The Effect of Corporate Governance Characteristics on Performance and Capital Structure: an Empirical Study of Saudi Listed Companies.

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Sara A. AlJanoubi

Middlesex University London

Business School

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Abstract

This thesis examines corporate governance in Saudi listed companies. Specifically, three main topics are empirically examined: the relationship between board structure and performance, the relationship between ownership structure and performance and the determinants of capital structure with respect to corporate governance.

Saudi Arabia is a special case in which companies do not pay income tax and the bond market is illiquid and in its early stages. Ownership is concentrated and based on wealthy families and the government. Furthermore, the Saudi society has some distinctive features such as the strong relationship between family members, furthermore, a significant number of shares are owned by some wealthy families and the government. Therefore, this thesis attempts to reflect these social aspects into examining the performance and the financing decisions of Saudi listed firms. Furthermore, bank connection is a new variable that has not been examined before, it is an important feature in the Saudi markets as it represents the connection of listed companies with banks and it will be used in this thesis to measure the effect of this connection on the level of leverage. [1]

The sample of analysis is comprehensive, it includes all non-financial listed companies on Saudi stock exchange (TADAWUL) covering a six-year period from 2009-2014, following the most recent revision of the Saudi corporate governance code in 2009. The analysis is done by applying three different econometric techniques including ordinary least squares, fixed-effects and system generalized method of moments. Ordinary least squares and fixed-effects are applied to compare the findings with previous studies as those studies have applied those models. Hence, this thesis

[1] More details on the variable are found in chapter 5

applies the ordinary least squares and the fixed-effects models to compare our results with previous studies in order to verify our sample data. Furthermore, dynamic system generalized method of moments is also applied as the main model to control for endogeneity since it has been argued that controlling for endogeneity would present different results. Furthermore, the relationship between corporate governance and performance in addition to the determinants of capital structure is revised using the generalized method of moments technique to control for endogeneity.

Based on the generalized method of moments, board characteristics do not affect performance and this could be due to the inapplicability in the Saudi corporate governance code in defining independent directors. Also, there is no relationship between insider, government and institutional ownership, and performance whereas family ownership produces significant and cubic relationship with performance. In term of the determinants of capital structure, the results show that liquidity, tangibility and firm size positively affect leverage. Profitability and growth have insignificant effects on leverage. Government ownership has significant negative effect on leverage only in companies where family ownership is controlled for. Insider, family and institutional ownership do not affect the level of debt. Bank connection has a significant positive impact on leverage; this suggests that when a board member is also a member on a bank's board, it might render getting debt from the bank.

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Last but not least, I would like to thank my Mom for her continuous prayers and love. My brother Faisal, without his endless support, my study could not have been completed. My sister Meshael, is always being there. My husband Ahmed, has joined me during my last year of study and continued to provide me with cheerful emotions.

Dedication

This thesis is dedicated to the soul of my father, who would have been happy to see me follow his steps in education.

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List of Abbreviations

CG – Corporate Governance

TADAUWL – Saudi Stock Exchange

OLS – Ordinary Least Square

FE – Fixed Effect

GMM – Generalized Method of Moment

CMA – Capital Market Authority

BODs - Board of Directors

PIF – Public Investment Fund

PPA – Public Pension Fund

GOSI – General Organization of Social Insurance

Chapter 1 Introduction

1.1 Background

The term corporate governance (CG) was first used in the beginning of the 19th century. In recent years, the concept of CG has been used more broadly by experts working in international, regional and local organizations to improve the CG practices and codes (Solomon, 2007).

The financial Crisis of 1997 in East Asia, the global scandals of Enron, WorldCom and other companies, followed by the financial crisis in 2007 have proved that there is a lack of effective monitoring mechanisms and increased attention on CG, both locally and internationally (Joh, 2003). These crises acted as alarm bells for the corporate world, altering them to that fact that they should follow CG best practices. Therefore, regulators around the world began maximizing their efforts to shape the best regulatory controls.

The notion of CG emerged as a means of controlling and managing relations between board of directors, executive directors, committees, in addition to shareholders of the company. This points to the vital role of effective CG in the whole of society (Ibrahim et al., 2010). Accordingly, the Capital Market Authority (CMA) in Saudi Arabia revised the CG code in 2009.

Furthermore, it is important to look at emerging markets as their role and importance in the global economy is increasing, given their economic growth forecasts. Furthermore, emerging markets involve attractive opportunities for some investors, but those opportunities are accompanied with different types of risks. Hence, investors need to better understand the firm-level governance in different markets (Ararat and Dallas, 2011).

It is also generally agreed that strong CG will enhance firm performance and maximize shareholder wealth, while weak governance gives managers the opportunity to mismanage assets of the firm (Ahmed and Duellman, 2007). Consequently, investigating the impact of CG on shareholder wealth has attracted the attention of practitioners (Pintea and Fulop, 2015 and Ng'eni, 2015).

Although the importance of CG around the world has dramatically increased, the literature has reported inconclusive evidence about the best CG practices (García-Castro, 2013; Dalton et al., 1995; Johnson, & Grossman, 2002;Daily et al., 2003 and Dalton et al., 1998). Despite the massive amount of research and theories that have been proposed, there is much yet to be explored about CG. As such, there are no exact board characteristics or ownership structures that have been shown to lead to better performance every time. Similarly, there are no precise CG characteristics or ownership structures that create an optimal capital structure.

Given the fact that CG practices vary across different markets and what seems to work in one market does not necessarily apply to other markets, investigating the effectiveness of the CG code in Saudi firms as this thesis intends, should incorporate common practices in Saudi firms. This thesis identifies the most important customs with which business is conducted in the Saudi market. Personal affairs, kindred and other forms of affinities play a major role in building networks and ties with influential government individuals. Hence, family ownership and government ownership are some of the key features of many Saudi listed firms. This extends to building relationships with banks through a board member representing the bank. Therefore, this thesis will examine the relationship between board of directors' (BODs) characteristics (board size and independence) and performance, the relation between ownership structure (insider ownership, family ownership, government and

institutional ownership) and performance as well as examining ownership structure and bank connection in relation to the capital structure of Saudi listed firms.

1.2 Aim of The Study

Despite the importance of CG around the world, studies regarding the impact of CG characteristics on firm performance and those that examine the determinants of capital structure are very limited in the GCC in general and in Saudi Arabia in particular. The studies that have been carried out by Aljifri and Moustafa (2007) in the UAE have shown that governmental ownership and debt ratio have a significant impact on firm performance. Al-Matari et al. (2012) have shown in Kuwait that board size, board composition and firm size have no impact on performance whereas leverage has a negative impact on performance. Najjar (2012) has shown that ownership concentration does not affect performance while board size and firm size significantly impact performance in the insurance industry in Bahrain. In Saudi Arabia Al-Hussain and Johnson (2009), Al- Abbas (2009), Al-Matari et al. (2012), Ghabayen (2012), and Fallatah and Dickins (2012) among others, have looked at the relationship between CG mechanisms and performance and concluded mixed results.

The ambiguity and lack of research in the field of CG in general and Saudi Arabia in particular suggests that it is important from both academic and practical points of view to examine the relationship between CG characteristics and firm performance and to investigate whether such characteristics might influence the performance of the companies in order to contribute to the debate on whether certain CG characteristics can be documented to represent best practices. Therefore, this thesis empirically analyses whether there is any significant association between CG characteristics and firm performance in Saudi Arabia and investigates the determinants of capital structure. In addition, it also aims to assess how prior research findings globally compare with the findings in this research. Finally, it aims to determine whether the implemented theories in western countries are applicable to the Saudi market.

1.3 Scope of The Study

This thesis aims to identify the nature of composition and configuration of the BODs, assess the nature of the relationship between board structure and performance, identify the nature of ownership structure, assess the nature of the relationship between different ownership structures and performance and finally examine the determinants of capital structure in Saudi listed companies. This thesis investigates listed companies on the Saudi Stock Exchange (TADAWUL) excluding banks and financial companies for the period 2009 to 2014, the sample period was not ventured further backwards as we were not able to obtain pre 2009 data.

1.4 Topics of Analysis

Three main topics are empirically examined in this thesis: the relationship between board structure and performance, the relationship between ownership structure and performance and the determinants of capital structure in the Saudi stock exchange.

1.4.1 The Relationship between Board Structure and Performance

Members on the BODs are elected to govern the firm and they have ultimate authority to make decisions. The main role of the board is to supervise managers, ensure that the interests of shareholders are protected and maximize the performance of the company. Managers have their own interests and may not act in the shareholders' best interests. The agency theory claim is that the board of directors reduces the agency conflict by monitoring and controlling managers (Fama and Jensesn, 1983).

It has been argued in the literature that having independent directors on the board will protect the interest of shareholders as they are financially independent and hence will enhance the performance of the company[2]. It has been further argued that board size affects monitoring as the larger the board the more able it is to monitor managers (Abdullah, 2004). However, there is no clear evidence in the literature in regards to the relationship between board structure and performance. There are only a few studies in the Saudi context that have examined this relationship. However, these have mainly been limited to examining the period of one year such as Ghabayen (2012) and Habbash and Bajaher (2015). Moreover, Habbash and Bajaher (2015) worked on a considerably old sample period from 2006 to 2009. Since the Saudi code was established in 2006 and revised in 2009, the results of the study do not reflect the actual effect of the Saudi CG code on performance. Furthermore, they all conclude

[2] More details about the literature on independent directors are found in chapter 3

that board size has no effect on performance while board independence has mixed results. From this, the following hypotheses are proposed:

H1a: there is a significant positive relationship between board independence and firm performance.

H1b: there is a significant negative relationship between board independence and firm performance.

H2a: There is a significant positive relationship between size of the board and firm performance.

H2b: There is a significant negative relationship between size of the board and firm performance.

1.4.2 The Relationship between Ownership Structure and Performance

Ownership structure is one of the main internal corporate governance mechanisms that has attracted huge attention in the literature because it is believed to have an impact on the value of the firm.

Ownership structure can be categorized under different groups such as insider, family, institutional and government. However, there are two different views on the results on the relationship between insider ownership and performance. The first stems from the convergence of interest hypothesis which argues that when insiders' own shares, their interests will be aligned with the interests of shareholders. The second view is based on the entrenchment hypothesis and states that when insiders' ownership increases, those insiders will become entrenched because of the high percentage of shares they own. Similarly, it has been argued in the literature that family ownership has two different impacts on performance: the positive impact is due to the monitoring effect while the negative impact is due to the extensive cash flow rights and the authority to make decisions that benefit their own interest at the expense of other shareholders.

Since there are two contradicting views on the relationship between insider and family ownership, and performance, this lead us to believe that this relationship is non-linear since it could be that different ownership levels have different effects on performance. According to Jensen and Meckling (1976), government ownership solves information asymmetry. Furthermore, institutional ownership is thought to protect the interest of minority shareholders and hence both government and institutional ownership are believed to enhance the performance of the company.

The research in regards to the impact of different ownership groups on CG is globally extensive. However, there is limited literature focus on Saudi market (Eljelly and Authority, 2009; Soliman, 2013; Arouri et al., 2014; Al-Dubai et al., 2015 and Nobanee, et al., 2017, among other); those studies that have been conducted have not filled the gap in our knowledge the due to their period of analysis being limited to one year such as Al-Matari et al. (2012) and Ghabayen (2012), or only including banks such as Arouri et al. (2014), or being based on an old sample at a time when the Saudi code was not established or revised such as Soliman (2013). Another gap in the literature on the Saudi market is on examining the non-linear relationship between ownership structure and performance with a recent sample that covers a longer period and applies more advanced econometric techniques. Among those studies that have been conducted but have fallen short are Soliman (2013) and Al-Dubai et al. (2015).

Saudi listed companies are unique and have their own characteristics, with family members having a strong relationship with each other, and several companies being either partially or majority owned by the government or families. Hence, it is essential to examine the relationship between ownership structure and performance. This thesis tests the following hypotheses:

H3: there is a nonlinear relationship between insider ownership and performance.

H4: there is a non-linear relationship between family ownership and firm

performance.

H5a: there is a significant positive relationship between governmental ownership and performance.

H5b: there is a significant negative relationship between governmental ownership and performance.

H6: there is a significant positive relationship between institutional ownership and performance.

1.4.3 The Determinants of Capital Structure

Capital structure is the mix of funds that a firm uses to finance its operations; it is measured by the relative amount of debt and equity. However, firms vary in their capital structure and several theories have been developed to explain this variation. Jensen and Meckling (1976) introduced the agency cost of debt hypothesis. They argued that diversified shareholders are risk neutral and have the motivation to invest in projects with a higher expected return and hence, higher risk. Therefore, debt holders will ask for higher interest rates. Consequently, the cost of debt will be higher. Myers (1984) developed the pecking order theory which claims that firms have an order of preference when they need to get finance. Firms prefer internal financing from retained earnings, then by debt and finally by external equity offering.

Further, it is suggested that a company's good CG will result in better performance, more transparency and hence lower cost of debt as debt holders will be more confident about lending to companies with good performance. Since ownership is believed to affect performance which will in turn affect the cost of debt, ownership structure is one of the internal mechanisms that has been widely examined in the literature as a determinant of capital structure. Furthermore, there are several variables

that are suggested to affect the capital structure of the company such as profitability, size of the firm, growth, tangibility and liquidity.

A substantial number of papers have empirically studied the determinants of capital structure in developed and emerging markets and yet the results from different contexts are inconclusive and mixed (Rajan and Zingales, 1995; Booth et al. 2001; Gaud et al., 2005; Omet and Mashharawe, 2002).

However, studies on the determinants of capital structure in the Saudi market are very rare and do not include a recent sample or offer conclusive results. Such studies have included some financial variables such as profitability and size (Omet and Mashharawe, 2002; Abdullah, 2005; Sbeiti, 2010 and Alzomaia, 2014), while only a few studies have included ownership variables (Al-Sakran, 2001 and Alajmi et al. 2009). However, none of those have included insider ownership although it has been extensively examined in the literature and is believed to have a significant impact on capital structure. Therefore, this thesis tests the following hypotheses:

H7a: there is a significant positive relationship between firm size and leverage.

H7b: there is a significant negative relationship between firm size and leverage.

H8a: there is a significant positive relationship between profitability and leverage.

H8b: there is a significant negative relationship between profitability and leverage.

H9a: there is a significant positive relationship between liquidity and leverage.

H9b: there is a significant negative relationship between liquidity and leverage.

H10a: there is a significant positive relationship between tangibility and leverage.

H10b: there is a significant negative relationship between tangibility and leverage.

H11a: there is a significant positive relationship between growth and leverage.

H11b: there is a significant negative relationship between growth and leverage.

H12: there is a positive relationship between bank connection and leverage. [3]

H13: there is a negative relationship between government ownership and leverage

H14: there is a positive relationship between family ownership and leverage

H15: there is a positive relationship between insider ownership and leverage.

H16: there is a positive relationship between institutional ownership and leverage

[3] Bank connection is a new variable; more discussion is found in chapter 5

1.5 Contribution

This thesis contributes to the literature on CG in several ways. The lack of studies that examine the relationship between CG and performance and the determinants of capital structure in Saudi listed firms creates an opportunity to shed light on this relationship and to find out whether different theories of CG applied in western countries are applicable to the Saudi context, especially given that the Saudi market has its own unique characteristics in which there is no income tax and the bond market is illiquid and in its early stages.

The Saudi code was established in 2006 and revised in 2009. This is the first attempt to analyse CG using a recent sample period as previous studies on the Saudi market have included years in which the Saudi code had either not yet been established or not yet revised. Furthermore, the sample period is considerably long, covering the period 2009 to 2014. This contrasts with some previous research which has only included one year of data.

Past papers that have examined the relationship between board structure and performance have produced mixed results. This thesis contributes to the literature by finding that there is no relationship between board structure and performance in Saudi listed companies after controlling for endogeneity.

Another contribution is that as far as the author is aware, this is the first attempt to examine the cubic relationship between family ownership and performance in addition to the quadratic relationship between insider ownership and performance in the Saudi market context. Further, the results obtained from the advanced econometric technique add new findings to the existing literature.

Furthermore, as far as the determinants of capital structure are concerned, this thesis also offers a major contribution to the literature, by including a new variable that has

not been examined before in the literature, which is the bank connection. A more detailed explanation of this variable will be in the data section in the relevant empirical chapters. To the best knowledge of the author, this is the first attempt to include this variable in the analysis in the Saudi context and in other countries. A further major contribution is to examine the effect of insider ownership on capital structure which is, as far as the author is aware, not been done before in studies on the Saudi market although it has been argued in the literature that insider ownership is important in this matter.

Furthermore, this thesis applies different econometric techniques including OLS and fixed effects to compare the findings not only with empirical evidence internationally, but also with the findings of the few past studies in the Saudi market. It also controls for endogeneity by applying the dynamic GMM technique following the argument in the literature that not controlling for endogeneity will lead to biased results.

Finally, this thesis provides insight into how firms can utilize ownership structure to maximize their profitability and efficiency. It also increases the awareness of investors to look at ownership structure as it has been proved that it significantly affects the performance of Saudi listed companies.

1.6 Structure of the Thesis

This thesis consists of six chapters; the current chapter introduces the thesis and includes the background, aims, the scope of the study, topics of analysis and contribution. Chapter 2 explains the literature review and presents a background of Saudi Market. Chapter 3 empirically examines the relationship between board structure and performance. Chapter 4 empirically examines the relationship between ownership structure and performance. The determinants of capital structure are empirically analysed in chapter 5. And finally, chapter 6 concludes the thesis, presents the limitations and offers recommendations for future research.

Chapter 2 Literature Review

2.1 Introduction

The goal of this chapter is to review the literature on corporate governance (CG) and to present a background of the Saudi Market. After the introduction in this section, section 2.2 introduces the history of corporation and section 2.3 presents several definitions of corporate governance. Empirical findings on the relationship between CG and performance will be outlined in section 2.4 and 2.5. Section 2.6 presents empirical findings on the determinants of capital structure. Section 2.7 presents a background of the Saudi market and a summary of the Saudi CG code.

2.2 History of Corporations

The concern of how companies should be managed to gain the optimal resource allocation is old as the history of companies. According to Mueller (2003), *"the separation of ownership from control, the corporate form as we know it today is the product of an evolutionary process that began in England as early as the seventeen century."* (p.63).

During that period, corporations were owned by a few individuals, some of whom were also the managers. Those corporations were very limited in the type of activities that they could engage in. Furthermore, managers are required to get the approval of all shareholders in some decisions such as purchasing other companies. Interestingly, in United States, shareholders of corporates had strong control until the middle of the 19th century. During that time, shares were only transferred or sold to relatives and friends. There was not any organized market to transfer shares. Ownership was concentrated in the hands of owners whom were the controllers and the managers of the corporation (Mueller, 2003).

Braendle and Kostyuk (2007) state that before the concept of corporations was developed, partnership was the only form available until the beginning of the 17th century. It was only in the 19th century, when growing industrialization, especially in the railroad industry, led to the establishment of large firms and thus for further demand of capital. This period witnessed a huge issuance of shares and a substantial increase in the number of shareholders (Wells, 2010).

By the end of the 19th century and the beginning of the 20th century, the growth of corporations along with the reduction of family ownership in corporations led to the separation of ownership and control. Besides, control progressively shifted from the

hands of owners to the managers. Thus, agency problems appeared (Mueller, 2003 and Braendle and Kostyuk, 2007).

Nevertheless, Cheffins (2012) states that *"There is no definitive historical treatment of corporate governance and there may never be one, given the vastness of the subject"* (p. 1). He also argues that the history of corporate governance goes back to the 16th and 17th century, when some major charted companies such as the East India and the Hudson Bay were formed.

Furthermore, Wells (2010) states that corporate governance has been with us since the implementation of the corporate form created the possibility of conflicts between investors and managers; yet, he argues that there is a traditional view that the birth of corporate governance goes back to 1932 when Berle and Mean published their paper and described the problems that arise from the separation of ownership and control in modern corporations.

2.3 Corporate Governance Definitions

The term corporate governance (CG) has been diversely defined and there are several terms that are commonly used to define CG in the literature, however, those terms have ambiguous meanings. Furthermore, in the last few years there have been different thoughts on the definition of CG during its development, because scholars have different points of view when they explore firms.

Claessens and Yurtoglu (2013) argue that there are two categories for the definition of CG. The first is classified as a narrow definition and it focuses on the behaviour of the firm, such as the operation of board of directors, performance, growth, treatment of shareholders and other stakeholders and it is used in single-country studies. The second category involves broader definition used in cross-country studies and focuses on the framework within which the company operates, such as rules of the legal system and financial markets. They also argue that in the field of finance, the definition would focus on how shareholders can protect themselves against the expropriation by managements.

The most widely used CG definition is "*the system by which companies are directed and controlled*." (Cadbury Committee, 1992). Shleifer and Vishny (1997) define CG in the finance literature as *"the way in which suppliers of finance to corporations assure themselves of getting a return on their investments. How do they make sure that managers do not steal the capital they supply or invest in bad projects? How do suppliers of finance control managers?"* (p. 737). In a similar manner, Denis and McConnell (2003) define CG as "*the set of mechanisms, both institutional and market-based, that induces the self-interested controllers of a company to make decisions that maximise the value of the company to its owners."* (p. 2).

In 2004, OECD suggested a wider definition of CG *as "CG involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. CG also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined"*

According to Schneider and Scherer (2015), CG is a tool to minimize the risk borne by the company's shareholders, who are also regarded as the owners of the company. According to John and Senbet (1998), CG deals with mechanisms by which the stakeholders of a corporation exercise control over corporate insiders and management in such a way that their interests are protected.

However, the Saudi CG code was established in 2006 and revised in 2009, hence, the concept of CG in the Saudi context is considerably recent and in its early stages. Further the definition and concept of CG in the Saudi context is unclear. This is because the word "CG" means "Hawkama" when translated to Arabic language and this term is very ambiguous.

2.4 Board of Director Characteristics and Performance

One of the most important internal CG mechanisms is the BODs (Fama and Jensen, 1983). Furthermore, the relationship between board structure and performance is described and predicted by the agency theory as it proposes that the BODs is responsible for protecting the shareholders' interest and ensuring that executives will not take decisions that benefit their own interest. The agency theory focus an aligning the interests of managers with those of the shareholders; it also suggests that firms should mitigate the agency problem by establishing a proper CG plan to monitor the behaviour of management and protect shareholders.[4]

The relationship between BODs and performance has attracted many scholars. Yet, empirical findings of the performance influence of the board structure remain inconclusive with respect to the Saudi market (Habbash and Bajaher, 2015 and Buallay et al. 2017).

The below sub-section sections are concerned with a brief on the empirical findings of the relation between board structure and performance including board structure and board size. However, more details on the theoretical context, empirical analysis and the hypotheses regarding the relationship between BODs characteristics and performance are found in chapter 3.

2.4.1 Board Composition and Performance

Board composition refers to the representation of dependent and independent outsider members on the BODs. The relationship between board structure or board composition and performance has been widely examined in the literature to measure the quality of the board.

[4] More about agency theory and other theories will be discussed in the following empirical chapters.

Based on the agency theory, managers may not act in the interests of shareholders and there is a need to monitor management, hence, it suggests monitoring management through having independent directors on the board. Agency theory also suggests that outside directors are financially independent (Fama and Jensen, 1983 and Jensen and Meckling, 1976), therefore, they can influence management and protect the interests of shareholders' from opportunistic behaviour and self-interested actions of managers (Bonn, 2004; Daily et. al., 1989 and Fama, 1980). Also, non-executive directors will supervise managers better than executive directors as they are keen on protecting their reputation and social status which drives them to better supervise managers and assure that the firm will operate efficiently (Fama and Jensen, 1983). Moreover, shareholders often try to replace internal directors with externals, as it is believed that board composition helps in monitoring managers and hence, it will reduce the agency problem and positively affect the performance of the firm (Hermalin and Weisbach, 1991 and Weisbach, 1988).

