

UNIVERSITY OF BAHRAIN
COLLEGE OF BUSINESS ADMINISTRATION
GRADUATE STUDIES PROGRAM



**Capital structure and firm performance in the
GCC countries**

**A Master Project (FIN 698) submitted in partial fulfillment of the requirement for
the degree of MBA in Finance**

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January 2016

DECLARATION

I hereby declare that this work is the result of my own investigation and that it has not already been accepted in substance of any degree, nor is it being currently submitted for any degree.

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The thesis defense committee considers the thesis titled:

Relationship between Capital Structure and Firm Performance

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ACKNOWLEDGEMENTS

First and foremost, I would like to take this opportunity to thank my supervisor, Dr. Batool K. Asiri, for her continued support, guidance, efforts and tolerance in explaining and supervising throughout this process to make this thesis possible.

I would also like to extend my deepest thanks and appreciation to all the faculty members of the MBA program for their continued support and guidance.

I would like to express special thanks to FactSet Research Systems Inc. and to their staff for being so cooperative and helpful in providing free access to their database for the purpose of collection of data.

Last but not least, I would like to thank my parents, my husband, my sister, my brother, and my lecturers at University of Bahrain for their encouragement and motivation, and for having faith in me.

ABSTRACT

Purpose – The purpose of this study is to find the relationship between capital structure and firm performance in the developing market economies of the GCC region. To do so, analysis was performed on the GCC region as whole, in addition to a country analysis, industry analysis and size of the firm analysis to observe the effect of different control variables.

Methodology – Using a sample of 111 firms from the consumer services, consumer non-durable services and producer manufacturing sectors of the GCC region for a period of 10 years (2004-2014), stepwise regression analysis was used to determine the relationship between capital structure and firm performance.

Findings – After analysis, the results show that there is a significant relationship between capital structure and firm performance. Moreover, growth in assets and size of the firm were found to be significant in determining both capital structure and firm performance.

Originality/Value – The existing literature on capital structure and firm performance in developing economies is very scanty; this study tries to fill in the existent gap.

Keywords – Capital structure, Performance, GCC, ROA, Regression.

Paper type – MBA project

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LIST OF ABBREVIATIONS

SR. NO.	ABBREVIATIONS	DEFINITIONS
1	EBIT M	Earnings before interest and tax margin
2	EFWA	External finance weighted average market-to-book
3	EPS	Earnings per share
4	DC	Debt to capital
5	DEMV	Debt to equity market value
6	Dep. Var.	Dependent variable
7	GCC	Gulf cooperation council
8	GDP	Gross domestic product
9	GA	Growth in assets
10	GM	Gross profit margin
11	LDC	Long term debt to capital
12	Ln (TA)	Natural logarithm of total assets
13	LTD	Long term debt
14	LTDTA	Long term debt to total assets
15	MM	Modigliani and Miller
16	MBVR	Market value of equity to book value of equity
17	NIM	Net interest margin
18	NP	Net profit
19	OLS	Ordinary least squares
20	POT	Pecking order theory
21	ROA	Return on assets
22	ROC	Return on capital

23	ROCE	Return on capital employed
24	ROE	Return on equity
25	ROI	Return in investment
26	SD	Standard deviation
27	SE	Standard error
28	STD	Short term debt
29	STDTA	Short term debt to total assets
30	TD	Total debt
31	TDTA	Total debt to total assets
32	TDTE	Total debt to total equity
33	TDTF	Total debt to total funds
34	TOT	Trade-off theory
35	TD/TE	Total debt to total equity
36	UAE	United Arab Emirates

CHAPTER ONE

1. INTRODUCTION

1.1. Background

Capital structure has attracted intense debate and scholarly attention across various industries in corporate finance literature after Modigliani and Miller's (MM) modern capital structure theory. Capital structure is important in determining the performance of an enterprise. Hence, proper care and attention need to be given when making any decision related to capital structure. Recent developments in the global economy, coupled with the financial crisis and credit crunch of the last decade, have increased researchers' interest in studying capital structure and its impact on performance.

Capital structure, in financial terms, means the way a firm finances its assets through the combination of equity and debt. How a firm has been financed is of great importance to both the managers of the firm and the providers of capital. The wrong mix of financial decisions can affect the performance and survival of a firm, as argued by Anarfo (2015). That's why this topic has gained importance in research studies. The general opinion of researchers is that a firm should determine and choose an optimal level of combined debt and equity based on the tradeoff between the cost and benefits of the debt. Pandey (2010) argued that some companies do not plan their capital structure and adapt to financial decisions taken by financial managers without any formal policy or planning. Thus, their capital structure is reactive because it is the result of past operating decisions rather than planned decisions.

Companies that do not plan their capital structure may have difficulties in raising funds to finance their operations in the future and may not be able to economize their use of funds. It is the general opinion of many researchers that each firm should plan its capital structure in such a way that it will maximize its use of funds and to be able to adapt to changing situations. Therefore, the

financial manager should plan an optimum capital structure for the company to maximize the market value of the firm.

Following the MM paradigm of 1958, corporate financing decision preference has attracted the attention of most corporate finance scholars, which has stimulated substantial research efforts in determining an optimal capital structure for firms as corporate financing decision preference affects corporate market value within the corporate cycle. This is due to the fact that profitable firms are likely to use internal finance (retained earnings), resulting in less debt capital, while less profitable firms are likely to use external finance (borrowings), resulting in higher debt capital.

Empirical evidence suggests that capital structure is one of the factors that impacts a firm's performance along with many other factors, including the macroeconomic conditions of a country, as suggested by Rajan and Zingales (1995); Friend and Hasbrouck (1988); Senaratne (1998); Friend and Lang (1988); Myers and Majluf (1984). Thus, it is important to investigate the impact of capital structures on firm performance in different economic conditions to test the validity of these theoretical claims.

After establishing the importance of both capital structure and its relationship to a firm's performance and capital structure decision and its financial leverages, this research has been carried out to contribute towards this topic.

1.2.Purpose of the Study

There have been several studies done on the relationship between capital structure and firm performance in developed countries. However, empirical studies on capital structure and firm performance in developing countries, especially in the Gulf Cooperation Council (GCC), are very scanty.

The purpose of this research is to clarify the relationship between capital structure and firm performance of companies located in the GCC region. This research will try to answer five main

questions, which are carried out from the literature, in relation to the developing economies of GCC countries.

1. Is capital structure related to firm performance of GCC countries? If yes, what is the direction of the relationship?
2. Is firm performance related to capital structure of GCC countries? If yes, what is the direction of the relationship?
3. Is there any significant relationship between capital structure and firm performance among the countries in GCC?
4. Is there any significant relationship between capital structure and firm performance of various sectors of GCC?
5. Is there any significant relationship between capital structure and firm performance due to the sizes of the firms in GCC?

To study these very important relationships in finance, certain variables have been taken into account to determine capital structure long-term debt ratios and total debt ratios. The determinants used to calculate the performance are profitability ratios and a control variable, in this case the size of the firm, which is measured by the natural log of total assets ($\ln(TA)$). For this purpose, 111 firms from three different non-financial industries have been selected from the GCC countries with 11 years of data ranging from 2004 to 2014.

People who can benefit from this research may include researchers, decision makers, managers, and analysts; and, as this research uses performance ratios and debt ratios, it may also provide some meaningful signals for shareholders or stakeholders.

1.3.Preview of the Chapters

This research analyzes some of the studies done on this topic by researchers and analysts in the literature review section; some light is shed on the GCC economy; methods adopted and variables

used for this study, along with data collection, are detailed in the methodology section; the models developed using various variables and hypotheses are exhibited in the analysis section; after analysis findings, conclusions and recommendations are given; and some limitations are also highlighted for further studies in order to improve the research.

1.4.GCC Economic Overview

The GCC is an oil-based region with the largest proven crude oil reserves in the world, and is ranked as the world's largest producer as well as exporter of petroleum. For the GCC region, the oil and gas sector represents approximately 73% of total export earnings, roughly 63% of government revenue and 41% of its GDP (Gross Domestic Product).

In the GCC, the largest economy is Saudi Arabia, accounting for around 47% of the region's GDP. The real GDP growth of Saudi Arabia was also very strong in the non-oil sector in 2012 at 7.2%. Ongoing major investment projects have supported growth in sectors such as construction, which expanded by 10.3% in 2012. UAE is the second largest economy, accounting for 23% of the region's GDP. Its real GDP growth for 2012 was 4%, with oil production amounting to 3.2%. Qatar has the third largest economy in the GCC, accounting for 12% of regional GDP. Real GDP growth was strong at 6.1% in 2012 due to the non-oil sector, compared to just 2.1% in the oil and gas sector. However, a slowdown in real GDP growth has been observed, as the country's rapid liquefied natural gas expansion program has peaked and further expansion has been put on hold for the time being. Kuwait accounts for 11% of GDP in the GCC, and real GDP growth for Kuwait was at 6.3% in 2012, driven mainly by a 12.1% increase in oil production. Non-oil growth was also strong, supported by spending on various projects. Growth in Oman, which accounts for 5% of GDP in the GCC, remains relatively steady at around 5.0% for real GDP, driven by gently rising oil production and major expansions in the petrochemical sector. Lastly the least growth has been in Bahrain, which accounts for 2% of the GCC's GDP. Bahrain's economy is more diversified than the rest of the GCC as it has a strong service-oriented non-oil sector (financial services account for 18% of its GDP) and relatively limited oil reserves.

After the global financial and economic crisis and the decline in global demand for oil, the GCC is trying to reform its economy by focusing on new ways to attract domestic, regional and foreign private sector investment into not only oil and gas, but also power generation, telecommunications, and real-estate. The fall in the global oil market due to the global financial and economic crisis slowed the pace of investment and development projects. This information was collected from a GCC economic overview (2012). The figures what were easily available for the GCC countries to compare GDP's were 2012.

CHAPTER TWO

2. LITERATURE REVIEW

Firms are almost always willing to maximize their performance and minimize their financing costs by maintaining the appropriate capital structure or by obtaining optimal capital structure. Modern capital structure theory began in 1958 with professors Modigliani's and Miller's classical paper, which led to the development of a large number of theoretical and empirical papers. The theoretical literature and empirical research done by different researchers on the relationship between firm performance and capital structure has produced mixed results.

The first section of the literature review consists of theoretical literature and the second section consists of empirical literature. It begins by analyzing studies that identify the determinants of capital structure and performance measure of a firm. Later some light is shed on the research done on the relationship between the capital structure and performance.

2.1. Theoretical Literature Review

Modigliani and Miller (1958), hereafter MM, formed the basis for modern thinking on capital structure. Their theory proved that, in a perfect market, cost of capital does not affect capital structure. That means debt in a firm's capital structure does not affect the firm's value. The value of the firm is determined by its overall productivity and the quality of the assets in which it has invested. This theory is also referred to as irrelevant theory. This first proposition of the MM is mainly based on assumptions of capital market in which the costs of bankruptcy, transactions, information asymmetry and taxes are not present.

Later on MM modified the irrelevant theory by presenting proof that the cost of capital affects capital structure and thus firm value when the assumptions in the first preposition are relaxed. Their second preposition is also based on the assumption of a perfect capital market in which a firm will pay higher returns to its shareholders, using a higher debt to equity ratio due to higher-

risks taken by shareholders, which in turn reduces the cost of borrowing and maximizes firm performance (Miller, 1977).

Debate over the MM theory resulted in the development of the trade-off theory, pecking order, agency cost and signaling theories.

2.1.1. Trade-Off Theory (TOT)

According to the trade-off theory, capital structure choices are determined by a trade-off between the benefits and costs of debt (Kraus and Litzenberger, 1973). This theory refers to the concept that a firm chooses how much debt finance and how much equity finance to use by balancing the costs and benefits. It basically entails offsetting the costs of debt against the benefits of debt, and maintains that firms are generally financed by both equities and debts.

The trade-off theory of capital structure primarily deals with two concepts: cost of financial distress and agency costs. It states that the advantages to financing with debt are the tax benefits of debt, and the costs of financing with debt, which are equivalent to the costs of financial distress, including bankruptcy costs of debt and non-bankruptcy costs. In 1963, Modigliani and Miller introduced the tax benefit of debt. MM said the attractiveness of debt decreases with the introduction of personal tax on interest income. A firm experiences financial distress when the firm is not able to conform to the debt holders' obligations.

However, as firm leverage ratio rises, tax benefits will eventually be offset by increases in bankruptcy cost. The trade-off theory sought to establish an optimal capital structure where the weighted average cost of capital would be minimized and the firm value maximized. Brigham and Gapenski (1996) argue that an optimal capital structure can be obtained if a tax benefit equal to the bankruptcy cost exists. Despite the theoretical appeal of debt financing, researchers of capital structure have not found the optimal capital structure (Simerly and Li, 2002).

Harris and Raviv (1991) argue that capital structure is related to the trade-off between the cost of liquidation and the gain from liquidation for both the shareholders and managers. So firms may

have more debt in their capital structure than is suitable, as it gains benefits for both shareholders and managers.

Krishnan and Moyer (1997) found a negative and significant impact of total debt to total equity (TD/TE) on return on equity (ROE). Another study done by Gleason et al. (2000) found that a firm's capital structure has a negative and significant impact on its performance measures return on assets (ROA), growth in sales, and pretax income. Therefore, it can be said that high levels of debt in the capital structure would decrease a firm's performance.

2.1.2. Pecking Order Theory (POT)

Pecking Order Theory (POT) was first suggested by Donaldson in 1961, and was popularized by Myers and Majluf in 1984. The theory tries to capture the costs of asymmetric information and assumes that the management of a company knows more about the future prospects of the firm than outsiders. According to POT, when a firm is going to raise capital, it prefers financing its operations first from internal funds, then debt, and then by issuing new equity as a last resort, when it is no longer sensible to issue any more debt. The internal source of finance is preferred as it doesn't have costs compared to debt and equity. If the need for external financing arises, companies prefer issuing debt before issuing equity. It has been argued that equity is a less preferred means to raise capital because when managers issue new equity, investors believe that managers think that the firm is overvalued, and are taking advantage of this overvaluation. As a result, investors will try to place a lower value on the new equity issuance. This theory also implies that the cost of financing increases with asymmetric information.

This theory is geared towards the signaling effect of the use of debt financing. According to this theory, firms prefer financing their operations from internally generated funds because the use of internal funds is less likely to send any negative signal that may lower the stock price of the firm. If a firm issues equity, it sends a negative signal to investors that the firm's share prices are overvalued, and that is why the managers are issuing equity. A share issue is thus interpreted by the market as a bad sign, but debt is less likely to be interpreted this way. Firms therefore prefer to

issue debt rather than equity if internal finance is insufficient. The pecking order theory is therefore a competing theory of capital structure that says firms prefer internal financing.

Further, Gatsi and Akot (2010) observe that raising external financing is expensive due to the fact that firm insiders are more aware of their companies' forecasts and predictions as compared to outsiders. From an outsider's point of view, equity is more risky than debt, and consequently the demands for the returns will also be higher. As a result, firms tend to consider debt to be a better source of finance than equity. One should consider that the best source of finance is internal financing (Ritter, 2004).

On the other hand, Owolabi et al. (2013) explains that the pecking order theory is based on the information differences between investors and managers. Managers usually have more information about a firm compared to investors. In this specific theory, managers don't tend to maintain a precise capital structure. Additionally, Iqbal et al (2012) point out that according to the equity market timing theory, firms exhibit a tendency to issue equity when shares are overvalued, and to repurchase those shares when the market is undervalued. Like many other theories, the equity market timing theory doesn't define any optimal capital structure.

The POT test has given mixed results. This theory is supported by Shyam-Sunder and Myers (1999) in their study done during the period of 1971-1989 on companies listed on the New York Stock Exchange. Less support is found for the POT test administered by Frank and Goyal (2003) during the period 1971-1998 on publicly-listed firms in the US. Fama and French (2005) also failed to find support for POT; they tested and analyzed the financing decisions of many individual companies, and found that they are the opposite of TOT. Sayeed (2007), who assessed the energy sector of Pakistan from 2001-2005, found that POT is applicable to energy sector of Pakistan, and Ilyas (2008) found that POT is applicable to listed non-financial firms in Pakistan.

Bradley et al. (1984) have gotten mix results in their study on capital structure theories. They found a strong direct relationship between a firm's debt level and non-debt tax shields, which works against POT. However, the studies on capital structure determinants done by MacKie-Mason (1990); Givoly et al. (1992); and Trezevent (1992) exhibited results consistent with trade-off

theory. Shah and Hijazi (2004) found support for trade-off theory and agency cost theory in their study on Pakistani listed nonfinancial firms during the period of 1997 to 2001. Delcours (2007) did not find enough documents for POT, TOT and agency cost theory, and argues that these theories do not neutrally explain the capital structure puzzle. The results of Buferna et al. (2008) suggest that both agency cost theory and TOT can be applied in the context of Libya while POT cannot.

2.1.3. Agency Cost Theory

Jensen and Meckling (1976) were the first to take initiative to conduct research in the field of agency cost theory. According to them, the agency cost theory of capital structure originates from the principal-agent relationship (Jensen and Meckling, 1976). Later on this research was continued by Fama and Miller (1972).

Myers' (2001) studies indicate that despite their goal of maximizing the wealth of shareholders, managers might work for personal incentives. Agency cost theory is an economic concept. It is also an important issue in determining the capital structure of a firm. It arises due to the conflict of interest between shareholders and managers, or between the shareholders and stakeholders. Jensen and Meckling (1976) stated in their study that managers are given the authority to manage the firm by shareholders, with the assumption that they will act in the best interest of the firm and of the shareholders.

