55.16                            | 31.92  | 2,869.03  | 2.51      | 231.15   |
| MVA (000) | 95.74                               | 0.004  | 3,000.00  | -1,500.00 | 485.99   | 320.28                           | 0.011  | 6,900.00  | -1,100.00 | 1,064.69 |
| ROA       | 8.97                                | 6.96   | 75.23     | -28.86    | 11.70    | 8.46                             | 6.88   | 37.30     | -65.13    | 10.55    |
| ROCE      | 8.20                                | 8.24   | 86.89     | -516.44   | 42.43    | 8.84                             | 7.96   | 52.18     | -328.30   | 30.78    |
| TQ        | 1.38                                | 1.24   | 3.26      | 0.52      | 0.53     | 12.24                            | 11.83  | 87.52     | -329.90   | 34.99    |
| ROE       | 6.11                                | 12.28  | 61.00     | -655.22   | 55.30    | 2.30                             | 1.53   | 74.66     | 0.43      | 6.02     |
|           | <i>UAE: observations = 184</i>      |        |           |           |          | <i>Qatar: observations = 160</i> |        |           |           |          |
| FSIZE     | 6.88                                | 6.92   | 10.05     | 4.69      | 1.31     | 6.72                             | 6.96   | 10.99     | 3.76      | 1.28     |
| LIQ       | 681.93                              | 25.61  | 2,1645.40 | 0.15      | 2,557.08 | 111.32                           | 2.06   | 1,185.24  | 0.02      | 255.42   |
| LEV       | 42.46                               | 37.80  | 95.34     | 7.30      | 23.06    | 49.06                            | 50.64  | 84.61     | 16.27     | 15.65    |
| MVA (000) | 62.828                              | 0.009  | 3,900.00  | -3,200.00 | 935.30   | 297.94                           | 0.002  | 12,000.00 | -3,200.00 | 1,943.31 |
| ROA       | 9.03                                | 6.59   | 44.32     | -3.24     | 8.29     | 7.68                             | 6.12   | 47.03     | -17.11    | 8.31     |
| ROCE      | 11.64                               | 7.90   | 44.85     | -4.27     | 10.40    | 13.20                            | 10.18  | 64.97     | -65.77    | 16.74    |
| ROE       | 16.46                               | 14.85  | 106.54    | -17.71    | 13.78    | 10.11                            | 7.34   | 51.41     | -27.24    | 12.30    |
| TQ        | 1.59                                | 1.46   | 5.64      | 0.32      | 0.85     | 1.45                             | 1.10   | 4.13      | 0.40      | 0.88     |

**Table 4.**  
Country wise  
descriptive statistics

**Notes:** 1- LEV is leverage, ROE is return on equity, TQ is Tobin-Q, LIQ is liquidity, ROCE is return on capital employed, ROA is return on assets, FSIZE is firm size and MVA is market value added

| Variable     | Stationary tests AL level   |              |            |                        | Result                 |
|--------------|-----------------------------|--------------|------------|------------------------|------------------------|
|              | Im, Pesaran and Shin W-stat | ADF – Fisher | Chi-square | PP – Fisher Chi-square |                        |
| <i>FSIZE</i> | 0.0000                      |              | 0.0000     | 0.0000                 | Reject null hypothesis |
| <i>ROA</i>   | 0.0250                      |              | 0.0016     | 0.0000                 | Reject null hypothesis |
| <i>LIQ</i>   | 0.0000                      |              | 0.0000     | 0.0002                 | Reject null hypothesis |
| <i>ROCE</i>  | 0.0000                      |              | 0.0000     | 0.0000                 | Reject null hypothesis |
| <i>LEV</i>   | 0.4590                      |              | 0.0393     | 0.0001                 | Reject null hypothesis |
| <i>ROE</i>   | 0.0000                      |              | 0.0000     | 0.0000                 | Reject null hypothesis |
| <i>MVA</i>   | 0.0000                      |              | 0.0000     | 0.0000                 | Reject null hypothesis |
| <i>TQ</i>    | 0.0000                      |              | 0.0000     | 0.0724                 | Reject null hypothesis |

**Table 5.**  
Unit root test

**Notes:** 1- LEV is leverage, ROE is return on equity, TQ is Tobin-Q, LIQ is liquidity, ROCE is return on capital employed, ROA is return on assets, FSIZE is firm size and MVA is market value added

positive correlation at 1% level of significance with TQ, it has a significant negative correlation with all other independent variables. All independent variables have a maximum correlation coefficient of 0.58 ( $0.58 < 0.70$ ), which indicates that multicollinearity issues in this study does not exist.