The above argument is in line with the agency theory and against the stewardship theory which assert that managers are not opportunistic and that they are in a better position to assess strategic decisions and can effectively elect CEO's as they have more awareness about the firm than outside directors. However, the agency theory states that a board with more independent directors will be more effective and will result in better performance of the firm (Dalton et al., 1998 and Ramdani and Witteloostujin, 2010).

The relationship between board composition and performance has been extensively examined in the literature, in both developed and developing countries. Although the results are mixed in regards to this relationship, however, consistent with the agency theory, there is a general belief that boards containing a majority of independent directors are more effective.

McAvoy and Millstein (1999) report that in the US firms having a higher proportion of active independent directors on the board are associated with better performance when compared with firms having more passive dependent members on the board. According to Mashayekhi and Bazaz (2008), when firms have outside directors on the board their performance will be improved. Likewise, O'Connell and Cramer (2010) examine a sample of 77 listed firms in Ireland and find a positive relationship between board composition and performance.

On the contrary, some studies conclude that having a high percentage of independent directors on the board will weaken the performance of the firm (Yermack, 1996 and Klein, 1998). Horvath and Spirollaric (2012) analyse the relationship between independent directors and performance in large US firms during 2005-2009 and find out that independent directors have a negative effect on performance. Their argument is that independent directors aim to protect shareholders and hence, they choose very conservative business plans which result in lower performance.

On the other hand, some studies show that the relationship between the proportion of outside directors and accounting performance is insignificant (Mehran, 1995; Klein, 1998; Bhagat and Bolton, 2008 and Hermalin and Weisbach, 1991). Similarly, Haniffa and Hudaib (2006) analyse 247 listed companies in the Kuala Lumpur stock exchange during 1996-2000 and did not find any significant relationship between board composition and both accounting performance measure (ROA) and market performance ratio (Tobin's Q).

However, board structure in the Saudi listed companies is characterised by usually having a large number of shareholders on the BODs. There are only few papers that have examined the relationship between board composition and performance in the Saudi market and the results are also inconclusive. Ghabayen (2012) examine 102 non-financial listed firms on the Saudi stock market and shows a significantly

negative relationship between board composition and firm performance (ROA). On the contrary, Al-Matari et al. (2012) examine 153 non-financial Saudi listed companies in 2010, based on a linear regression and conclude that the relationship between board independence and performance measured by Tobin's Q, is insignificant. Habbash and Bajaher (2015) also examine the relationship between board independence and performance of the non-financial Saudi market during the 2006-2009 period and they conclude that there is a positive and significant relationship between board independence and firm performance.

However, the Saudi CG code necessitates that not less than one third of the board members must be independent; further, it recommends that the majority of the directors should be non-executive directors on the board who must enjoy complete independence.[5] This indicates that the Saudi code contrasts the assumptions of the stewardship theory.

Based on the above argument, this thesis aims to find out if there is any relationship between board composition and performance in Saudi listed companies.

2.4.2 Board Size and Performance

Board size is the number of members serving on the board (Jensen and Meckling, 1976). It is considered one of the main internal CG mechanisms to improve the performance of the company (Bonn, 2004). Moreover, shareholders indirectly supervise the activities of the managers through the board, hence it is an important approach for shareholders (John and Senbet, 1998).

The agency theory states that board size is important in determining its effectiveness. According to Jensen and Meckling (1976) a large board size will assist in reducing the agency cost and hence, the firm will perform better, however, it is suggested that there

[5] More details are found in section 2.7.3

is an upper limit to the number of members on the BODs. Jensen (1993) argues that when the board size is too large, it would slow the dynamics and negatively affect the performance of the board; he suggests that the maximum number of directors on the board does not exceed eight members.

The relationship between board size and performance has been broadly studied and the optimal size of BODs is still a controversial issue in the literature. Past studies on the relationship between the size of the board and the firm performance show mixed results.

Lipton and Lorsch (1992) examine the board size in the US market and conclude that firms in the US have crowded boards; they further argue that when the number of the board's members is more than ten, the directors will find it difficult to express their thoughts and opinions. They suggest that in order for boards to function efficiently, the size of the board should be small and not more than seven or eight members. Furthermore, Ogbechie et al. (2009) argue that the BODs must have between seven to fifteen members.

It has been argued in the literature that when the board size it large, members will find it hard to coordinate and communicate (Cheng et al., 2008; John and Sanbet, 1998 and Forbes and Milliken, 1999). Also, board members will take longer time to agree on important decisions when the size of the board is large (Goodstein et al., 1994). While small boards can agree on a particular outcome easily (Lang et al., 2000).

On the other hand, Abdullah (2004) argue that the size of the board influences its monitoring ability where the larger the size, the more capable it will be to monitor top management.

In developed countries, numerous past studies have reported similar results and concluded that there is a negative relationship between board size and firm performance. For instance: (Irina and Nadezhda 2009; Nanka-Bruce, 2011 and

O'Cornnell and Cramer, 2010). Studies in developing countries show that the relationship is also negative. Including (Al Manaseer at al., 2012; and Kota and Tomar, 2010).

Barnhart and Rosenstien (1998) conclude that firms with small board size will have better performance in comparison with firms with larger boards. Eisenberg et al. (1998) find a negative relationship between the board size and ROA as a proxy for firm performance, using a sample of 879 firms in Finland. In Malaysia, Mak and Kusnadi (2005) and Haniffa and Hudaib (2006) find a negative relationship between board size and performance.

On the contrary, other studies in the literature show that the relationship between board size and performance is positive, i.e. the larger the board the better the performance. Dalton et al. (1998) suggest that when the board size is large there will be more experts which will enhance the decision making and hence, it will prevent the company's failure. Likewise, Coles et al. (2008) show that the relationship between board size and performance is positive. Nevertheless, Dulewicz and Herbert (2004) conclude that there is no relationship between board size and performance.

However, the Saudi CG code suggests that all listed firm must have at least three and no more than eleven directors on the board. This implies that the Saudi code is in line with the agency theory assumption i.e., in order to attain better performance, a company should keep their board size of less than eleven members.

There are only few studies that have examined the relationship between board size and performance in the Saudi listed companies. Among those is Ghabayen (2012) who examines the relationship between board size and performance (ROA), in a sample of 102 non-financial companies listed in the TADAWUL during 2011 and conclude that board size has no effect of firm performance. Similarly, Al-Matari et al. (2012) analyse a sample of 153 non-financial listed companies in the Saudi market during

2010 and find that the relationship between board size and performance measured by Tobin's Q is insignificantly negative. Similarly, Habbash and Bajaher (2015) apply OLS regression on non-financial firms for the period 2006-2009 and also conclude that board size insignificantly affects firm performance in Saudi listed firms. Alhassan et al. (2015) examine the relationship between board size and firm performance in a sample of 10 banks listed in the Saudi stock market for the period 2007-2012; they show that the relationship is insignificant. In Oman, Al-Matari and Al-Arussi (2016) apply multiple regression analysis to analyse a sample of non-financial firms in 2011 and 2012; their results show that board size has insignificantly positive relationship with performance measured by ROA. In general, past papers that are concerned with the relationship between board size and performance in Saudi listed companies, did not find any significant relationship between board size and performance and this insignificant relationship varies between positive and negative.

However, this thesis evaluates the relationship between board size and performance in order to find out if any relationship exists in Saudi listed companies.

2.5 Ownership Structure and Performance

Ownership structure is considered one of the main internal CG mechanisms that affect the firm's value and it has received substantial attention in the literature. (Demsetz and Lehn, 1985; Morck, Shleifer, and Vishny, 1998; La Porta et al., 1999; De Miguel et al., 2004 and Kowalewski et al., 2010).

In 1932, Berle and Means suggested the concept of separating ownership from control, and found out that ownership concentration is important to solve problems between owners and managers. After that, the agency theory followed (Jensen and Meckling, 1976; Fama and Jensen, 1983). The agency theory predicts a positive relationship between ownership concentration and performance. It states that when shareholders own a large proportion of shares, they will have high incentives to monitor and influence managers. This would help in reducing the agency problem and result in better firm performance.

The goal of shareholders is to maximize their profits whereas managers pursue their self-interest strategies that are not necessarily in line with the interests of shareholders to maximize the firm's value. Moreover, managers can use their authority at the expense of the shareholders, especially when the firm neither has appropriate incentive plans nor adequately monitoring for managers. Therefore, it has been suggested in the literature that ownership structure can be one of the internal CG mechanisms to reduce the conflict of interest between managers and shareholders.

Ownership structure has received substantial interest among scholars during the last two decades. Yet, the results are still mixed in regards to the relationship between ownership structure and performance and this relationship is affected by the type of those owners. According to Shleifer and Vishny (1986), there is a positive relationship between ownership concentration and performance, and large shareholders have

greater motivation to monitor and control managers which resolves the agency problem. Similarly, Holderness and Sheehan (1988) state that firms with major shareholder ownership will perform better.

This section briefly discusses the empirical findings of the impact of different ownership groups on performance including insider, family, government and institutional shareholders. Although the relationship between ownership structure and performance has been extensively examined, empirical studies failed to reach conclusive findings. The below sub-sections provide only a summary of the literature. However, more details on the relationship between ownership structure and performance in addition to the empirical analysis and the hypotheses are presented in chapter 4.

2.5.1 Insider Ownership and Performance

Based on the agency theory, managerial ownership can help reduce agency conflict between managers and shareholder. When managers own a significant portion of shares, they will be motivated and have incentives to maximize the value of the firm and hence they will make better decisions as their interests will be aligned with those of other shareholders.

Managerial ownership is determined through the proportion of shares owned by insiders and board members. Therefore, insider ownership and managerial ownership are two sides of the same coin (Liang et al., 2011 and Wahla et al., 2012). There are two different points of view in regards to the relationship between insider ownership and performance. The first point of view is the convergence-of-interest hypotheses and it suggests that the firm's value increases with the increase in management ownership, as the interests of managers will be aligned with the interests of shareholders and the conflict of interest will be resolved (Jensen and Meckling, 1976).

The second point of view, supported by the entrenchment hypothesis, claims that insiders will be entrenched by the high percentage of shares they own and thus, substantial insider ownership will negatively affect the firm performance (Shleifer and Vishny, 1986). Moreover, when insider ownership increases, hostile takeovers will be less likely and this will solidify the entrenchment of managers (Lang et al., 1989).

However, empirical findings in the literature produce mixed results on the relationship between insider ownership and firm performance in developed and developing countries. On one hand, there are studies that confirm a positive relationship between insider ownership and firm performance (e.g. Leung and Horwitz, 2010; Chung et al., 2008 and Uwuigbe and Olusanmi, 2012). On the other hand, there are other studies that confirm that the relationship between insider ownership and performance is negative (e.g Juras and Hinson, 2008; Liang et al., 2011 and Wahla et al., 2012). Nevertheless, Siala et al. (2009) and Nuryanah and Islam (2011) among others, did not find any relationship between insider ownership and performance. Likewise, Schultz et al. (2010) show that there is not any significant relationship between insider ownership in the ASX200 index by applying the GMM method to control for endogeneity.

Moreover, it has been argued in the literature that the relationship between insider ownership and performance is non-monotonic or nonlinear (McConnell and Servaes, 1990). When insiders own a small percentage of shares and their compensation is sensitive to firm performance, they will be motivated to invest in profitable investments and this will enhance the performance of the company. In contrast, when the percentage of insider ownership is high they might protect their shareholding through investing in low risk projects and this might reduce the value of the firm. This argument of the non-monotonic relationship between insider ownership and performance is supported by the findings of De Miguel et al. (2004) who apply the

GMM method and show that there is a cubic relationship between insider ownership and performance in Spain.

In Saudi Arabia, there is a lack of studies that examine the relationship between ownership and performance. Soliman (2013) analyse the impact of ownership concentration on performance for the period 2006-2008; he concludes that performance measured by ROA and ROE increases as the ownership concentration increases. He also finds the there is a non-linear relationship between ownership concentration and performance, where by performance increases then decreases with the increase in ownership concentration. Based on dynamic GMM method, Nobanee et al. (2017) find out that ownership concentration does not affect agency costs and agency costs do not affect performance in Saudi listed companies for the period 2010-2013. In Bahrain, Khamis et al. (2015) conclude that managerial ownership significantly affects performance only when ownership concentration declines (their sample period was from 2007-2011 and analysed using 2SLS method).

Based on the previous discussion, this thesis aims to find out if there is any relationship between insider ownership and performance in Saudi market.

2.5.2 Family Ownership and Performance

Ownership structure in Saudi listed companies is similar to that in developing countries; it is concentrated with a domination of family business. The relationship between family ownership and performance has been extensively examined in the literature, however, studies have different points of view in regards to this relation. Some studies suggest that family ownership affect performance positively; these studies argue that this positive relationship is due to monitoring effects which will result in better performance (e.g. Villalonga and Amit, 2006 and Anderson and Reeb, 2003). Empirically, Maury (2006) examines 1672 non-financial firms in Western

Europe and concludes that family firms outperform non-family ones. Likewise, Barontini and Caprio (2006) show that there is a positive relationship between family ownership and performance in Continental Europe.

On the contrary, other studies argue that family ownership reduces firm performance since family members will have extensive cash flow rights and could take decisions for their own benefit at the expense of other shareholders (Cronqvist and Nilsson, 2003). Wall (1998) finds out that family firms are less productive in Western New York. Barth et al. (2005) conclude that family firms are also less productive than non-family firms in Norway. De Miguel et al. (2006) argue that due to the high chance of entrenchment effect by family members, it is not always the case that family firms perform better than non-family ones.

However, it has been argued in the literature that the relationship between family ownership and performance is non-linear. For example, Anderson and Reeb (2003) analyse the relationship between family ownership and performance among US large firms and conclude that, although family firms outperform non-family firms, the relationship between family ownership and performance is non-monotonic. Performance increases then decreases with the increase in family ownership. Furthermore, Kowalewski et al. (2010) find an inverse U-shaped relationship between family ownership and performance in Polish firms.

In Saudi listed companies, a huge proportion of shares of family firms are owned by family members, and the BODs also consists of members from the same family. Furthermore, it is easy to chase family ownership in Saudi listed companies as the whole family has the same surname. In addition, family firms listed in the Saudi market used to be small firms owned by rich families who have converted those small firms to listed companies in which the founder family still owns a large proportion of the shares. Also, some of those listed companies are given the name of the founder or

the family name.

Although the number of family owned companies is large, there is a lack of studies that study the relationship between family ownership and performance. Al-Ghamdi and Rhodes (2015) analyse the relationship between family firms and performance for the period from 2006-2013 and find no relationship in Saudi listed companies. On the contrary, Al-Dubai et al. (2015) examine Saudi listed companies from 2007-2010, and conclude that the behaviour of family firms changes between expropriation and monitoring effects depending on the percentage of family ownership.

Therefore, this thesis aims to answer the following question: is there any relationship between family ownership and performance in Saudi listed companies?

2.5.3 Government Ownership and Performance

One of the key features of the Saudi stock exchange is the large governmental ownership in different major listed companies. This ownership is undertaken through the governmental institutional investors investing on behalf of the Saudi government (Al Kahtani, 2013).

According to "The Economy" a Saudi daily newspaper, the Saudi government owns more than 35% of the market value of TADAWUL, distributed between 13 industries and 50 listed companies on August 31, 2014. This governmental ownership ensures that the activities of these companies will be controlled and monitored and hence, those companies will most likely be successful as the government aims to promote stability of the stock market and to encourage the growth of the economy. Therefore, those companies are expected to perform better.

Based on the agency theory, when the government owns shares in the firm, it will solve the issue of information asymmetry. Moreover, government ownership can be used to align the interests of both the owners and managers (Jensen and Meckling,

1976).

Although, the impact of government ownership on performance remains a controversial issue and the past studies produce mixed results, the literature has a clear shortage in studies that examine the relationship between government ownership and performance. In China, Sun et al. (2002) conclude that government ownership has a positive impact on the partially privatized state-owned firms. On the other hand, Estrin and Tian (2005) find out that government ownership negatively affects the value of the firm, and that this effect is non-monotonic, indicating that the value of the firm first decreases to a certain point then it increases with the increase in government ownership. In Malaysia, Najid and Rahman (2011) find that most of the government owned firms listed in Bursa Malaysia, have significantly lower performance. In Saudi Arabia, Eljelly and Authority (2009) compare the performance of listed government-related companies with listed private companies during 2000-2003, and conclude that in general government-related companies outperforms or match the performance of their counterparts.

Based on the previous arguments, it is important to find out if there is any relation between government ownership and performance in Saudi listed companies.

2.5.4 Institutional Ownership and Performance

It is believed that institutional ownership can protect the interests of other shareholders, as it has the power to intervene in managing the company and is likely to be independent of managers. Pension funds, mutual funds and banks are examples of those institutional investors.

In Australia, Welch (2003) suggests that there is a positive relationship between institutional ownership and performance. In the GCC, Arouri et al. (2014) conclude that institutional ownership also has a significant positive impact on performance for

the year 2010.

Therefore, is it essential to examine the relationship between institutional ownership and performance in Saudi listed companies.

2.6 Capital Structure Determinants

Capital structure is the relative amount of equity and debt that firms use to finance their operations. Different firms have different capital structure, and theories in the literature have been trying to explain this variation by proposing that companies choose their capital structure based on the cost and benefits that are associated with equity and debt financing. So far, there is not a clear determination of the optimal capital structure of the firms in the literature, however, there is a claim that good CG will result in better performance, higher transparency and accountability and it will be easier for firms to issue debt at a lower cost as debt holders are more confident to lend firms with good performance. Hence, CG is as important determinant of capital structure.

However, several theories emerged to explain capital structure since the seminal work of Modigliani and Miller (1958), such as the agency theory and the pecking order theory[6]. The agency theory is defined by Jensen and Meckling (1976) as a contract under which the principal (owner) engages the agent (manager) to perform some services on their behalf which involve delegating some decision-making authority to the agent. Furthermore, Shleifer and Vishny (1997) argue that shareholders with concentrated ownership are expected to have different incentives than shareholders with diversified ownership and this will affect the riskiness of the undertaken projects, in turn affecting the cost of debt.

[6] The trade-off theory is another theory that is concerned with the determinants of capital structure, however, it is not possible to examine the effectiveness of the trade-off theory in the Saudi context as there exists no interest tax shield and hence the raise of debt financing is attributed to reasons that are not explained by the theory. Therefore, there is no benefit of interest tax shield, however, higher rates of leverage would still lead to bankruptcy cost and agency cost, so while management cannot benefit from increasing their firm value through tax shield, they might increase their cost of capital by leveraging their firm. And debt financing under these circumstances could be argued to be used for capital needs and/or for management control and monitoring.

Ownership structure is one of the internal CG mechanisms options to reduce the agency conflict and hence reduce agency costs. Although, a massive amount of studies has empirically examined the determinants of capital structure all over the world, the results are mixed and inconclusive.

There are several variables that are considered in the literature and believed to affect leverage including: profitability, size, growth, asset tangibility and liquidity, in addition to ownership structure variables including family, insider, government and institutional ownerships. The below sub-sections provide a summary of those variables. However, theoretical context, more details on the empirical findings and the hypotheses are found in chapter 5.

2.6.1 Firm Size

Most of empirical studies find that the relationship between the size of the firm and the level of leverage is positive; however, results are still inconclusive. Rajan and Zingales (1995) claim that large firms tend to have more tangible assets and easier access to the debt market as they are less likely to be bankrupt. On the contrary, Titman and Wessels (1988) find that the relationship between firm size and debt is negative.

2.6.2 Profitability

Modigliani and Miller (1958) claim that profitable firms with high profits will issue more debt due to the tax deductibility of interest payment. Booth *et al*. (2001) show that profitability negatively affect leverage in developing countries.

2.6.3 Liquidity

Liquidity measures the ability of the firm to pay its short-term liabilities with the current assets and different theories predict different effects of liquidity on leverage. Ozkan (2001) find a negative relationship between liquidity and leverage in UK

2.6.4 Tangibility

Firms with more tangible assets will be able to issue debt as those assets serve as collateral for debt. Moreover, firms are required to disclose information on their assets to the creditors and when they have sufficient tangible assets, creditors will be more secured and willing to lend those firms, hence they will have low agency cost (Booth et al., 2001 and Rajan and Zaingales, 1995).

2.6.5 Growth

It is claimed that firms raise debt when the internal funds from retained earnings have already been used by growing firms, especially when investment opportunities exceed the retained earnings. Rajan and Zingales (1995) show that growth opportunities have a negative impact on leverage.

2.6.6 Ownership

It is extensively believed that ownership structure affects the firm's capital structure, and this relationship has been widely examined; however, the results are mixed and the literature has failed to conclude a clear prediction on this relationship.

Anderson and Reeb (2003) suggest that families are a unique class of shareholders that worry about the reputation of their firms and care about passing their wealth to future generations, hence, it is expected that family firms will have lower cost of debt.

Furthermore, Anderson et al. (2003) analyse family firms in the US market. They conclude that debt holders believe that family firms protect their interests, hence, they have lower cost of debt. Likewise, Gill et al. (2012) conclude that family ownership positively affects the level of leverage in India. On the contrary, Al-Ajmi et al. (2009) find that in the Saudi market, the relationship between family ownership and capital structure is negative.

It is also claimed that managerial ownership will align the interests of managers with these of the shareholders and increase transparency, hence, debt holders will require lower interest rates when lending companies with managerial ownership which will in turn reduce the cost of debt. Jensen and Meckling (1976) propose that when managers own shares in the firm they will have less incentive to expropriate shareholders' wealth and their interests will be aligned to those of the shareholders. Chen and Steiner (1999) conclude that there is a positive relationship between managerial ownership and leverage. Similarly, Short et al. (2002) show that the relationship between management ownership and leverage is positive in UK firms.

In the Saudi market, the government owns a large percentage of the listed companies, by August 2014, the Saudi government owned more than 35% of the listed companies' shares. Furthermore, this ownership represents only government ownership exceeding 5% of the firm's shares, which means that the actual ownership of the government is way larger than 35%[7].

The government aims to support the development of the economy, hence, when it owns shares in a firm, it will provide it with some benefits (e.g., grants, lands). In addition, it is thought to monitor the actions of managers effectively. De Andre´s Alonso et al. (2005), show that firms with state ownership have less debt in Spain. In

[7] For further information see http://www.aleqt.com/2014/09/14/article_886608.html

the Saudi market, Alajmi et al. (2009) also find a negative relationship between government ownership and leverage.

Institutional ownership is suggested to have a positive relationship with debt as those institutions act as monitors and hence are assumed to reduce agency costs. However, Crutchley et al. (1999) report a negative relationship between the coefficient of institutional ownership and leverage.

The determinants of capital structure have been extensively examined in the literature around the world, yet, in the Saudi context there are only few papers that have considered it and have concluded mixed results. Among these are Kalyanaraman and Altuwaijri (2016), Alzomaia (2014), Twairesh (2014), Sbeiti (2010), Abdullah (2005), Al-Ajmi et al. (2009), Omet and Mashharawe (2003) and Al-Sakran (2001).