There are two main sources of costs, the first being the costs inherently associated with using an agent (e.g., the risk that agents will use organizational resources for their personal benefits) and the second being the costs of techniques used to reduce the problems associated with using an agent (e.g., gathering information about what the agent is doing, or employing mechanisms to align the interests of the agent with those of the principal).

Ross (1977) assumes that managers know the true distribution of a firm's returns, but investors don't know. If managers decide to add more debt into capital structure, investors interpret this as a signal for higher future cash flows. Thus, this behavior indicates a higher level of confidence in

the firm's future prospects on the part of management. However, if management decides to finance by issuing new equity, this signals that management is lacking in confidence regarding the future prospects of the firm.

Jensen and Meckling (1976) and Jensen and Ruback (1983) argue that managers do not always pursue shareholders' interests. To mitigate this problem, the leverage ratio should increase as suggested by Pinegar and Wilbricht in 1989. This would force managers to invest in profitable projects that benefit the shareholders. If they decide to invest in non-profit tax businesses or investment and are not able to pay interest on debt, then the bondholders will file for bankruptcy and they will lose their jobs. The contribution of the agency cost theory is the idea that leverage firms are better for shareholders as debt can be used to monitor managerial behavior (Boodhoo, 2009). Thus, higher leverage is expected to lower agency cost, reduce managerial inefficiency, and thereby enhance firm and managerial performance (Jensen, 1986; Koehhar, 1996; Aghion et al., 1999).

The agency theory seeks to explain firms' capital structure as a result of attempts to minimize costs associated with the separation of ownership and control, while the signaling theory postulates that managers tend to signal their expectations of a firm's future performance through their capital decisions.

2.2. Empirical Literature Review

On the empirical level, the relationship between capital structure and performance has been closely examined by many researchers, including but not limited to San and Heng (2011); Ahmad et al. (2012); and Ebaid (2009). Several studies examine and assess the capital structure of various firms and industries.

2.2.1. Determinants of Capital Structure

The capital structure of an enterprise is actually a combination of equity shares, preference shares and long-term debts. A cautious attention has to be paid to unplanned capital structure in order to

obtain the optimum capital structure; companies may fail to economize the use of their funds. Consequently, it is being increasingly noted that a company should plan its capital structure to maximize the use of funds and to be able to adapt more easily to changing conditions (Pandey, 2009).

Many researchers have investigated the determinants of capital structure of companies within and across countries. Some of the main empirical studies include Taub (1975); Titman and Wessels (1988); Harris and Raviv (1991); Pagano (1993); Demircug-Kunt and Maksimovic (1996); Zwiebel (1996); Boyd and Smith (1998); Bevan and Danbolt (2000); Shin and Stulz (2000); Booth et al. (2001); Mira (2001); Huang and Song (2002); among many others.

Common determinants of capital structure used by most of the studies include: company size, which is measured by the natural logarithm of total assets (Rajeswararo, 1991; Lasfer, 1999; and Booth et al., 2001); age of the company (Herring and Szego, 1995; Manos and Ah-Hen, 2001; and Huang and Song, 2002); liquidity ratio (Ozkan, 2001 and Antoniou et al., 2002); and profitability (Kester, 1986; Titman and Wessels, 1988; and Michaelles et al., 1999).

However, there are several other factors that have been suggested by scholars to be determinants of a firm's capital structure. Peterson and Rajan (1994) assert that business size, age and cash flow are relevant factors. Olowe (2011) says that "in order to maximize shareholders' wealth, the practical factors that financial managers should consider in the choice of capital structure include: business risk, nature of the firm's assets, growth rates of the firm, stability of sales, profitability, taxes, control, management attitudes, lender and rating agency attitudes, conditions in the stock market, perceived undervaluation of equity shares in the stock market, and reserve borrowing capacity".

Huang and Song (2002) posit that theoretical and empirical studies have shown that profitability, tangibility, tax, size, non-debt tax shields, growth opportunities volatility, and many more affect capital structure.

Harris and Ravis (1990) summarize a good number of empirical studies from US firms, and conclude that “leverage increases with fixed assets, non-debt tax shields, investment opportunities and firm size and decreases with volatility, advertising expenditure, the probability of bankruptcy, profitability and uniqueness of the product”. However, Wald (1999) observes that leverage decreases rather than increases with non-tax shields.

In addition, Pandey (2010) notes that in practice, capital structure decisions involve considerations of assets, growth opportunities, debt and non-debt tax shields, financial flexibility and operating strategy, loan covenants, financial slack, sustainability and feasibility, control, marketability and timing, issue costs and the capacity to raise funds.

On the other hand, modern theories of capital structure (such as trade-off theory, pecking order theory, and agency theory) and econometric models form the basis of research aiming to evaluate the impact of the various factors that affect a firm’s capital structure. In the initial stages of research, the emphasis was placed on the analysis of determinants of capital structure at firm level; later on, researchers expanded their work by incorporating their analyses on factors specific to various industries. Later, it was demonstrated that the choice of capital structure is also affected by macro-level factors, such as the cooperation environment and a country’s infrastructure.

Various studies that explore the role of variables specific to companies, industries and countries in defining a firm’s financing policies acknowledge that all three categories work together to form a firm’s capital structure, although we estimate that among the three categories of factors, *firm-specific variables* have the widest influence over capital structure. Financial managers must particularly focus on such variables when making financing decisions.

Most studies examine the influence of the following variables as determinants of capital structure:

- a) Asset tangibility – measured by the ratio of fixed assets in the total assets.
- b) Profitability – determined based on the ratio of earnings before taxes and total assets; although widely recognized as an influential factor of financial structure, there is still a

lack of consensus in terms of theoretical formulations in regard to the nature and meaning of this particular influence.

- c) Firm size – the assessment of firm size is accomplished by considering two benchmarks: the number of employees (Bass et al., 2010) and the sales logarithm (Kayo and Kimura, 2011); in regard to theoretical grounding, there are common views on the relationship between firm size and leverage.
- d) Growth opportunities – two alternative methods are used: the ratio of a firm's total market value (sum of debt and equity) and the value of its total assets; and the ratio of turnover growth rate and the growth of total assets.
- e) External finance weighted average market-to-book (EFWA) – according to Baker and Wurgler (2002), firms prefer issuing equity when the market valuation is high. Hovakimian (2006) considers EFWA to be a variable which provides information on a firm's development prospects.
- f) The probability of financial distress –estimated using Altman's Z-score, as modified by Mackie Mason. The vast majority of studies agree that companies that are financially sound tend to have lower debt levels (Byoun, 2008; Kayo and Kimura, 2011).
- g) Capital intensity – assessed based on the ratio of the employment rate and fixed assets, as proxy for the operating leverage (Pahalathan, 2010); a high value of the indicator suggests an increased risk of variation in future earnings.
- h) Non-debt tax shields – this category incorporates depreciations; if firms have tax deductible items other than debts, then the leverage effect is low (Pahalathan, 2008).

Industry-specific determining factors, i.e. factors that are originated in the firm's external environment, are considered to be external to the firm. Research which incorporate industry-level determinants in its analyses can be grouped as follows: studies limited to classifying the industries and analyzing the determinants of capital structure, which constituted the starting point for the earliest research; and studies which not only classify industries but also characterize them (e.g. more recent studies by MacKay and Phillips, 2005; Kayo and Kimura, 2011).

- a) *Industry dynamism*. Initial studies associated the concept of industry dynamism with a firm's business risk, reflecting the variability of expected future revenue or the variability of profit, which suggests the firm's future ability to meet both its fixed obligations and those related to debt payments (Kayo and Kimura, 2011).
- b) *Environmental munificence*. The capacity of the environment to sustain durable growth through an abundance of resources is defined as environmental munificence. Without directly researching the link between environmental munificence and a firm's leverage, some authors indicate that environments characterized by high levels of munificence feature plentiful resources, low competition, and consequently, high return ratios.
- c) *Industry concentration*. In order to quantify the level of industry concentration, the traditional Herfindahl-Hirshman indicator is employed, i.e. the sum of the squared market share held by firms in a particular industry (Kayo and Kimura, 2011).

Rajan and Zingales (1995) were probably the first to explore the importance of country-level variables on the financing structure by examining variables such as: the size of capital markets, bankruptcy law, and the link between ownership and control. They argue that these factors do not necessarily act simultaneously with the internal factors of the financial structure.

Omet and Nobanee (2001) examine the capital structure of the listed industrial companies in Jordan in their research. Using available data, the mean leverage ratios and the mean ratios of long-term debt to total debt were calculated for the years spanning 1978-1998. Based on the statistical analysis, it was found that company size and retained earnings divided by total assets are significant determinants of leverage. Furthermore, it has been discovered that fixed assets to total assets and total assets are the only significant determinant factors of debt ratios.

Sukkari (2003) analyzed the determinants of the capital structure for Kuwait companies during the time period of 1996 to 2001. The mean total leverage ratio and the mean long-term debt to total debt were calculated, and the empirical results show that leverage ratios are low, and company size and company profitability are the most important determinants of leverage.

2.2.2. Determinants of Firm Performance

The most commonly used performance measure proxies are ROA and ROE, or return on investment (ROI) by Reese and Cool (1978); Long and Ravenscraft (1984); Shahid (2003), among others. These accounting measures representing the financial ratios from balance sheet and income statements have been used by many researchers such as Demsetz and Lehn (1985); Gorton and Rosen (1995); Mehran (1995); and Ang et al. (2000).

Valentin (2012) carried out a study on determinants of corporate financial performance, and his opinion is that a company's financial performance is directly influenced by its market position. He also identified that risk and growth are important factors in influencing a firm's financial performance. The size of the company can also have a positive effect on financial performance because larger firms can use their size as an advantage to get some financial benefits in business relations (Marthur and Kenyon, 1997).

There are other measures of performance called market performance measures, such as PE ratio (Shahid, 2003), market value of equity to book value of equity (MBVR) and Tobin's Q (Moreck et al., 1988; McConnel and Serveas, 1990; and Zhou, 2001).

Others say that firm financial performance is directly influenced by its market position (Ross et al., 1996); risk (Fruhan, 1979); economic growth (Varaiya et al., 1987); size of the company (Mathur and Kenyon, 1997); capital structure (Kakani et al., 2011) and total assets (Beaver et al, 1970).

However, the performance of a firm is affected by multiple external and internal factors. The internal factors are specific to each firm and the external factors can be the same for all or most of the firms. The external factors include market preferences and perceptions, country rules and regulations, and the economy of the country (Mirza and Javed, 2013).

In view of the nature of financial institutions, researchers have classified the determinants of bank performance into two categories: bank-specific (internal), and macroeconomic (external) factors

(Al-Tamimi and Hasan, 2010) and (Aburimem, 2005). Internal factors are the characteristics of individual banks which affects performance. These factors are influenced by the internal bank management and board decisions. The external factors are the characteristics of the economy of the country where the bank operates, which are beyond the control of the bank but affect bank performance.

Safarova (2010) analyzes the factors that determine firm performance of New Zealand listed companies. He found that size is the most important factor determining firm performance, followed by growth and leverage, while other factors such as tangibility, corporate governance, cash on hand and risk appeared to be only slightly related to firm operating performance.

To measure the performance of the banks, Heffernan and Fu (2008) use economic value added as a dependent variable in addition to the standard measures of profitability, Return on Average Assets (ROAA) and Return on Average Equity (ROAE) and Net Interest Margin (NIM). They conducted a study on 76 Chinese banks between 1999 and 2006. The results, based on diagnostics and the significance of coefficients, suggest that the best dependent variables are economic value added and the net interest margin, as against ROAA or ROAE.

Mirza and Javed (2013) carried out a study on the determinants of financial performance of firms on the Pakistan stock market and found that firms having well-governed ownership structure, capital structure, and proper risk management tend to exhibit better financial performance.

Abbas et al. (2013) performed a study on determinants of a firm's financial performance using the textile sector of Pakistan for their study, and found that a firm's performance is significantly affected by short-term leverage, size, risk, tax and non-debt tax shield.

Molyneux and Seth (1998) looked at the performance of foreign banks in the United States from 1987-91 and found the risk adjusted capital ratio to be a key determinant of these banks' performance. Williams (2003) considered the determinants of the performance of foreign banks in Australia for the period of 1989-1993, with ROA as the main dependent variable.

Several studies in the following section that examine the effects and relationship between capital structure and firm performance have exhibited mixed results.

2.2.3. Relationship between Capital Structure and Firm Performance

San and Heng (2011) examine the relationship of capital structure and corporate performance of 49 Malaysian construction companies listed in the main board of Bursa Malaysia before and during the 2007 crisis. The study spanned the years 2005 to 2008, and divided these 49 companies into three units according to size: small, medium and large. The independent variables used were long-term debt to capital (LDC), debt to capital (DC), debt to asset, debt to equity market value (DEMV), debt to common equity, long-term debt to common equity, and the corporate performance dependent variables were return on capital (ROC), ROE, ROA, earnings per share (EPS), operating margin and net margin. The pooling regression model was employed to test the influence of capital structure on each company's performance. The results show that there is relationship between capital structure and corporate performance, and also indicate that there is no relationship between the different variables that are examined in this study. For the big construction companies, only ROC and EPS exhibited a significant relationship with capital structure. Basically, DEMV, LDC and DC proved to have direct influence on the corporate performance of large companies while other independent variables proved to have no effect on the dependent variables. Debt to capital has a direct impact on the corporate performance of small companies, yet other independent variables don't affect the dependent variables.

Ahmad et al. (2012) investigated the impact of capital structure on firm performance by analyzing the relationship between capital structures and operating performance of Malaysian firms. The dependent variables used in this research were ROA, ROE, control variables (firm size, sales growth, growth, firm efficiency) and independent variables (long-term debt, short-term debt and total debt). This study covers a sample of 58 firms during the period of 2005 to 2010. In their research, they used two general pooled regression models. Findings show that STD and TD have significant relationships with ROA, whereas ROE has a significant relationship with all capital structure indicators.

Salim and Yadav (2012) attempted to investigate the relationship between capital structure and firm performance. Panel data was used for a sample of 237 Malaysian companies listed on the Bursa Malaysia Stock exchange from 1995-2011. The study used four performance measures, ROA, ROE, Tobin's Q and EPS, as dependent variables. Five capital structure measures, long-term debt, short-term debt, total debt ratios and growth were used as independent variables, and size was used as a control variable. The data was obtained from six sectors: construction, consumer product, industrial product, plantation, property, trading and services. The results indicate that firm performance, which was measured by ROA, ROE and EPS, has a negative relationship with short-term debt (STD), long-term debt (LTD) and total debt (TD) as independent variables. However there was positive relationship seen between the growth and performance for all the sectors. Tobin's Q shows a significantly positive relationship between STD and LTD. It also reports that TD has a significant negative relationship with the performance of all the firms.

Pratheepkanth (2011) conducted a study regarding capital structure and its impact on financial performance during the period 2005-2009 for business organizations in Sri Lanka. The research validated a negative relationship between the capital structure and financial performances of the Sri Lankan companies.

Srivastava's (2014) paper presents an analysis of patterns of capital structure in the Indian private corporate sector by taking two industries from the BSE 500 listed companies for the periods of 1999-2000 and 2012-2013, steel and banking, and using them to develop an empirical pattern within the Indian private corporate sector. The findings of the study suggest that the pecking order theory is not applicable to the Indian private corporate sector.

Ebaid (2009) examined the capital structure and performance of firms with the aim of assessing the relationship between debt level and financial performance of companies listed on the Egyptian stock exchange during the period of 1997 to 2005. In this research, the least squares regression model was used. Measures of performance such as ROA, ROE and gross profit margin (GM) were employed as dependent variables, STD, LTD and TD were used as independent variables, and size of the firm stood as the control variable. His results show that there is negative significant influence of STD and TD on financial performance measured by ROA and no significant influence of TD

and STD on financial performance measured by either gross profit margin or ROE. Moreover, LTD is found to be insignificant in determining financial performance. The results also indicate that the control variable, firm size, has no significant effect on a firm's performance.

Ebrati et al. (2013) empirically investigated the impact of capital structure on firm performance. Multiple regression analysis was used in the study to estimate the relationship between the leverage level and firm's performance based on a sample of 85 firms listed on the Tehran Stock Exchange from 2006 to 2011. The study used financial performance (i.e. ROE, ROA, MBVR, EPS, and Tobin's Q) as dependent variables, along with short-term debt to assets, long-term debt to assets, total debt to assets and total debt to equity as independent variables for capital structure. The results indicate that firm performance, which is measured by ROE, MBVR and Tobin's Q, is significantly and positively associated with capital structure, while a negative relation exists between capital structure, ROA, and EPS.

Saedi and Mahmoodi (2011) studied the relationship between capital structure and firm performance by using a sample of 320 firms listed on the Tehran Stock exchange over the period of 2002 through 2009, excluding financial companies and banks. They used four performance measures, ROA, ROE, EPS and Tobin's Q, as dependent variables and three capital structures, LTD, STD and TD, as independent variables. The study indicated that firm performance, which is measured by EPS and Tobin's Q, is significantly and positively associated with capital structure, while a negative correlation is reported between capital structure and ROA. Moreover, no significant relationship is found between ROE and capital structure.

Zeitun and Tian (2007) investigated the effect that capital structure has on corporate performance using a panel data sample representing 167 Jordanian companies from 1989-2003. Performance measures used included ROE, ROA, PROF, Tobin's Q, MBVR, P/E and MBVE as dependent variables. Independent variables included leverage (STD and LTD), growth (growth of sales) and firm size (log of assets and log of sales), and time effect was used as the control variable (dummy variable for each year). The results showed that a firm's capital structure has a significantly negative impact on the firm's performance measures, in both the accounting and market measures.