#### 5.4 Regression estimation

Table 7 presents an estimation of the results of the models of the current study. An estimation of fixed effect model is opted. At the initial step of the analysis, a redundant fixed

**Table 6.**  
Correlation analysis

| Variables    | FSIZE    | LIQ      | LVR     | TOBINQ  | MVA     | ROA     | ROCE    | ROE |
|--------------|----------|----------|---------|---------|---------|---------|---------|-----|
| <i>FSIZE</i> | 1        |          |         |         |         |         |         |     |
| <i>LIQ</i>   | 0.01***  | 1        |         |         |         |         |         |     |
| <i>LVR</i>   | -0.12**  | -0.01    | 1       |         |         |         |         |     |
| <i>TQ</i>    | -0.11*** | -0.05*** | 0.28*** | 1       |         |         |         |     |
| <i>MVA</i>   | -0.04    | 0.11***  | -0.03   | 0.33*** | 1       |         |         |     |
| <i>ROA</i>   | -0.11*** | -0.07*   | -0.08** | 0.51*** | 0.23*** | 1       |         |     |
| <i>ROCE</i>  | -0.02    | -0.04    | -0.06   | 0.23*** | 0.10*** | 0.58*** | 1       |     |
| <i>ROE</i>   | 0.03     | -0.03    | -0.04   | 0.26*** | 0.07*   | 0.45*** | 0.54*** | 1   |

**Notes:** 1- LEV is leverage, ROE is return on equity, TQ is Tobin-Q, LIQ is liquidity, ROCE is return on capital employed, ROA is return on assets, FSIZE is firm size and MVA is market value added; \*\*\*, \*\* and \* indicate at 1, 5 and 10% level of significance respectively

**Table 7.**  
Fixed effect model

| Variables        | Coef.  | Std. err. | T-value | P-value |
|------------------|--------|-----------|---------|---------|
| Cons             | 189.06 | 63.95     | 2.96    | 0.003   |
| <i>ROA</i>       | -5.07  | 0.83      | -6.08   | 0.000   |
| <i>ROE</i>       | 0.22   | 0.14      | 1.59    | 0.111   |
| <i>ROCE</i>      | 0.32   | 0.18      | 1.75    | 0.080   |
| <i>MVA</i>       | 0.00   | 0.00      | -5.21   | 0.000   |
| <i>FSIZE</i>     | -28.13 | 9.25      | -3.04   | 0.002   |
| <i>LIQ</i>       | 0.00   | 0.01      | 0.47    | 0.639   |
| <i>TQ</i>        | 669.48 | 38.38     | 17.44   | 0.000   |
| Husamm test      |        |           |         | 0.000   |
| R-seq. within    |        |           |         | 0.3575  |
| R-seq. between   |        |           |         | 0.1273  |
| R-seq. overall   |        |           |         | 0.1416  |
| <i>F</i> (7,588) |        |           |         | 46.7300 |
| Prob > <i>F</i>  |        |           |         | 0.0000  |

**Notes:** 1- LEV is leverage, ROE is return on equity, TQ is Tobin-Q, LIQ is liquidity, ROCE is return on capital employed, ROA is return on assets, FSIZE is firm size and MVA is market value added

effect estimation is made to choose between the panel set or pooled regression analysis. The results of the redundant fixed effect test shows that the panel set is appropriate than the pooled set. Furthermore, the results of the redundant fixed effect shows that the estimation should be a one-way cross-section fixed effect model. In addition, an analysis is conducted to compare the relationship between fixed or random effect models. Accordingly, Husman test is conducted for this purpose and the yielded result of Husman test was in favor of fixed effect model ( $P$ -value < 0.00), which means a rejection of random effect model and the acceptance of fixed effect model.