However, those studies neither include a recent sample nor have conclusive results. They only examined some financial variables such as profitability and size (Omet and Mashharawe, 2002; Abdullah, 2005; Sbeiti, 2010 and Alzomaia, 2014, amongst other). Few other studies have examined ownership variables (Al-Sakran, 2001 and Al-Ajmi et al., 2009, amongst others). However, none of the studies have analysed insider ownership although it has been extensively examined in the literature and is believed to have a significant impact on capital structure.

According the above discussion on the, this thesis aims to find out what are the determinants of capital structure in Saudi Market.

2.7 Background of Saudi Market

2.7.1 Saudi Market Classification

Global equity markets are divided into three classifications: developed markets, emerging markets and frontier markets. The Morgan Stanley Capital International[8] (MSCI) has three components for classifying countries: size and liquidity, economic development of the country and market accessibility. However, the economic development component is not required for frontier and emerging markets. Furthermore, MSCI places some countries under review for potential reclassification. If during its annual review, MSCI finds out that this reclassification is irreversible, those countries will be reclassified.

Saudi Arabia is classified as frontier market due to several market and institutional issues (Barger, 2011). Yet, time-series and cross-sectional momentum in Saudi stock market returns, mention that Saudi market fulfills all requirement to be upgraded to an emerging market and the only reason behind considering it as a frontier market is the restrictions that Saudi market imposes on foreign investors (Ahmed et al., 2018 and Balcilar et al., 2013).

The international finance corporation (IFC) invented the term frontier market to define a pre-emerging economy. As per the definition of the IFC (1980), frontier markets are less developed, less liquid and less accessible to foreign investors.

Although frontier markets have higher risk, lower capital and less liquid, they are investable and they offer potential opportunities to investors to take advantages of privatizations and the increased listings on local exchanges over times (Gomes, 2014).

There are several classifications of the global equity indices. These classifications are to a large extent similar but they have different index construction rules. This thesis

[8] MSCI is one of the providers of the global equity indices.

will consider the classification of MSCI for defining frontier markets. Oil economies often have the largest representation in frontier market indices. Frontier markets are widely diverse in terms of income, geography and degree of economic development. For example, the GCC countries are among the richest economies globally on a per capita basis, while many of the key Sub-Saharan economies are among the poorest (Gomes, 2014).

Frontier markets may be reclassified or upgraded to emerging market when their capital increases and liquidity improves. This classification was created when Standard & Poor's started to track an index that represents frontier markets in 1990s, it later became a well-known when Standard & Poor's launched and extended the frontier indexes in 2007. Similarly, MSCI introduced a frontier market index in 2007 due to the increase in investors' interests in those markets (Barger, 2011). According to Kim (2010), MSCI has returns for frontier markets that go back to May 2002, while S&P's Frontier Index (which excludes the Gulf countries) extends back to 1996.

The legal environment and the enforcement of law in frontier as well as emerging markets are weak, hence, those markets do not have a strong legal system to protect the interests of shareholders (La porta and Vishny, 1999). However, during the past few decades, several frontier markets in Asia have extremely performed in the global economic integration and got the attention of various academics and investors (Jianu Ma and Chu, 2009 and Wright et al., 2005).

There is a growing interest in the literature in investigating the relationship between corporate governance and performance and the determinants of capital structure in developed countries. Corporate governance regulations significantly vary between developed and developing countries which result in having differences in the structure and organization of companies (Denis, 2003; Jianu Ma and Chu, 2009 and Kwok and Tadesse, 2006). Minimal focus has been accorded to frontier markets that have a

different structure from developed markets, therefore, this thesis contributes to the literature and fills the gap by examining corporate governance mechanisms in a frontier market namely, Saudi market.

This thesis focuses on Saudi market in order to enhance our understanding of corporate governance practices in frontier markets in general and in the Saudi market is particular. A frontier market is classified as a type of developing country but it is more developed than the least developing countries, it is either too small or has less capital and lower liquidity to be considered as an emerging market.

There are several motives to focus on investigating the effectiveness of corporate governance in Saudi Arabia. Frontier markets received relatively less attention in the literature concerning corporate governance and they should be more examined to fill in the gap in the literature. Furthermore, corporate governance theories are created based on assumptions that are coherent with developed markets (Bekaert and Harvey, 2000). Therefore, those theories may not be the best guides to decision makers in emerging and frontier markets as they have different environments and characteristics (Jabbouri, 2016). These facts could explain some of the differences between corporate finance practices in Saudi Arabia and in emerging markets and developed markets. Moreover, the results from these frontier markets can also enhance other empirical results from the developed market (Bagudu et al., 2015).

Indeed, it is crucial to examine corporate governance in a frontier market like Saudi Arabia, due to the differences in legal system, economic development, culture, language and personal values (Bagudu et al., 2015). Saudi Arabia is one of the largest frontier markets and it has its own features. It is the largest oil producer in the world, has the second largest oil reserves, and has the largest economy in the gulf region. Also, family businesses in Saudi Arabia are dominant and family values are very strong. Although family businesses exist in many other courtiers however, in Saudi

Arabia those businesses reflect the largest public firms and one of the largest banks is also owned by a family. Furthermore, it is important for policy makers to examine the effectiveness of Saudi corporate governance code and whether it needs any improvements.

2.7.2 History and Development of Saudi Market

Al-Rehaily (1992) explained the domination of family businesses in Saudi Arabia. He stated that the increase in oil prices worldwide during the 1970s, reaching the peak in the 1980s, in addition to the increase in the Saudi oil production, resulted in the appearance of a substantial group of mid-class people with a motivation to launch their private business. Although several entities of these businesses have significantly developed and grown up, they are still owned and dominated by the family.

The nature of ownership structure in developing countries including Saudi Arabia is concentrated. And this nature of ownership could be due to several factors, such as the complicated legal system in general, the underdeveloped CG systems and security markets, in addition to the inadequacy of the disclosure and transparency conditions. In Saudi Arabia particularly, the structure of ownership is concentrated in the hands of rich families and the government.

Saudi government is the largest investor in different major companies listed on the stock exchange. According to the reporting unit in "The Economy" a Saudi daily newspaper, Saudi government owns more than 35% of the market value of TADAWUL (The Saudi Stock Exchange), distributed between 13 industries and 50 listed companies by August 31, 2014. [9]The ownership of the government in those leading listed companies is made through the governmental institutional investors

[9] For further information see http://www.aleqt.com/2014/09/14/article_886608.html

which they invest on behalf on the government. Those institutions are (GOSI, PIF, and PPA).

Furthermore, the government owns 70% of the Saudi Electricity company; it is the leading and the only producer of electricity in all parts of the Kingdom of Saudi Arabia and the 6th largest listed company in terms of market capital as 31/12/2014. In addition to the ownership of governmental institutions such as Saudi Aramco, Sabic, National Commercial Bank and Saudi Airlines in other listed companies.

Moreover, several family ventures that used to be small enterprises owned by wealthy families have converted into listed companies on TADAWUL, yet the founder family still holds a large number of the shares. Furthermore, some of those listed companies are given the family's name of the founder. Those companies are listed under different sectors including energy, cement, transport, agriculture, retail and industrial sectors (Al Kahtani, 2013). Further, there are several listed companies in which the insider ownership percentage is large, and those owners are usually on the BODs.

Saudi Arabia has an oil-based economy with strong government controls over major economic activities. It has shown a remarkable growth due to the reformation of the economy in the past two decades. For instance, privatization has increased, six economic cities have been developed, foreign investments have been introduced, and credit risk has been improved. (Abraham et al., 2006).

Saudi Arabia is a member of the G20. The Gross Domestic Product (GDP) in 2013 has reached its all-time high; it was $745.27 billion, which represents 1.2% of the world economy. It also has the largest stock market in the Gulf region with a market value of shares traded at Dec 31, 2014 of $ 572.41 billion compared to $ 365.25 billion for the previous year, which reveals an increase by 56.72%.

There have been several initial public offerings and liquidity is high. According to Deutsche Bank, Saudi Arabia's stock market is the most liquid in the Middle East and

North Africa (MENA) region. In addition, the Saudi Arabian stock market has diverse sector selection and more companies listed than any other market in the region. Further, it was voted the "Best Managed Financial Exchange in the Middle East 2014" for the 3rd consecutive year, according to Euromoney Group.

According to Fallatah and Dickins (2012), the Saudi CG model is influenced by the Anglo-American model, which focuses on maximizing the wealth of the shareholders. It is a one tire system in which, the BODs is elected by shareholders and there is no CEO duality. Since shareholders in this system do not affect the direction of the firm, the important elements in monitoring the performance are independent directors, ownership structure, and the separation of the chairman and the CEO (Robertson, 2009).

2.7.3 Saudi Corporate Governance Code

Capital Market Authority (CMA) issued the Saudi CG code in an attempt to attract more investors to the country and mitigate agency problems. The Saudi corporate governance (CG) code was first issued in 2006, and then it was revised in 2009. It includes: Preliminary Provisions, Rights of Shareholders and the General Assembly, Disclosure and Transparency, BODs and Closing Provisions. Most provisions of the code were placed by January1, 2011.[10] The regulation includes rules to ensure the protection of shareholders' rights as well as the rights of stakeholders. However, as far as this research is concerned, below are the main regulations of the Saudi CG code that are related to the BODs:

- The number of the BODs members shall not be less than 3 and not more than 11.

[10] The code issued in 2006 insisted that companies comply with it.

- The majority of BODs shall be non-executive
- It is prohibited to conjoin the position of the chairman and any other executive position.
- The independent members shall not be less than 2 or 1/3, whichever is greater.
- A member of the BODs shall not act as a member of the BODs for more than 5 joint stock companies.

The BODs report has to disclose the following information:

- Names of any joint stock company or companies in which the company DOBs member acts as a member.
- Number of BODs members, formation of the BODs and classification of its members as follows: executive board member, non-executive board member, or independent board member.

Moreover, the ultimate responsibility for the company rests with the BODs even if the board sets up committees or delegates some of its powers to a third party. A member of the BODs represents all shareholders; he undertakes to carry out whatever may be in the general interest of the company, but not the interests of the group he represents or that which voted in favour of his appointment to the BODs. This implies that the Saudi code reflects the Agency theory assumptions.

However, due to lack of experience in implementing the Saudi code, it has some limitations. For example, the independent director is defined as the director who has no first-relative on the board. And the first-relative is defined as father, wife or husband, and children. It excludes brothers, sisters, uncles and cousins. In Saudi Arabia, family members have very strong relationship and hence this definition of

independent directors is not suitable for Saudi firms. Because even if members are categorised as independent as per the code, they are actually not.

According to Alshehri and Solmon (2012), the Saudi CG code is based on the Anglo-American model of CG. And it has been suggested that due to the differences in culture and business environment, it is not suitable to apply the codes of the West in Saudi Arabia.

Hence, this thesis examines Saudi market aiming to find out if BODs characteristics and ownership structure affect performance. It also aims to find out the determinant of capital structure. Saudi market is classified as a frontier market; the finding of this thesis gives insight on corporate governance effectiveness in frontier markets as those markets are under investigated in the literature.

Chapter 3 The Relationship between Board Characteristics and Firm Performance

3.1 Introduction

BODs is at the top of the governing authority within the management structure in any publicly traded company. It is presumed that the BODs reduces the agency conflict by utilizing its power to control and monitor the management (Fama and Jensen, 1983). The main role of BODs is to supervise mangers. This supervision is necessary because managers often have their own interests and might not act on the company's shareholders best interests. Jensen and Meckling (1976) have mentioned some examples of abusive actions by managers such as excessive perks, and non-optimal investments.

Furthermore, BODs take major decisions; some of its duties include selecting, evaluating and approving proper compensations for the CEO of the company, agreeing on paying dividends, recommending stock splits, recommending or disapproving mergers and acquisitions and to approve the company's financial statements.

Besides, directors on the board are taking responsibilities for many tasks. For instance, they are required to hire/ fire and monitor managers (Shleifer and Vishny, 1997 and Hermalin and Weisbach, 1998). They also provide strategic direction (Kemp, 2006). Another major role of the BODs is to protect the interest of shareholders, enhance the performance and promote the success of the company.

Board characteristics are considered part of the internal CG mechanisms. However, as far as this chapter in concerned, CG characteristics variables that are related to the BODs include: board independence and board size.

It is presumed that strong CG will enhance firm performance and maximize shareholders' wealth, while weak governance gives managers the opportunity to abuse the assets of the firm (Ahmed and Duellman, 2007). Consequently, investigating the impact of good CG on shareholders' and other stakeholders' wealth has attracted the attention of practitioners.

CG has emerged in an attempt to control and manage relations between BODs, executive directors and committees, in addition to shareholders of the companies. This explains the importance of effective CG in the whole society (Ibrahim et al., 2010).

Consequently, many countries have issued guidelines for corporate governance practices including board composition. For instance, Cadbury (1992) in the UK and the Saudi Code in 2006.

However, based on the Saudi code that was issued in 2006, then revised in 2009, and as far as the BODs is concerned, a member of the BODs shall not act as a member of the BODs for more than five joint stock companies. The Saudi code also requires the majority of the BODs members to be non-executive and the independent members shall not be less than 2 or 1/3, whichever is greater. Moreover, the code prohibits conjoining of the chairman and any other executive position. Finally, a member of the BODs represents all shareholders and he/she undertakes to carry out whatever actions maybe necessary in the general interest of the company.

Although there is an extensive amount of research concerning the impact of the BODs on corporate performance around the world, there is a scope for further research in this field in Saudi Arabia as previous papers are either outdated or have only analysed a short sample period. Hence, the aim of this chapter is to examine the impact of the BODs' characteristics, namely board size and board independence on firms' performance for Saudi listed companies covering a recent sample and a considerably longer period. Further, unlike most previous papers that use cross-sectional data, or

analyse periods of one or two years, this chapter contributes to the literature by analysing the relation between CG specifically (board structure) and firm performance covering a panel data of 6 years following the latest revised Saudi CG code.

Further, there are several concerns that have been raised in the CG literature that affect the analysis. Some of those are the lack of data and other unobservable factors that would affect this relation. Moreover, theories are often contradictory in their predictions with regards to the direction and nature of the relationship and a more resent concern that has been raised and not yet been solved in the literature is endogeneity. Several econometric techniques have been suggested and implemented in the literature to deal with the issue of endogeneity. Therefore, as far as the author is aware, this chapter is the first in applying the dynamic system GMM model to examine the relationship between board structure and performance in Saudi listed companies to control for endogeneity. Hence, it contributes to the literature by obtaining new results that contradict some of the past studies in which dynamic endogeneity was not taken into consideration.

The remainder of this chapter proceeds as follows: after the introduction in section 3.1. Section 3.2 presents theories of BODs. Section 3.3 discusses the relationship between BODs and other corporate governance mechanisms. Section 3.4 presents theoretical and empirical evidence on the relationship between the board and firm performance in addition to the hypotheses. Sample selection, data set, collection methods and variables are explained in section 3.5. Section 3.6 describes the performance measures that are used to analyse the data. Methodology is presented in section 3.7. Section 3.8 presents the results and the robustness tests. And finally, section 3.9 concludes the chapter.

3.2 Theories of Board of Directors

The industrial revolution in the 17th century and the steady separation of ownership from control led to the development of board of directors. Furthermore, the recognition of governance issues goes back to (1776) when Adam Smith revealed the conflicts between ownership and management in its simplest form in his seminal publication "Inquiry into the nature and causes of the wealth of nations" (Jimenez, 2006). Following Adam Smith (1776), Berle & Mean (1932) introduced the discussion regarding the concerns of the separation between ownership and control in publicly listed companies. They conclude that managers and owners have different interests and this results in a conflict between the agent and the principal.

Several corporate governance mechanisms are required to achieve a balanced alignments of the interests of both parties: the agent and the principal (Haniffa and Hudaib, 2006). Similarly, Abu Atta (2003) states that corporate governance mechanisms aim to align the interests of managers and shareholders in orders to protect the company and enhance its performance.

The importance of BODs as a corporate governance mechanism has been massively discussed in the literature. Furthermore, several theories have been developed as an attempt to help in understanding the role of BODs as one of the corporate governance mechanisms. The following discussion will review the theoretical implications of the board of directors as a mechanism for mitigating the arising conflicts between the owners and the agents. The review will focus on agency theory and stewardship theory.

3.2.1 Agency Theory

Agency theory is considered the earliest on BODs as a corporate governance mechanism. Based on agency theory, there is a contract in which one or more person (principal) engage another person (agent) to act on their behalf, which includes delegation of authority to the agent (Jensen and Meckling, 1976). It is grounded on the notion that shareholders and managers have different interests and that they both act based on their self-interests (Berle and Mean, 1932). Furthermore, managers may sometimes seek self-interests in pursuing the business activities of the firm or be incompetent, therefore, they might not act in the interests of shareholders. Hence, based on agency theory, the role of BODs as a corporate governance mechanism is to lessen the risks inherent in the separation of ownership from management. Agency theory claims that BODs can prevent managers from pursuing their self-interests and enhance the performance of the company through its monitoring role.

However, there are costs incurred in acting to minimize the gap and align the interests of the two parties (the principal and the agent) and is called agency costs. Jensen and Meckling (1976) listed three sources of agency costs. Monitoring costs: to limit the abnormal activities of the agent, bonding costs: to compensate agents if they do not take actions that would harm the principal, residual losses: costs resulting from the agents' decisions that are not in the best interests of the principal.

Moreover, there is information asymmetry between managers and shareholders, and the role of BODs is to obtain the required information to monitor the company's performance and to supervise managers.

Fama and Jensen (1983) further explain the circumstances in which firms separate decision managing and decision control with residual risk sharing, they argue that BODs can be an effective tool to monitor managers and reduce agency costs.

However, agency theory has been criticized for minimizing individual motivations and for arguing that managers are always self-interested. Although a considerable amount of efforts has been spent on studying governing boards, there is no single competent and integrative theory or model to explain the roles played by governing boards.

3.2.2 Stewardship Theory

Stewardship theory was first introduced by Donaldson and Davis (1991) and then developed by Davis et al. (1997). It challenges the belief of agency theory that managers always maximize their self-interests. According to stewardship theory, managers are more concerned with their personal growth and achievements, and they act as stewards in managing and controlling the firm.

Furthermore, it necessitates that the chief executive's and the chairman's roles are held by the same person as it will strength the leadership authority and result in a better performance.

Stewardship theory states that BODs and managers have the same goals, and managers act in the best interests of the firm. It also has a very different point of view from the one that underlines agency theory, in which, people are not seeking self-interests. It claims that there is a level of trust that does not exist in agency theory. Furhtermore, incentive plans are not important to align the interests of managers with those of the shareholders and to achieve the company's goals.

Based on stewardship theory, the role of BODs as a corporate governance mechanism is to use their knowledge to advise other members on the board and to work together with managers to develop strategies rather than monitoring the performance of the company. Is assumes that managers act in the best interests of the firm they are serving.

Davis et al. (1997) although proponents of stewardship theory, argue that, given the mixed empirical evidence, neither agency theory nor stewardship theory represents a 'golden bullet' for corporate governance.

3.3 The Relationship between BODs and CG Mechanisms

This section discusses the relationships between BODs and other CG mechanisms. It also includes discussion of studies presenting empirical evidence on those relationships.

3.3.1 BODs and Management Compensation

BODs represents shareholders and it is responsible for deciding the level and structure of top management compensation. Fama (1980) and Fama and Jensen (1983) suggest that outside directors should decide managers' compensation as those directors are independent and unbiased when judging managers. Furthermore, it has been argued that BODs plays an important role in determining management compensation. And there is a general consensus in the literature that when the BODs have a higher level of independence, corporate governance will be more effective.

However, excessive level of compensation given to top management has been criticized in the literature and the BODs is often blamed for this issue. The argument of this criticism is that the members of the BODs are influenced by the CEO who hired them, therefore, they might not set an appropriate level of compensation.

The impact of board structure on management compensation has been extensively examined and the results are mixed. Angbazo and Narayanan (1997) examine the relationship between the structure of the BODs and top management compensation for a sample of 97 commercial banks listed on S&P 500 during 1989; and find out that when outside directors are more reputable, they compensate managers with long-term incentives (stock and options) more than with cash (bonus and salaries). This long-term incentive plan is appropriate to ensure that the firm performs better in the future. Ryan and Wiggins (2002) examine the relationship between board of director's

independence and directors' compensation for 1018 firms listed in the S&P 500, Midcap 400 and Smallcap 600 during 1995-1997; their evidence suggests that when boards have more independent directors, the compensation of boards will be based on equity and this will align their interests with those of the shareholders. Conyon and Peck (1998) examine the role of BODs in determining management compensation, their sample includes large and publicly traded companies in UK between 1991 and 1994; and find out that board monitoring (measured by the proportion of non-executive directors) has a limited impact on the level of top management compensation.

On the other hand, Fernandes (2005) studies a sample of 58 Portuguese listed firms from 2002-2004; and show that top-executive remuneration is higher in firms with more non-executive board members; this suggests that non-executive board members do not have strong monitoring roles. The results are contrary to expectations as non-executive directors are expected to be independent and to monitor managers.

3.3.2 BODs and Voluntary Disclosure

Agency theory predicts that having independent members on the board will reduce information asymmetry between owners and managers. Furthermore, independent directors represent shareholders and since the role of the BODs is to monitor managers, it has been argued in the literature that having independent members on the board will increase the level of voluntary disclosure as those independent members have incentives to increase disclosure to establish a good reputation for themselves.

Donnelly and Mulcahy (2008) examine the relationship between non-executive directors on the board and the level of voluntary disclosure in Ireland; and find out that the increase in representation of non-executive directors on the board is coupled by an increase in disclosure, they interpret their result as independent members on the

BODs help in reducing information asymmetry between managers and owners; their finding supports the prediction of agency theory.

Huafang and Jianguo (2007) examine that impact of board composition on voluntary disclosure of listed companies in China in 2002, and find out that the increase in independent directors increases voluntary disclosure.

3.3.3 BODs and Large Shareholders

Ownership structure has an important but ambiguous role as a CG mechanism (Shleifer and Vishny, 1997). It has been argued in the literature that there is a relationship that exists between ownership structure and other corporate governance mechanisms. However, the interdependence between ownership and other governance mechanisms is relatively unexplored in the literature (Judge, 2011).

There are two potential conflicts that arise in a corporation. In corporations with a dominant shareholder, the potential conflicts would arise between the controlling shareholders and minority shareholders. The second in firms with dispersed ownership and would be between shareholders and managers.

Acrot (2013) explains that the relationship between ownership structure and the role of BODs has two different points of view; it has been argued that a large individual shareholder will be motivated and has the power to monitor managers (the monitoring hypothesis), thus, he will substitute the monitoring role of the BODs and will be an alternative corporate governance mechanism (Shleifer and Vishny, 1986; Bolton and Von Thadden, 1998 and Aghion and Tirole, 1997). Hence, other corporate governance mechanisms such as BODs will have an insignificant impact on performance in companies with the large shareholder. The alternative point of view indicates that the large shareholder may expropriate minority shareholders and entrench himself in a managerial position (the entrenchment hypothesis); hence, other corporate governance

mechanisms such as BODs will be more significant in affecting performance in companies with the large shareholder. Furthermore, Acrot (2013) particularly tries to find out if the presence of a large shareholder substitutes board governance practices, he analyses the FTSE 350 from 1998-2004; and concludes that monitoring overcomes entrenchment hypothesis and hence, controlling shareholders substitute board practices.