They also found that the short-term debt to total assets (STDTA) has a significantly positive effect on the market performance measured by Tobin's Q.

Khan (2012) studied the relationship of capital structure decisions and firm performance using 36 engineering firms in Pakistan listed on the Karachi Stock Exchange (KSE) as a sample. The study covered the period of 2003-2009 and used pooled ordinary least square regression (OLS). His dependent variable was performance measured by ROE, ROA, GM and Tobin's Q and his independent variables were capital structure measured by STDTA, long-term debt to total assets (LTDTA) and total debt to total assets (TDTA). His findings show that financial leverage measured by STDTA and TDTA has a significant negative relationship with the firm's performance measured by ROA, GM and Tobin's Q.

Taani (2013) examined the impact of capital structure on the performance of Jordanian banks. The annual financial statements of 12 commercial banks listed on the Amman Stock Exchange were used for a period of five years, from 2007-2011. Indicators used to measure performance included net profit (NP), return on capital employed (ROCE), ROE and NIM, and for capital structure total debt to total funds (TDTF) and TD/TE were used. Multiple regression models were applied to estimate the relationship between capital structure and banking performance. The results show that bank performance, which is measured by NP, ROCE and NIM, is significantly and positively associated with TD, while TD is found to be insignificant in determining ROE in the banking industry of Jordan.

Anarfo (2015) examined the relationship between capital structure and bank performance in Sub-Saharan Africa by using panel data techniques. The performance variables used in the study were ROA, ROE and NIM. The results from the two panel unit root test (Levin-Lin-Chu and Im-pesaran-shin) show that there is a negative relationship between capital structure and bank performance. The results also indicate that capital structure does not determine bank performance but rather it is performance that determines a bank's capital structure.

Goyal's (2013) paper seeks to study the impact of capital structure on the profitability of public sector banks in India listed on the National Stock Exchange (NSE) of India between 2008 and

2012. Regression analysis was used for establishing the relationship ROA, ROE and EPS have with capital structure. The findings reveal a positive relationship between short-term debt and profitability as measured by ROE, ROA and EPS.

Lim (2015) based his sample on eleven universal banks in the Philippines from 2006 to 2013. The study used correlation analysis to determine the relationship between capital structure and profitability. To measure profitability, he used ROE as a dependent variable, and for capital structure as an independent variable, debt to equity ratio and debt to asset ratio were used. The study showed that debt to equity ratio and debt to asset ratio have a significant positive relationship with ROE. Furthermore, it indicated that profitable banks depend almost exclusively on debt rather than equity to finance their assets. Overall, the study confirmed that the decisions banks make about how to manage their resources and capital structure will always be significantly related to profitability.

Niresh (2012) investigated the impact of capital structure on the profitability of ten listed Sri Lankan banks over the period of 2002 to 2009. A few key points can be concluded from the results of this study, the most significant being that it is very important that the total debt is the determining factor of profitability in the banking industry of Sri Lanka. The outcomes of the study may guide banks, loan-creditors and policy planners to formulate better policy decisions as far as capital structure is concerned.

Baltaci's and Ayaydin's 2014 study explores the significance of firm-specific, country, and macroeconomic factors in explaining variation in leverage. The analysis is based on quarterly firm-level data from the Turkish banking sector for the ten year period of 2002 to 2012. The results show that leverage is significantly and positively associated with average industry leverage, firm size and GDP growth. The study also shows that leverage is significantly and negatively associated with tangibility, profitability, inflation and financial risk. Moreover, tangibility, profitability and GDP growth are consistent with the predictions of the pecking order theory, while firm size is consistent with the predictions of the trade-off theory. Finally, the study suggests that the capital structures of financial and non-financial firms are ultimately determined by the same drivers.

Amidu (2007) conducted a study to investigate the dynamics involved in the determination of the capital structure of Ghana banks. The dependent variables used in this paper were: leverage, calculated by total debt divided by total capital; short-term debt ratio, total short-term debt to capital; and long-term debt ratio, total long-term debt divided by total capital. The explanatory variables included profitability, risk, asset structure, tax, size and sales growth. The regression line model was used, and the study found a negative relationship between profitability and leverage. The significant finding of this study is that more than 87% of a bank's assets are financed by debts, and out of this percent, short-term debt appears to constitute more than three quarters of most banks' capital. This highlights the importance of short-term debt over long-term debt in Ghanaian bank financing.

Using multiple regression models, Saeed et al. (2013) studied the impact of capital structure on the performance of Pakistani banks listed on the Karachi Stock Exchange for the period of 2007 to 2011. Performance was measured by ROA, ROE and EPS, and determinants of capital structure included long-term debt to capital ratio, short-term debt to capital ratio and total debt to capital ratio. The results show a positive relationship between determinants of capital structure and the performance of the banking industry.

After studying a great wealth of literature, it was noted that mixed results were found. Some studies conclude that the relationship between capital structure and firm performance shows both positive and negative impacts on each other (Salim and Yadav, 2012); (Ebrati et al., 2013); (Zeitun and Tian, 2007); (Saeedi and Mahmoodi, 2011).

Others conclude that the relationship between capital structure and firm performance is negative (Pratheepkanth, 2011); (Ebaid, 2009); (Khan, 2012), while still other studies have documented a positive relationship between the two (San and Heng, 2011); (Ahmed et al., 2012). With these mixed and conflicting results, the relationship between capital structure and firm performance has remained a puzzle, and empirical study continues. A summary table for the literature review has been prepared to compare the results of conflicting research and find out which variables are truly significant.

Table 1 Literature Review Summary

Authors	Period	Industry	Country	Dependent Variable	Independent Variable	Control Variable	Relationship	Significant Results
San and Heng (2011)	2005-2008	Construction	Malaysia	ROC, ROE, ROA, EPS, Opr. Margin, Net Margin	LDC, DC, DEMV, DCE, LDCE	-	✓ + ✓ +	✓ ROC, EPS & C.S. ✓ Prf. & DEMV, LDC, DC
Ahmad, Abdullah and Roslan (2012)	2005-2010	Listed Firms	Malaysia	ROA, ROE	LTD, STD, TD	Size, Sales growth, Growth, Firm Efficiency	✓ + ✓ +	✓ ROA & STD, TD ✓ ROE & C.S.
Sahin & Vadav. (2012)	1995-2011	Listed Firms	Malaysia	ROE, ROA, Tobin's Q, EPS	LTDTA, STDTA, TDTA, Growth (ATA)	Size (Ln TA)	✓ - ✓ + ✓ + ✓ -	✓ ROA, ROE, EPS & LTD, STD, TD ✓ Growth & Prf. ✓ Tobin's Q & STD, LTD ✓ TD & Prf.
Pratheepharuth (2011)	2005-2009	Listed Firms	Sri Lanka	Performance	Capital Structure	-	✓ -	✓ Prf. & C.S.
Ebeid (2009)	1997-2005	Listed Firms	Egypt	ROE, ROA, GPM	LTD, STD, TD	Size (Ln TA)	✓ - ✓ NR ✓ NR ✓ NR	✓ ROA & STD, TD ✓ ROE, GPM & C.S. ✓ LTD & Prf. ✓ Size & Prf.
Ebrahi & et. al (2013)	2006-2011	Listed Firms	Tehran	ROA, ROE, MBVR, EPS, Tobin's Q	STDTA, LTDTA, TDTA, TDTE	-	✓ + ✓ - ✓ -	✓ ROE, MBVR, Tobin's Q & C.S. ✓ ROA, EPS & C.S.
Saeedi and Mahmoodi (2011)	2002-2009	Listed Firms	Tehran	ROA, ROE, EPS, Tobin's Q	LTD, STD, TD	-	✓ + ✓ - ✓ NR	✓ EPS, Tobin's Q & C.S. ✓ ROA & C.S. ✓ ROE & C.S.
Zehra & Tian (2007)	1989-2003	Listed Firms	Jordan	ROE, ROA, Tobin's Q, MBVR, MBVE, P/E, Profit	STDTA, LTDTA	-	✓ + ✓ -	✓ Tobin's Q & STDTA ✓ Rest all Prf. & C.S.
Khan (2012)	2003-2009	Engineering	Pakistan	ROA, ROE, Tobin's Q, GPM	STDTA, LTDTA, TDTA	Size (Ln TA)	✓ - ✓ - ✓ NR ✓ NR	✓ ROA, GPM, Tobin's Q & STDTA, TDTA ✓ Size & Tobin's Q ✓ ROE & C.S. ✓ Size & ROA, GPM

C.S. = Capital Structure
 DC = Debt to Capital
 DCE = Debt to Common Equity
 DEMV = Debt to Equity Market Value
 GPM = Gross Profit Margin
 LDC = Long-term Debt to Capital
 LDCE = Long-term Debt to Common Equity
 LTD = Long-term Debt
 LTDTA = Long-term Debt to Total Assets
 LTD/TC = Long-term debt to Total Capital
 MBVR = Market value to the book value of Equity
 NR = No Relationship
 Prf. = Performance
 STD = Short-term Debt
 STD/TC = Short-term Debt to Total Capital
 STDTA = Short-term Debt to Total Assets
 TD = Total Debt
 TD/TC = Total Debt to Total Capital
 TDTA = Debt to Assets
 TDTE = Debt to Equity

2.3. Gap in the Literature

After an intensive review of the literature, it was noticed that many studies conducted in this area have concluded that a significant relationship exists between capital structure and firm performance. Yet there were no concrete findings regarding the direction or quality of the relationship between capital structure and firm performance. Very few comparative studies were done on the GCC region in non-financial sectors, which leaves a gap in the research. This paper attempts to fill this gap by elaborating on this topic in great depth.

The literature makes evident that while some researchers based their research on theoretical approaches and others based their work on empirical findings, neither type of research provided concrete findings.

Theoretical research done by Harris and Raviv (1991) and Shah and Hijazi (2004) among others found support for TOT, while Sayeed (2007) and Ilyas (2005) found support for POT, but many others didn't find any support for these theories, including but not limited to Fama and French (2005); Delocure (2007); and Frank and Goyal (2003).

Some researchers used ratios to analyze this very important relationship which gained considerable importance after the financial crisis, and they also found inconsistent results. San and Heng (2011) and Ahmed et al. (2012), among others, found positive relationship while Pratheepkanth (2011) found negative relationships. Zeitun and Tian (2007), Khan (2012), and Saeedi and Mahmoodi (2011) among others found mixed relationships using different variables.

This research attempts to contribute to the current body of literature by discovering the direction of the relationship between capital structure and firm performance. It also seeks to find the best measures of performance and capital structure. From the literature, it can be observed that abundant research has been carried out on individual countries, which limits the potential for generalization in the results. This research attempts to test this relationship by examining the impact of different geographical locations, i.e. the GCC region as a whole as well as individual countries, the impact of different industries and the impact of firm size.

CHAPTER THREE

3. METHODOLOGY

3.1. Sample and Data

To carry out this research, three sectors from the non-financial industries of the GCC (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arabs Emirates (UAE)) countries were selected, and the latest 11 years of annual data from the time period of 2004-2014 was used. Non-financial industries in the GCC were selected for this research, because as stated earlier, very few studies have been done on this area. The sample was selected based on the availability of data, which is considered to be convenient sampling, due to time limitations.

The main source of data collection was the FactSet database. The FactSet database converts data to common international standards to facilitate comparisons. It also provides the common ratios required for the purpose of analysis.

Due to time constraints, only three sectors were randomly selected from the 19 different types of non-financial sectors listed on the FactSet database, representing the population by 15.8%. The selected sectors are: 1) Producer manufacturing sector; 2) Consumer non-durable services sector; and 3) Consumer services sector. A brief description for each sector is provided below.

1. ***Producer manufacturing sector:*** includes companies from metal fabrication, industrial machinery, trucks/construction/farm machinery, auto parts, OEM, building products, electrical products, office equipment/suppliers, miscellaneous manufacturing, and industrial conglomerates;
2. ***Consumer durable sector:*** includes motor vehicles, automotive aftermarket, home building, home furnishings, electronics/appliances, tools and hardware, recreational products, and other consumer specialties; and

3. *Consumer non-durables sector*: includes food such as major diversified food, specialty/candy, meat/fish/dairy, both alcoholic and non-alcoholic beverages, tobacco, household /personal care, apparel/footwear, and consumer sundries.

Initially, data collected from these three sectors included 121 companies, with 49 companies from the consumer services sector and 36 each from consumer non-durable services and the producer manufacturing sector.

The data was then screened, and companies were excluded based on the following selection criteria:

1. Inactive securities - A security that has a relatively low trading volume. Inactive security may not trade for days or weeks. They are often difficult to buy or sell in any significant quantity without affecting the price.
2. Secondary listed securities - Secondary listed companies are listed on more than one stock exchange and the majority of their equity securities are usually traded on secondary stock exchange.
3. Non-equity securities - Any security other than a stock. Examples include bonds and options. These securities may fluctuate in value in relation to stocks.
4. Missing financials

Once the screening process was done, the final sample available for analysis was 111 companies, with 1080 observations, which passed the above-mentioned criteria. Once the final sample was selected, the annual data from financial statements and ratios was retrieved from the FactSet database. The data used for research is panel data that is time-series, cross-sectional data that spans the time period 2004-2014. Panel data is useful because it increases the degree of freedom and reduces multicollinearity among the explanatory variables, which increases the predictive power of the model (Anarfo, 2015).

Table 2 depicts a summary of the sample. It can be observed that the smallest samples are from Qatar and Bahrain, whereas most of the sample data has been collected from Oman and Saudi Arabia. The available data was mainly from the consumer services sector, followed by the producer manufacturing sector, and then the consumer non-durable sector, with the number of firms being 46, 33 and 32, respectively.

Table 2: Sample Summary

Country	Consumer Service Sector	Consumer Non-Durable Sector	Producer Manufacturing Sector	Total No. of Companies
Bahrain	6	-	-	6
Kuwait	14	5	8	27
Oman	11	13	8	32
Qatar	1	1	2	4
Saudi Arabia	9	8	13	30
UAE	5	5	2	12
Total	46	32	33	111

3.2. Multiple Regression Techniques

This research uses ordinary least squares technique (OLS), which is a statistical technique that uses sample data to estimate the true population relationship between two variables. This technique has been applied to multiple explanatory variables in this research, which is called multiple regression analysis. Multiple regression analysis is a statistical technique for estimating the relationships among variables. It is used for developing models and analyzing several variables.

Under multiple regression analysis, stepwise regression method is used. It is an approach in which the choice of predictive variables is carried out by an automatic procedure. The process systematically adds the most significant variable or removes the least significant variable at each step. Stepwise regression method can be employed by using SPSS software.

Most statistical tests rely upon certain assumptions about the variables used in the analysis. When these assumptions are not met, the results may not be trustworthy. Multiple linear regression analysis makes five key assumptions:

1. **Linear relationship.** It is assumed that the relationship between variables is linear, resulting in normal distribution. Although non-normally distributed variables can distort relationships and significance tests, minor deviations do not greatly affect multiple regression procedures. This assumption can be tested by finding outliers using scatter plots, histograms, and P-P plots.
2. **Multivariate normality.** It is assumed that all variables are normally distributed. Normality can be checked with a goodness of fit test.
3. **No or little multicollinearity.** Multicollinearity occurs when the independent variables are not independent from each other. This assumption can be checked by employing correlation matrix of Pearson, tolerance measure, variance inflation factor (VIF) or by condition index.
4. **No auto-correlation.** Multiple linear regression analysis requires that there is little or no autocorrelation in the data. It occurs when the residuals are not independent from each other. This can be verified with the Durbin-Watson test.
5. **Homoscedasticity and heteroscedasticity.** Homoscedasticity means that the variance of error remains constant along the regression line. Scatter plot is a good method to check whether homoscedasticity is present. Heteroscedasticity is when the variance of error differs at different values of independent variables. It can be tested by using the Goldfeld-Quandt test (Statistics Solutions, 2015).

In this research to test assumptions, histograms will be plotted for each variable to check the normality of the variables and also to detect any outliers, while the Pearson correlation coefficient will be used to check for multicollinearity.

3.3. Variables

Dependent and independent variables will be interchangeably used to study whether there is any relationship between capital structure and firm performance. The variables that will be used in this research to measure firm performance are return on assets (ROA), return on equity (ROE), earnings per share (EPS) and earnings before interest and tax margin (EBIT margin). The variables that will be used to determine capital structure are total debt to total assets (TD/TA), total debt to total equity (TD/TE), long-term debt to total capital (LTD/TC) and long-term debt to total equity (LTD/TE).

The control variable used in this research will be size of firm, measured by the natural logarithm of total assets LN (TA), along with another independent variable, growth in assets (GA). These were included in the analysis process because the pre-existing literature considers them essential in determining the capital structure and performance of a firm. All the variables used in this research were selected on the basis of showing significant importance in determining the capital structure and firm performance relationship in the literature (Table 1).

3.3.1. Capital Structure Variables

To determine the capital structure of the firm, the determinants deemed most important by the literature have been used. The definitions and formulas for all variables, which have been retrieved from www.Investopedia.com and www.wikipedia.com and which are also consistent with the formulas used by the FactSet database, are provided below.

1. TD/TA

$$TD/TA = \frac{\text{Total Debt}}{\text{Total Assets}}$$

Total debt to total assets (TD/TA) is a leverage ratio that defines the total amount of debt relative to assets. This ratio enables comparisons of leverage to be made across different

companies. The higher the ratio, the higher the degree of leverage and consequently, the greater the financial risk.