The results of regression analysis of fixed effect model shows that ROA has a significant negative effect on leverage at the level of 1% level of significance ( $\beta = -5.07$ ,  $P$ -value =  $0.000 < 0.01$ ). This negative effect indicates that LEV is significantly influenced by ROA, this result is consistent with (Bandyopadhyay and Barua, 2016; El-Khatib, 2017; Gómez *et al.*, 2014; Güner, 2016; Kyissima *et al.*, 2019; Matemilola *et al.*, 2013; Rouf, 2015; Sbeiti, 2010), who found a negative and significant impact of profitability on leverage. The results contradict those of (Alipour *et al.*, 2015; Chadha and Sharma, 2015), who documented a positive impact of profitability on leverage.

FSIZE has statistically significant negative effect on LEV. This effect is statistically significant at the level of 1% ( $\beta = -28.13, P\text{-value} = 0.000 < 0.01$ ). This result is in line with (Bandyopadhyay and Barua, 2016; Benkraiem and Gurau, 2013; Güner, 2016; Rouf, 2015), who found a negative and significant impact of size on firms' leverage. These results do not agree with the findings of (Alipour *et al.*, 2015; Chadha and Sharma, 2015; El-Khatib, 2017; Gómez *et al.*, 2014; Kyissima *et al.*, 2019; Matemilola *et al.*, 2013; Morri, and Cristanziani, 2009; Sbeiti, 2010), who advocated that size of a firm has a positive and significant impact on firm's leverage.

MVA and TQ exhibit statistically significant effect on LEV at the level of 1% ( $P\text{-value} = 0.000 < 0.01$ ). This effect is positive indicated by ( $\beta = 0.01$  and 699.48, respectively). Further, the results reveal that ROCE has a significant positive impact ( $\beta = 0.32$ ). However, this effect is statistically significant at the level 10% ( $P\text{-value} = 0.08 < 0.10$ ).

Overall, the model is fit with a significance level of less than 1% ( $P\text{-value} = 0.000 < 0.01$ ). The adjusted  $R^2$  is 13% indicating that the variables included in the model contribute about 13% of the variability of LEV.

Table 8 illustrates a comparison on the overall impact of all explanatory variables included in the models on the dependent variable. A country wise effect comparison estimation is made based on kingdom of Saudi Arabia (KSA). KSA is considered as the basis of the comparison and other countries are compared with KSA. The results show that both Oman and the UAE have a negative difference from KSA ( $\beta = -18.24, -17.88$ , respectively) however, Qatar has a positive difference from KSA ( $\beta = 2.82$ ). This means that Qatar is better than KSA, Oman and the UAE but KSA is better than both UAE and Oman in terms of the overall impact of all explanatory variables on the dependent variable. However, the  $P$ -value of the three countries (Oman, the UAE and Qatar) are insignificant ( $P\text{-value} > 0.10$ ) indicating that there are no significant differences among the countries in terms of the overall impact of all explanatory variables included in the models on the dependent variable.

| Variables  | Coef.  | Std. err. | T-value | P-value  |
|--|--------|-----------|---------|----------|
| <i>Cons</i>  | 103.91 | 25.59     | 4.06    | 0.000    |
| <i>ROA</i>   | -4.017 | 0.63      | -6.37   | 0.000    |
| <i>ROE</i>   | 0.01   | 0.14      | 0.10    | 0.922    |
| <i>ROCE</i>  | 0.16   | 0.19      | 0.88    | 0.379    |
| <i>MVA</i>   | 0.01   | 4.15e     | -3.60   | 0.000    |
| <i>FSIZE</i>   | -8.20  | 3.41      | -2.40   | 0.016    |
| <i>LIQ</i>   | 0.00   | 0.00      | 0.51    | 0.609    |
| <i>TQS</i>   | 306.18 | 25.48     | 12.02   | 0.000    |
| R.seq. within  |        |           |         | 0.3176   |
| R.seq. between   |        |           |         | 0.1713   |
| R.seq. overall   |        |           |         | 0.1705   |
| Wald $\chi^2(10)$  |        |           |         | 161.0600 |
| Prob > F   |        |           |         | 0.000    |
| Country wise comparison effect (KSA is the base of comparison) |        |           |         |          |
| Oman   | -18.24 | 14.36508  | -1.27   | 0.204    |
| UAE  | -17.88 | 13.73376  | -1.30   | 0.193    |
| Qatar  | 2.82   | 13.98649  | 0.20    | 0.84     |