Rediker and Seth (1995) examine the substitute effect between outside directors and large outside shareholders in US banks during 1982; and suggest that in the presence of large outside shareholders, the importance of monitoring by outside directors on the board will be less as the need of those outside directors to monitor managers will be reduced. The reason behind this argument is that those large shareholders have incentives to monitor managers. Their results show that there is a negative relationship between outside directors and the level of monitoring by large outside shareholders; suggesting that there is a substitution effect between those two variables.

3.3.4 BODs and Managerial Ownership

Theoretically, managerial ownership is one of the internal corporate governance mechanisms that aims to reduce the conflicts between managers and shareholders.

According to Jensen and Meckling (1976), when managers are also owners in the firms, their interests will be aligned with that of the shareholders and they will less likely make decisions or invest in projects that will maximize their own benefits at the expense of other shareholders. This implies that the increase in managerial ownership will reduce the monitoring role of BODs.

Lasfer (2006) examines the relationship between managerial ownership and board structure in UK during 1996-1997; and finds a negative relationship between managerial ownership and the proportion of non-executive directors on the board. The

results suggest that when managers have high levels of ownership, they choose a BODs that is less likely to monitor them.

Similarly, Rediker and Seth (1995) examine the substitution between the incentive effect of managerial shareholding and monitoring by outside directors in US banks during 1982; and find out that managerial share ownership helps in aligning the interests of managers and shareholders; and this ownership substitutes monitoring by outside directors.

Mak and Li (2001) find a negative relationship between managerial ownership and the proportion of outside directors in Singapore during 1995-1996; and conclude that those two variables are substitutes.

3.4 The Relationship between BODs and Firm Performance

The literature regarding the nature of the relationship between CG and performance has failed to reach a consensus. Although some theories strongly support the impact of governance mechanisms on performance, to date, the evidence on this relation is inconsistent.

BODs is considered a main corporate governance mechanism and a main tool for shareholders to implicitly supervise and monitor managers. Furthermore, the attention has been focused in recent years on the BODs as a corporate governance mechanism to improve the performance of firms. Ruigrok et al. (2006) point out that the BODs also has important roles with respect to activities such as designing and implementing strategies and fostering links between the firm and its external environment. The importance of BODs as one of the main corporate governance mechanisms is considered by Fama and Jensen (1983). Limpaphayom and Connelly (2006) also emphasize on the effectiveness and the role of the BODs in monitoring managers.

BODs includes members elected by the owners of the company to supervise its activities. As a corporate governance mechanism, BODs has several features including board size and board composition. There is an extensive amount of empirical literature on the relationship between firm performance and board characteristics including board size and composition. The results are mixed and prior research has failed to provide a convincing association between board characteristics and the performance of firms. It is plausible that board structure may affect firm performance, given the board's complex tasks. A question that usually arises is concerning the optimal type of board structure that would maximizes shareholders' wealth. Denis and McConnell (2003) state that in recent years, questions about the effect of board characteristics on firm performance have attracted significant attention

globally.

The following sub-sections will theoretically and empirically discuss the relationship between composition and size of BODs, and firm performance.

3.4.1 Board Composition

Board structure or board composition refers to the representation of dependent and independent external members on the BODs. According to Carter & Lorsch (2004) Independent directors: "*not only excludes employees but also anyone who has had any recent relationship with the company as a supplier, customer, or professional adviser*" (p. 16).

The structure and composition of the board is one of the BODs features that have received considerable attention. It has been argued that outside board members must be independent of the executive managers and have no business or any other relations with the company that would affect their independence. Hence, practitioners and academia have tried to find out the most suitable board structure that would maximize the firm's performance (Ranasinghe, 2010). According to Fama (1980) and Fama and Jensen (1983), including outside directors improves the feasibility of the BODs and reduces the possibility that top managers will act on behalf of their self-interest and expropriate shareholders' wealth. Based on this argument, it could be generalized that the more the independent directors serving on the board, the better the performance of the firm, since monitoring managers will be more effective. Further, due to the dispersed ownership of common stocks, it is assumed that independent directors will monitor, control and supervise managers on behalf of shareholders to ensure that managers are maximizing shareholders' wealth because it would be difficult for shareholders to control managers (John and Senbet, 1998 and Fama and Jensen, 1983)

Furthermore, outside directors can to a large extent influence management as they are

financially independent, and able to protect the interests of shareholders from the opportunistic behaviour of managers (Bonn, 2004 and Fama, 1980). This argument is in line with the agency theory and against the stewardship theory which asserts that managers are not opportunistic and that they are in a better position to assess strategic decisions and can effectively elect CEOs as they have more awareness about the firm than outside directors.

The idea behind agency theory model is the separation between ownership and control. The principal-agent model claims that managers may pursue their own interests at the expense of shareholders of the company, hence, as far as the composition of BODs is concerned, agency theory recommends that BODs will have more independent members.

Shareholders often try to replace internal directors with external ones, because it is assumed that board composition helps in monitoring managers and hence reduces agency problems (Hermalin and Weisbach, 1991 and Weisbach, 1988). In this view, a large proportion of independent directors can monitor the self-interested actions by managers so that shareholders can enjoy greater returns (Nicholson and Kiel, 2007 and Johnson, Daily, and Ellstrand, 1996).

According to Fama and Jensen (1983), external directors are more conscientious about their reputations and social status which drives them to supervise management and assures that the firm will operate efficiently. A board with more independent directors will be more effective and will result in better performance for the firm (Dalton et al., 1998 and Ramdani and Witteloostuijn, 2010).

Board Composition has been enormously discussed and empirically examined in corporate governance literature. The evidence on the relationship between board composition and performance is inconclusive, however, there is a general belief that boards containing a majority of independent directors are more effective, which is

consistent with agency theory.

In developed markets, Shao (2010) studies traded media companies in US during 2004-2007; he applies fixed-effects regression and shows that board independence has a significant and positive impact on ROA and ROE. O`Connell and Cramer (2010) examine the relationship between the proportion of non-executive directors and performance of Irish listed companies at the end of December 2001, they use a two-stage least squares (2SLS) estimation procedure to control for endogeneity; and find a positive and significant relationship between the proportion of non-executive directors and ROA.

MacAvoy and Millstein (1999) report that the higher the proportion of active independent directors on the board in US firms, the better the performance of the company.

On the contrary, Irina and Nadezhda (2009) study 270 German companies for the period of 2000-2006; they apply instrumental variables and simultaneous equations methods, and find out that there is a negative relationship between outside directors and performance; the more the outside directors on the board the lower the performance.

Horváth and Spirollari (2012), examine the relationship between independent directors and firm performance for large US firms from 2005-2009 and find that independent directors affect performance negatively, with this effect being even more significant during the global financial crisis that took place 2007-2009. They propose that independent directors prefer very conservative business strategies aiming to protect shareholders, and this leads to a lower performance of the firm. Similarly, Yermack (1996) concludes that having a majority of independent directors on the board may result in poor performance in the US.

However, there are studies on developed markets that find no relationship between

these variables. Adams & Mehran (2005) analyse banking firms in US over the period from 1986 to 1999; and conclude that once endogeneity caused by omitted variables is controlled for using fixed-effects, there is no relationship between board structure and firm performance. Hermalin and Weisbach (1991) apply OLS and did not find any association between Tobin's Q and board composition in US firms. Similarly, Bhagat and Black (2001) examine US firms during 1991; they apply OLS and three-stages least squares (3SLS); and the results do not support the argument that having more independent members on the board will improve firm performance.

On the contrary, Mehran (1995) shows that there is no significant relationship between the proportion of outside directors and accounting performance in the US.

In Emerging Markets the results are also mixed. In Taiwan, Lin (2011) finds out that outside independent directors have a positive influence on performance measured by Tobins' Q, ROA, and ROE; he applies OLS regression models on a sample of listed companies during 2007-2009. Similarly, Chiang and Lin (2011) investigate non-financial firms in 2008 in Taiwan; and find out that the higher the proportion of independent directors on the board, the better the performance of the company. In Thailand, Connelly et al. (2004) examine the relation between board characteristics and firm performance among life insurance companies during 2000-2001; they apply OLS regression and find out that board independence has a positive impact on profitability measured by ROA.

On the other hand, Garg (2007) examines Indian market and applies both OLS and random-effects models; and find out that board independence is inversely related to performance.

However, there are studies that have failed to find any impact of board composition on performance in emerging markets. In China, Wei (2007) concludes that the proportion of independent directors does not have any significant effect on performance of listed

companies during 1999-2002. Likewise, Black, Jang and Kim (2006) and Choi, Park and Yoo (2007), using data on South Korean firms, find no relationship between board structure and performance. Similarly, Haniffa and Hudaib (2006) point out that there is no significant relationship between board composition and, both accounting (ROA) and market performance (Tobin's Q) measures for 347 companies listed on the Kuala Lumpur stock market during 1996-2000.

In frontier markets, Almatari (2012) examines the impact of board composition on performance measured by ROA of non-financial listed companies in Kuwait during 2009; the results based on multiple linear regressions show insignificant relationship. Furthermore, in Bangladesh, Abdurrouf (2011) examines the relationship between board independence and firm performance of non-financial firms in 2006 measured by ROA and ROE; and finds a significantly positive relationship based on OLS regression.

In Saudi Arabia, Ghabayen (2012) shows that board composition has a significantly negative relationship with firm performance (ROA) including 102 non-financial listed companies on the Saudi stock market. On the contrary, Habbash and Bajaher (2015) show that board independence has significant positive impact on firm performance. Nevertheless, there are some studies that conclude that there is no relationship between board independence and performance in Saudi listed companies (Al-Matari et al., 2012; Alhassan et al., 2015 and Buallay et al., 2017, amongst others).

Based on the above discussion, the following hypotheses have been proposed:

H1a: there is a significant positive relationship between board independence and firm performance.

H1b: there is a significant negative relationship between board independence and firm performance.

3.4.2 Board Size

Size of the board influences its monitoring ability where the larger the size, the more capable it will be to monitor top management (Abdullah, 2004). According to Jensen and Meckling (1976) and John and Senbet (1998), board size is the number of directors serving on the BODs.

BODs is considered as a main CG mechanism and a crucial approach for shareholders to indirectly supervise managements' activities (John and Senbet, 1998) and to achieve better performance (Bonn, 2004).

According to agency theory, board size is a feature of BODs that is important in determining the effectiveness of the BODs. Jensen and Meckling (1976) argue that a big board size will help management in reducing agency costs and lead to better performance of the company. Agency theory supports the idea that large board sizes will improve performance, however, it suggests that there is an upper limit to the number of directors on the board. Jensen (1993) proposes the maximum number of directors to be eight members, as larger number of directors would delay the dynamics, decrease efficiency and reduce the performance of the board.

The discussion in regards to the relationship between board size and performance is mixed. Large boards will have more expertise (Zahra and Pearce, 1989) and greater external linkages (Goodstein et al., 1994) thus leading to better performance. Dalton et al. (1998), believe that a large board size is better in preventing the failure of the company, because there will be more expertise which will in turn enhance decision making.

On the contrary, larger boards may also lead to lower group cohesion (Evans and Dion, 1991) and greater levels of conflicts (Goodstein et al., 1994). Likewise, Forbes and Milliken (1999) claim that large boards find it harder to coordinate, whereas it is

easier for smaller boards to agree on a particular outcome (Lange et al., 2000).

However, the optimal size of BODs is a controversial issue. Ogbechie et al. (2009) analyse board characteristics and involvement in strategic decision making in Nigeria. They argue that the BODs must have between seven to fifteen members.

Despite the substantial empirical evidence on the relationship between the board size and firm performance, the findings failed to reach to a conclusive result. Numerous past studies concluded that board size has a negative impact on firm performance. On the other hand, it has been argued that a large board size will lead to a better performance of the company. Advocates of this point of view claim that a large board size will include members with wide range of skills and this will result in better decision making and better monitoring of managers.

In developed markets, Adams and Mehran (2005) found a positive relationship between board size and performance in U.S banking industry.

However, most of the studies in developed market conclude that there is a negative relationship between board size and performance including (Nanka-Bruce, 2011). Lipton and Lorsch (1992) investigate board size in the US market; they find out that US firms have crowded boards, which incur more costs to the shareholders; they also show that if the board comprises of more than 10 members, it would be more difficult for directors to express their thoughts and opinions and it will make it difficult for members to coordinate and discuss issues. They suggest that the size of the board should be small and limited to seven or eight members in order to function effectively. Barnhart and Rosenstein (1998) examine S&P 500 firms, they conclude that companies with small board size will have better performance in comparison with firms with large boards. Florackis (2005) analyses firms traded in UK over the period 1999-2003; and finds out that board size negatively affects performance measured by Tobin's Q. Furthermore, Irina and Nadezhda (2009) study 270 German companies for

the period of 2000-2006, they apply instrumental variables and simultaneous equations methods and find out that smaller boards are associated with better performance. Yermack (1996) presents evidence consistent with the view that small boards are more effective; he applies OLS regression and finds an inverse association between board size and Tobin's Q in large US industrial corporation between 1984 and 1991. Eisenberg et. al. (1998) find a negative relationship between board size and performance among firms in Finland; this inverse relationship between board size and performance is attributed to the fact that in large boards there will be conflicts between members, and these conflicts may result in actions that harm shareholders. O`Connell and Cramer (2010) examine listed firms in Irish stock exchange in 2001; and find a negative relationship between board size and performance based on OLS and two-stages least squares (2SLS). In examining this relationship in the Japanese listed companies, Bonn (2004) found that there is a negative association between board size and firm performance. The same conclusion was drawn by Bozeman and Daniel (2005) based on a sample of the Canadian public companies; their conclusion implies that board size was also shown to have a negative relationship with performance measured by return on sales, sales efficiency and ROA.

Other studies in developed markets have shown that there is no association exists between firm performance and board size. Shao (2010) studies traded media companies in US during 2004-2007; and applies fixed-effects regressions, the results show that the board size insignificantly affect ROA and ROE.

In emerging markets the results are also inconsistent. Lin (2011) finds a negative influence of board size on ROA and ROE in Taiwan listed companies during 2007-2009. Similarly, Garg (2007) applies OLS and random-effects models and concludes that board size and performance are inversely related in India. Likewise, Kota and Tomar (2010) show that this relationship is negative in India. In Malaysia, Mak and

Kusnadi (2005) and Haniffa and Hudaib (2006) find a negative relationship between board size and firm performance.

On the contrary, there are some studies that have failed to find any association between board size and performance in emerging markets. Dar et. al. (2011) analyse oil and gas listed companies in Pakistan for the period 2004-2010; based on OLS analysis, they find that board size has a significantly positive relation with ROE, but has an insignificantly relation with profit margin. In Turkey, Bektas & Kaymak (2009) investigate the relationship of board size and the performance of banks, the results indicate that board size insignificantly influence ROA. Kyereboah-Coleman & Biekpe (2006) examine the association between board size and firm performance among life insurance companies in Thailand and conclude that board size has an insignificantly relationship with firm performance. Wei (2007) concludes that size of the board insignificantly affects firm's performance, using a sample of 276 China listed companies from 1999 to 2002.

In frontier markets the results are also inconsistent. Almatari et al. (2012) examines the effect of board size on the performance (ROA) of non-financial listed companies in Kuwait during 2009, based on multiple linear regressions, and show that it is insignificantly negative. Similarly, Abdurrouf (2011) examines the relationship between board size and firm performance measured by ROA and ROE; based on non-financial firms in Bangladesh in 2006 and OLS regression; the study could not provide a significantly relationship between board size and performance. Al Manaseer et al. (2012) examine Jordanian banks and conclude that the relationship between board size and performance is negative.

In the Saudi market, the results are mixed. Ghabayen (2012), investigates the relationship between a number of board mechanisms and firm performance (ROA), including 102 non-financial listed companies on the Saudi stock market in 2011.

Based on a regression analysis, he shows that board size has no effect on firm performance. Similarly, other studies (Habbash and Bajaher, 2015; Al-Matari et al., 2012; Arouri et al., 2014 and Alhassn et al., 2015) conclude that there is no relationship between board size and performance in Saudi listed companies. On the contrary, there are some studies that conclude that a significant relationship exists (Buallai et al., 2017 and Alhumoudi, 2014, among others).

Nevertheless, early literature on CG has been criticized for assuming that firm's characteristics are exogenous to its value (Mehran, 1995 and Klein, 1998). Several papers have argued that CG and firm performance are impacted by unobservable firm-specific factors (Himmelberg et al., 1999; Denis and Kruse, 2000 and Wintoki et al., 2012). Moreover, there are four potential sources of endogeneity, namely measurement error, unobserved heterogeneity, simultaneity and dynamic endogeneity, therefore, the results of studies ignoring these estimation issues should be interpreted with caution (Wintoki et al., 2012). Although, dynamic GMM is believed to overcome the endogeneity problem and produce unbiased estimates by introducing instruments in the equation, the evidence on the relationship between BODs and performance is also mixed when this model is applied.

Generally, the concept that the board size affects firm performance has been to a large extent supported and proved internationally. Based on the past literature, the following hypotheses is formulated:

H2a: there is a significant positive relationship between board size and firm performance

H2b: there is a significant negative relationship between board size and firm performance

3.5 Sample and Data Set

The sample of this research is covering companies listed on TADAWUL, from 2009-2014, excluding financial firms. Financial firms were excluded, as they are different in their structures, methods and accounting practices (Barontini and Caprio, 2006 and Bohren and Strom, 2010).

Further, to eliminate any biases in the results, companies with losses of more than 50% of their capital were removed from the analysis. The total number of the companies excluded is five.

Also, newly listed companies were added to the analysis in the second year of listing in order to avoid the listing year effect.[11]

Table 3.1 Number of Listed Companies from 2009-2014

Year	2009	2010	2011	2012	2013	2014
Agri&Food	12	13	13	13	14	14
Building &Constructions	10	11	12	13	13	14
Cement	8	8	9	10	12	13
Energy	2	2	2	2	2	2
Hotel	2	2	2	2	3	3
Indust-Investments	11	11	13	14	14	14
Media	3	3	3	3	3	3
Muti-Investments	6	6	6	6	6	6
Petrochemical	13	14	14	14	14	14
Real Estate	7	7	8	8	8	8
Retail	8	9	9	10	11	12
Telecom	3	3	3	3	3	3
Transport	4	4	4	4	4	4
Total	**89**	**93**	**98**	**102**	**107**	**110**

This table shows the number of companies per industry each year.

From table 3.1, it can be observed that the number of listed companies that are included in the analysis has increased from 90 in 2009 to 110 in 2014, which means that the number has increased by around 23% during 6 years.

[11] The listing year is the year at which the company goes public. If the public thinks that the initial public offering (IPO) price is high and the share is overvalued, the value of the stock will sharply drop. On the contrary, if the public think that the IPO price is undervalued, the stock price could go up significantly. Therefore, the newly listed companies were added from the second year of listing.

The companies in this study are categorized under 13 different industries including: petrochemical, cement, retail, energy and utility, agriculture and food, telecommunication and information technology, multi-investment, industrial investment, building and construction, real estate development, transport, media and publishing and finally hotel and tourism; those industries are categorized by TADAWUL.

Data on the firms concerning CG is acquired from their annual managerial reports and financial statements; these are published on the Saudi stock exchange website (TADAWUL).

The process of data collection has faced several difficulties. While financial statements were available, there were several missing annual reports and the researcher had to contact companies via emails to acquire the missing annual reports. Most companies responded, very few did not and even fewer had wrong email addresses. However, the researcher followed up with the companies that did not respond, and the few companies with the wrong email addresses were contacted via phone. The contacted companies respond as the regulation of the Saudi code forces companies to make the data available. Another major difficulty was that many of the annual reports were in Arabic language, so the researcher had to extract the data and convert them to English.

The data on the BODs including board size and independence were taken manually from the annual reports and most of the time it was translated from Arabic to English. Further, the financial information on performance such as ROA, ROE, market return and firm size was taken from Bloomberg and DataStream. For some years and some companies, there were missing data in either DataStream or Bloomberg; in this case the researcher had to gather data from both sources to complete the missing data.

Following previous studies, such as (Guest, 2009; Buniamin et al., 2010 and Vafeas

and Theodorou, 1998), the regression model in this research well be designated to include control and dummy variables in order to account for omitted variables bias as they might be related to performance; thus it will improve the explanatory power of the regression models of the research.

Similar to Drobetz et al. (2004) and Wintoki et al. (2012), those control variables are industry, market to book value and standard deviation. Standard deviation measures volatility and is used in the analysis as it is considered one of the firm's specific variables that is likely to influence performance. It has been used in several studies including (Black et al., 2006 and Coles et al., 2008). It is measured by calculating the yearly standard deviation of the log of the average daily prices.

Moreover, since there are 13 different industries in the Saudi market, this research intends to control for industry, and this variable is manually taken from TADAWUL's website, as there is a tab that shows the industry which each company belongs. Another control variable that has been used widely in empirical studies is leverage; those studies have shown that leverage has a significant impact on financial performance and it is the ratio of total debt to total assets (Alsaeed, 2006). The final control variable which is commonly used in the literature is the size of the firm, hence this research will also use it as a control variable and it is the natural log of total assets (Ghosh, 2006). Muth and Donaldson (1998) indicate that board characteristics are affected by changes in the firm size and they include it as a control variable in their study.

Table 3.2 List of Variables

CG Characteristics	
Board Size	Total number of directors on the board.
Board Indep	Proportion of independent directors to total number of directors.
Performance Ratios	
ROA	(Return / Total Asset) * 100.
ROE	(Return / Equity capital) * 100.
Market Price Return	Log (price end of year) - Log (price beginning of the year)
Control Variables	
Firm Size	Natural log of total Assets.
Industry	The industry a firm operates in.
Leverage	(Book Value of Total Debt / Book Value of Total Assets) *100
Market to Book Value	Market value of common equity/Book value of common equity
Standard Deviation	Standard deviation of the log (average daily price) calculated yearly

This table explains the variables that are used in the analysis.

3.6 Performance Measures

To measure corporate performance, several proxies have been widely used in the literature including accounting ratios and stock market return performance measures. The common accounting performance measures are return on assets (ROA) and return on equity (ROE). Bhagat et al. (2010) argue that unlike stock market returns, accounting measures do not suffer from anticipation problem[12]. Core et al. (2006) assert that ROA is less affected by leverage, extraordinary items and other discretionary items. Additionally, the common stock market return performance measure is the stock price return which has been used in several papers (Bhagat and Bolton, 2008).

However, in order to find out the relationship between CG and firm performance in this chapter, three widely used measures in the literature are going to be used including ROA, ROE and stock market return.[13]

- **Return on assets = net income／total assets**

ROA measures the management efficiency in generating earnings from the assets of the company. ROA has been considered as the true measure of financial performance in many of the previous studies (Bonn, 2004).

- **Return on equity = net income／shareholders' equity**

ROE measures the profitability of the company; it reveals the profit generated with the money from shareholders' equity and shows how well the company has invested shareholders' funds in generating profit.

[12] Anticipation problem: If investors anticipate the effect of CG on performance, then the long-term stock return will not be significantly correlated with governance even if a significant correlation between performance and governance indeed exists.

[13] Stock Market return will be used as a robustness test as opposed to accounting based measures.

Accounting measures have been broadly used to measure performance (Mckiernan and Morris, 1994 and Robinson and Pearce, 1983).

- **Market return = Log (price end of year) – Log (price beginning of the year)**

Stock market return is based on the change in the market value of the firm. It also measures the return to shareholders or stock price. Stock price measure is said to be dependent on forces that are not under the control of management (Grossman & Hoskisson, 1998).