2. TD/TE

$$TD/TE = \frac{\text{Total Debt}}{\text{Total Equity}}$$

Total debt to total equity (TD/TE) ratio gives users an idea of a company's financial structure, or how it is financing its operations. This ratio indicates how much debt a company is using to finance its assets relative to the amount of value represented in shareholders' equity. If the ratio is high in comparison to the industry average, it may indicate financial weakness because the cost of these debts may weigh on the company and increase its default risk.

3. LTD/TE

$$LTD/TE = \frac{\text{LongTerm Debt}}{\text{Total Equity}}$$

Long-term debt to total equity (LTD/TE) ratio expresses the degree of protection provided by the company for the long-term creditors. A company with a high long-term debt to equity is considered to be highly leveraged. Companies with ratios of 0.35% to 0.50% are considered to be well-managed companies with low debt exposure.

4. LTD/TC

$$LTD/TC = \frac{\text{LongTerm Debt}}{\text{Total Capital}}$$

Long-term debt to total capital (LTD/TC) ratio computes the proportion of a company's long-term debt compared to its available capital (equity & debt). This ratio helps investors to identify the

amount of leverage utilized by a specific company and compare it to others, which helps in analyzing the company's risk exposure. Generally, companies that finance a greater portion of their capital via debt are considered riskier than those with lower leverage ratios.

3.3.2. Performance Measure Variables

Performance is determined by ROA, ROE, EPS, EBIT margin and growth in assets, which were also used in the studies discussed in the literature review.

1. ROA

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

Return in assets (ROA) is an indicator of profitability relative to the total assets of a company. It clarifies the efficiency of management in using its assets to generate earnings. ROA ratio varies substantially from industry to industry. This is why when using ROA as a comparative measure, it is best to compare it against a company's previous ROA numbers or the ROA of a similar company.

2. ROE

$$ROE = \frac{Net\ Income}{Shareholder's\ Equity}$$

Return on equity (ROE) measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. ROE ratio is useful for comparing the profitability of a company to that of other firms in the same industry.

3. EPS

$$EPS = \frac{(Net\ Income - Dividends\ on\ Preferred\ Stock)}{Average\ Outstanding\ Shares}$$

Earnings per share (EPS) ratio is one measurement of a company's profitability. It is the portion of a company's profit allocated to each outstanding share of common stock. Companies with high EPS ratio are capable of generating significant dividends for their investors, or investing back into their business for more growth; in either case, a high ratio indicates a potentially worthwhile investment.

4. EBIT margin

$$EBIT\ Margin = \frac{Earning\ Before\ Interest\ and\ Tax}{Total\ Revenue}$$

Earnings before interest and tax margin (EBIT margin) is one way to measure a company's operating profitability. This margin allows investors to understand the true business costs of running a company. The higher the EBIT margin, the less operating expenses for the company, leading to more profitable operations.

3.3.3. Other Independent Variables

Other independent variables has been included in order to gain a better sense of the real-life impact the models may have in explaining the relationship between capital structure and firm performance.

1. Growth in assets

$$Growth\ in\ Assets = \frac{Total\ Assets_n - Total\ Assets_{n-1}}{Total\ Assets_{n-1}}$$

Growth in assets (GA) is calculated by taking the current year's assets and dividing the figure by the preceding year's assets. The variable measures the growth in assets of the firm throughout the year. A high ratio means the firm has improved its assets over time to cover its debt.

2. Size of firm

$$Size\ of\ firm = Ln (Total\ Assets)$$

The other independent variable used in this study is size of the firm, which was employed in many of the studies discussed in the preceding literature review (Titman and Twite, 2003); (Mathur and Kenyon, 1997); (Abbas et al., 2013); (Diraniyyeh, 1992); (Baltaci and Ayaydin, 2014); (Amidu, 2007).

To measure firm size different methods are used by scholars. According to Titman and Twite (2003) firm size is calculated as natural log of total book value of assets LN (TA), which is adopted in this study. Firm size is the control variable that is highly correlated with the dependent and the independent variables (Aftab, 2012).

3.4. Development of Hypotheses

The literature review section theoretically explains the relationship between capital structure and firm performance, whereas this section develops and proposes hypotheses for the same.

The core of this research, to study the relationship between capital structure and firm performance within the GCC region as a whole, the following hypotheses have been developed:

- H₀: There is significant relationship between capital structure and firm performance.
- H₁: There is no significant relationship between capital structure and firm performance.

For the purpose of detailed analysis, four different hypotheses have been developed based on the four main criteria selected for this research.

- ***Hypothesis # 1***

- H₀: The GCC firms have significant relation between capital structure and firm performance
- H₁: The GCC firms have no significant relation between capital structure and firm performance

- ***Hypothesis # 2***

- H₀: The relationship between capital structure and firm performance is same among the GCC countries.
- H₁: The relationship between capital structure and firm performance is not same among the GCC countries.

- ***Hypothesis # 3***

- H₀: The relationship between capital structure and firm performance is the same among sectors
- H₁: The relationship between capital structure and firm performance is not same among sectors

- ***Hypothesis # 4***

- H₀: The relationship between capital structure and firm performance is the same for small and large firms.
- H₁: The relationship between capital structure and firm performance is not same for small and large firms.

3.5. Development of Models

The base model has been developed on the basis of the main hypothesis of this research by taking dependent and independent variables interchangeably.

$$Y = \alpha_0 + \alpha_1 X_{1it} + \alpha_2 X_{2it} + \dots + e$$

Whereas,

Y = Dependent variable of capital structure or firm performance

α_0 = Constant

$\alpha_1, \alpha_2, \dots$ = Coefficient of independent variables

$X_1, X_2, \dots$ = Independent variables of capital structure or firm performance for firm i at time t

e = Error. It takes care of other explanatory variables that equally determines capital structure but are not included in the model.

CHAPTER FOUR

4. ANALYSIS AND FINDINGS

In this section, the six hypotheses developed earlier for the research questions are tested to find out if there is any statistically significant relationship between capital structure and firm performance. As a result, different relationships are developed in a linear regression model. However, before testing the hypotheses, the data is summarized as descriptive statistics, correlation between variables is checked and histograms are drawn to determine the normality of the variables.

4.1.Descriptive Statistics

Table 3 provides a summary of the descriptive statistics for all the variables in the study for all the selected firms over the study period (2004-2014).

Table 3: Descriptive Statistics for the GCC

Variables	N	Minimum	Maximum	Mean	SE	Std. Deviation
Total Asset	1013	1.572	12762.785	436.064	38.687	1231.316
Ln (TA)	1013	0.452	9.454	4.569	0.053	1.691
GA	986	-58.660	341.991	11.906	1.056	33.153
ROA	1013	-48.645	42.457	5.218	0.324	10.320
ROE	987	-299.753	503.212	8.497	0.929	29.194
EBIT Margin	979	-5241.845	49.919	-24.352	9.626	301.199
EPS	1013	-5.819	642.684	1.139	0.696	22.156
TD/TA	1011	0.000	199.920	21.722	0.743	23.629
TD/TE	987	0.000	2245.670	65.364	4.456	139.990
LTD /TE	1010	-34.043	173.889	5.462	0.584	18.545
LTD / TC	1009	0.000	257.625	12.254	0.616	19.579
Valid N (list wise)	928					

Unusual observations, errors and inapplicable data were removed from the data set. The range of the data was determined from the values of minimum and maximum, which also highlights

outliers. As an example, ROE has a maximum value of 503, EPS 642 and TD/TE 2245. These numbers highlight the existence of error, mis-reporting or extreme values within the variables.

From the table it can be witnessed that the maximum and minimum value for ROE are 503.212 and -211.867 respectively, whereas the average is only 9.195. Moreover, the variables EPS, TD/TE, LTD/TE and LTD/TC all have extreme maximum values. Including these variables in the sample might not give a representative sample, hence analysis process will not provide fair results.

Standard error provides information on how accurate and precise the sample is as an estimate of the population parameter. It means the variables' EBIT margin and TD/TE do not present the population very well, therefore there is no reason to use these variables in the regression analysis process. Standard error (SE) of the variables taken into consideration is less than 1 for all except for EBIT margin and TD/TE, which is 10 and 4.6 respectively.

4.2. Normality of Data

Another statistical measure by which we can test the normality of the data is histogram charts, which allows us to easily examine the outliers and extreme values from the normal distribution range. Some of the variables are depicted in the histogram charts here to provide clearer picture of the normal distribution of the data for the variables ROA, TD/TA, Ln (TA) and GA. For variables such as EPS, the EBIT margin is neither skewed nor normally distributed, but clustered together, as a majority of the observations lay at one point; for this reason these variables are not considered (see Appendix B).

Figure 1 represents the histogram for ROA for the sample, which shows that it is approximately normally distributed. It is also to be noted that for the purpose of analysis, approximately 2% of the extreme left values were removed from the sample ($ROA < -50\%$). From the variables selected for firm performance, data from ROA represents approximate normal distribution.

Figure 1: Return on Assets

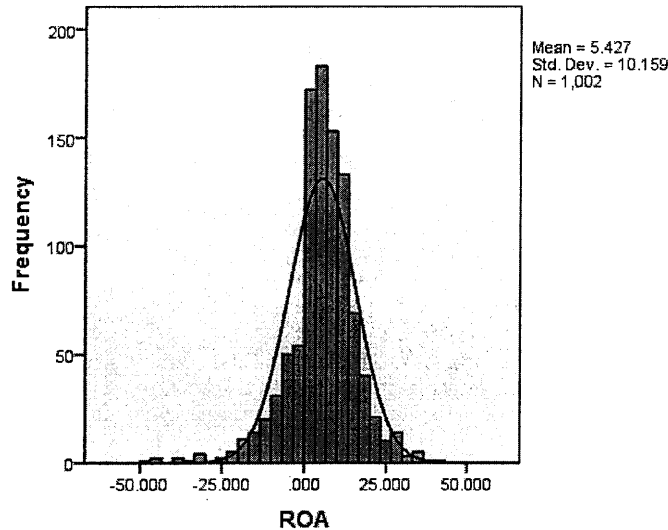


Figure 2 shows that capital structure (TD/TA) is positively skewed with some extreme values on the right of the distribution, meaning that some of the companies have a TD/TA ratio that is too high compared to the majority. The outliers from TD/TA were not removed because they accounted for more than 5% of the total observations for TD/TA, and if removed, very few observations would be left for analysis. Additionally, it is the only variable that is found to be most significant to determine capital structure in this research.

Figure 2: Total Debt to Total Assets

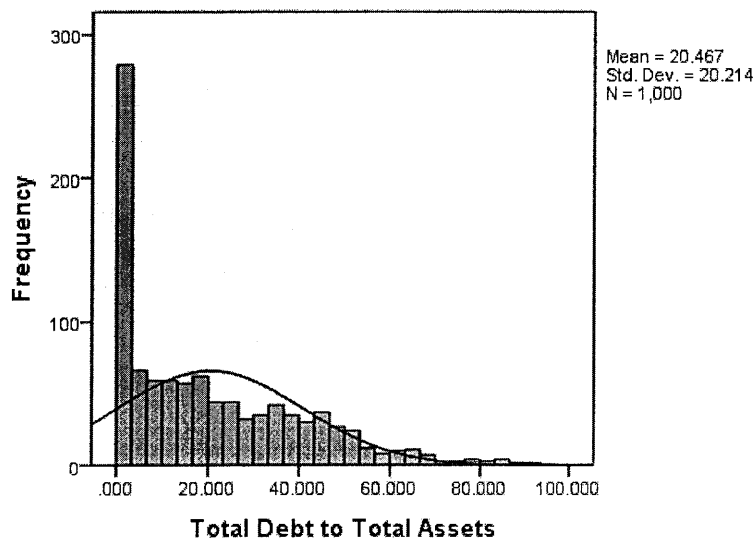


Figure 3: Ln (Total Assets)

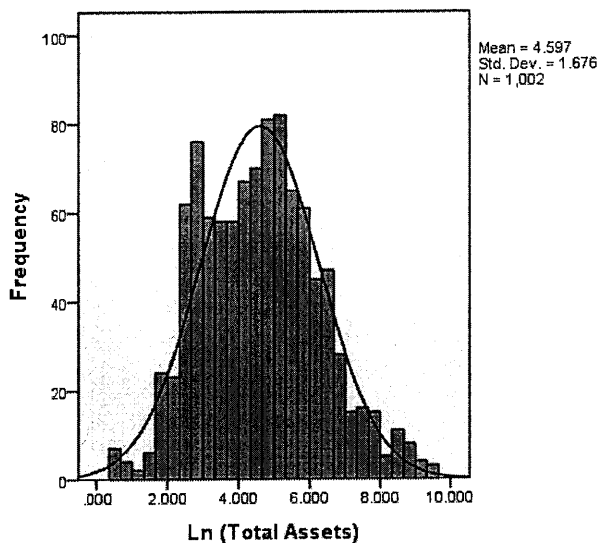
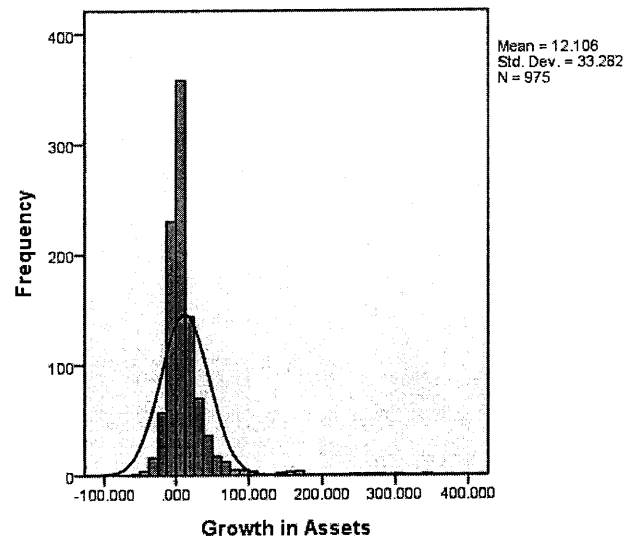


Figure 4: Growth in Assets



Both Figures 3 and 4 for the Ln (total assets) and growth in assets, respectively, are approximately normally distributed.

4.3. Correlation

Table 4 highlights the Pearson correlation coefficients between all the variables selected for the GCC countries. This matrix is used to find out the strength and the direction of the relationship between every two variables. This is important since it is the starting point for running and developing linear regression models. Strong relationships between the dependent and independent variables are necessary, while weak relationships among the independent variables will minimize the problem of multicollinearity.

Strong correlation among capital structure and firm performance variables indicates that it is important to include these variables because they move together, but strong correlation among the dependent variables is less desirable as it may lead to multicollinearity.

From Table 4, a strong positive correlation between ROA and ROE ($r = 0.678$) can be observed among both dependent and independent variables, but such correlation among independent variables will lead to multicollinearity problems, which will cause distorted results. Therefore,

since one variable should be dropped from the histogram, it is wise to drop the ROE and use ROA as a measure of firm performance and as an independent variable explaining capital structure. To further validate these results, ROE, EBIT, and EPS are used as dependent variables and the subsequent results are compared with the ROA model. This does not mean that ROE is totally dropped from the sample, but rather that it is used as a dependent variable with capital structure used as an independent variable.

Table 4: Correlation Matrix for the GCC

	Ln (TA)	GA	ROA	ROE	EBIT M	EPS	TD/TA	TD/TE	LTD /TE	LTD / TC
Ln (TA)	1									
GA	0.122**	1								
ROA	0.155**	0.227**	1							
ROE	0.143**	0.175**	0.678**	1						
EBIT M	0.072*	0.043	0.141**	0.076*	1					
EPS	0.016	0.207	0.055	0.056	0.008	1				
TD/TA	0.136**	0.019	-0.304**	-0.19**	0.063	0.048	1			
TD/TE	-0.120	-0.002	-0.254**	-0.27**	0.027	0.008	0.71**	1		
LTD /TE	0.082**	0.073*	-0.036	-0.015	0.027	-0.014	0.254	0.082	1	
LTD / TC	0.023	-0.006	-0.192**	-0.089	0.055	-0.029	0.739**	0.508**	0.424	1

* significant at 1%

** significant at 5%

It can also be observed from the table that a strong positive correlation among capital structure variables exists, which will certainly lead to multicollinearity problem. Strong correlation also exists between variables such as TD/TA and TD/TE ($r = 0.710$), LTD/TC and TD/TA ($r = 0.739$), and TD/TE ($r = 0.508$) and LTD/TE ($r = 0.424$). Therefore, one variable should be selected to measure capital structure, and from the results shown in the plotted histograms, it is wise to select TD/TA because it represents the sample data most precisely. To improve the accuracy of the results, models for TD/TE, LTD/TE, and LTD/TC have been developed and the results compared with the TD/TA model. Strong negative correlation exists between ROA and TD/TA ($r = -0.304$). It was also found that strong correlation exists between ROA and TD/TE ($r = -0.254$), and ROE and TD/TE ($r = -0.270$), but after plotting histograms and descriptive analysis, TD/TE and ROE are

not considered significant enough to justify further analysis. However, models for all selected variables were developed to further support the initial analysis.

From the above analysis, we can conclude that in the context of this research, the best measure to determine capital structure is TD/TA, and to measure firm's performance it is ROA; moreover, variables such as size of the firm and growth in assets are also found to be important in determining the relationship between capital structure and firm performance.

4.4. Regression

4.4.1. GCC Region

Multiple regression analysis has been run to develop models for the GCC region firms by using capital structure and firm performance determinants as dependent and independent variables interchangeably to test hypothesis #1, presented in section 3.4, and either accept the hypothesis or reject it and deem it null.