**Table 8.**  
Country wise effect  
comparison  
estimation

**Notes:** 1- LEV is leverage, ROE is return on equity, TQ is Tobin-Q, LIQ is liquidity, ROCE is return on capital employed, ROA is return on assets, FSIZE is firm size and MVA is market value added

| Variables              | Coef.  | Std. err. | T-value | P-value   |
|------------------------|--------|-----------|---------|-----------|
| <i>C</i>               | 51.341 | 5.322     | 9.646   | 0.000     |
| <i>ROA</i>             | -3.069 | 0.087     | -35.436 | 0.000     |
| <i>ROE</i>             | 0.000  | 0.000     | -1.107  | 0.269     |
| <i>ROCE</i>            | -0.137 | 0.031     | -4.376  | 0.000     |
| <i>MVA</i>             | 1.500  | 0.023     | 66.353  | 0.000     |
| <i>FSIZE</i>           | 0.881  | 0.466     | 1.891   | 0.059     |
| <i>LIQ</i>             | -0.200 | 0.054     | -3.729  | 0.000     |
| <i>TOBIN_Q</i>         | 2.816  | 0.227     | 12.390  | 0.000     |
| $R^2$                  |        |           |         | 0.192     |
| Adjusted $R^2$         |        |           |         | 0.184     |
| Rw-squared             |        |           |         | 0.472     |
| Adjust Rw-squared      |        |           |         | 0.472     |
| Akaike info criterion  |        |           |         | 1,001.933 |
| Prob(Rn-squared stat.) |        |           |         | 0.000     |

**Notes:** 1- LEV is leverage, ROE is return on equity, TQ is Tobin-Q, LIQ is liquidity, ROCE is return on capital employed, ROA is return on assets, FSIZE is firm size and MVA is market value added

**Table 9.**  
Robust regression

**Table 9** presents the results of robust regression. The results show consistent outputs to the results of the fixed effect model except in the case of liquidity. Coefficient estimates of both fixed and robust regressions are not highly deviated. All variables exhibit same effect except in case of ROE, which was insignificant in case of the random effect model but it is significant in the robust regression. This signifies a proper estimation of the regression assumptions. Further, the outputs of robust regression signify that the data is not contaminated with outliers.

## 6. Conclusion and policy implications

The main objective of the present research was to investigate the impact of corporate characteristics on leverage. These characteristics include ROE, Tobin-Q (TQ), Liquidity (LIQ), ROCE, ROA, firm size (FSIZE) and MVA. The finding of the study revealed that both ROA and FSIZE have a significant negative effect on leverage. However, MVA, ROCE and TQ exhibited statistically significant positive effect on leverage. Further, the results indicated that Qatar is better than KSA, Oman and the UAE but KSA is better than both UAE and Oman in terms of the overall impact of corporate characteristics on the leverage. However, this effect is not statistically significant.

Despite the effort made by prior studies to investigate the issue of corporate characteristics and its relationship with leverage, this study focused on the GCC context, which opens an insight of different research implications. The study realizes that the GCC countries have some characteristics such as immature stock markets, tax systems and Shari'ah financing, which may have a significant impact on financing decisions of firms. This study calls upon managers, bankers, investors, financial analysts and regulators in the GCC stock markets to reconsider capital structure components and try to rebalance between debts and equities depending on corporate characteristics. In addition, future research in the GCC countries should investigate some other determinants such as country-level factors, stock market characteristics, Shari'ah financing and some areas of capital structure mix. This study contributes to knowledge by providing new insights into the corporate characteristics and leverage. By so doing, it provides an attempt to identify the factors influencing corporate financing behavior taking into consideration



different issues such as different proxies of firms' profitability, market capitalization, MVA and liquidity, which provides original evidence from Gulf countries emerging markets. These countries are characterized by low tax rates and high liquidity. High liquidity may reduce the cost of borrowing and debt financing may not be a huge burden on firms' profits. This makes the investigation of leverage and corporate characteristics, particularly, firms' profitability and liquidity, very important. Therefore, the study tries to bridge an existing gap in the body of literature of capital structure and debt financing in Gulf countries emerging markets. The findings of this study will enable regulatory agencies to aim toward greater compliance with the local and international standards and will also enable them to enforce penalties for non-compliance. The limitation of the study is that only non-financial companies have been used as a sample. Hence, the results may not extend across all listed companies in Gulf countries.

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#### **Further reading**

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