3.7 Methodology

Previous studies that are concerned with the relationship between CG characteristics and firm performance have used distinct statistical techniques; however, multiple regression analysis is the most common approach and it has been widely used to test the relationship between CG variables and performance (Bonn 2004).

Since this research is going to analyse the performance of companies over time, the data set of these companies will be a panel data as it allows us to control for variables that cannot be observed or measured across companies or variables that change over time but not across entities. Thus, it accounts for individual heterogeneity.

This thesis will apply OLS and fixed-effects models that were used in previous studies to compare our results with the findings from previous studies as this will allow us to verify our sample data. However, to control for endogeneity, we will apply the GMM as our main model.

First, to test the relationship between board characteristics and firm performance, multiple regression analysis will be used in this research in order to predict the effect of independent variables (board characteristics) on the dependent variables (performance measures).

Nevertheless, it has been widely argued that CG variables are endogenous and when this endogeneity is not considered in the analysis, the results will be biased. (Demsetz, 1983; Himmelberg et al., 1999 and Palia, 2001).

According to Wooldridge (2010), there are three sources of potential endogeneity:

1. Omitted variables: variables not included in the analysis either because data is not available or because these variables are unobservable.
2. Simultaneity: when one of the independent variables is simultaneously determined by the dependent variable.

3. Measurement error: when proxies are used to measure variables that are difficult to quantify.

Another source of endogeneity that has been addressed by Wintoki et al. (2012) is the dynamic endogeneity and it appears when the current value of a variable is affected by its value in the preceding period. However, it has been recently argued in the literature that in the presence of endogeneity in the data, the results will be biased and the estimates will be inefficient. Therefore, the second regression method that is going to be used is the fixed effects model as it is commonly used to deal with endogeneity concerns.

Furthermore, the third method that is going to be applied is the system GMM and it is the mian model. It has been argued that CG variables are endogenous and there is an individual effect that cannot be captured by the fixed-effects regression, hence the most efficient method is the system GMM.

However, following Wintoki et al. (2012), this chapter will examine the relation between board structure and firm performance through the following four models:

3.7.1 Static OLS Regression Model

Although the static pooled OLS assumes strict endogeneity, it will be implemented as a baseline and compared with alternative models.

$$Y_{it} = \alpha + \beta_1 BSize_{it} + \beta_2 Indep_{it} + \beta_3 Lev_{it} + B_4 Size_{it} + \beta_5 MTBV_{it} + \beta_5 STDEV_{it} + \epsilon \quad (3.1)$$

3.7.2 Dynamic OLS Regression Model

It is similar to the static OLS while including also the first and second lags of the

dependent variable, as follow[14]

$$Y_{it} = \alpha + LagY_{it-1} + LagY_{it-2} + \beta_1 Bsize_{it} + \beta_2 Indep_{it} + \beta_3 Lev_{it} + \beta_4 Size_{it} + \beta_5 MTBV_{it} + \beta_6 STDEV_{it} + \epsilon \quad (3.2)$$

3.7.3 Fixed Effects and Random Effects Models

3.7.3.1 Fixed Effects Model

This model has been used in many studies as it is believed that it deals with endogeneity (Yermack, 1996 and Himmelberg et al., 1999). Petersen (2009) states that it produces consistent estimates if the firm has constant unobservable characteristics over time.

Fixed Effects model explores the relationship between the independent and dependent variables within the company. However, each company has its own individual characteristics that may or may not influence the regressors.

The fixed effect model assumes that there are individual-specific characteristics (observed or unobserved). Those characteristics may impact or bias the model and need to be controlled for.

If the individual-specific characteristic is observed for all individuals, then the entire model can be treated as an ordinary linear model and fit by least squares. The complications arise when α_i is unobserved, which will be the case in most applications.

If the individual-specific characteristic is unobserved, but correlated with the regressors, then the least squares estimator of the coefficient is biased and inconsistent as a consequence of an omitted variable. However, the fixed effects model:

$$Y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_2 X_{jit} + \sum_{p=1}^{s} \gamma_p Z_{pi} + \delta t + \epsilon_{it} \quad (3.3)$$

[14] Two lags of the past performance are included in the regression as independent variables following Wintoki et al. (2012).

Where

Y is the dependent variable

X_i are the observed explanatory variables

Z_p are the unobserved explanatory variables

i refers to the unit of observation

t refers to the time period

j and *p* are used to differentiate between the observed and unobserved explanatory variables

δt allow for a shift of the intercept over time

ϵ_{it} is an error term

Z_p variables are responsible for unobserved heterogeneity, and it is assumed (a common assumption) to be unchanging and therefore do not need a time subscript. Hence, the model can be rewritten as

Where

$$Y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_2 X_{jit} + \alpha_i + \delta t + \epsilon_{it} \quad (3.4)$$

$$\alpha_i = \sum_{p=1}^{s} \gamma_p Z_{pi} \quad (3.5)$$

This fixed effects approach assumes α_i to be an individual-specific constant term in the regression model. The term "fixed" in this model implies the correlation of α_i and X_{jit}, not that α_i is non-stochastic. Fixed effect removes the effect of those time-invariant characteristics so that the net effect of the predictors on the outcome variable can be measured.

Another important assumption of the fixed effect model is that those time-invariant characteristics are unique to the individual and should not be correlated with other individual characteristics. Each entity is different therefore the entity's error terms should not be correlated with the others.

3.7.3.2 The Random-Effects Model

The unobserved individual heterogeneity is assumed to be uncorrelated with the included variables in the model hence, that individual heterogeneity mayfunction as explanatory variables; then the model may be formulated as:

$$Y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_j X_{jit} + \alpha_i + \delta t + \epsilon_{it} \quad (3.6)$$

$$Y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_j X_{jit} + \delta t + u_{it} \quad (3.7)$$

where

$$u_{it} = \alpha_i + \epsilon_{it} \quad (3.8)$$

However, the important difference between fixed and random effects is whether the unobserved individual characteristics are correlated with the regressors in the model.

3.7.3.3 Hausman Test[15]

It is believed that random effect is more attractive because observed characteristics that remain constant for each individual are retained in the regression model. However, in the fixed effects model, they are dropped. Moreover, in the random effects model, n degrees of freedom are not lost, as in the case with the fixed effects model.

Nevertheless, in order to choose between fixed and random effects, Hausman test will be used. According to the Hausman test:

H_0: Random effect is preferred

H_1: Fixed effect is preferred

It basically tests whether the unique errors u_{it} are correlated with the regressors, the null hypothesis being that they are not and the alternative hypothesis being that they are correlated. Based on the results of the Hausman test, the researcher will choose

[15] Hausman test has been applied on the data, and the results indicate the FE is preferred for all three performance measures.

which model is preferred for the data.

However, Schultz et al. (2010) argue that fixed-effects estimation does not control for all sources of endogeneity such as simultaneity and dynamic endogeneity. Therefore, the dynamic GMM model will be employed as it is robust to all sources of endogeneity.

3.7.4 System Dynamic GMM Model

System GMM will be applied because usually CG variables are endogenous and there is an individual effect that cannot be captured by the fixed effect, hence the most efficient method is the system GMM.

Dynamic panel estimation has been increasingly used to deal with invalid or weak instruments (for example, Arcot and Bruno 2009; Schultz et al., 2010 and Wintoki et al., 2012). However, when there is a problem of endogeneity, dynamic GMM is generally preferred compared to difference GMM (Roodman 2009).

Wintoki et al. (2012), argue that dynamic GMM has some noticeable advantages over the other common regression methods in the literature. One of the proposed advantages is that *"it relies of a set of 'internal' instruments contained within the panel itself: past values of governance and performance can be used as instruments for the current realizations of governance, this eliminate the need of external instruments."* (p. 582).

Following Wintoki et al. (2012), we use system GMM model and include two lags of past performance as explanatory variables. This makes historical performance and historical firm characteristics, lagged three periods or more, available for use as instruments.

Two-step dynamic system GMM estimation is applied and it is assumed that all regressors expect the year and industry dummies are endogenous. This estimator was

developed in a series of papers including Arellano and Bover (1995) and Blundell and Bond (1998).

In order to estimate the effect of board structure on firm performance, conditional on firm heterogeneity, it is required to estimate the following empirical model:

$$y_{it} = \alpha + \sum_p k_p\, y_{it-p} + \beta X_{it} + \gamma Z_{it} + \eta_i + \epsilon_{it} \qquad s = 1, \dots, p, \qquad (3.9)$$

where

ϵ_{it} is a random error term

β is the effect of board structure on performance

The basic estimation procedure consists of two essential steps. First we write the dynamic model of (1) in first difference form:

$$\Delta y_{it} = \alpha + k_p \sum_p \Delta\, y_{it-p} + \beta \Delta X_{it} + \gamma \Delta Z_{it} + \Delta \epsilon_{it} \qquad p > 0 \qquad (3.10)$$

First differencing removes any potential bias that can arise from time-invariant unobserved heterogeneity. After that, we estimate (3.10) via GMM using lagged values of the independent variables as instruments for the current independent variables. That is, we use historical values of firm performance, board characteristics, and other control variables as instruments for current changes in these variables.

However, system GMM enhances the estimator by including the equations in levels to the model. First differenced variables are used as instruments for the equation in level in a system of equations that includes both level and differenced equations. Hence, the system GMM is estimated as follows:

$$\begin{bmatrix} y_{it} \\ \Delta y_{it} \end{bmatrix} = \alpha + k \begin{bmatrix} y_{it-p} \\ \Delta y_{it-p} \end{bmatrix} + \beta \begin{bmatrix} X_{it} \\ \Delta X_{it} \end{bmatrix} + \gamma \begin{bmatrix} Z_{it} \\ \Delta Z_{it} \end{bmatrix} + \epsilon_{it} \qquad (3.11)$$

Nevertheless, each of the above mentioned four models will be used to examine the relation between board structure and performance using each of the three performance measures (ROA, ROE and market return).

3.8 Analysis and Results

This section explains and discusses the results from analysing the relationship between board structure and performance in Saudi listed companies from 2009-2014. The first sub-section will discuss the results based on the ROA as a performance measure, the second sub-section will discuss the ROE results and the final sub-section is a robustness test.

It has been argued in the literature that CG characteristics are endogenous with firm performance and are simultaneously affected by other factors that are not taken into consideration (Schultz et al., 2010).

Although OLS regression method assumes strict exogeneity, it is employed as a baseline analysis in order to find out if there are any discrepancies with applying GMM modelling, and to compare the findings with previous papers that have applied the OLS regression.

Table 3.3 presents the descriptive statistics for all variables. ROA ranges from -64% to 46%, with a mean of 7.68%, this is in line with the finding of Habbash and Bajaher (2015), who find that ROA is 7% in the large Saudi listed companies during the period 2006-2009. ROE has a mean of 11.54%, a minimum of -78.05% and a maximum of 60.2% with a mean of 11.5%. The mean fraction of independent directors is 50%.

The summary statistics also shows that the mean board size is about 8, indicating that firms in the Saudi market possess a relatively moderate board size, having a maximum of 12 members. This implies that the board sizes of Saudi companies are appropriate for optimum firms' performance as suggested by Jensen (1993) and Lipton and Lorsch (1992), who argue that the bigger the board size, the less effective it would be for firm performance.

Table 3.4 shows the changes in board size and board independence every year from 2010 to 2014. By the end of the sample period, about 26.67% of the firms have changed their board size and about 82.22% have changed their board independence.

Table 3.3 Descriptive Statistics of Firm Characteristics and Performance Measures

Variable	Mean	Std. Dev.	Min	Max	Median
ROA	0.077	0.089	-0.640	0.464	0.063
ROE	0.115	0.141	-0.781	0.602	0.097
Log Market Return	0.092	0.281	-0.775	1.010	0.097
Board Size	8.293	1.541	3.000	12.000	8.000
Indep	0.501	0.191	0.000	1.000	0.444
Leverage	0.211	0.193	0.000	0.698	0.182
TA	13,000,000	42,000,000	53,487	340,000,000	2,115,824
MTBV	2.488	1.816	0.450	14.670	1.960
Return SD	0.019	0.007	0.006	0.083	0.018

This table presents the descriptive statistics including mean, median and standard deviation for the firm characteristics and performance measures. The sample is covering the period from 2009-2014. Board size is the total number of directors on the board. Board independence is the proportion of independent directors to total number of directors on the board. Leverage is the ratio of total debt to total assets. TA is the total assets. MTBV is the market value of common equity/book value of common equity. Return SD is the standard deviation of the log (average daily price) calculated yearly. ROA is the return on assets. ROE is the return on equity. Log Market Return is calculated yearly as Log (price end of year) – Log (price beginning of the year).

Table 3.4 Summary of Changes in Board Structure Variables

	2010	**2011**	**2012**	**2013**	**2014**	**Average**	**2010 - 2014**
Change in BoDSize	16.67%	15.96%	17.17%	12.62%	7.41%	13.96%	26.67%
Change in Indep	62.22%	41.49%	39.39%	35.92%	19.44%	39.69%	82.22%

This table presents the changes in board size and independence over the period from 2010 to 2014. The results are based on a sample of 605 company-years. Board size is the total number of directors on the board. Board independence is the proportion of independent directors to total number of directors on the board. Data is collected from annual reports of the companies.

Table 3.5 Correlation Matrix

	ROA	ROE	Log MR	BoDSize	Indep	LogTA	Lev	MTBV	RTN SD
ROA	1.00								
ROE	0.92	1.00							
Log MR	0.08	0.12	1.00						
BodSize	0.13	0.12	-0.01	1.00					
Indep	-0.05	-0.08	-0.01	-0.15	1.00				
LogTA	0.01	0.04	-0.05	0.46	-0.33	1.00			
Lev	-0.20	-0.11	-0.10	0.13	-0.22	0.53	1.00		
MTBV	0.36	0.39	0.26	-0.24	0.06	-0.31	-0.17	1.00	
RTN SD	-0.32	-0.32	0.18	-0.24	0.09	-0.31	0.00	0.12	1.00

This table presents the correlation coefficients between the variables. The sample is covering the period from 2009-2014. Board size is the total number of directors on the board. Board independence is the proportion of independent directors to total number of directors on the board. Leverage is the ratio of total debt to total assets. TA is the log of total assets. MTBV is the market value of common equity/book value of common equity. Return SD is the standard deviation of the log (average daily price) calculated yearly. ROA is the return on assets. ROE is the return on equity. Log Market Return is calculated yearly as Log (price end of year) – Log (price beginning of the year).

Table 3.5 presents correlation coefficients between variables. It is usually used as a preliminary step in determining the relationship between the dependent and explanatory variables.

The correlation coefficient between the two accounting performance measures is high (r = 0.92). The correlations between market return and both accounting measures are low, (r = 0.0) and (r = 0.12) for ROA and ROE, respectively. There is a high correlation between total assets and leverage (r = 0.53). In Addition, the VIF test is applied to check if the problem of multicollinearity exists; the results in table 3.6 show that the variables do not suffer from multicollinearity problem.

Table 3.6 Variance Inflation Factor

Variable	VIF	1/VIF
BodSize	1.59	0.63
Indep	1.28	0.78
LogTA	3.65	0.27
LEV	2.06	0.48
MTBV	1.41	0.71
RTN SD	1.78	0.56
Mean VIF	2.45	

3.8.1 ROA

Table 3.7 reports the results of ROA as a performance measure utilizing the four regression models including static and dynamic OLS, fixed-effects and system dynamic GMM. As mentioned in the methodology section, this chapter includes two lags of past performance in the model and uses the third and fourth lags of variables as instruments.

Table 3.7 The Effect of Board Structure on ROA

	Static Model		Dynamic Model	
Dependent Variable (ROA)	OLS	Fixed Effects	OLS	System GMM
ROA(t-1)			0.534***	0.479***
			(0.000)	(0.000)
ROA(t-2)			0.084	-0.009
			(0.585)	(0.947)
LogBodSize	0.061***	0.039	0.035**	0.008
	(0.001)	(0.266)	(0.044)	(0.794)
Indep	-0.0182	0.001	-0.004	-0.005
	(0.292)	(0.945)	(0.727)	(0.900)
LogTA	0.010***	0.068***	0.003*	0.0168**
	(0.000)	(0.001)	(0.064)	(0.045)
Leverage	-0.137***	-0.147***	-0.046**	-0.133**
	(0.000)	(0.000)	(0.043)	(0.011)
MTBV	0.019***	0.0018	0.008**	0.004
	(0.000)	(0.489)	(0.010)	(0.249)
RTN SD	-3.958***	-0.179	-0.929**	-0.460
	(0.000)	(0.733)	(0.019)	(0.595)
R-squared	0.413	0.058	0.617	
AR(1) test (p-value)				0.069
AR(2) test (p-value)				0.479
Hansan over identification test (p-value)				0.771
Diff-in-Hansan test of exogeneity (p-value)				1.000

This table presents the regression estimates of the relationship between the board structure and ROA.
The static model
$Y_{it} = \alpha + \beta_1 BSize_{it} + \beta_2 Indep_{it} + \beta_3 Lev_{it} + B_4 Size_{it} + \beta_5 MTBV_{it} + \beta_5 STDEV_{it} + \epsilon$
The dynamic model
$Y_{it} = \alpha + LagY_{it-1} + LagY_{it-2} + \beta_1 Bsize_{it} + \beta_2 Indep_{it} + \beta_3 Lev_{it} + \beta_4 Size_{it} + \beta_5 MTBV_{it} + \beta_6 STDEV_{it} + \epsilon$
The sample is covering the period from 2009-2014. Board size is the log of number of directors on the board. Board independence is the proportion of independent directors to total number of directors on the board. Leverage is the ratio of total debt to total assets. TA is the log of total assets. MTBV is the market value of common equity/book value of common equity. Return SD is the standard deviation of the log (average daily price) calculated yearly. ROA is the return on assets. ROE is the return on equity. Log Market Return is calculated yearly as Log (price end of year) – Log (price beginning of the year). AR(1) and AR(2) are tests of first and second order serial correlation of the first differenced residuals. Hansan test of over-identification restrictions tests the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are reported in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

First, looking at the board size, it is shown in table 3.7 that static and dynamic OLS regressions show a positive and significant relation between board size and firm performance. This finding is similar in direction and magnitude to those of the Alhumoudi (2016), who finds that there is a positive relationship between board size and performance in the Saudi listed companies in 2014 by applying the OLS. On the contrary, this result does not support the findings of Ghabayen (2012), who concludes that board size has no effect on firm performance in the Saudi market based on the OLS.

An important thing to notice in the OLS model is that the R^2 improves from 0.413 in the static model to 0.617 in the dynamic model. This improvement indicates that the lagged performance has importance in explaining the variations in current performance and in assessing the relation between board characteristics and firm performance.

Further, there is a drop in the magnitude of the board characteristics variables' coefficients when we move from the static OLS model to the dynamic OLS model which indicates that past performance affects current board characteristics, and suggests that there is the potential for the appearance of endogeneity when examining the relation between board characteristics and performance; furthermore, the OLS estimation does not reflect the unobservable and constant heterogeneity of the firms.

Column 2 of table 3.7 presents the fixed-effects panel model estimation. It corrects for the unobservable heterogeneity that may exist in the relation between board characteristics and performance. The fixed effects model suggests that the relation between board size and performance is insignificant. This implies that there might be some unobservable heterogeneity that is not even captured by past performance. However, the fixed-effects method results contradict the results obtained by Buallay et al. (2017), who concludes based on the fixed effects that board size has significant

positive effect on the performance of Saudi listed companies during 2011-2014.

According to Wintoki et al. (2012) *"The system GMM model enables us to estimate the governance/performance relation and time-invariant unobservable heterogeneity, respectively."* (p. 596). Hence, the system-GMM model is generally preferred when the current board characteristics and firm performance are affected by the firm's past performance, that is when endogeneity arises.

Table 3.7 also shows the results of the dynamic system GMM; the coefficient of the board size on ROA is insignificant (0.00865, t = 0.794). This result is similar to the findings of Wintoki et al. (2012) who apply the system GMM to US firms and do not find any relationship between board size and performance.

Second, looking at the board independence variable, the static OLS estimates reveals an insignificant negative relation with firm performance (-0.0182, t = 0.292). This result is similar to several previous studies on the Saudi market (Al-Matari et al., 2012; Alhassan et al., 2015 and Alhumoudi, 2016) and in other countries (Yermak 1996; Klien 1998; and Bhagat and Black 2002). Likewise, Al-Matari et al. (2012) find an insignificant negative relationship between board independence and ROA in the Kuwaiti stock exchange by applying the OLS regression.

On the contrary, Ghabayen (2012) find a significantly negative relationship between board composition and performance in the Saudi stock exchange in 2011 via OLS regression. Dynamic OLS also suggests an insignificantly negative relationship between board independence and firm performance (-0.00481, t = 0.727).

Interestingly, the fixed effects model also shows insignificant results, but the sign of the coefficient switches from negative to positive. The positive sign of the coefficient is similar to Wintoki et al. (2012), but they find a significant relation between board structure and performance. The insignificant results support the findings of Buallay et al. (2017), who find that based on the fixed-effects method, board independence

insignificantly affects the performance of Saudi listed companies from 2011-2014.

Further, based on the dynamic GMM estimation, the relation between board independence and firm performance is negatively insignificant (-0.00586, t=0.900). This result is also in line with Wintoki et al. (2012) who report an insignificant relationship between board independence and performance in the US market.

The reason behind the change in the sign from negative to positive when moving from the OLS to fixed-effects and system GMM could be due to the bias that may arise from ignoring the unobservable heterogeneity and endogeneity problems. This finding is supported by Wintoki et al. (2012), and according to them "*an OLS regression that ignores the unobservable heterogeneity of managerial ability may find a negative relation between firm performance and board independence."* (p. 597).

Among the control variables, the log of total assets which represents the size of the firm is significant in all the four methods.

Leverage has negative coefficients, and it is statistically significant in all the four models. This is similar to most of the previous studies such as Huang and Song (2006), Zeitun and Tian (2007), Wintoki et al. (2012) and Matari et al. (2012).

Table 3.7 also shows the results of the dynamic GMM specification tests. Including the Arellano and Bond test of second order serial correlation AR(2), the Hansan test of over-identification restrictions and difference in Hansan test for exogeneity of the instruments. AR(2) test has a p-value of (0.479), thus we cannot reject the null hypothesis of no second-order serial correlation. Hansan test provides a p-value of (0.771), indicating that we cannot reject the null hypothesis that the instruments are valid. Also, the difference-in-Hansan test yields a p-value of (1.000), hence we also cannot reject the null hypothesis that the instruments used in the level equations are exogenous.

3.8.2 ROE

The results of ROE are very similar to those obtained from ROA. Table 3.8 reports the results of ROE as a performance measure utilizing the four regression models including static and dynamic OLS, fixed effects and dynamic system GMM. As mentioned in the methodology section, two lags of past performance were included as explanatory variables in the models.

First, regarding board size, table 3.8 shows that both static and dynamic OLS estimates suggest a positive relation between board size and ROE. Also, the lagged values of performance are of importance when determining the effect of board structure on performance, as the R^2 increases from 0.419 in the static OLS model compared to 0.642 in the dynamic OLS model.

Also, when moving from the static OLS to the dynamic OLS (which includes the first and second lags of performance), the magnitude of the estimated coefficients of the board structure declines, and this indicates that past performance is correlated with board structure, suggesting the board structure is endogenous with firm performance.

Hermalin and Weisbach (1998) claim that *"poor performance lowers the board's assessment of the CEO's ability, reducing his bargaining position and thus increasing the probability that the CEO will be forced to accept more independent directors."* (p. 97). According to their model, board composition is negatively related to past performance.