4.4.1.1. Performance as a Function of Capital Structure

In this section, the dependent variable is performance and the independent variable is capital structure, with the control variable being size of the firm. This section will depict the impact of capital structure on the performance of firms in the GCC region.

Table 5 summarizes all the statistically significant models developed by SPSS software by naming performance as the dependent variable. Four significant models were developed, one for each variable of performance measure used in this research. These models have been developed to support the analysis done in the previous sections. It is very clear from Table 5 that Models 3 and 4 don't show any significant relationship with any of the measures used to determine capital structure in this research; only Models 1 and 2 exhibit significant relationships with capital structure. As we know from the analysis presented in the previous section, ROA is found to be a more appropriate measure of firm performance for this research, hence for further analysis ROA

is used as dependent variable to determine firm performance. Henceforth it is concluded that only Model 1 in Table 5 is valid for further study, and Models 2, 3 and 4 have been dropped.

Table 5: Performance Model Summary for the GCC

Models	Model 1	Model 2	Model 3	Model 4
Dep. Var.	ROA	ROE	EPS	EBIT M
Constant	3.181 (3.570)	0.008 (0.003)	-0.51 (-0.668)	-84.916 (-2.874)
TD/TA	-0.165 (-10.858)*	-0.347 (-7.266)*	-	-
GA	0.065 (7.144)*	0.142 (5.192)*	0.142 (6.599)*	-
Ln (TA)	1.048 (5.761)*	2.924 (5.239)*	-	13.319 (2.222)**
df	972	961	962	930
Adj-R ²	0.164	0.092	0.042	0.004
SE	9.312	28.093	22.235	306.513
F- value	64.688	33.523	43.551	4.938

* significant at 1%

** significant at 5%

Equation # 1

$$ROA_{it} = 3.181 - 0.165TD/TA_{it} + 0.065 GA_{it} + 1.048 Ln(TA)_{it} + e$$

Model 1 was developed by taking dependent variable ROA as a measure of performance. Overall Model 1 shows a good fit with F-value 64.688, which is significant at 1% level with independent variables being TD/TA and other variables being GA and size of the firm. The independent variables are successful in explaining 16.4% of the variation in the dependent variables, while the rest remains unexplained by the model, and is thus deemed an error by the term e.

Return on assets (ROA) has a constant coefficient of 3.181, which means that ROA is 3.181% when all other variables are held constant. TD/TA manifests negatively with a 0.165% decrease in ROA and a 1% increase in TD/TA, holding all other variables constant. This means that GCC firms will show a reduction in process by 0.065% if there is an increase in debt ratio of 1%. This

shows that the performance of the GCC firms is affected by capital structure to such a degree that a 1% increase in debt can cause a decrease in overall firm performance. From this information, one can conclude that GCC firms' performance will decrease as total debt ratio increases.

Growth in assets shows a significant relationship with performance, with an increase of 1% in GA positively impacting ROA by 0.065% and holding other variables constant. As expected, increase in the growth of assets in return increases ROA, showing improvement in a firm's performance. Control variables show a positive significant impact at 1% level for ROA, and the impact of Ln (TA) on ROA is \$1.048 with a \$1 increase in Ln (TA) while holding other variables constant.

Results from this analysis are supported by literature. That TD/TA shows significant negative impact on ROA has also been proven by: Salim and Yadav (2012); Ebaid (2009); Ebrati et al. (2013); Saedi and Mahmoodi (2011); and Khan (2012). The significant positive impact of LTD/TC has previously been established by San and Heng, 2011. It can also be concluded that size of the firm is an important factor in determining the performance of the firm, which is consistent with the studies of Ebrati et al. (2013).

4.4.1.2. Capital Structure as a Function of Performance

In this study of regression analysis, capital structure is taken as dependent variable. This means the impact of performance on capital structure for firms in the GCC region as a whole has been studied. All four measures of capital structure have been taken into consideration, and a significant model has been created for each to give further justification to the analysis done previously, and to establish the best variable to carry in the model.

Table 6 summarizes all the significant models developed by using SPSS, which makes capital structure a dependent variable for the GCC region.

Table 6: Capital Structure Model Summary for the GCC

Models	Model 1	Model 2	Model 3	Model 4
Dep. Var.	TD/ TA	LTD/ TE	LTD/ TC	TD/ TE
Constant	12.181 (6.984)	2.120 (1.184)	7.294 (4.839)	80.834 (16.201)
ROA	-0.656 (-10.858)*	-0.123 (-2.032)**	-0.248 (-4.945)*	-
GA	0.042 (2.276)*	0.044 (2.353)**	-	-
LN (TA)	2.388 (6.624)*	0.826 (2.241)**	1.118 (3.620)*	-
df	972	961	961	960
Adj-R ²	0.129	0.011	0.031	0.071
SE	18.563	18.791	15.822	135.67
F- value	48.904	4.43	16.56	37.814

* significant at 1% ** significant at 5%

It can be observed in Table 6 that four statistically significant models have been developed for determining the capital structure of GCC firms. This table further adds justification for selecting TD/TA as a dependent variable to measure capital structure. Model 1, developed specifically for TD/TA, is found to be the most significant model in determining firm performance with all variables significant at 1% level, and adjusted R² at 12.9%, the highest of all the models in the table.

Models 2 and 3, with dependent variables LTD/TE and LTD/TC, are found to have a significant relationship in determining the performance of GCC firms. As it was concluded in the previous analysis, these variables do not represent the population in a normal distribution analysis and contain many outliers, and because of these reasons it is suggested not to consider these models for further analysis. Moreover, Model 4 is found to be the least worthwhile model to study as it includes ROA and ROE at the same time, and as we have observed previously in Table 4, there is high multicollinearity (0.678) among ROA and ROE variables despite the fact that both play a substantial role in determining firm performance.

Thus it has been decided that, considering the previous analysis presented in this research, only Model 1 from Table 6 should be carried forward for further analysis.

Equation # 2

$$\frac{TD}{TA}_{it} = 12.181 - 0.656 ROA_{it} + 0.042 GA_{it} + 2.388 Ln(TA)_{it} + e$$

Adjusted R² for TD/TA is 12.9%, which means that variation in the dependent variable is explained by the independent variables of this model which are ROA, EBIT margin, GA and size of the firm. The rest of the variation remains unexplained, which is e (error), with all variables statistically significant at the 1% level. This model is statistically significant in determining the capital structure of firms in the GCC, and the overall model is highly significant with F-value of 48.904 at 1% level of significance (Table 6).

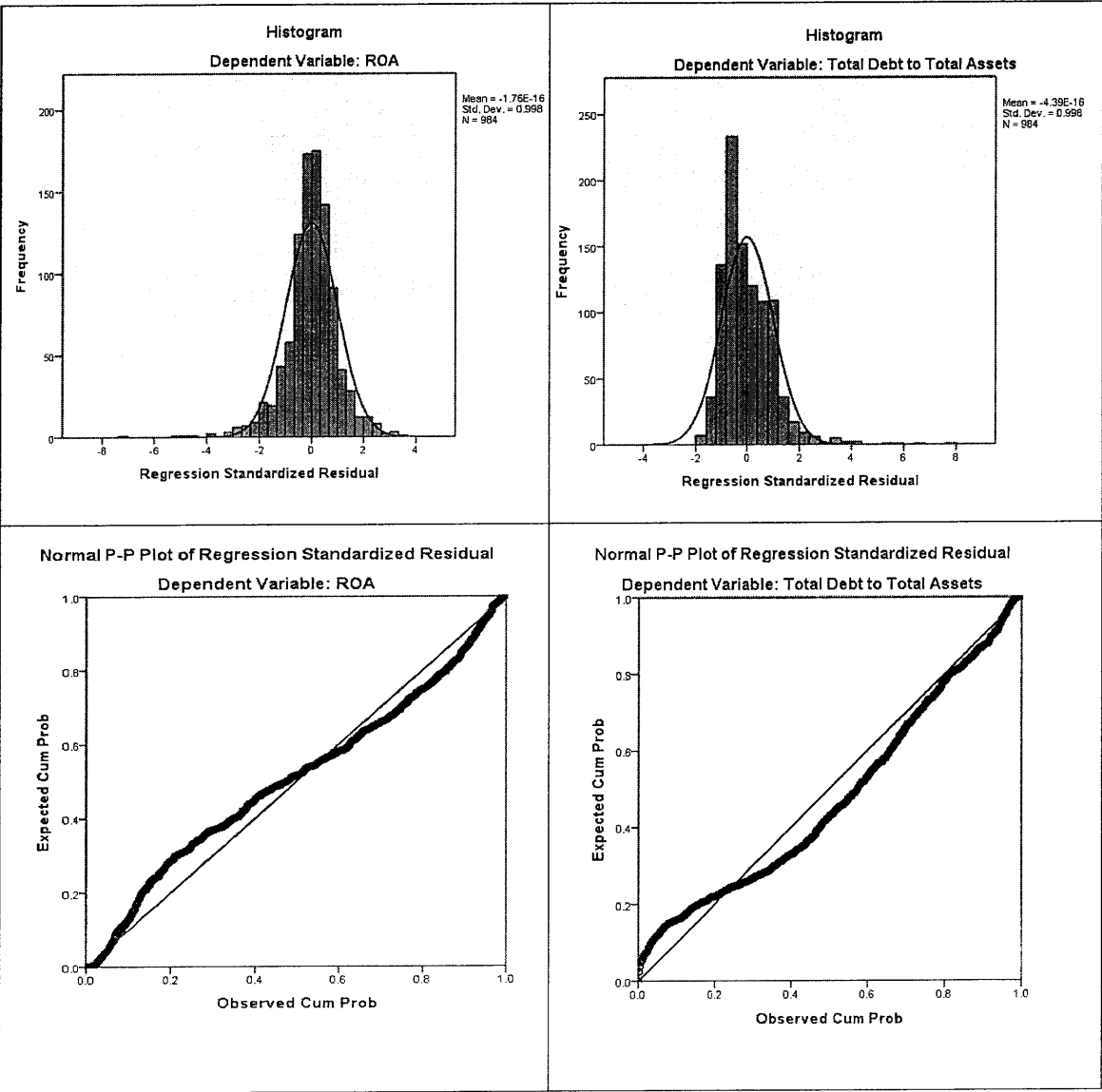
The constant coefficient for TD/TA indicates that TD/TA is 12.181% with other variables being constant whereas ROA will decrease the TD/TA ratio by 0.656% with respect to all variables being constant. This finding is consistent with studies done by Salim and Yadav (2012), Pratheepkanth (2011) and Ebaid (2009). That means that as net income increases or total assets decrease, debt to asset ratio decreases. This means that as the firm performance improves, the leverage ratio will go down, which translates to a good sign to investors and shareholders.

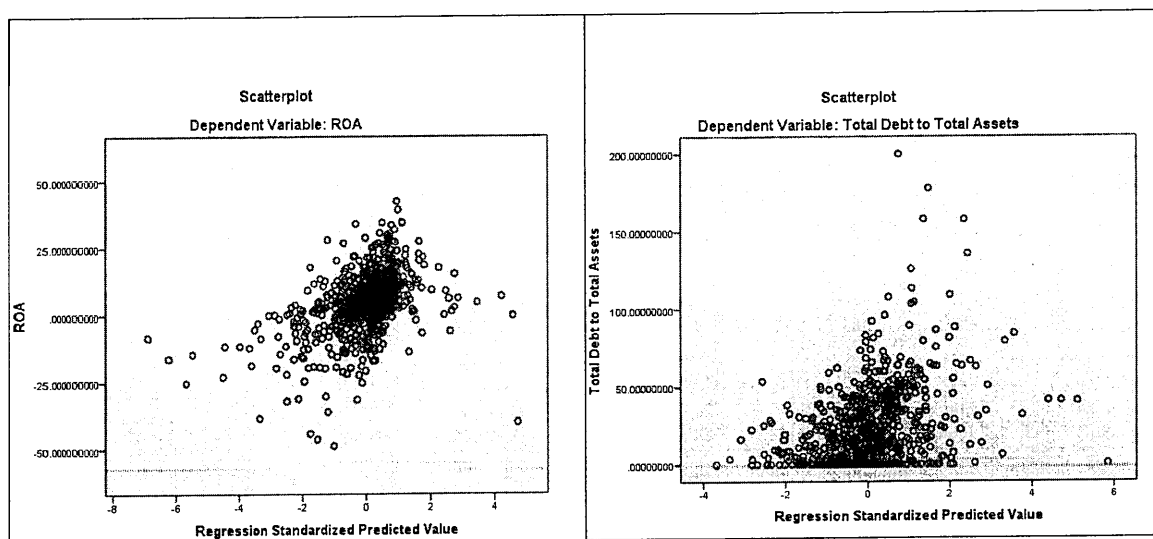
On the other hand, growth in assets has a positive impact on TD/TA by 0.042%, considering other variables constant. The control variable in the model, size of the firm measured by Ln (TA), is also considered to show a positive significant impact of \$2.388 on TD/TA while keeping all other variables constant. No significant relationship has been found between TD/TA and ROE, which is consistent with the studies done by Ebaid (2009), Khan (2012), and Saedi and Mahmoodi (2011).

After analyzing the firm performance and capital structure for the GCC region, it can be concluded that we accept the null hypothesis #1. The results show that GCC firms determine the relationship between capital structure and firm performance. It can also be concluded that the best variables to measure performance and capital structure of GCC firms are ROA and TD/TA respectively, which are carried forward as dependent variables to be used in the analyses performed according to country, industry and firm size.

For Models 1 and 2, residual values have been plotted below in histogram, normal P-P plot and scatterplot for ROA and TD/TA. According to the graphs the errors plotted in histogram shows approximately normal distribution. When plotting for pp expected and observed values shows that the lines almost overlap with only small deviations, which satisfies the assumption of normality. From the scatter plot it can be seen that errors plotted shows no pattern which means that no heteroscedasticity exists.

Figure 5: ROA and TD/TA Residual values





4.4.2. Country

Analysis for the GCC has been taken a step further by splitting the region into specific countries, and developing models for capital structure and performance according to these independent nations. This analysis has been done to check hypothesis 2, developed earlier in Section 3.4, and to determine whether specific countries have any impact on determining capital structure and firm performance within the GCC.

On a whole, some clear conclusions can be drawn from the results obtained from the GCC analysis, and used as a base for further study. Two such significant findings are: ROA is the main determinant of performance impacting capital structure, and TD/TA is used to determine the capital structure of the firms. Table 7 summarizes all the GCC country models used to study the performance of the firms. To determine firm performance, return on assets (ROA) is used as a dependent variable.

Table 7: Performance Model Summary for Countries

Country	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
Dep. Var.	ROA	ROA	ROA	ROA	ROA	ROA
Constant	-2.451 (-0.625)	-6.068 (-2.674)	3.301 (1.841)	10.706 (12.818)	-7.046 (-2.537)	9.244 (7.629)
TD/TA	-	-0.254 (-5.680)*	-0.180 (-7.404)*	-0.196 (-4.098)*	-	-
LTD/ TC	-0.736 (-4.489)*	-	-	-	-	-
TD/TE	-	-	-	-	-0.055 (-5.043)*	-0.091 (-5.526)*
GA	0.406 (4.938)*	0.040 (2.427)**	0.066 (4.012)*	-	0.081 (3.688)*	0.085 (2.695)*
Ln (TA)	2.198 (2.418)**	2.595 (5.228)*	1.839 (3.688)*	-	2.708 (5.018)*	-
df	55	229	288	38	252	95
Adj-R ²	0.414	0.150	0.253	0.294	0.158	0.305
SE	5.899	9.620	9.183	3.738	9.598	8.714
F- value	13.977	14.496	33.591	16.791	16.731	19.232

* significant at 1%

** significant at 5%

Table 8 summarizes all the capital structure models for the GCC countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE). While developing the models for capital structure, EPS and EBIT margins were eliminated from the independent variables, as they were found to be insignificant in determining the capital structure (Table 5).

Table 8: Capital Structure Model Summary for Countries

Country	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
Dep. Var.	TD/TA	TD/TA	TD/TA	TD/TA	TD/TA	TD/TA
Constant	-4.765 (-1.769)	-14.035 (-4.583)	36.268 (21.851)	4.075 (0.477)	-23.34 (-6.584)	4.324 (0.875)
ROA	-0.376 (-4.555)*	-0.491 (-5.680)*	-1.377 (-10.352)*	-1.354 (-3.670)*	-0.299 (-3.618)*	-0.490 (-3.370)*
GA	0.168 (2.647)**	0.057 (2.538)**	-	-	-	-
Ln (TA)	2.051 (3.284)*	6.321 (10.593)*	-	3.543 (2.713)**	8.399 (13.693)*	3.006 (3.236)*
df	55	229	308	38	254	95
Adj-R ²	0.317	0.369	0.256	0.397	0.424	0.165
SE	4.133	13.363	27.235	9.83	13.546	14.804
F-value	9.519	45.586	107.166	13.519	94.396	10.391

* significant at 1%

** significant at 5%

Each country's model for firm performance and capital structure has been analyzed in great detail in the following sections.

4.4.2.1. Bahrain

Equation # 3

$$ROA_{it} = -2.451 - 0.736 LTD/TC_{it} + 0.406 GA_{it} + 2.198 Ln(TA)_{it} + e$$

The model to measure performance by ROA for Bahraini firms shows a good fit overall with an F-value of 13.977 at 1% level of significance. The independent variables LTD/TC, GA and size of the firm were successful in explaining the dependent variable by 41.4%, while 58.6% remains unexplained, which is considered to be an error, and is represented in the model by e. The sample size is 55 observations, which is admittedly quite small, due to limitations of data availability. To improve the significance of the model in future studies, the sample size should be increased.