Furthermore, there is a relationship between firm characteristics and firm performance. Also, these firm characteristics determine board structure. Hence, past performance is related to board structure through the effect on firm characteristics. For example, past performance is positively related to firm size. Also, larger firms will require larger board size. Hence, board size will be positively related to past firm

performance through the effect of performance on firm size (Wintoki 2012).

Similar to ROA, the fixed-effects model suggests that the relation between board size and performance represented by ROE is insignificant.

Table 3.8 The Effect of Board Structure on ROE

	Static Model		Dynamic Model	
Dependent Variable (ROE)	OLS	Fixed Effect	OLS	System GMM
ROE (t-1)			0.572***	0.405***
			(0.000)	(0.003)
ROE (t-2)			0.084	0.0307
			(0.414)	(0.855)
LogBodSize	0.099***	0.065	0.055**	0.0108
	(0.000)	(0.219)	(0.028)	(0.827)
Indep	-0.007	-0.000	-0.005	0.005
	(0.772)	(0.974)	(0.796)	(0.911)
LogTA	0.023***	0.119***	0.007**	0.039***
	(0.000)	(0.000)	(0.033)	(0.002)
Leverage	-0.160***	-0.221***	-0.038	-0.201***
	(0.000)	(0.000)	(0.237)	(0.004)
MTBV	0.032***	0.004	0.013***	0.008
	(0.000)	(0.337)	(0.008)	(0.181)
RTN SD	-6.788***	-0.363	-1.153*	0.525
	(0.000)	(0.644)	(0.079)	(0.730)
R-squared	0.419	0.063	0.642	
AR(1) test (p-value)				0.105
AR(2) test (p-value)				0.496
Hansan over identification test (p-value)				0.880
Diff-in-Hansan test of exogeneity (p-value)				1.000

This table presents the regression estimates of the relationship between the board structure and ROE.
The static model
$Y_{it} = \alpha + \beta_1 BSize_{it} + \beta_2 Indep_{it} + \beta_3 Lev_{it} + B_4 Size_{it} + \beta_5 MTBV_{it} + \beta_5 STDEV_{it} + \epsilon$
The dynamic model
$Y_{it} = \alpha + Lag\ Y_{it-1} + Lag\ Y_{it-2} + \beta_1 Bsize_{it} + \beta_2 Indep_{it} + \beta_3 Lev_{it} + \beta_4 Size_{it} + \beta_5 MTBV_{it} + \beta_6 STDEV_{it} + \epsilon$

The sample is covering the period from 2009-2014. Board size is the log of number of directors on the board. Board independence is the proportion of independent directors to total number of directors on the board. Leverage is the ratio of total debt to total assets. TA is the log of total assets. MTBV is the market value of common equity/book value of common equity. Return SD is the standard deviation of the log (average daily price) calculated yearly. ROA is the return on assets. ROE is the return on equity. Log Market Return is calculated yearly as Log (price end of year) – Log (price beginning of the year). AR(1) and AR(2) are tests of first and second order serial correlation of the first differenced residuals. Hansan test of over-identification restrictions tests the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are reported in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

Furthermore, system GMM shows that the relation between board size and ROE is also insignificant (0.0108, $t = 0.827$).

Second, regarding board independence, the static, dynamic OLS and fixed effects estimates show insignificant negative relationships between board independence and firm performance (ROE), whereas the dynamic system GMM shows an insignificant positive relation between board independence and ROE, (0.00488, t=0.911).

The above results indicate that the static OLS, dynamic OLS and fixed-effects regressions ignore the dynamic endogeneity between board structure and performance and the unobservable individual effects such as managerial capability, and those can be captured only by applying the system GMM.

As far as control variables are concerned, the firm size represented by the log of total assets is positive and significant in all four models. This result is similar to the findings of Biswas (2012). Consistent with ROA, the coefficient of leverage is negative and statistically significant in all four models when using ROE as a performance measure; this finding is consistent with most of the prior literature such as Huang and Song (2006), Zeitun and Tian (2007) and Biswas (2012).

Table 3.8 also shows the results of the dynamic GMM specification tests including the AR(2) of second-order serial correlation (Null: no second-order-serial correlation) , the Hansan test of over-identification restriction (Null: the instruments are valid) and finally the Difference-in-Hansan test (Null: the additional instruments used in the system GMM can be considered as exogenous).

AR(2) test yields a p-value of 0.496 which means that we cannot reject the null hypothesis hence, there is no second-order-serial correlation. Hansan test shows a p value of 0.88 and reveals that we cannot reject the null hypothesis, hence, the instruments are valid. Finally, the Difference-in-Hansan test provides a p-value of 1.0 suggesting that we cannot reject the null hypothesis, therefore, the additional instruments used in the system GMM can be considered as exogenous.

It can be concluded from the above analysis that CG variables represented by board

structure, are usually endogenous and there is an individual effect that cannot be captured by the OLS or fixed effects models, hence, the system GMM improves the analysis, and this explains the significant findings in previous papers that have applied OLS in their analysis.

3.8.3 Robustness Tests

This section includes robustness tests to investigate the relation between board structure and performance. The market return will replace both ROA and ROE as a performance measure and will be used as a robustness check.

Table 3.9 shows the results of the analysis when introducing the market return as a performance measure. It is evident that the lagged values of performance have their importance when determining the effect of board structure on performance, as the R^2 slightly increases from 0.298 in the static OLS model compared to 0.340 in the dynamic OLS model.

Further, in both the OLS static and dynamic regression models, the R^2 is lower than the R^2 when applying both ROA and ROE. This supports the argument that our control variables and board characteristics have a higher impact on accounting measures than on market return.

However, based on the static and dynamic OLS the inferences of the explanatory variables remain similar to the results obtained from ROA and ROE as there is a significant positive relation between board size and firm performance and the relation between board independence and performance is insignificantly negative. The fixed-effects model using market returns reveals that board size and board independence are insignificant. Finally, the system GMM model shows that board size and independence are insignificantly positive.

Since the results in this chapter are based mainly on the dynamic system GMM, the

agency theory assumptions concerning the relationship between board structure and performance and the hypotheses H1a, H1b, H2a and H2b are not supported.

Table 3.9 The Effect of Board Structure on Log MR

	Static Model		Dynamic Model	
Dependent Variable (Log MR)	OLS	Fixed Effect	OLS	System GMM
Log MR (t-1)			-0.210***	-0.327***
			(0.002)	(0.000)
Log MR (t-2)			-0.151**	-0.194**
			(0.013)	(0.016)
LogBodSize	0.111*	-0.134	0.188**	0.184
	(0.099)	(0.424)	(0.020)	(0.410)
Indep	-0.0731	-0.106	-0.137	0.005
	(0.228)	(0.213)	(0.107)	(0.983)
LogTA	0.028**	0.191*	0.017	0.084
	(0.016)	(0.053)	(0.235)	(0.159)
Leverage	-0.123*	-0.017	-0.184**	-0.409
	(0.079)	(0.932)	(0.034)	(0.214)
MTBV	0.042***	0.081***	0.049***	0.046**
	(0.000)	(0.000)	(0.000)	(0.029)
RTN SD	9.901**	12.23***	3.872	9.463
	(0.030)	(0.000)	(0.392)	(0.244)
R-squared	0.298	0.301	0.340	
AR(1) test (p-value)				0.012
AR(2) test (p-value)				0.570
Hansan over identification test (p-value)				0.143
Diff-in-Hansan test of exogeneity (p-value)				0.671

This table presents the regression estimates of the relationship between the board structure and market returns.
The static model
$Y_{it} = \alpha + \beta_1 BSize_{it} + \beta_2 Indep_{it} + \beta_3 Lev_{it} + B_4 Size_{it} + \beta_5 MTBV_{it} + \beta_5 STDEV_{it} + \epsilon$
The dynamic model
$Y_{it} = \alpha + Lag\ Y_{it-1} + Lag\ Y_{it-2} + \beta_1 Bsize_{it} + \beta_2 Indep_{it} + \beta_3 Lev_{it} + \beta_4 Size_{it} + \beta_5 MTBV_{it} + \beta_6 STDEV_{it} + \epsilon$

The sample is covering the period from 2009-2014. Board size is the log of number of directors on the board. Board independence is the proportion of independent directors to total number of directors on the board. Leverage is the ratio of total debt to total assets. TA is the log of total assets. MTBV is the market value of common equity/book value of common equity. Return SD is the standard deviation of the log (average daily price) calculated yearly. ROA is the return on assets. ROE is the return on equity. Log Market Return is calculated yearly as Log (price end of year) – Log (price beginning of the year). AR(1) and AR(2) are tests of first and second order serial correlation of the first differenced residuals. Hansan test of over-identification restrictions tests the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are reorted in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

Table 3.9 also shows the results of the dynamic GMM specification tests. AR(2) test yields a p-value of 0.57; hence, we cannot reject the null hypothesis which means that there is no second-order-serial correlation. Hansan test shows a p-value of 0.143 and

reveals that we cannot reject the null hypothesis; hence, the instruments are valid. Finally, the Difference-in-Hansan test provides a p-value of 0.671 suggesting that we cannot reject the null hypothesis therefore, the additional instruments used in the system GMM can be considered as exogenous.

A possible explanation of the variation in the results among the performance measures is that the Saudi stock exchange exhibits the general characteristics of emerging market with prices being to a large extent manipulated by rumours and speculations, some well-known online forums are usually visited by a huge number of speculators on a daily basis, where recommendations -to buy or sell a specific stock- from are followed by several anonymous people; those recommendations are not based on any sort of technical or fundamental analysis. Its financial statements of listed companies being usually audited by one the Big Four or well-known and authorized Saudi auditing companies, this might explain why ROA and ROE are better in assessing the relation between board characteristics and performance of the companies.

Further, the Saudi stock market index TADAWUL increased dramatically from 4,437.58 by the end of 2003 to 8,206.23 by the end of 2004. Later, the index reached its highest point at 20,634.86 on 25 February 2006, but ended the year with a massive loss as it declined and reached 7,933.29 points.

Initial analysis conducted using OLS and dynamic OLS estimation revealed evidence of a significant relationship between board size and performance. However, when fixed-effects and dynamic system GMM was applied, the significance of this relation disappeared. Those results suggest that the significant relationship previously found in the OLS and dynamic OLS were the result of spurious correlation. Those results are similar to Wintoki et al. (2012) and Schultz et al. (2010).

3.9 Conclusion

In this chapter, a sample of 605 firm-year observations of non-financial firms listed on the Saudi Stock Exchange over a 6-year sample covering the period from 2009-2014 are used, to find out the relation between board characteristics (including board size and board independence) and performance. ROA and ROE are used as the primary firm performance proxies in analysis, and market return is used later as a robustness check.

First, static OLS, dynamic OLS and fixed-effects models are applied. the relation between board size and firm performance is significant and positive, and the relation between board independence and performance is insignificantly negative (except for ROA where the relationship is insignificantly positive).

Second, when past performance is included in the OLS regressions, the R^2 rises and it is always greater in the dynamic OLS model when compared with the static OLS model, the magnitude of the coefficients of both the size and independence of the board decline for the dynamic OLS. This indicated that past performance is important in assessing the relationship between board structure and performance, and it has asignificant impact on the current performance. Furthermore, the decline in the magnitude of the coefficient of both board size and independence implies that current board structure is affected by past performance, thus devoting a potential endogeneity problem.

Third, when the dynamic GMM is applied (i.e. when unobserved heterogeneity and endogeneity are accounted for) the results show that the relation between firm performance and board size is no longer significant. This finding support the notion that the causal relationship in previous papers that apply OLS and fixed-effects is spurious (Schultz et al., 2010 and Wintoki et al., 2012).

Finally, a robustness test using stock market returns is applied to examine the relation between board structure and performance. The results are similar to those obtained via the ROA and ROE.

However, board independence does not have any significant relation with performance across the four models and the three performance measures. This result could be due to the weakness of the Saudi code; as explained in an earlier chapter, the Saudi code was first issued in 2006 and then revised in 2009. However, it identifies the independent director as the director who has no first degree relative on the board; it also identifies the first degree relative as father, husband, wife and children. It excludes sisters, brothers, cousins and uncles. In the Saudi society, families have very strong relationships between their members, and hence many family members have their brothers, nephews, uncles and cousins as independent directors on the board, while they are not independent in real.

Further, the positive and significant relationship between firm size and performance in most of the results suggests that larger firms are more likely to have sources that create value, wider activities, and have greater influence on the market (Bohren and Strom, 2005).

Leverage has a significant and negative impact on performance. This finding indicates that the increase in the firm's leverage will cause a decrease in the firm performance. This conclusion is in line with that reported by Bohren and Strom (2005), but contrasts with that reported by Kyereboah-Coleman and Biekpe (2006). In sum the findings of this chapter do not support the agency theory hypotheses on the relationship between board structure and performance.

It could be concluded that after controlling for endogeneity by applying the dynamic GMM, the results reveal that some variables that occur to be significant in the OLS and fixed-effects mordels are not significant anymore.

Another important finding is that the relationship between the current performance (ROA and ROE) and one year lagged performance is significant. For stock market return both the first and second lags are significant. This is in line with the findings of Wintoki et al. (2012), and it suggests that the dynamic relationship between board structure and performance should be taken into consideration. This implies that past performance is crucial in determining current board structure and performance.

The significant relationship between current performance and past performance implies a dynamic endogeneity as current performance is determined by past performance. In the relationship between board structure and performance, dynamic endogeneity occurs when past performance determines current performance, board structure and control variables. For example, it past firm performance is poor, shareholders will likely replace BODs and ensure stricter controls. Hence current governance and performance will in turn be affected (Hermalin and Weisbach, 1998). This mean that current expected performance impounds firm's past performance.

Yet, the relation between governance structure and performance is complicated; previous studies worldwide have found mixed results and this could be attributed to several factors, the time period of the study and different methodologies. It could be concluded from this chapter that cultural effects which cannot be captured or analysed easily have a significant impact, especially in Saudi Arabia. For instance, favouritism -an unobservable factor- plays a huge role in the decision-making process.

Board-level behaviour, board activities and directors' expectations varies among different cultures, hence, culture in a component in corporate governance (Tricker, 2015).

The culture in Saudi Arabia is based on Islam and much of the law and social norms arise from the religion. This basis has a special impact on the use of corporate governance; firms in Saudi must adhere to Sharia and behave according to Quran and

Sunnah.

Falgi (2009) analyses corporate governance in Saudi Arabia; one aspect of his study is to examine the cultural impact on corporate governance, he suggests that corporate governance is Saudi Arabia is characterized by weak legal framework and influenced by cultural factors. Furthermore, collectivism plays a vital role in the culture.

It has been argued in the literature that the laws protecting investors varies significantly among countries due to differences in legal systems (La Porta et al. 1997). Klapper and Love (2002) state that countries with weak legal system will have lower performance and governance. Also, firm-level corporate governance is more important in countries with weak legal environment, their results suggest that firms can adopt good corporate governance practises that enforce investor protection to offset the weak legal system. This adoption of firm-level good corporate governance might enhance firms' performance.

Doidge, Karolyi and Stulz (2004) argue that countries in which investors have lower protection, large and controlling shareholders will be more motivated to expropriate minority shareholders, consequently, agency problems will be greater in those countries.

Chapter 4 The Relationship between Ownership Structure and Firm Performance

4.1 Introduction

Ownership structure is considered one of the main internal CG mechanisms that affect the firm's value and it has received a substantial attention in the literature (Demsetz and Lehn, 1985; La Porta et al., 1999; De Miguel et al., 2004; Kowalewski et al., 2010).

Shareholders aim to maximize their profit while managers seek self-interest strategies that are not necessarily maximizing the value of the firm. Further, managers can exert their power at the expense of the shareholders, especially when there is a lack of either appropriate incentive plan or adequate monitoring. In this sense, it has been argued that ownership structure is one of the internal CG mechanisms that is believed to reduce the conflict of interest between managers and shareholders.

The structure of business ownership in countries around the world could be in general categorized into four groups. First, countries in which the ownership of public companies' shares is widespread, such as the UK and the USA. Second, countries in which governments and banks exercise control, such as Germany and France. Third, countries where the economy is dominated by the public sector and family oriented businesses. This third category represents the situation in most of the developing countries. Fourth, countries in which the ownership structure is mixed (Al- Rumaihi, 1997).

However, family firms are the most prevalent type of ownership structure in most economies worldwide (La Porta et al., 1999). In Arab countries, the majority of the listed companies are family owned; therefore, family members usually have an

extensive power over management. This may be achieved by chairmanship, being a board member or by controlling the positions of senior management (OECD, 2003).

It is important to be aware of the issue of CG in Arab countries, since the conflict of interest usually rises between the controlling family and minority shareholders (Saidi, 2004; Omet and Mashharawe, 2002; Najib, 2007).

In Saudi listed companies, ownership structure is highly concentrated and the control is usually in the hands of dominant shareholders. Those shareholders are reluctant in delegating their authority and responsibility. Furthermore, ownership structure is believed to be unique though, and this is due to the strong relationship between family members and the complexity of ownership structures where some big companies have a major ownership in other companies. Also, several companies are either partially or highly owned by the government or by families, while some of them are owned by one or two major shareholders. Further, some companies are owned by major shareholders, who are not on the BODs, but their first degree relative, such as the son or brother, is either the chairman or a board member.

While there is a widespread amount of research with regards to the impact of different ownership groups on corporate performance globally, there is not much work in this field in Saudi Arabia. Few papers have examined the relationship between ownership structure and performance, and none of them have examined the impact of insider ownership on performance (Soliman, 2013; Nobanee et al., 2017 and Khamis, et al., 2015). Since the structure of ownership in Saudi listed firms is concentrated and based on rich families, government and dominant shareholders whom are also insiders, it is essential to investigate the relationship between the performance and ownership structure including the following groups: insiders, family, government and institutional shareholders.

Data on ownership can be easily obtained as TADAWUL has a depository system in

which all stocks are hosted in, and for ownership that exceeds 5%, the system will automatically update this information daily on TADAWUL's website. Moreover, the analysis of this chapter differs from most previous papers that use cross-sectional data, or analyse periods of one or two years. It contributes to the literature by examining the relationship between ownership structure and performance covering a panel data of 599 non-financial Saudi listed companies over six years spanning over the period from 2009 to 2014, and by applying more advanced econometric techniques to find out whether accounting for the endogeneity problem would confirm the documented results of the previous studies.

Although several regression methods have been applied to find out the relationship between ownership structure and performance, OLS is considered the mostly used method in the literature. Yet, it has been argued recently that OLS might produce biased estimates in the presence of endogeneity problems and that the fixed-effects method is most appropriate to deal with it. Moreover, it has been claimed that the dynamic system GMM is the most appropriate regression method as there is an individual effect that cannot be captured by fixed-effects. However, both the OLS and fixed-effects will be applied to compare the findings with previous studies and verify our sample, and the dynamic system GMM will also be applied as the main model as it controls for endogeneity and to find out if the results obtained are different from those of the OLS and fixed-effects.

Considering the presence of potential dynamic endogeneity, this chapter examines the effect of ownership structure as an internal governance mechanism on performance. It aims to find out if after controlling for dynamic endogeneity, the causal relationship between ownership structure and performance as proposed by the agency theory persists in the Saudi market.

To the best knowledge of the researcher this is the first attempt to examine the cubic

relationship between family ownership and performance in addition to the quadratic relation between insider ownership and performance in the Saudi market context. Furthermore, this research differs from past studies on the Saudi market in the sense that the sample starts from 2009, and this is the year in which the Saudi CG code was revised, although it was established in 2006. Therefore, the results will reflect the actual implementation of the code.

The remainder of this chapter proceeds as follow: after the introduction in section 4.1. Section 4.2 presents a theoretical perspective on ownership structure as a corporate governance mechanism. Section 4.3 discusses the relationship between different forms of ownership structure and corporate governance. Section 4.4 discusses the relationship between ownership structure and performance and presents the hypotheses. Sample selection, data set, collection methods and variables are explained in section 4.5. Section 4.6 describes the performance measures that are used to analyse the data. Methodology is presented in section 4.7. Section 4.8 presents the results. And finally, section 4.9 concludes the chapter.

4.2 Theories on Ownership Structure

The importance of corporate governance arises from the potential conflicts of interests between participants in the firm. These conflicts of interests occur from two main sources. First, the participants in the firm have different preferences and goals. Second, the information they have on each other's interests and actions are imperfect.

The history of the relationship between ownership structure and firm performance goes back to the 1932, when Berle and Means suggested the separation of ownership and control. In their seminal work, they address these conflicts by examining the separation of corporate owners from corporate manager. They claim that there are two parties in a firm: the principal who owns the firm and the agent who operates the firm on behalf of the principal. They distinguish between the positions of managers and the actions of owners which is commonly referred to as the separation of ownership and control; they argue that this separation motivates managers to act in their own self-interests at the expense of other shareholders' interests; they also suggest that ownership concentration is important in resolving issues between owners and managers.

Hence, their work is considered the base for research concerning corporate ownership structures. It further creates some potential issues and problems related to the separation of ownership and management, known as the agency problems (Jensen & Meckling 1976).

Jensen and Meckling (1976) propose an agency theory based on the conflicts of interests between owners and managers. They further claim that owners and managers have different risk preferences which may result in managerial actions that may differ from the preferences of shareholders. They define the agency relationship as *"a contract under which one or more persons (the principal(s)) engage another person*

(the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent." (p. 308).

Agency problems between shareholders and managers who control resources of the firm in modern companies resulted in the appearance of corporate governance mechanisms to assure that the wealth of shareholders is not expropriated in unprofitable projects (Jensen and Meckling, 1976 and Shleifer and Vishny, 1997).

Although the notion that managers and shareholders have diverge interests has been questioned in the literature (Ghoshal, 2005), massive amount of research based on agency theory proves this assumption (Dalton et al., 2007). Hence, the literature suggests several internal mechanisms to ensure the alignment of interests between managers and shareholders. Ownership structure, among others, is considered in the literature one of the important corporate governance mechanisms to align the interests of owners and managers and reduce the costs associated with this conflict of interests (Dalton et al., 2003).

Several definitions have been suggested in the literature to explain ownership structure. According to Shleifer and Vishny (1997), ownership structure in any firm refers to the characteristics of shareholders and their size of shareholding, it also depends on the distribution of shares with regards to paid capital and votes. Grossman & Hart (1986) define ownership as *"the power to exercise control."* (p. 694).

Shleifer and Vishny (1997) claim that ownership structure impacts corporate governance systems through its influence on their process and design, it affects the objectives of the company and how they are achieved.

The following discussion will review the impact of ownership of different groups as a corporate governance mechanism from a theoretical perspective.

Large shareholders are believed to have strong incentives to monitor managers (Shleifer and Vishny, 1986). Managers will pay a special attention to those large

shareholders (Useem, 1996). Furthermore, those large shareholders might have access to private information as they are more motivated to monitor the actions of managers (Heflin and Shaw, 2000). Bhagat et al. (2004) claim that large shareholders may participate with managers in setting the policy of the firm.

For instance, agency theory suggests that ownership structure could help in reducing the conflict of interests between managers and shareholders. As managers' ownership increases, there will be a convergence of interests between managers and shareholders of the firm (Jensen and Meckling 1976). Moreover, Kren and Kerr (1997) show that when board members own shares; they will be more encouraged to act as owners in terms of monitoring, hence agency costs will reduce.