ROA for Bahraini firms is decreasing by 2.451% regardless of any influence of capital structure, growth in assets, or size of the firm. A 1% increase in LTD/TC will negatively impact ROA by 0.736%, keeping other variables constant. This means that returns on assets for Bahraini firms will increase if long-term debts are decreased or total capital funded is increased. Conversely, a 1% growth in assets increases ROA for Bahraini firms by 0.406%, holding other variables constant, meaning that investment in assets in Bahraini firms results in improved performance, which sends a good signal to the market. It can also be observed that size of the firm does impact Bahraini firms' performance by \$2.198 while holding other variables constant. Thus, as the size of the firm increases, returns also increase, leading to improved performance.

Equation # 4

$$TD/TA_{it} = -4.765 - 0.376 ROA_{it} + 0.168 GA_{it} + 2.051Ln(TA)_{it} + e$$

Capital Structure model for Bahrain passes the goodness of fit test for the overall model with an F-value of 9.519 at 1% level of significance. However, the variation in the dependent variable TD/TA of 31.7% is explained by the independent variables of ROA, GA and size of the firm in the model while rest remains unexplained, and is represented by the term error (e).

Total debt to total assets (TD/TA) will decrease for the Bahraini firms by 4.765% when there is no impact of capital structure, GA or firm size. Return on assets shows a negative relationship with capital structure with a 0.376% decrease when all other variables are held constant. This shows that financial leverage for Bahraini firms decreases with the improvement in firm performance, which gives good signal to the analysts, investors, etc.

Furthermore, growth in assets (GA) shows a positive significant impact on dependent variables of \$0.168 when assets grow by \$1 while holding all other variables constant. This model also establishes that size of the firm is an important variable in determining the capital structure of the firms of Bahrain. It increases the dependent variable by \$2.051, keeping all other variables constant. It can thus be concluded that as the GA and size of the Bahraini firms increase, leverage level also increases.

After studying the models for firm performance and capital structure for Bahraini firms it can be concluded that as firms grow larger and assets increase, Bahraini firms tend to perform better, but at the same time financial leverage also tends to increase.

4.4.2.2. Kuwait

Equation # 5

$$ROA_{it} = -6.068 - 0.254 TD/TA_{it} + 0.040 GA_{it} + 2.595 Ln(TA)_{it} + e$$

The performance model represented by ROA for Kuwaiti firms shows a good overall fit with an F-value of 14.496, which is significant at the 1% level (Table 7). On the other hand, the independent variables of TD/TA, GA and Ln (TA) have a success rate of only 15% in explaining the variation in dependent variables, while the rest remains unexplained by the model, with 229 observations.

Return on assets for the firms of Kuwait decreases by 6.068% when all other variables are held constant. The capital structure represented by TD/TA has a significant but negative impact on ROA of 0.254% when other variables are kept constant, which is consistent with the literature. Growth in assets positively impacts ROA with a \$0.04 increase in ROA when assets grow by \$1, keeping other variables constant. Size of the firm is also considered important in determining the performance of the firms for Kuwait. When size of the firm increases by \$1, ROA increases by \$2.595, holding other variables constant.

Equation # 6

$$TD/TA_{it} = -14.035 - 0.491 ROA_{it} + 0.057 GA_{it} + 6.321 Ln(TA)_{it} + e$$

Kuwaiti firms' capital structure is determined by the model written above, showing significant fitness of the overall model (Table 8) by an F-value of 45.586 at 1% level of significance. The independent variables ROA, GA, and firm size are able to explain the variation in dependent

variable TD/TA by 36.9% while the rest remains unexplained by the model. The term error (e) represents the variables that are important in determining the capital structure but were not considered in this study.

Total debt to total assets ratio measures capital structure for Kuwaiti firms, and it decreases by 14.035% when all other variables are held constant. ROA impacts the dependent variable negatively by 0.491% when other variables are held constant, showing consistency with the literature that states capital structure and firm performance have a negative significant relationship with each other. However, growth in assets (GA) and size of the firm have a positive impact on TD/TA by \$0.057 and \$6.321 respectively, holding other variables constant.

After studying the models for Kuwaiti firms for firm performance and capital structure, which show almost the same results as the models created for the Bahraini firms did, it can be concluded that as a firm grows larger and assets increase, the Kuwaiti firms' performance gets better. However, at the same time, financial leverage ratios tend to increase, offsetting the returns to some extent.

4.4.2.3. Oman

Equation # 7

$$ROA_{it} = 3.301 - 0.180 TD/TA_{it} + 0.066 GA_{it} + 1.839 Ln(TA)_{it} + e$$

Performance model ROA for Omani firms shows the goodness of fit test to be significant with an F-value of 33.591 at 1% level of significance. While the independent variables TD/TA, GA, and Ln (TA) explain 25.3% of the variation in the performance of dependent variables, the rest remains unexplained by the developed model. The total number of observations that were valid for this model were 288.

ROA increases by 3.301% regardless of any determinants. When capital structure (TD/TA) increases by 1%, ROA will decrease by 0.180% while other variables hold constant. GA impacts

the performance by an increase of \$0.066 when other variables are held constant. However, size of the firm exhibits a positive impact in determining firm performance. If size of the firm increases by \$1, the firm performance will improve by \$1.839, holding other variables constant.

Equation # 8

$$TD/TA_{it} = 36.268 - 1.377ROA_{it} + e$$

The overall fitness of the model proves adequate and significant in determining capital structure for Oman with an F-value of 107.166 at the 1% level. The independent variables are 25.6% successful in explaining the variation in dependent variables, while the rest remains unexplained by the model. The independent variable here is ROA, which is found to be the only significant variable which impacts capital structure.

Capital structure, represented by TD/TA, increases by 36.268% when all other variables are held constant. ROA proves to have a negative impact on dependent variables, decreasing them by 1.377% whenever it increases by 1%, keeping all other variables constant. In this model it can be observed that size of the firm is insignificant in determining the capital structure of Omani firms.

From the two models studied for Omani firms, it can be concluded that growth in assets and firm size impacts firm performance, yet they don't show any significant relationship in determining the capital structure of Omani firms.

4.4.2.4. Qatar

Equation # 9

$$ROA_{it} = 10.706 - 0.196 TD/TA_{it} + e$$

This model of performance for Qatari firms shows a significant fit with an F-value of 16.791 at 1% level of significance. Precisely 29.4% of the variation in the dependent variables is explained

by the independent variables in this model, leaving the rest unexplained by the model. Those unexplained variations can be accounted for by the variables that were not considered in this study, and are instead represented in the model by the term e (error). The only dependent variable is ROA.

ROA for Qatar firms increases by 10.706% while holding other variables constant. TD/TA shows a significant impact on ROA in the form of a 0.196% decrease while other variables are held constant. It can be noted that size of the firm is also insignificant for Qatar firms in determining performance.

Equation # 10

$$TD/TA_{it} = 4.075 - 1.354ROA_{it} + 3.543 \ln(TA)_{it} + e$$

The overall model for capital structure (TD/TA) of Qatar shows significant fitness with an F-value of 13.519, which is significant at the 1% level. The variation in dependent variables is 39.7% explained by the independent variables considered in the study; however, the rest remains unexplained by the model. The independent variable here is ROA, which acts as a determinant of performance. The control variable, size of the firm measured by $\ln(TA)$, and e representing error due to other variables, are not considered in this model.

TD/TA increases by 4.075% with all variables constant, whereas ROA shows a negative impact on the capital structure by a decrease of 1.354% when ROA increases by 1%, keeping all other variables constant. Size of the firm is considered an important indicator in determining capital structure, as it increases TD/TA by \$3.543 while keeping all other variables constant.

After analyzing the two models for Qatar, it can be logically determined that size of firm has no influence on Qatari firms, but it does determine capital structure. It can also be inferred that growth in assets has no significant relationship with firm performance or capital structure.

4.4.2.5. Saudi Arabia

Equation # 11

$$ROA_{it} = -7.046 - 0.055 TD/TE_{it} + 0.081 GA_{it} + 2.708 Ln(TA)_{it} + e$$

Saudi Arabia's performance model is statistically significant with an F-value of 16.731, which is determined at 1% level of significance. However, only 15.8% of the variation in dependent variables is explained by the independent variables considered in the model, while the rest is not explained by the model. The sample that could be extracted from the available data for Saudi Arabia amounted to 252 observations. The dependent variable for performance is ROA, which is determined by the independent variables TD/TE, GA, and by the size of the firm measured by Ln (TA).

The constant of ROA is -7.046, which indicates that by holding all other variables constant, ROA will decrease by 7.046%. For Saudi Arabia, the only significant capital structure measure is TD/TE, which impacts the performance negatively by inciting a 0.055% decrease in ROA when all other variables are held constant. This means that most Saudi firms' performance increases as the level of debt decreases or equity increases. However, GA is positively related to ROA, so a \$1 growth in assets will increase ROA by \$0.081, holding all other variables constant. Size of the firm exhibits a significant positive relationship with ROA, which shows that a \$1 increase in size will lead to a \$2.708 increase in ROA.

Equation # 12

$$TD/TA_{it} = -23.340 - 0.299ROA_{it} + 8.399 Ln(TA)_{it} + e$$

The model created for the capital structure of Saudi Arabian firms shows overall good fitness for the model with an F-value of 94.396 at 1% level of significance (Table 8). However, independent variables are successful in explaining the variation in dependent variables by 42.4%, leaving a little more than half of the variation unexplained by the model. The dependent variable for capital

structure determination is TD/TA, the independent variable is ROA and the control variable is size of the firm measured by Ln (TA).

Analysis of the model shows that TD/TA decreases by 23.34% while keeping all other variables constant. ROA impacts TD/TA both negatively and significantly by causing a 0.299% decrease when ROA increases by 1%, while all other variables are held constant. However, size of the firm positively impacts the TD/TA by \$8.399, keeping all other variables constant.

The two models developed and studied for Saudi Arabia show that firm size does have a significant impact on both performance and capital structure. It can also be noticed that in performance models, the only variable found to be a significant measure of capital structure is TD/TE although it is not considered to be a good measure.

4.4.2.6. UAE

Equation # 13

$$ROA_{it} = 9.244 - 0.091 TD/TE_{it} + 0.085 GA_{it} + e$$

The performance model for UAE is overall fit for analysis with an F-value of 19.232 at 1% level of significance. However, the independent variables are successful in explaining only 30.5% of variation in dependent variables while the remainder remains unexplained by the model. The sample taken from the available data for UAE was 95 observations (Table 7).

The model reveals that ROA increases by 9.244% without the influence of any of the considered variables; however, TD/TE shows a negative influence with a 0.091% decrease while holding all other variables constant. This model is run using TD/TA as well, but TD/TE is found to be more significant in determining UAE firm performance than in others. This means that UAE firms' performance will increase if assets decrease or equity portion increases. GA exhibits a positive impact on ROA, showing a \$0.077 increase while all other variables are held constant. Size of the firm was insignificant in determining the performance of the UAE firms.

Equation # 14

$$TD/TA_{it} = 4.324 - 0.490 ROA_{it} + 3.006 Ln(TA)_{it} + e$$

The capital structure model for UAE shows that the overall model is fit for analysis with an F-value of 10.391 at 1% level of significance. The independent variables of the model are successful in explaining a mere 16.5% of the variation in dependent variables, leaving the majority of the variation unexplained. The dependent variable in this model is TD/TA, which is one of the determinants of capital structure. The independent variable is ROA and the control variable is size of the firm measured by Ln (TA).

Total debt to total assets increases by 4.324% when there is no impact from any variable. Performance measure ROA shows a negative impact on TD/TA by way of a 0.49% decrease when ROA increases by 1% while keeping all other variables constant, indicating that financial leverage will increase if the firm performance decreases. The control variable size of the firm shows a positive impact on TD/TA, indicating that a \$1 increase in Ln (TA) will result in a \$3.006 increase in TD/TA, holding all other variables constant.

After analyzing all the countries individually regarding performance and capital structure, it can be concluded that null hypothesis # 2 is accepted because the analysis shows that all countries firms' performance and capital structure have a significant relationship with each other.

It can also be concluded that size of the firm has a significant relationship with performance for all GCC countries except for Qatar and UAE, whereas GA is insignificant only in Qatar. From the capital structure models developed for the countries, it has been determined that size of the firm is insignificant for Oman in terms of determining the capital structure of firms. Lastly, the research proves that GA only impacts capital structure in Bahrain and Kuwait (Table 8).

4.4.3. Industry

To test hypothesis 3, the analysis was carried out to determine whether or not industry acts as a control variable in determining the relationship between capital structure and performance of firms in the GCC region. Three non-financial industries have been selected for this study: the consumer non-durable sector, the consumer service sector and the producer manufacturing sector. As it was concluded in section 4.4.1, the best variable to determine performance is ROA and the most efficient variable to determine capital structure it is TD/TA, both of which are employed here as dependent variables.

Table 9: Performance Model Summary for Industries

Industry	Consumer Non-Durables Sector	Consumer Services Sector	Producer Manufacturing Sector
Dep. Var.	ROA	ROA	ROA
Constant	1.960 (1.132)	2.497 (1.625)	4.229 (2.809)
TD/TA	-0.137 (-6.273)*	-0.240 (-6.249)*	-0.113 (-8.038)*
GA	0.133 (5.716)*	0.042 (3.224)*	0.080 (5.728)*
Ln (TA)	0.986 (2.701)*	1.507 (4.347)*	0.648 (2.648)*
df	285	398	298
Adj-R ²	0.243	0.115	0.295
SE	9.679	10.103	7.331
F-value	31.430	18.191	42.563

* significant at 1%

** significant at 5%

The performance models for the three studied industries are summarized in Table 9. It is evident from the table that the models for all three industries are significant, resulting in the same independent variables.

Table 10 summarizes the capital structure model for the three industries, which are analyzed in great detail in the industry-specific models below. It can be seen in the table that EBIT margin and

EPS have been eliminated from the independent variables as they were found to be insignificant in determining capital structure for the GCC region.

Table 10: Capital Structure Model Summary for Industries

Industry	Consumer Non-Durables Sector	Consumer Services Sector	Producer Manufacturing Sector
Dep. Var.	TD/TA	TD/TA	TD/TA
Constant	27.443 (17.680)	1.866 (0.968)	37.07 (24.445)
ROA	-0.852 (-6.480)*	-0.375 (-6.249)*	-1.319 (-8.514)*
GA	-	0.055 (3.371)*	-
Ln (TA)	-	2.771 (6.576)*	-
df	285	398	298
Adj-R ²	0.126	0.169	0.193
SE	24.676	12.639	23.353
F- value	41.996	28.022	72.482

* significant at 1% ** significant at 5%

4.4.3.1. Consumer Non-Durable Service Sector

Equation # 15

$$ROA_{it} = 1.960 - 0.137 TD/TA_{it} + 0.133 GA_{it} + 0.986 Ln (TA)_{it} + e$$

From Table 9, it can be seen that the performance model for the consumer non-durable sector is showing overall good fitness to the model with an F-value of 31.430 at 1% level of significance. The total number of observations accrued here was 285. However, the model is successful in explaining the variation in dependent variables by only 24.3% (adjusted R²) while the rest remains unexplained. The dependent variable for performance is ROA, and the independent variables are TD/TA, GA and Ln (TA).

The model illuminates the fact that ROA increases with a constant of 1.96% with all other variables remaining constant. The capital variable TD/TA has a negative impact on performance, decreasing it by 0.137% with every 1% increase in TD/TA while all other variables are held constant. On the other hand, GA and size of the firm show a positive impact on firm performance, because when GA increases by 1%, performance increases by \$0.133, holding all other variables constant. Size of the firm positively impacts ROA by causing an increase of 0.986% while keeping other variables constant.

Equation # 16

$$TD/TA_{it} = 27.443 - 0.852 ROA_{it} + e$$

From Table 10 it can be observed that the model for this industry is significant with an F-value of 41.996 at the 1% level, showing an overall good fit. Adjusted R² means that 12.6% of the variation in TD/TA is explained by the independent variables in the model, leaving most of the variation unexplained. For that purpose, the term error (e) is included in each model to represent the missing variables that impact the model but were not considered in this study. It has only one independent variable, ROA.

Total debt to total assets for the consumer non-durable sector is seen to increase with a constant of 27.443% without an impact on any variables. ROA has a negative impact on capital structure, causing a decrease of 0.852% with every 1% increase in ROA while other variables are held constant. It is to be noted that size of the firm doesn't impact capital structure in the consumer non-durable sector.

It can be concluded here that in the consumer non-durable service sector, firm performance and capital structure have a significant negative relationship, while GA and firm size exhibit a significant positive relationship in the context of firm performance within this industry.

4.4.3.2. Consumer Service Sector

Equation # 17

$$ROA_{it} = 2.497 - 0.240 TD/TA_{it} + 0.042 GA_{it} + 1.507 Ln(TA)_{it} + e$$

From the performance model summary for industries, Table 9, it can be seen that the consumer service sector has an F-value of 18.191, showing overall good fitness for the model at 1% level of significance. The model is successful in explaining the variation in dependent variables by only 11.5%, whereas the majority of variation remains unexplained.

The dependent variable representing performance for this industry is ROA, and the independent variables are TD/TA, GA, and size of the firm. The model depicts an increase in ROA, with a constant 2.497% without impacting any other variables. TD/TA has a negative impact of 0.24% on ROA, holding other variables constant. Nonetheless, GA increases ROA by \$0.042 with every \$1 in growth, keeping other variables constant at the same time. It can also be noticed that size of the firm has a significant impact on performance as ROA increases by \$1.507 with every \$1 increase in size of the firm, holding all other variables constant.