Insider/managerial ownership assists in aligning the interests of managers and shareholders as these insiders will be motivated to make decisions that are in the interests of other shareholders. Dalton et al. (2003) call it the 'alignment' approach. On the other hand, other scholars argue that managerial ownership might have a harmful effect on the firm; when managers own high levels of shares, they will have more power and will be entrenched with the firm (Morck et al., 1988). Entrenchment effect may also lead managers to take advantages and/or invest in low risk projects to protect their interests.

Family owners are another type of shareholders; earlier studies claim that family owners may have greater abilities to monitor the firms, especially when their ownership of the firm is combined with control over managers (Anderson and Reeb, 2004). Family firms might have a longer time horizon than non-family firms as family members are keen and concerned to save their wealth for following generations. Furthermore, family shareholders have unique incentives, they are motivated to make decisions for the long-term and they have a significant influence on the firm (Becht and Roel, 1999 and Dhnadirek and Tang, 2003).

According to agency theory, family firms have less managerial opportunism which makes the importance for internal governance mechanisms such as BODs, insignificant (Jensen and Meckling, 1976).

On the other hand, family owners can expropriate and use the company's resources to their own benefits. This expropriation effect in family firms is worse than in firms with dispersed ownership, since it is difficult in family firms to replace the controlling family (Enriques and Volpin, 2007).

Nevertheless, it has been theoretically claimed that ownership structure is one of the key effective corporate governance mechanisms that is believed to resolve the agency problems that arises from the separation between ownership and control. Therefore, it is believed to influence firm performance (Shleifer and Vishny's 1997).

4.3 The Relationship between Ownership Structure and Corporate Governance

Ownership structure is one of the key mechanisms of corporate governance, it is determined by the local characteristics of the country such as the stock market development (Desender, 2009) and the legal system (Claessens et al., 2000).

Ownership structure varies among countries. Generally, it is divided into either concentrated or dispersed (Coffee 2005; Franks and Mayer 1997 and La Porta et al., 1999). There are several types of owners of listed firms including managers, family, institutions and government. The global differences in ownership structure lead to variations in corporate governance among countries. Grasping the impact of different ownership structure is important to explain corporate governance of firms operating in different national contexts and institutional arrangements (Li, 1994)

The following sub-sections discuss and present empirical evidence on how various forms of ownership structure and types of owners are expected to impact on corporate governance.

4.3.1 Managerial Ownership

Insider or (managerial) shareholding is believed to affect control over the BODs. Jensen and Meckling (1976) hypothesize that when managers own shares in the firm, their interests will be aligned with those of the shareholders; hence, the need for monitoring managers by the BODs will reduce.

4.3.1.1 Managerial Ownership and BODs

Bathala and Rao (1995) claim that the role of outside directors is less important in firms with high insider ownership. They find out that there is an inverse relation

between the equity held by insiders and the proportion of outside board members, indicating that insider ownership helps in mitigating the conflict of interests between managers and shareholders, hence reducing the need for monitoring managers by external directors on the BODs. Similarly, Mak and Li (2001) examine the relationship between board structure characteristics and ownership in a sample of listed firms in Singapore; and indicate that there is a negative relationship between outside directors and managerial ownership. They interpret their finding by suggesting that when managers own more shares in the firm they will be able to influence board appointments and hence, there will be less outside directors. Likewise, Denis and Sarin (1999) examine listed companies in US over ten-year period 1983-1992; and find out that insider ownership and the proportion of outsider directors on the board are negatively related.

4.3.1.2 Managerial Ownership and Voluntary Disclosure

The relationship between managerial ownership and voluntary disclosure is vague. The first point of view claims that an increase in managerial ownership will align the interests of managers with those of the shareholders. Hence, the greater the managerial ownership the higher the voluntary disclosure. Warfield et al. (1995) examine US market and find a positive relationship between managerial ownership and the amount of information disclosed on earning.

On the other hand, Fama and Jensen (1983) claim that dispersed ownership (lower managerial ownership) is likely to raise the conflict between owners and managers. This agency problems can be mitigated through monitoring by shareholders (Jensen and Meckling, 1976 and Shleifer and Vishny, 1986). To reduce agency costs, managers in dispersed owned companies are expected to disclose more information in the annual report as monitoring by shareholders puts pressure on managers to disclose

more information than is demanded by law or regulations. That is, voluntary disclosure is a substitute for monitoring. Therefore, it is expected that there is a negative association between managerial ownership and voluntary disclosure.

Another argument that justifies the negative relationship between managerial ownership and voluntary disclosure is that the increase in managerial ownership might entrench managers, hence, voluntary disclosure will decrease.

Ruland et al. (1990) examine US market and find out that managerial ownership is negatively associated with reporting earnings forecasts, their finding is consistent with Jensen and Meckling (1976) prediction. Chau and Gray (2002) examine listed companies in Hong Kong and Singapore, they find out that companies with defused ownership will disclose more voluntary information whereas insider controlled firms will disclose lower information.

Also in Singapore, Eng and Mak (2003) find evidence supporting the above argument; voluntary disclosure is negatively related to managerial ownership and it substitutes monitoring managers. Further evidence from Singapore market, Firer and Williams (2005) observe that when directors own shares in the firm, they are less motivated to disclose information on intellectual capital. Haji and Ghazali (2013) examine Malaysian listed companies, they find out that the extent and quality of intellectual capital disclosure is negatively related to director ownership.

However, Huafang and Jianguo (2007) examine the impact of managerial ownership of voluntary disclosure of Chinese listed companies in 2002; and conclude that managerial ownership and voluntary disclosure are not related.

4.3.2 Family Ownership

Based on the classical principal-agent approach, family owned firms should be less exposed to agency costs because of the separation between ownership and control is

limited. However, agency problems in family owned firms is not between managers and owners as proposed by Jensen and Meckling (1976); it is instead between family owners and minority shareholders.

4.3.2.1 Family Ownership and Monitoring

It has been claimed in the literature that family ownership in the firm reduces monitoring capabilities of the BODs. Eulaiwi et al. (2016) examine the relationship between family ownership and the multiple directorship held by board members in non-financial listed companies in the GCC from 2005-2013; and find a positive relationship, this finding supports their hypothesis that family owners of the firm hire busy directors on the board to sustain control over the firm. Furthermore, Jaggi and Leung (2007) examine listed companies in Hong Kong, and conclude that monitoring by outside directors is less effective in family-controlled firms, hence, the quality of reported earnings is less.

4.3.2.2 Family Ownership and BODs Compensation

The effect of family owned firms on compensation has two opposite points of view. Family members look after their firms as they constitute most of their wealth (Arregle et al., 2007). Also, these firms represent their professionalism and reputation, hence, families are motivated to follow a strategy that ensures the firm's success on the long-run. Consequently, they do not to act based on their self-interests (Ward, 2004 and Miller and Le Breton-Miller 2005). This argument suggests that the main concern of family members is not mainly financial, therefore, they will have lower compensation in comparison to non-family members (Corbetta and Salvato, 2004).

Another argument of the negative relationship between family ownership and compensation is that family ownership concentration offers an employment protection

to the family CEO, hence this CEO will exchange low earnings for a greater job security as he/she will be less exposed to risk (Gomez-Mejia et al., 2003).

On the contrary, there might be a positive relationship between family ownership and compensation as those family members might extract their own benefits or expropriate minority shareholders by receiving higher payments.

However, studies that have analysed the relationship between family ownership and compensation of BODs have concluded mixed results. Barontini and Bozzi (2011) examine companies listed on Milan stock exchange during 1995–2002; and find out that board compensation is higher in family owned firm especially for founder-controlled firms. Similarly, Haid and Yurtoglu (2006) examine a sample of large listed companies in Germany during 1987-2003; and find out that the relationship between family ownership and managers pay is positive. Cohen and Lauterbach (2008) investigate a sample of traded Israeli firms during 1994-2001; and conclude that when the CEOs are related to the family that owns most of the shares, they receive higher pay than CEOs who are not related to the family. This finding supports the view that family related CEO abuse the firm and extract benefits for themselves. On the contrary, in US, Cavalluzzo and Sankaraguruswamy (2000) find out that the relationship between family ownership and the level of executive compensation is negative.

4.3.3 Institutional Ownership

The importance of institutional ownership has emerged in corporate governance as a monitoring mechanism to protect the interests of minority shareholders (Daily, Dalton, & Cannella, 2003). Allen et al. (2000) argue that institutional ownership will reduce the agency conflicts as those institutions have more information and can better monitor companies.

4.3.3.1 Institutional Ownership and Board Remuneration

Institutional ownership and board compensation are methods to monitor and reduce agency problems between managers and shareholders. However, there are two contradicting hypotheses on the relationship between institutional ownership and compensation depending on whether they are considered as substitutes or as complements. Each of those contradicting hypotheses has a different sign in predicting the relationship between institutional ownership and compensation. If institutional investors substitute compensation in monitoring managers, then the more the monitoring by institutional investors the less the need to spend on compensation. On the contrary, if institutional investors complement compensation in monitoring managers, then the role of those institutional investors will add to that of the compensation (Hartzell and Starks, 2000).

Henry (2010) find out that institutional ownership is positively correlated to remuneration and compensation in Australia. Hartzell and Starks (2000) examine US market during 1991-1997; and find out that the relationship between institutional ownership and level of compensation is negative. On the contrary, they find a positive relationship between institutional ownership and pay-for-performance sensitivity of executive compensation.

4.3.3.2 Institutional Ownership and Voluntary Disclosure

Shleifer and Vishny (1986) presume that institutional investors will supervise managers and reduce the agency conflicts. Hence, institutional ownership is suggested to increase voluntary disclosure. However, empirical studies provide conflicting results on this relationship.

Barako et al. (2006) find out that there is a significant positive relationship between

institutional investors' ownership and voluntary disclosure in listed companies in Kenya during 1992-2001; they argue that institutional investors are motivated to monitor disclosure practices, therefore, managers disclose voluntary information to meet the expectations of these investors. Carson and Simnett (1997) find a positive relationship between institutional ownership and voluntary disclosure in Australia.

On the contrary, Hidalgo et al. (2011) document a negative relationship between institutional ownership and intellectual capital disclosure in Mexico, their findings support the entrenchment hypothesis of institutional ownership. However, Haniffa and Cooke (2002) did not find any association between institutional ownership and disclosure in Malaysia.

4.3.4 Government Ownership

Companies with government ownership may have less effective corporate governance practices compared to companies where the government does not own shares.

4.3.4.1 Government Ownership and BODs

The goals of government are usually related to the well-being of the country and might not be centred on making profits. Furthermore, firms with governmental ownership will most likely have easier access to external funding than non-government owned companies. Government-owned firms also encounter less pressure to pay dividends. Furthermore, the government often invests for the long-term, hence, companies with government ownership are less likely exposed to takeovers. Finally, they are less monitored by shareholders. Therefore, companies with government ownership are expected to have different and often weaker corporate governance practices (Mak and Li, 2001).

Mak and Li (2001) examine the relationship between ownership and board structure in

Singapore, and find a negative association between government ownership and the proportion of outside directors on the board. They state that government linked companies "*have different board structures because they have less incentive to solve agency problems, rather than because they are subjected to other forms of monitoring by the government."* (P. 240).

As far as board compensation is concerned, Barontini and Bozzi (2011) examine listed companies in Italy during 1995-2002; and find out that state-owned firms have lower levels of board compensation.

4.3.4.2 Government Ownership and Voluntary Disclosure

The relationship between government ownership and voluntary disclosure has two different points of view. On one hand, Eng and Mak (2003) argue that government owned firms disclose more information to protect shareholders and reduce information asymmetry; they find a positive relationship between government ownership and disclosure in Singapore. Likewise, Firer and Williams (2005) observe that when companies are less owned by government, there are less motivated to disclose intellectual capital information in Singapore. In Malaysia, Haji and Ghazali (2013) observe a positive association between government ownership and intellectual capital disclosure.

On the other hand, Mak and Li (2001) argue that government owned firms can get information from other sources and have easier access to finance than non-government owned firms. Hence, companies with government ownership will have less disclosure requirement which will lead to less information disclosure.

In Saudi Arabia, Al-Janadi et al. (2013) examine the impact of government ownership of voluntary disclosure of listed companies during 2006-2007; and report a negative relationship, they argue that the reason behind the negative relationship is that the

government believes that it is not necessarily to disclose information to other shareholders, hence, it does not deliver sufficient information. However, Huafang and Jianguo (2007) examine listed companies in China and find out that there is no association between government ownership and voluntary disclosure.

4.4 The Relationship between Ownership Structure and Performance

During the last two decades, the ownership of firms has received increased attention among scholars, and although it has been argued that ownership structure is important and the behaviour of firms is affected by how ownership is allocated and who the owners are, results are still mixed. Shleifer and Vishny (1986) conclude that ownership concentration is positively related to firm performance; they argue that large shareholders have greater intensive to control and monitor managers and this will resolve agency problems. Holderness and Sheehan (1988) similarly argue that firms with majority shareholders will have a better performance.

The ground of past analyses is the divergence of interests between managers and owners. An extensive amount of literature has obtained empirical evidence on the relation between ownership structure and performance. However, those empirical studies have produced conflicting results.

Financial literature in particular, has paid more attention on two relations. The first has focused on the relation between family ownership and firm performance. And the second is on the relation between insider ownership and firm performance.

On the contrary, it has been stated that ownership structure is an endogenous factor and should not affect performance and that research that does not account for endogeneity problems reveals a non-linear relationship between ownership structure and performance. Demsetz (1983) argues that there should not be any systematic relation between insider ownership and performance. According to Demsetz and Lehn (1985), Demsetz and Villalonga (2001) and Himmelberg et al. (1999) ownership structure and performance are endogenous, and ignoring this endogeneity will result in biased estimations.

However, there are several types of owners that can be distinguished in listed firms including managers, institutions, government and families. The following sub-sections will provide a detailed theoretical and empirical presentations of the key literature on the link between ownership structure and firm-performance.

4.4.1 Insider Ownership

Liang et al. (2011) and Wahla et al. (2012) state that managerial ownership is determined through the percentage of shares owned by insiders and board members. Hence, managerial and insider ownership are two side of the same coin.

The focus in the literature has been on the potential conflict of interests between manager and owners of the company; it has been proposed that managerial ownership will reduce this conflict and align the interests of both parties.

Classical theory states that management-controlled firms will have different performance than owner-controlled firms because the interests of owners differ than the interests of managers. Owners are interested in maximizing the value of the firm while managers are interested in maximizing their power, security and income (Baumol, 1959; Galbraith, 1967)

Following Jensen and Meckling (1976), the significance of the relationship between managerial ownership and performance has evolved theoretically and empirically. As far as financial literature is concerned, managerial ownership produces two contradicting effects on the behaviour of managers based on their costs and benefits; the convergence of interests and the entrenchment effects (Jensen and Meckling, 1976; Fama and Jensen, 1983).

The first point of view is that managerial ownership has a positive impact on the value of the firm, as insider ownership increases, the interests of those insiders will be aligned with interests of shareholders, and agency conflicts will be resolved. The view

of this positive impact of managerial ownership on performance relies on agency theory claim that managers and owners have different interests due to the separation of ownership and control; when those managers own shares in the firms, there will be convergence of interest between them and the owners, hence, the agency costs will reduce. This view is supported by the convergence-of-interest hypothesis which suggests that as management ownership rises, firm value increases (Jensen and Meckling, 1976). Based on the convergence of interest hypothesis, when insiders' own shares in the firm, they will be less motivated to use resources in activities that are not maximizing the value of the firm, hence they will reduce monitoring costs (Fama & Jensen, 1983 and Shleifer & Vishny, 1996).

The second point of view is that substantial insider ownership has negative impact on performance. This view is supported by the entrenchment hypothesis which proposes that insiders will be entrenched by their high percentage of ownership and will expropriate outside and minority shareholders (Shleifer and Vishny, 1986 and Mørck et al., 1988). Furthermore, Stulz (1998) suggests that hostile takeovers become less likely with the increase in insider ownership, hence enforcing managerial entrenchment.

However, empirical evidence on the effect of managerial ownership on performance have produced mixed results. Studies in developed countries have confirmed a positive relationship between insider ownership and performance (e.g. Leung and Hortiz, 2010). Likewise, many studies in developing countries also have found similar results (Chung et al., 2008 and Uwuigbe and Olusanmi, 2012).

Using 648 listed firms in Germany, Kaserer and Moldenhauer (2008) examine whether insider ownership affects performance, they account for endogeneity and apply two-stages least squares method; their results show a significantly positive relationship between insider ownership and performance measured by stock price

performance, market-to-book ratio and return on assets. In US, Ang et al. (2000) conclude that insider ownership reduces the conflicts between shareholders and managers, and decreases agency costs in small businesses. Singh & Davidson (2003) extended Ang et al. (2000) analysis to large publicly traded companies and find similar results. In UK, McKnight and Weir (2009) examine listed companies from 1996-2000, and conclude that board ownership reduces agency costs. Similarly, Florackis (2008) examines the relationship between managerial ownership and agency costs using a large sample of publicly listed companies in UK over the period 1999-2003; and suggests that managerial ownership represents a significant corporate governance mechanism as it mitigates agency costs.

On the contrary, other studies confirmed a negative relationship between insider ownership and firm performance in developed countries (such as Juras and Hinson 2008) and in developing countries (e.g Liang et al., 2011; Wahla et al., 2012).

Irina and Nadezhda (2009) examine 270 German companies during 2000-2006; they apply instrumental variables and simultaneous equations techniques to assess the impact of corporate governance on performance, they find a negative relationship between insider ownership and performance.

However, several studies have suggested that the relationship between managerial ownership and performance is non-linear **(**McConnell and Servaes, 1990**).** When the compensations of managers is sensitive to firm performance, managers will have incentives to invest in profitable investments and follow strategies that will maximize the firm's value. Furthermore, when insider ownership is low, the alignment of interests between shareholders and managers increases as managerial ownership increases (alignment effect), but when insider ownership is high, they will be insulated from monitoring and they may pursue strategies with lower risk to protect their shareholding. Hence, when insider shareholding increases it can negatively affect

the firm performance (the entrenchment effect). The final effect of insider ownership on agency costs depends on the trade-off between the alignment and the entrenchment effects.

In US market, Morck et al. (1988) investigate the relationship between insider ownership and performance measured by Tobin's Q; and find out that the firm values first rise then decrease and finally slightly increase as the board ownership increases. Similarly, McConnell and Servaes (1990) examine US market, they find that the relationship between managers and performance measured by Tobin's Q is curvilinear, performance increases until insider ownership reaches 40%-50% then it decreases. Short and Keasey (1999) examine firms listed in London stock exchange for the period 1988 to 1992; they apply OLS regression and confirm a cubic relationship between managerial ownership and performance; when managerial ownership is small their interests will be aligned with those of shareholders, then managers entrench themselves at higher levels of ownership, and finally their interests will be aligned with those of shareholders as their ownership in the firm increases.

Similarly, De Miguel et al. (2004) conclude that the relationship between insider ownership and firm value is a non-monotonic in Spain; using GMM approach, their results show that there is a cubic relation between insider ownership and performance

However, other studies did not find any association between insider ownership and firm performance in developed countries (Siala et al., 2009) or in developing countries (Nuryanah and Islam, 2011).

Nevertheless, some scholars argue that insider ownership and performance of the company are endogenous and there should be no relationship between them after controlling for endogeneity. In US market, Demsetz and Villalonga, (2001) control for endogeneity, and did not find any significant relationship between insider ownership and performance measured by Tobin Q. Similarly, Schultz et al. (2010) did not find

any significant relation between insider ownership and performance after controlling for endogeneity by applying the GMM model to the ASX200 index.

Although the relationship between ownership structure and performance has been extensively analysed, there is lack of studies on the Saudi market. Soliman (2013) examines the effect of ownership concertation on firm performance in Saudi listed companies, using pooled cross-sectional observations from 2006-2008. He finds that both ROA and ROE improve as ownership concentration increases, however performance starts to decline with further concentration indicating a hump-shaped relationship between ownership concentration and performance. Nobanee et al. (2017), assess the association between shareholding concentration and agency costs in addition to the impact of agency costs on the performance of Saudi listed companies for the period 2010-2013. Based on the dynamic GMM method, they conclude that equity concentration does not affect agency costs and that agency costs do not affect performance. Further, Khamis, et al. (2015) analyse the relationship between ownership structure and performance in Bahrain from 2007-2011, based on the two-stages least squares statistical method; they conclude that managerial ownership has significant effect on performance only when ownership concentration declines.

Based on the past literature, the below hypothesis will be examined:

H3: there is a nonlinear relationship between insider ownership and performance.

In Saudi Arabia, there are several companies in TADAWUL with major shareholders in which their ownership is 5% or more, and usually those shareholders are members in the BODs, however, some companies are owned by a major shareholder who is not on the board, but his first degree relative such as the father, son or brother is either the chairman or a board member. Hence, being a board member and a relative to a major shareholder at the same time will make that member in a representative position of the major shareholder.

4.4.2 Family Ownership

The nature of ownership structure in developing countries including Saudi Arabia is concentrated and there is a domination of family businesses. However, it is reasonably easy to chase family ownership in Saudi listed companies. Since the whole family has the same surname, it is easy to identify family members. In addition, several family ventures that used to be small enterprises owned by wealthy families have been converted into listed companies on the TADAWUL, yet the founder family still holds a large number of the shares. Furthermore, some of those companies are listed under the family's name of the founder. Those companies are traded under different sectors including energy, cement, transport, agriculture, retail and industrial sectors (Al Kahtani, 2013).

La porta et al. (1999) evaluate ownership structure of firms in 27 countries around the world; and reveal that firms around the world are usually controlled by families, except in economies where shareholders are well protected such as in US. Furthermore, they define family firms as the one owned by one or more members from the same family who control at least 20% of the total votes outstanding.

Amran and Che Ahmad (2009) compare corporate governance practices between family and non-family firms, they analyse 896 firms listed on Bursa Malaysia from 2000 to 2003; and conclude that family firms have different corporate governance practices and different natures than non-family firms as they have high sense of familyness, they further suggest that additional attention is needed to be given by regulators to the unique features of family firms.

Theoretically, there are two different points of view on the impact of family ownership on performance. Agency theory argues that firms with family ownership are motivated to reduce the agency costs, as those family help to monitor and control

managers (Fama and Jensen, 1983). Demsetz and Lehn (1985) argue that when shareholding is concentrated, benefits and costs will be borne by the same owner. In family firms, shares are concentrated in the hands of family members and their income is closely linked to the performance of the firm. Family members are strongly motivated to monitor managers (monitoring effect) which in turn enhances firm performance (Villalonga and Amit, 2006 and Anderson and Reeb, 2003).

On the other hand, previous research also indicates that family ownership reduces firm performance as family members have extensive cash flow rights and can make decisions that benefit their interests at the expense of other shareholders (Cronqvist and Nilsson, 2003). Moreover, Villalonga and Amit (2006) argue that when family members own majority of voting shares they will probably have personal interests and will utilize their power to serve their own benefits, hence, rights of minority shareholders will be expropriated.

Daily and Dollinger (1991) argue that family firms have different strategies from non-family firms. Family firms usually have family members on their BODs, hence, the structure of board may have an effect of the firm performance.

However, previous literature has argued both in favour of and against the claim that concentrated family ownership may have beneficial economic consequences.

Maury (2006) compares the performance of family vs. non-family controlled firms in Western Europe including 1672 non-financial firms; he finds that family control is associated with higher value for the firm. Similarly, Barontini and Caprio (2006) find a positive relationship between family ownership and performance in Continental Europe. Moreover, Martínez et al. (2007) study the relationship between family ownership and firm performance in 175 Chilean listed firms for a relatively long period from 1995-2004. Using ROA, ROE and Tobin's Q, they find that family-controlled firms have significantly outperformed nonfamily firms.