Equation # 18

$$TD/TA_{it} = 1.866 - 0.375 ROA_{it} + 0.055 GA_{it} + 2.771 Ln(TA)_{it} + e$$

The table for the capital structure model summary for industry shows this model is overall a fit model at 1% level of significance with an F-value of 28.022. However, adjusted R² is 16.9%, meaning that the model independent variables are successful in explaining the variation in dependent variable by 16.9% while rest remains unexplained. The independent variables here are ROA, GA and the control variable size of the firm.

From the model it can be noticed that TD/TA consistently increases by 1.866% while ROA shows a significant negative impact of 0.375%, holding other variables constant. However, GA impacts

TD/TA positively with an increase of \$0.055 with every 1% growth in assets while holding other variables constant. Similarly, size of the firm also has a positive impact of \$2.771 while keeping all other variables constant.

Contradictory to the results found for the consumer non-durable service sector firms, in this industry, firm performance and capital structure are positively influenced by both GA and firm size. Yet the relationship between capital structure and firm performance remains the same, i.e. negative.

4.4.3.3. *Producer Manufacturing Sector*

Equation # 19

$$ROA_{it} = 4.229 - 0.133 TD/TA_{it} + 0.080 GA_{it} + 0.648 Ln(TA)_{it} + e$$

From Table 9, the overall fitness of the model is observed to be good with an F-value of 42.563 at 1% level of significance. The independent variables of the model are successful in explaining 29.5% of the variation in the dependent variables, leaving the rest unexplained. The model uses ROA as the dependent variable for performance, TD/TA and GA as independent variables, and size of the firm as the control variable.

From the model above it can be observed that ROA will increase by 4.229% without having an impact on any variables whereas the capital structure variable TD/TA will impact the performance with a 0.133% decrease while holding other variables constant. GA exhibits a positive impact on performance, or ROA, of \$0.080 while keeping other variables constant. Similarly, size of the firm also impacts performance positively with an increase of \$0.648 while at the same time holding other variables constant.

Equation # 20

$$TD/TA_{it} = 37.070 - 1.319 ROA_{it} + e$$

From Table 10 it can be witnessed that the model for this sector is significant with an F-value of 72.482 at 1% level of significance. Adjusted R-square for the producer manufacturing sector means that 19.3% of the variation in dependent variables is explained by the independent variables in this model. The only independent variable in this model is ROA.

This model shows that TD/TA increases consistently by 37.07% without an impact on any other variables. But the only independent variable ROA impacts capital structure negatively by 1.319% while keeping all other variables constant. Firm size and GA show no significant relationship to the capital structure of producer manufacturing firms.

From the analysis of each individual industry, it can be concluded that performance and capital structure for these studied industries have a negative significant relationship, which means that we accept null hypothesis for hypothesis # 3. The performance models for all three industries show a positive significant relationship with GA and size of the firm; however, the capital structure models for the consumer non-durable and producer manufacturing sectors don't show any significant relationship with GA and size of the firm. This means that as the firms of these industries grow larger, these industries will do an excellent job of maintaining their financial leverages.

4.4.4. Firm Size

This analysis has been done to test hypothesis 4 and determine whether size of the firm has any influence on capital structure and firm performance. To categorize the firms, total assets was taken as the measure. In this study, the firms have been divided into two categories: small and large. This categorization is based on values, in which firms whose total assets were less than the median of 94 were classified as small, and firms whose total assets valued more than the median of 94 were classified as large.

Tables 11 and 12 summarize the models for performance and capital structure of small and large firms. Table 11 summarizes the two models for both small and large firms, and reveals that as before, ROA is the best measure of firm performance. The model for large firms shows that Ln (TA) is insignificant in determining ROA.

Table 11: Performance Model for Firm Size

Firm Size	Dep. Var.	Constant	TD/TA	GA	Ln (TA)	df	Adj-R ²	SE	F-value
Small	ROA	1.221 (0.554)	-0.135 (-6.915)*	0.096 (5.418)*	1.262 (2.021)**	487	0.175	11.521	35.408
Large	ROA	9.644 (18.084)	-0.148 (-8.04)*	0.043 (4.774)*	-	496	0.142	7.225	42.004

* significant at 1% ** significant at 5%

Table 12 summarizes the models for determining the capital structure for both sizes of firms. To measure capital structure, TD/TA is used as earlier, and it proves once again to be the most significant variable. From the table below it can be seen that in the model for small firms, GA is insignificant in determining capital structure; therefore, it has not been included in the model.

Table 12: Capital Structure Model for Firm Size

Models	Dep. Var.	Constant	ROA	GA	LN(TA)	df	Adj-R ²	SE	F-value
Small	TD/TA	47.685 (10.866)	-0.641 (-6.827)*	-	-7.802 (-5.820)*	487	0.171	25.642	51.216
Large	TD/TA	-15.834 (-4.085)	-0.628 (-7.149)*	0.045 (2.353)*	7.020 (11.312)*	496	0.295	14.823	70.315

* significant at 1% ** significant at 5%

4.4.4.1. Small Firms

Equation # 21

$$ROA_{it} = 1.221 - 0.135 TD/TA_{it} + 0.096 GA_{it} + 1.262 Ln (TA)_{it} + e$$

Table 11 shows the overall fitness of the model for small firms with an F-value of 35.408 that is significant at 1% level. The success rate of independent variables being able to explain variation

in dependent variables here is just 17.5%. The model developed for small firms contains the independent variables TD/TA, GA and Ln (TA).

The developed model reveals that small firms' ROA increases consistently by 1.221%. TD/TA exhibits a negative impact on ROA of 0.135% while holding other variables constant. However, GA and Ln (TA) have a positive impact on ROA; a 1% positive change in assets will increase ROA by 0.096% holding all other variables constant, and Ln (TA) will increase ROA by \$1.262 while keeping all other variables constant.

Equation # 22

$$TD/TA_{it} = 47.685 - 0.641 ROA_{it} - 7.802 Ln(TA)_{it} + e$$

The overall model fitness is very good with an F-value of 51.216 at 1% level of significance (Table 12). It is also 17.1% successful in explaining the variation in dependent variables by way of independent variables. The model includes the independent variables ROA and Ln (TA), but it doesn't show any significant relationship with the GA variable.

The model shows a consistent increase of 47.685% in TD/TA, and a decrease of 0.641% in ROA, which translates to a negative influence on capital structure when other variables are held constant. Moreover, Ln (TA) also exhibits a significant negative relationship with capital structure in small firms, which determines TD/TA by inciting a \$7.802 decrease when other variables are held constant.

After analyzing both the models for small firms, we can conclude that small firms' performance is positively determined by size, whereas their capital structure exhibits a negative relationship with size of the firm. This means that small firms tend to keep their financial leverage ratios low.

4.4.4.2. Large Firms

Equation # 23

$$ROA_{it} = 9.644 - 0.148 TD/TA_{it} + 0.043 GA_{it} + e$$

Table 11 makes evident that the overall fitness of the model for large firms is good, with an F-value of 35.408, which is statistically significant at the 1% level. In the model, independent variables are successful in explaining a mere 14.2% of variation in dependent variables while the bulk of the variation is left unexplained. The developed model depicts that ROA is determined by the independent variables of TD/TA and GA.

Return on assets increases quite consistently in large firms, by 9.644%. The capital structure measured by TD/TA impacts performance negatively by 0.148% while holding other variables constant. On the other hand, GA increases large firms' performance because if assets grow by 1%, then ROA will increase by 0.043%. This means as assets grow, the performance of large firms simultaneously improves.

Equation # 24

$$TD/TA_{it} = -15.834 - 0.628 ROA_{it} + 0.045 GA_{it} + 7.020 \ln(TA)_{it} + e$$

The model created for large firms shows the overall fitness of the model with an F-value of 70.315, which is highly significant at the 1% level. Moreover, the independent variables in the model were able to explain the variation in dependent variables by 29.5%. The model consists of independent variables ROA, GA and Ln (TA).

From the model it can be seen that TD/TA decreases by 15.834% at a constant rate. ROA causes the TD/TA to decrease by 0.628% when other variables are held constant, while GA influences the capital structure of large firms to increase by 0.045%, keeping all other variables constant. Ln (TA) also shows positive significant relationship in determining capital structure, and increases

TD/TA by \$7.020 while keeping all other variables constant. This means that as the assets grow and the size of the firm gets larger, the capital structure of the firm also tends to increase.

After analyzing small and large firms separately within the context of hypothesis # 4, we can conclude that performance and capital structure exhibit a mutually significant relationship which is predominately negative, leading us to accept null hypothesis. From the analysis it be ascertained that GA does determine the capital structure of large firms, but is insignificant in small firms; however, as a firm's size increases, its performance will remain largely unaffected although its financial leverage may simultaneously increase.

4.4.5. Summary of Results

In order to adequately summarize the results of the above analyses, Tables 13 and 14 have been created. It is clear from the tables that for performance measure, ROA and TD/TA were used successfully to determine relationship in capital structure in most models, whereas, in some performance models TD/TE and LTD/TC were found to be more significant than TD/TA. Moreover, GA and Ln (TA) were also found to be significant in determining relationship between firm performance and capital structure for most of the models.

CHAPTER FIVE

5. CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

2.1. Conclusion

This study examined the determinants of several GCC industries, and analyzed the relationship between capital structure and firm performance using a sample of 111 firms from the GCC region from the following sectors: consumer services, consumer non-durable and producer manufacturing. The data for this study covered the ten-year period of 2004-2014, and was used to analyze the topic from four different vantage points: geographically, by focusing on the GCC region specifically and then by focusing on individual countries, sector-wise, by focusing on specific industries, and size of the firms, by dividing firms according to their assets. The results from all four analyses indicate a statistical significant relationship between capital structure and firm performance. Moreover, growth in assets and firm size were found to be significant and important factors in determining capital structure and firm performance. Other major findings of the study are summarized below in Tables 13 and 14, which summarize firm performance and capital structure for all the significant models developed.

The empirical results from all four analyses indicate that of all the determinants used to measure performance, only return on assets and return on equity affect capital structure negatively, which is consistent with the findings of Ebaid (2009) and Salim and Yadav (2012). Return on assets was used to measure firm performance measure in each analysis in this research, and total debt to total assets was used for the analysis of capital structure. In some models total debt to total assets was insignificant, and it was replaced by total debt to total equity to measure capital structure. Capital structure, which is found to be highly significant in determining the relationship with firm performance, was found to have a negative correlation to firm performance, which is consistent with the research of Salim and Yadav (2012); Ebaid (2009); Pratheepkanth (2011) and many more.

Moreover, size of the firm, which was measured by Ln (TA), was found to be positively significant in determining capital structure and firm performance for the GCC region as a whole, which contradicts the findings of many researchers who found no relationship between size of the firm and firm performance, such as Ebaid (2009) and Khan (2012). However, in the countries of Qatar and UAE, size of the firm did not exhibit a significant relationship with performance, and in Oman, size of the firm was insignificant in determining the capital structure of the firms. In the industry analysis, size was found to be significant in determining firm performance but insignificant in determining capital structure in the consumer services sector. In the analysis done of size of the firm, Ln (TA) was found to be positively significant for small firms in determining performance and negatively significant in relation to capital structure, a finding that is also supported by Khan (2012). While size was not found to be play a significant role in large firms' performance, a positive relationship was found to exist between size and capital structure for large firms. This claim is supported by the findings of Ebaid (2009).

Furthermore, the independent variable growth in assets was found to have significant weight in explaining capital structure and firm performance in GCC region firms, which is consistent with the studies of Salim and Yadav (2012). Whereas growth in assets was found to be insignificant in Qatar in determining performance and determining capital structure, it was found to be significant in Bahrain and Kuwait (Tables 13 and 14). In the industry analysis, it was found that growth in assets is positively significant in determining the performance of firms, but it was unsuccessful in determining capital structure within the producer manufacturing and consumer non-durable service sectors. From the analysis done for size of the firm, it can be concluded that growth in assets determines the performance of small and large firms positively, which is consistent with the work of Salim and Yadav (2012). But in terms of determining capital structure, it is insignificant for small firms although shows a positive relationship with large firms.

In the end, the main objective of the study was obtained, and it can be concluded that there is a significant relationship between capital structure and firm performance in non-financial firms in the GCC region.

Table 13: Performance Models Summary

Models	GCC	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	Consumer Non-Durables Sector	Consumer Services Sector	Producer Manufacturing Sector	Small Firms	Large Firms
Dep. Var.	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
Constant	3.181 (3.570)	-2.451 (-0.625)	-6.068 (-2.674)	3.301 (1.841)	10.706 (12.818)	-7.046 (-2.537)	9.244 (7.629)	1.960 (1.132)	2.497 (1.625)	4.229 (2.809)	1.221 (0.554)	9.644 (18.084)
TD/TA	-0.165 (-10.858)*	-	-0.254 (-5.680)*	-0.180 (-7.404)*	-0.196 (-4.098)*	-	-	-0.137 (-6.273)*	-0.240 (-6.249)*	-0.113 (-8.038)*	-0.135 (-6.915)*	-0.148 (-8.04)*
TD/TE	-	-	-	-	-	-0.055 (-5.043)*	-0.091 (-5.525)*	-	-	-	-	-
LTD/TC	-	-0.736 (-4.489)*	-	-	-	-	-	-	-	-	-	-
GA	0.065 (7.144)*	0.406 (4.938)*	0.040 (2.427)**	0.066 (4.012)*	-	0.081 (3.688)*	0.085 (2.695)*	0.133 (5.716)*	0.042 (3.224)*	0.080 (5.728)*	0.096 (5.418)*	0.043 (4.774)*
Ln (TA)	1.048 (5.761)*	2.198 (2.418)**	2.595 (5.228)*	1.839 (3.688)*	-	2.708 (5.018)*	-	0.986 (2.701)*	1.507 (4.347)*	0.648 (2.648)*	1.262 (2.021)**	-
df	972	55	229	288	38	252	95	285	398	298	487	496
Adj-R ²	0.164	0.414	0.150	0.253	0.294	0.158	0.305	0.243	0.115	0.295	0.175	0.142
S.E. of Est.	9.312	5.899	9.620	9.183	3.738	9.598	8.714	9.679	10.103	7.331	11.521	7.225
F-value	64.688	13.977	14.496	33.591	16.791	16.731	19.232	31.43	18.191	42.563	35.408	42.004

Table 14: Capital Structure Models Summary

Models	GCC	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	Consumer Non-Durables Sector	Consumer Services Sector	Producer Manufacturing Sector	Small Firms	Large Firms
Dep. Var.	TD/ TA	TD/TA	TD/TA	TD/TA	TD/TA	TD/TA	TD/TA	TD/TA	TD/TA	TD/TA	TD/TA	TD/TA
Constant	12.181 (6.984)	-4.765 (-1.769)	-14.035 (-4.583)	36.268 (21.851)	4.075 (0.477)	-23.34 (-6.584)	4.324 (0.875)	27.443 (17.680)	1.866 (0.968)	37.07 (24.445)	47.685 (10.866)	-15.834 (-4.085)
ROA	-0.656 (-10.858)*	-0.376 (-4.555)*	-0.491 (-5.680)*	-1.377 (-10.352)*	-1.354 (-3.670)*	-0.299 (-3.67)*	-0.490 (-3.370)*	-0.852 (-6.480)*	-0.375 (-6.249)*	-1.319 (-8.514)*	-0.641 (-6.827)*	-0.628 (-7.149)*
GA	0.042 (2.276)*	0.168 (2.647)**	0.057 (2.538)**	-	-	-	-	-	0.055 (3.371)*	-	-	0.045 (2.353)*
LN (TA)	2.388 (6.624)*	2.051 (3.284)*	6.321 (10.593)*	-	3.543 (2.713)**	8.399 (13.693)*	3.006 (3.236)*	-	2.771 (6.576)*	-	-7.802 (-5.820)*	7.020 (11.312)*
df	972	55	229	308	38	254	95	285	398	298	487	496
Adj-R ²	0.129	0.317	0.369	0.256	0.397	0.424	0.165	0.126	0.169	0.193	0.171	0.295
S.E. of Est.	18.563	4.133	13.363	27.235	9.830	13.546	14.804	24.676	12.639	23.353	25.642	14.823
F-value	48.904	9.519	45.586	107.166	13.519	94.396	10.391	41.996	28.022	72.482	51.216	70.315

2.2.Limitations

Although the study was done effectively, it is not free from some unavoidable limitations. The key limitations were due to the sample size, observation length, methodology used and the effect of financial crisis.

Data was obtained from the FactSet database, but the sample size was very small due to limited availability of data. The sample was selected not in terms of number of firms or time period but from each country or industry. In addition, most of the variables were found to be abnormally distributed, which may impact the accuracy of the results obtained.

Although regression method is largely used to study the relationship between capital structure and firm performance, as is evident in the recent literature, it may not be wholly appropriate to determine this relationship in the GCC. Models were developed using multiple linear regression, and the null hypotheses were rejected if there was no linear relationship, whereas the relationship might be non-linear or curvilinear, which was not tested in this study.

Moreover, the financial crisis period was not excluded from this sample, and its influence could create biased results. Exclusion of financial crisis period may change the results to some extent. For the firm-size analysis, only two categories were selected, small and large, which is too broad a range to accurately represent the sample size.

The variables used in the models were selected based on studies which were conducted in different regions of the world. While these variables may have been significant for those particular studies, they may not be appropriate for studying the GCC market.

2.3.Recommendations

This study tries to fill in the existent gap in one area of corporate finance, capital structure and firm performance of GCC firms. However, due to certain limitations, some suggestions for further studies are recommended.

Due to the lack of availability of data, many firms in the industries chosen for this study were eliminated, thus limiting the scope of results. Therefore, it is predicted that extending the sample size and number of observations will improve the quality of the data and results.

The analyses were made on only three sectors of the GCC region due to the limitation of time. For further studies, it will be beneficial to include more sectors so the results will be more accurate and applicable. More analysis regarding size of firm can be done by looking more closely at total assets. In this study, the range is huge, which means the sample should be divided into more categories such as very large, large, medium, and small firms.

Due to the limitation of time, only accounting ratios were used. For future studies where market data is available, different ratios can be studied, such as Tobin's Q to measure performance, and market to book ratios to determine capital structure. Other techniques, such as chi-square (to measure the difference between the categories), t-test or f-test could also be used to make the models more robust.

This study uses panel data methods for statistical analysis; however, other statistical methods can be used to check the consistency of the results. It is also recommended, if possible, to use more than two methods to analyze the data, as that may help to clarify results and also to find the best mode of measure.

It is also recommended to study the period of financial crisis separately to avoid its impact and any influence on results. By eliminating the financial crisis from the analysis, we can better understand the impact capital structure and firm performance have on each other.

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APPENDIX A: List of Selected Sample

Sr. #	Company	Country	Industry
1	Bahrain Cinema Co. BSC	BAHRAIN	Consumer Services Sector
2	Bahrain Family Leisure Co. BSC	BAHRAIN	Consumer Services Sector
3	Bahrain Tourism Co. BSC	BAHRAIN	Consumer Services Sector
4	Banader Hotels Company BSC	BAHRAIN	Consumer Services Sector
5	Gulf Hotels Group BSC	BAHRAIN	Consumer Services Sector
6	National Hotels Company BSC	BAHRAIN	Consumer Services Sector
7	AFAQ Educational Services Co. KSC	KUWAIT	Consumer Services Sector
8	Al-Bareeq Holding Co. KSC	KUWAIT	Consumer Services Sector
9	Al-Shamel International Holding Co. KSCC	KUWAIT	Consumer Services Sector
10	Alrai Media Group Company K.S.C.	KUWAIT	Consumer Services Sector
11	Educational Holding Group (K.S.C.P.)	KUWAIT	Consumer Services Sector
12	Flex Resorts & Real Estate Co. (K.S.C.)	KUWAIT	Consumer Services Sector
13	Future Kid Entertainment Real Estate Co. KSCC	KUWAIT	Consumer Services Sector
14	Hits Telecom Holding Co. KSCC	KUWAIT	Consumer Services Sector
15	Kout Food Group KSCC	KUWAIT	Consumer Services Sector
16	Kuwait Cable Vision Co. SAK	KUWAIT	Consumer Services Sector
17	Kuwait Food Co. (Amricana) S.A.K.	KUWAIT	Consumer Services Sector
18	Kuwait Hotels Co. SAK	KUWAIT	Consumer Services Sector
19	Kuwait National Cinema Co.	KUWAIT	Consumer Services Sector
20	Nafais Holding Co. KSCC	KUWAIT	Consumer Services Sector
21	Kuwait United Poultry Co. KSC	KUWAIT	Consumer Non-Durable Sector
22	Livestock Transport & Trading Co. KSC	KUWAIT	Consumer Non-Durable Sector
23	Mezzan Holding Company K.S.C. (Closed)	KUWAIT	Consumer Non-Durable Sector
24	National Slaughter House Co. KSCC	KUWAIT	Consumer Non-Durable Sector
25	United Foodstuff Industries Group Co. KSCC	KUWAIT	Consumer Non-Durable Sector
26	Arabi Holding Group Co. (K.S.C.C)	KUWAIT	Producer Manufacturing Sector
27	Gulf Cable & Electrical Industries Co. KSC	KUWAIT	Producer Manufacturing Sector
28	Heavy Engineering Industries & Shipbuilding Co. (KSC)	KUWAIT	Producer Manufacturing Sector
29	Kuwait Foundry Company	KUWAIT	Producer Manufacturing Sector

30	National Industries Group (Holding) SAK	KUWAIT	Producer Manufacturing Sector
31	Refrigeration Industries Co.	KUWAIT	Producer Manufacturing Sector
32	Specialities Group Holding Co (KSCC)	KUWAIT	Producer Manufacturing Sector
33	United Industries Co.	KUWAIT	Producer Manufacturing Sector
34	Al Batinah Hotels Co. Saog	OMAN	Consumer Services Sector
35	Al Buraimi Hotel	OMAN	Consumer Services Sector
36	Al Jazeira Services Co. SAOG	OMAN	Consumer Services Sector
37	Dhofar Tourism Co. SAOG	OMAN	Consumer Services Sector
38	Gulf Hotels (Oman) Co.	OMAN	Consumer Services Sector
39	Majan College (University College) SAOG	OMAN	Consumer Services Sector
40	National Hospitality Institute	OMAN	Consumer Services Sector
41	Oman Education & Training Investment Holding SAOG	OMAN	Consumer Services Sector
42	Oman Hotels & Tourism Co.	OMAN	Consumer Services Sector
43	Salalah Beach Resort SAOG	OMAN	Consumer Services Sector
44	UBAR Hotels & Resorts SAOG	OMAN	Consumer Services Sector
45	A'Saffa Foods SAOG	OMAN	Consumer Non-Durable Sector
46	Areej Vegetable Oils & Derivatives SAOG	OMAN	Consumer Non-Durable Sector
47	Dhofar Beverages & Food Stuff SAOG	OMAN	Consumer Non-Durable Sector
48	Dhofar Fisheries & Food Industries Co. SAOG	OMAN	Consumer Non-Durable Sector
49	Gulf Mushroom Products Co. Saog	OMAN	Consumer Non-Durable Sector
50	National Biscuit Industries Ltd SAOG	OMAN	Consumer Non-Durable Sector
51	National Detergent Co. SAOG	OMAN	Consumer Non-Durable Sector
52	National Mineral Water Co. SAOG	OMAN	Consumer Non-Durable Sector
53	Oman Agricultural Development Co. SAOG	OMAN	Consumer Non-Durable Sector
54	Oman Foods International SAOC	OMAN	Consumer Non-Durable Sector
55	Oman Refreshment Co., Ltd. SAOG	OMAN	Consumer Non-Durable Sector
56	Omani Euro Food Industries SAOG	OMAN	Consumer Non-Durable Sector
57	Sweets of Oman	OMAN	Consumer Non-Durable Sector
58	Abrasives Manufacturing Co. SAOG	OMAN	Producer Manufacturing Sector
59	Al Anwar Ceramic Tiles Co.	OMAN	Producer Manufacturing Sector
60	Al Batinah Development & Investment Holding Co. SAOG	OMAN	Producer Manufacturing Sector
61	Gulf Stone Co. SAOG	OMAN	Producer Manufacturing Sector
62	Oman Cables Industry SAOG	OMAN	Producer Manufacturing Sector
63	Oman Ceramic Co. SAOG	OMAN	Producer Manufacturing Sector

54	Oman Filters Industry Co. SAOG	OMAN	Producer Manufacturing Sector
55	Voltamp Energy SAOG	OMAN	Producer Manufacturing Sector
56	Qatar Cinema & Film Distribution Co.	QATAR	Consumer Services Sector
57	Zad Holding Co.	QATAR	Consumer Non-Durable Sector
58	Qatar Industrial Manufacturing Co.	QATAR	Producer Manufacturing Sector
59	Salam International Investment Ltd.	QATAR	Producer Manufacturing Sector
70	Abdul Mohsen Al-Hokair Group for Tourism and Development Company	SAUDI ARABIA	Consumer Services Sector
71	AlKhaleej Training & Education Co.	SAUDI ARABIA	Consumer Services Sector
72	Al Tayyar Travel Group	SAUDI ARABIA	Consumer Services Sector
73	Herfy Food Services Co.	SAUDI ARABIA	Consumer Services Sector
74	Saudi Automotive Services Co.	SAUDI ARABIA	Consumer Services Sector
75	Saudi Industrial Services Co.	SAUDI ARABIA	Consumer Services Sector
76	Saudi Printing & Packaging Co.	SAUDI ARABIA	Consumer Services Sector
77	Saudi Research & Marketing Group	SAUDI ARABIA	Consumer Services Sector
78	Tourism Enterprise Co.	SAUDI ARABIA	Consumer Services Sector
79	Almarai Co. Ltd.	SAUDI ARABIA	Consumer Non-Durable Sector
80	Bisha Agricultural Development Co.	SAUDI ARABIA	Consumer Non-Durable Sector
81	Halwani Bros Co. Ltd.	SAUDI ARABIA	Consumer Non-Durable Sector
82	National Agricultural Development Co.	SAUDI ARABIA	Consumer Non-Durable Sector
83	Saudi Fisheries Co.	SAUDI ARABIA	Consumer Non-Durable Sector
84	Saudia Dairy & Foodstuff Co.	SAUDI ARABIA	Consumer Non-Durable Sector
85	Savola Group	SAUDI ARABIA	Consumer Non-Durable Sector
86	Wafrah for Industry & Development	SAUDI ARABIA	Consumer Non-Durable Sector
87	Al-Ahsa Development Co.	SAUDI ARABIA	Producer Manufacturing Sector
88	Al-Babtain Power & Telecommunication Co.	SAUDI ARABIA	Producer Manufacturing Sector
89	Al-Baha Investment & Development Co.	SAUDI ARABIA	Producer Manufacturing Sector
90	Astra Industrial Group	SAUDI ARABIA	Producer Manufacturing Sector
91	Bawan Co.	SAUDI ARABIA	Producer Manufacturing Sector
92	Electrical Industries Co.	SAUDI ARABIA	Producer Manufacturing Sector
93	Middle East Specialized Cables Co.	SAUDI ARABIA	Producer Manufacturing Sector
94	National Industrialization Co.	SAUDI ARABIA	Producer Manufacturing Sector
95	National Metal Manufacturing & Casting Co.	SAUDI ARABIA	Producer Manufacturing Sector
96	Saudi Cable Co.	SAUDI ARABIA	Producer Manufacturing Sector

97	Saudi Industrial Development Co.	SAUDI ARABIA	Producer Manufacturing Sector
98	Saudi Vitrified Clay Pipes Co.	SAUDI ARABIA	Producer Manufacturing Sector
99	Zamil Industrial Investment Co.	SAUDI ARABIA	Producer Manufacturing Sector
00	Abu Dhabi National Hotels Company PJSC	UAE	Consumer Services Sector
01	Dubai Parks and Resorts PJSC	UAE	Consumer Services Sector
02	Emirates Driving Company - PSC	UAE	Consumer Services Sector
03	Makkah & Madinah Holdings Limited Class A	UAE	Consumer Services Sector
04	National Corporation For Tourism & Hotels	UAE	Consumer Services Sector
05	Dubai Refreshment PJSC	UAE	Consumer Non-Durable Sector
06	Emirates Refreshments PSC	UAE	Consumer Non-Durable Sector
07	Gulfa Mineral Water & Processing Industries Co PLC	UAE	Consumer Non-Durable Sector
08	United Foods Co. PSC	UAE	Consumer Non-Durable Sector
09	United Kaipara Dairies Co. PSC	UAE	Consumer Non-Durable Sector
10	Abu Dhabi Ship Building Company	UAE	Producer Manufacturing Sector
11	Ras Al Khaimah Ceramics PSC	UAE	Producer Manufacturing Sector

APPENDIX B: List of Figures

Figure 6: Return on Equity

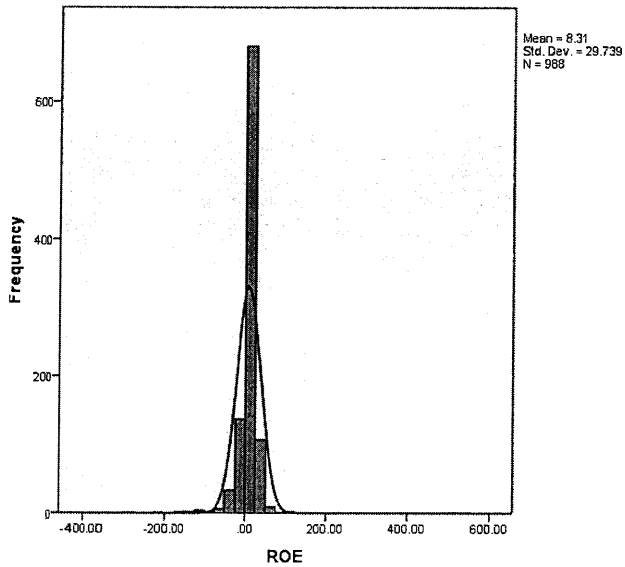


Figure 7: EBIT Margin

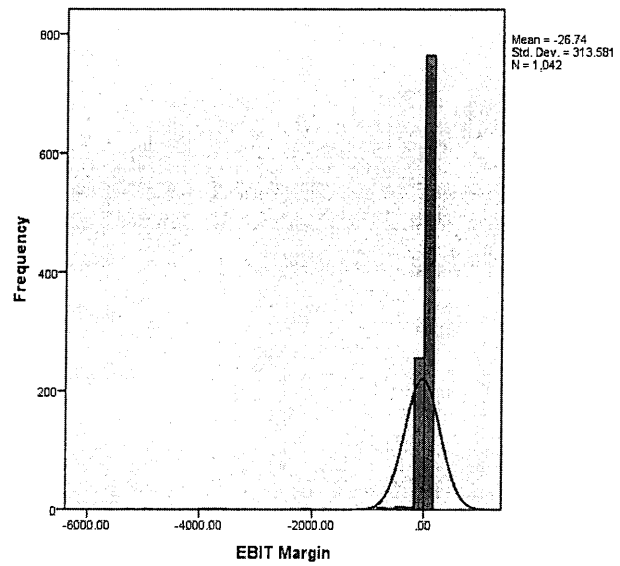


Figure 8: EPS

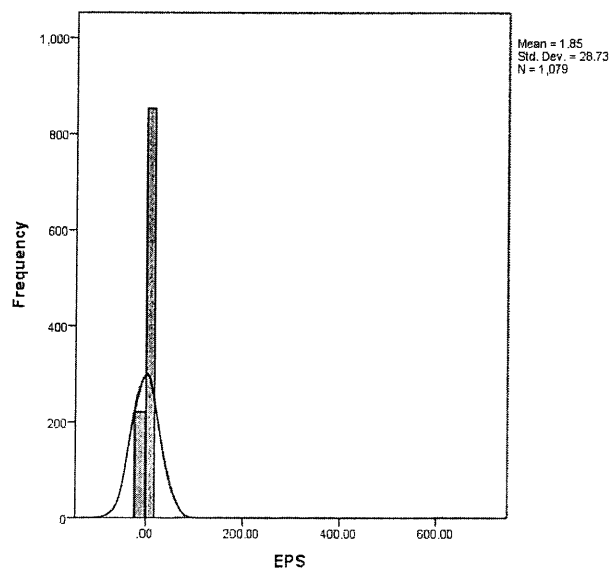


Figure 9: Total Debt to Total Equity

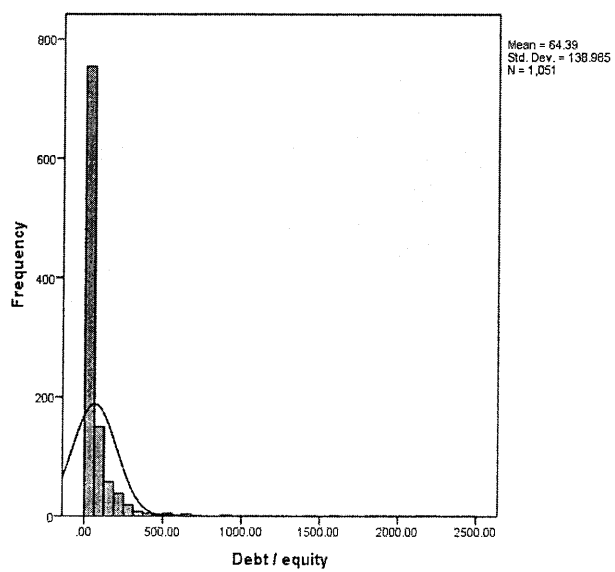


Figure 10: LTD/ Total equity

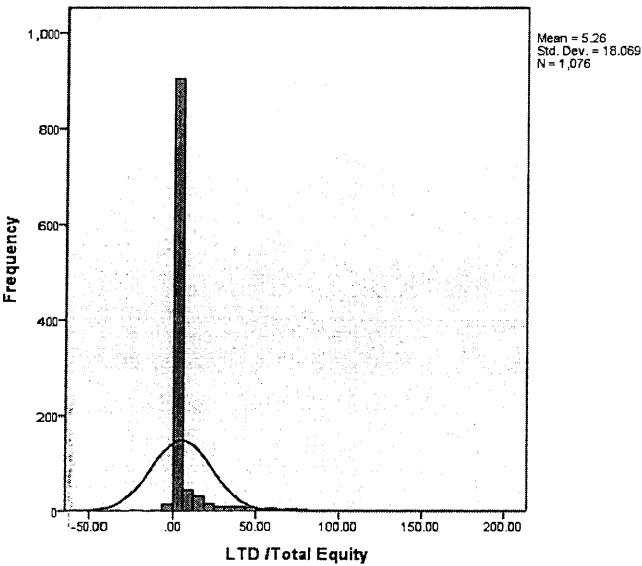


Figure 11: LTD/Total capital