Mishra et al. (2001) examine 120 Norwegian firms and find that family firms have better performance measured by Tobin-Q, they also find that family firms are managed differently that non-family firms. McConaughy et al. (1998) examine US market and conclude that founding family controlled firms have higher efficiency and better performance than non-family controlled firms. Maury (2006) empirically compares the performance of family controlled firms with non-family controlled firms in western Europe; by applying the fixed-effects regression method, the results reveal that family firms outperform non-family firms measured by Tobin's Q and return on assets. Martinez et al. (2007) study a sample of 175 listed Chilean firms during 1995-2004; and employ ROA, ROE and Tobin's Q as performance measures, they conclude that family firms outperform non-family firms.

Ibrahim and Samad (2011) examine the relationship between family ownership and performance of listed companies in Malaysia during 1999-2005; they apply fixed-effects model and find out that family ownership has a positive relationship with performance based on ROE, on the contrary, family ownership has a lower value than non-family ownership based on Tobin's Q and ROA.

On the contrary, there are numerous papers that have argued against the claim that family owned firms will perform better. Wall (1998) analyses the relation between family ownership and productivity in private firms in Western New York. He concludes that productivity is less in family owned firms. Similarly, Barth et al. (2005) examine the relationship between family ownership and productivity in Norway; they find that family ownership negatively affects productivity.

And finally, there is a common belief in the literature that the relation between family ownership and performance is non-linear. Kowalewski et al. (2010) investigate the influence of family ownership on performance in 217 Polish firms and find an inverse U-shaped relationship. Furthermore, Anderson and Reeb (2003) examine the

relationship between family ownership and firm performance in large U.S. firms; they conclude that family-owned companies perform better than non-family owners with regards to ROA, ROE and Tobin's Q. They also present evidence that the relation between family ownership and performance is non-monotonic; performance first increases as family ownership increases but then decreases with increasing family ownership.

Ng (2005) examines listed companies in Hong Kong during 1995-1998; he applies GMM to control for endogeneity, the results show that at low level of family ownership (less than 16.86%), family members whom are managers will be entrenched and tend to maximize their own interests as their ownership is relatively low, then when family ownership ranges between (16.86–63.17%), the interests of family managers will be aligned with other shareholders and the performance of the company improves, however, when family ownership becomes relatively high and exceeds (63.17%), those family managers will have more power and become entrenched at the expense of other shareholders' interests.

In Saudi, there is a lack of papers that examine the relationship between family ownership and performance. Al-Ghamdi and Rhodes (2015) find no relationship between ownership and performance in Saudi listed companies for the period from 2006-2013. On the contrary, Al-Dubai et al. (2015) employ cross-sectional time series analysis and conclude that the behaviour of Saudi listed family firms companies from 2007-2011, is changeable between expropriation and monitoring subject to the family ownership percentage.

However, since in Saudi Arabia, a large percentage of the shares of family firms are owned by family members who are also on the BODs, and based of the above argument, the following hypothesis is formulated:

H4: there is a non-linear relationship between family ownership and firm

performance.

4.4.3 Governmental Ownership

Agency theory suggests that government ownership solves the issue of information asymmetry that comes from the incomplete information provided to investors. Furthermore, government ownership can be used as a tool to align the interests of owners and managers. (Jensen and Meckling, 1979).

In Saudi Arabia, the government is the largest investor in different major companies listed to the stock exchange. The ownership of the government in those leading listed companies is made through the governmental institutional investors, who invest on behalf of the Saudi government (Al Kahtani, 2013).

According to "The Economy", a Saudi daily newspaper, the Saudi government owns more than 35% of the market value of TADAWUL, distributed between 13 industries and 50 listed companies by August 31, 2014.

However, the effect of government ownership on firm performance also remains a controversial issue. And there is a clear shortage in the literature concerning this issue. One of the few studies belongs to Sun et al. (2002), in which they argue that government ownership has a positive impact on partially privatized state-owned companies in China. Further, Estrin and Tian (2005) find that government ownership in China has a negative effect of corporate value, and it is non-monotonic, indicating that to a certain point, corporate value decreases as government ownership increases, but after this point corporate value increases.

Wei (2007) examine a sample of 276 Chinese listed companies during 1999-2002; and concludes that the relationship between government ownership and performance is non-linear, when shareholding by the government is relatively small, the impact on performance is not negative, however, when the shareholding exceeds 50%, it will

negatively affect performance.

In a more recent study, Najid and Rahman (2011) analyse companies listed in Bursa Malaysia and find that corporate performance is significantly lower in most of government owned companies.

On the contrary, Mollah and Talukdar (2007) examines a sample of 55 listed companies in Bangladesh for the period of 2002-2004; and uses three measures as proxies for performance including ROA, ROE and the logarithm of market capitalization, by applying OLS and two-stages least squares, he finds out that governmental ownership positively affects firm performance. Similarly, Eljelly and Authority (2009) compare the performance of listed government related companies with that of listed private companies in the Saudi exchange during 2000-2003; they conclude that in general government related companies outperform or match the performance of their counterparts.

In light of the previous arguments, it is important to find out the relation between government ownership and performance in Saudi listed companies, hence, the following hypotheses are proposed:

H5a: there is a significant positive relationship between governmental ownership and performance.

H5b: there is a significant negative relationship between governmental ownership and performance.

4.4.4 Institutional Ownership

Institutional owners such as pension funds, mutual funds and banks are likely to be independent of managers; they have the power to intervene in managing the company, hence, it is believed that they can protect the interests of minority shareholders.

The literature concerning the relationship between institutional ownership and

performance produces different hypotheses; it has been argued in the literature that institutional investors have incentives and are effective in monitoring managers, hence their ownership will have a positive impact on the performance of the company (Shleifer and Vishny 1986).

However, Pound (1988) suggests that there are three different hypotheses in regards to the relationship between institutional ownership and firm performance. The first hypothesis it the efficient monitoring of managers and it predicts a positive relationship between institutional ownership and firm performance as those institutions have better expertise and can monitor managers at reduced costs. The other two are the conflict-of-interests and the strategic alignment hypotheses. The conflict-of-interest hypothesis predicts that institutional investors are forced into voting their shares with managers, because of other profitable business relationships with the firm. According to the alignment hypothesis, institutional investors find it more valuable to cooperate with managers rather than monitoring them, hence, the effect of monitoring managers by institutions will be reduced. Thus, they both predict a negative relationship between institutional ownership and firm performance.

Furthermore, it is possible that institutional ownership up to a certain level may improve the firm performance as their interests will be aligned with other shareholders, but at higher levels of institutional ownership they will be entrenched and may take suboptimal decisions that would negatively affect the firm. The combination of these contradicting hypotheses between institutional ownership and performance leads to the prediction of a non-linear relationship.

However, the empirical results in the literature are very mixed in regards to the relationship between institutional ownership and firm performance. McConnell & Servaes (1990) examine US market and find a significantly and positive relationship between the coefficient of institutional ownership and performance measured by

Tobin's Q.

Similarly, Henry (2010) examines s sample of 120 Australian listed companies during 1992-2002; and finds a positive relationship between the coefficient of institutional ownership and performance as measured by Tobin's Q. Irina and Nadezhda (2009) study a sample of 270 German companies for the period of 2000-2006; they apply instrumental variables technique and conclude that institutional ownership positively affect performance. Tasi and Gu (2007) examine US market and control for endogeneity by applying the two-stages least squares, they conclude that institutional ownership has a significantly positive effect on performance measured by Tobin's Q. Further, Arouri et al. (2014) find that the coefficient of institutional ownership significantly positive in the GCC during 2010, based on multivariate regression analysis. Welch (2003) suggests that higher institutional ownership has positive effects over performance in Australian companies.

Navissi and Naiker (2006) examine the relationship between institutional ownership and the firm value on a sample of 123 firms in New Zealand; and find out that institutions with board representation will have a non-linear relationship with the firm value. It is positive at low levels of ownership, then as the institutional ownership increases, the effect on the firm's value turns to be negative. However, share ownership by institutions without board representation in does not affect the value of the firm.

In contrast, Short and Keasey (1999) examine firms listed in London stock exchange for the period 1988 to 1992; they apply OLS regression and find that institutional ownership does not affect performance. Similarly, McKnight and Weir (2009) examine listed companies in UK for the period from 1996-2000; and conclude that the coefficient of institutional ownership is insignificant in mitigating the agency problems. Lin (2010) examines a sample of 221 Taiwanese listed firms during 1997-

2006; and measures performance by Tobin's Q. The results show that when institutional is more than 81.2%, firm value increases. Agrawal and Knoeber (1996) examine US market, they apply the two-stages least squares and conclude that the relationship between institutional ownership and performance is insignificant. In Austraila, Craswell et al. (1997) did not find a significantly relationship between the coefficient of institutional ownership and performance during 1987 and 1989. Mollah and Talukdar (2007) studies a sample of 55 listed companies in Bangladesh during 2002-2004; he uses three measures as proxies for performance including ROA, ROE and log market capitalization, he applies OLS and two-stages least squares and find out that institutional ownership does not affect performance.

Hence, it is important to find out the relation between institutional ownership and performance in the Saudi listed companies, hence, the following hypothesis is proposed:

H6: there is a significant positive relationship between institutional ownership and performance.

4.5 Sample and Data Set

The sample of the study includes non-financial firms listed on TADAWUL for the period ranging from 2009-2014. Financial firms were excluded since they differ in their structure, methods and accounting practices (Barontini and Caprio, 2006 and Bohren and Strom, 2010).

Since this research is going to analyse the performance of companies over time, the data set of these companies will be a panel data for the reason that it allows to control for variables that cannot be observed or measured across companies or variables that change over time but not across entities, i.e. it accounts for individual heterogeneity. [16]

The data on the ownership was taken manually form the annual reports and most of the time it was translated from Arabic to English. Also, some companies had no information on major shareholders in their annual report, especially in the earlier years, hence, the researcher had to contact CMA and request lists of the major shareholders during the period of the analysis. It took a while to get the approval from the management, but luckily the researcher was able to get the data. Further, the financial information on performance measures such as ROA, ROE and firm size was taken from both Bloomberg and DataStream. For some years and some companies, there were missing data in either DataStream or Bloomberg; in this case the researcher had to gather data from both sources to complete the sample.

Since one of the main aims of this chapter is to identify family firms and find out the relationship between family ownership and performance, a firm is considered as a family firm if the family owns 20% or more of the firm's shares, and at least 2 or more of the family members are on the BODs.

Further, based on empirical findings in the literature, there is a potential of non-

[16] Data is explained in section 3.4

linearity in the relationship between ownership structure (family and insider ownership) and performance, hence, in order to investigate for non-linearity in our data, the square of insider ownership, square and cubic values of family ownership will be included in the regression (McConnell and Servaes, 1990 and Miguel et al., 2004).

Following previous studies (Guest, 2009; Buniamin et al., 2010 and Vafeas and Theodorou, 1998), the regression model in this research well be designated to include control and dummy variables in order to account for firm characteristics and omitted variables bias as they might be related to performance; thus it will improve the explanatory power of the regression models of the research.

Similar to Drobetz et al. (2004) and Wintoki et al. (2012), those control variables are industry, market to book value and standard deviation. Moreover, since there are 13 different industries in the Saudi market, this research intends to control for industry, and this variable is manually taken from TADAWUL's website, as there is a tab that shows the industry in which each company operates. Another control variable that has been used widely in empirical studies is leverage; those studies have shown that leverage measured as the ratio of total liabilities to common equity has a significant impact on financial performance (Alsaeed, 2006). The final control variable which is commonly used in the literature is the size of the firm measured by the natural log of total assets (Ghosh, 2006).

The definitions of variables are illustrated in table 4.1.

Table 4.1 List of Variables

CG Characteristics	
Family firm	Firms in which the percentage of shares owned by a family is more than 20% and at least 2 of the BODs are from the same family
Insider Ownership	% of shares owned by board members
Government Ownership	% of shares owned by the government
Institutional Ownership	% of shares owned by institutional investors
Performance Ratios	
ROA	(Return / Total Asset) * 100.
ROE	(Return/ Equity Capital) * 100
Control Variables	
Firm Size	Log of Total Assets.
Industry	The industry a firm operates in.
Leverage	(Book Value of Total Debt / Book Value of Total Assets) *100
MVTB	Market value of common equity/Book value of common equity
Standard Deviation	Standard deviation of the log (average daily price) calculated yearly

However, past papers have used diverse definitions of family firms. Miller et al. (2007) have gathered the definitions of family firms that are used in the literature from 1996 to 2006, and came up with a list of 28 definitions. James (1999) defines family firms that are entirely or to a large extent owned by one person or several members of the same family.

However, there is no clear definition in the literature of family firms, thus, the definition of family firms in this research will be any firm where the family has ownership of at least 20% of the equity, and at least two representatives of the family are on the BODs.

4.6 Performance Measures[17]

Several proxies have been broadly used in the literature including accounting ratios and stock market performance to measure the relationship between ownership structure and performance. The common accounting performance measures are return on assets (ROA) and return on equity (ROE).

However, in order to find out the relationship between CG and firm performance in this chapter, two accounting measures widely used in the literature are going to be applied: ROA and ROE. In addition, stock market return will also be applied as opposed to the accounting measures.

- **Return on assets = net income／total assets.**
- **Return on equity = net income／shareholders' equity.**
- **Market return = Log (price end of the year) – Log (price begging of the year).**

[17] More details are found in section 3.6

4.7 Methodology

Previous studies that are concerned with the relationship between ownership structure and firm performance have used distinct statistical techniques; however, multiple regression analysis has been extensively used in the literature to test the relationship between variables (Bonn 2004). Therefore, to test the relationship between ownership structure and firm performance, multiple regression analysis will be firstly used in this research as a base model in order to predict the effect of independent variables (ownership structure) on the dependent variables (performance measures).

However, it has been widely argued that ownership and performance are endogenous and ignoring this endogeneity will no doubt lead to biased estimations. Demstez (1983), Himmelberg et al. (1999) and Palia (2001) point out that firm value is influenced by unobservable characteristics.

The second regression method that is going to be used is the fixed-effects model as it is commonly used to deal with endogeneity concerns.

Furthermore, the third method that is going to be applied is the system GMM since it has been argued that CG variables are endogenous and there is an individual effect that cannot be captured by the fixed-effects modeels, hence the most efficient method is the system GMM.

Consequently, to assert the relation between ownership structure and performance, three estimation methods are going to be applied: OLS and fixed-effects models to compare our results with the findings from previous studies as this will allow us to verify our sample data, and system GMM models to control for endogeneity and it is the main model.

4.7.1 Static OLS Regression Model

$$Y_{it} = \alpha + \beta_1 Insider_{it} + \beta_2 Insider_{it}^2 + \beta_3 Gov_{it} + \beta_4 Instit_{it} + B_5 Size_{it} + \beta_6 Lev_{it} + \beta_7 MTBV_{it} + \beta_8 STDEV_{it} + \beta_9 LogTA_{it} + \epsilon \quad (4.1)$$

$$Y_{it} = \alpha + \beta_1 Family_{it} + \beta_2 Family_{it}^2 + \beta_3 Family_{it}^3 + \beta_4 Gov_{it} + \beta_5 Instit_{it} + B_6 Size_{it} + \beta_7 Lev_{it} + +\beta_8 MTBV_{it} + \beta_9 STDEV_{it} + \beta_{10} LogTA_{it} + \epsilon \quad (4.2)$$

4.7.2 Fixed-Effects[18]

Fixed-Effects model explores the relationship between the independent and dependent variables within the company. However, each company has its own individual characteristics that may or may not influence the regressors.

The fixed-effects model assumes that there are individual-specific characteristics (be observed or unobserved). Those characteristics may impact or bias the model and need to be controlled for.

4.7.3 System GMM Model[19]

Endogeneity is the correlation between the explanatory variables and the error term in a regression. According to Wooldridge (2010), endogeneity usually arises in one of the following three ways: omitted variables, measurement errors and simultaneity or reverse causality. Therefore, system GMM model is applied to control for endogeneity.

Nevertheless, each of the above mentioned three methods will be applied to examine the relation between ownership structure and performance. Moreover, two models are going to be analysed. The first model includes insider ownership variable and its squared to test both the convergence of interest and the entrenchment effects. The

[18] More details are found in section 3.7.3.
[19] More details are found in section 3.7.4.

second model includes family ownership; its squared value and its cubic value will be employed to test whether there is a cubic relationship between family ownership and performance.

4.8 Analysis and Results

To find out the relationship between ownership structure and performance, ROA and ROE are going to be used as performance measures. In the Saudi market, on average families own 44.6% of family firms; and usually those firms are also managed by the family. Moreover, there are firms that are highly owned by insiders and those insiders include family and non-family members. So to avoid the duplication, the analysis is going to be done twice, the first analysis is on insider ownership including family and non-family firms and the second analysis includes only family firms.

Nevertheless, the prediction of the agency theory about the causal relationship between ownership and performance is recently being challenged in the CG literature. It is suggested that there a dynamic relationship between ownership and firm performance, and this dynamic nature suggests that the past performance of the firm affects the current performance and ownership structure (Gedajlovic and Shapiro, 2002; Thomsen and Pedersen, 2000; Yabei and Izumida, 2008 and Wintoki et al., 2012). Therefore, the preliminary regression will be the dynamic system GMM model which includes past performance as an independent variable in the estimation. Later, a robustness test excluding past performance will be applied to find out whether excluding past performance from the analysis will change the results.

Table 4.2 Descriptive statistics for independent and dependent variables

	Mean	Std. Dev.	Min	Max	Median
ROA	0.077	0.089	-0.640	0.464	0.063
ROE	0.115	0.141	-0.781	0.602	0.097
Leverage	0.211	0.193	0.000	0.698	0.182
TA	13,000,000	42,000,000	53,487	340,000,000	2,115,824
MTBV	2.488	1.816	0.450	14.67	1.960
Std. Dev	0.019	0.007	0.006	0.083	0.018
Family Ownership	0.446	0.213	0.200	0.950	0.435
Insider Ownership	0.177	0.214	0.000	0.959	0.094
Gov Ownership	0.259	0.235	0.025	0.837	0.157
Institutional Ownership	0.289	0.195	0.038	0.750	0.275

This table present the descriptive statistics including mean, median, minimum, maximum and standard deviation for the firms' performance, ownerships and control variables. The sample is covering the period from 2009-2014. ROA is return on assets. ROE is return on equity. TA is total assets. MTBV is market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (average daily price) calculated yearly.

Table 4.2 presents summary statistics for the dependant and independent variables. ROA has a mean of 7.7% and this finding in comparable to Sbeiti (2010) and Alzomaia (2014) who found that profitability equals 7.8% and 6%, respectively.

4.8.1 Insider Ownership

Table 4.2 shows that the mean of insider ownership (including family and non-family firms) is 17.6% and it ranges from 0% up to 95%. Government ownership ranges from 26% to 84% with an average of 26%. The mean of Outsider institutions ownership is 29%. Table 4.3 presents the correlation matrix for our sample variables.

Table 4.3 Correlation Matrix

	ROA	ROE	Insider	Gov	Instit	Lev	Log TA	MTBV	Std. Dev
ROA	1.00								
ROE	0.93	1.00							
Insider	0.15	0.25	1.00						
Gov	0.15	0.13	-0.28	1.00					
Instit	-0.02	-0.06	-0.29	-0.14	1.00				
Lev	-0.21	-0.12	0.12	0.00	0.20	1.00			
Log TA	0.01	0.04	-0.06	0.51	0.26	0.53	1.00		
MTBV	0.37	0.39	0.11	-0.04	-0.08	-0.18	-0.31	1.00	
Std. Dev	-0.32	-0.32	-0.03	-0.26	0.02	0.00	-0.31	0.13	1.00

This table presents the correlation coefficients for our sample variables. The sample is covering the period from 2009-2014. ROA is return on assets. ROE is Return of equity. Gov is government ownership. Inst is institutional ownership. Lev is book value of total debt/book value of total assets. TA is total assets. MTBV is market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (average daily price) calculated yearly.

Table 4.3 shows that overall, most correlation coefficients are considerably low. There is a high correlation between total assets and both leverage and governmental ownership (r = 0.53) and (r = 0.51), respectively; indicating that government has shares in large companies; further, both insider and governmental ownerships have positive correlation with performance; institutional ownership has a negative correlation with performance although it is economically insignificant.

Nevertheless, the correlation matrix only partially explains the relationship between leverage and CG variables. Hence, more advanced models will follow.

In addition, the VIF test is applied to check if the problem of multicollinearity exists; the results of the test show that the variables do not suffer from multicollinearity problems.

Table 4.4 Variance Inflation Factor

Variable	VIF	1/VIF
Log TA	4.56	0.22
Gov Ownership	2.35	0.43
Leverage	2.24	0.44
Institutional Ownership	1.70	0.59
Insider Ownership	1.78	0.56
Std.Dev	1.73	0.58
MTBV	1.47	0.68
Mean VIF	2.55	

Table 4.5 Insider Ownership and ROA

Dependent Variable (ROA)	OLS	FE	GMM.
ROA (t-1)			0.369***
			(0.000)
Insider	0.193***	0.002	-0.020
	(0.000)	(0.990)	(0.892)
Insider squared	-0.143***	0.107	0.087
	(0.003)	(0.597)	(0.637)
Government	0.077***	-0.086	0.050
	(0.000)	(0.648)	(0.641)
Institution	0.090***	0.0481	0.016
	(0.000)	(0.556)	(0.732)
LogTA	0.007**	0.070***	0.0168*
	(0.029)	(0.000)	(0.077)
Leverage	-0.151***	-0.154***	-0.120**
	(0.000)	(0.000)	(0.041)
MTBV	0.017***	0.002	0.008**
	(0.000)	(0.350)	(0.020)
Std Dev	-3.529***	-0.510	-0.656
	(0.000)	(0.284)	(0.248)
Constant	0.003	-0.931***	-0.204*
	(0.967)	(0.002)	(0.079)
R-squared	0.441	0.063	
AR(1) test (p-value)			0.062
AR(2) test (p-value)			0.405
Sargan over id test (p-value)			0.001
Hansan over id test (p-value)			1.000
Diff-in-Hansan			1.000

This table presents the results of the regression on the relationship of insider ownership with ROA.
The model
$Y_{it} = \alpha + \beta_1 Insider_{it} + \beta_2 Insider_{it}^2 + \beta_3 Gov_{it} + \beta_4 Instit_{it} + B_5 Size_{it} + \beta_6 Lev_{it} + \beta_7 MTBV_{it} + \beta_8 STDEV_{it} + \beta_9 LogTA_{it} + \epsilon$
The sample is covering the period from 2009-2014. OLS is the ordinary least squares method. FE is the fixed-effects method. GMM is the system dynamic GMM method. TA are total assets. MTBV is market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (average daily price) calculated yearly. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan and Sargan tests of over-identification restrictions test the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

Table 4.5 presents the results of the relationship between insider ownership and ROA as a performance measure and the three models already described in the methodology section. Since past papers found a non-linear relation between insider ownership and performance, the squared value of insider ownership is included in the regression to find out if such non-linearity appears in the Saudi market.

First, OLS method is employed as a baseline model although it assumes strict exogeneity. It shows a significantly positive effect of insider ownership on

performance; it also shows a significantly negative impact of the squared value of insider ownership on performance which implies a non-linear relation between insider ownership and performance.

Government ownership have significantly positive impact on firm performance, and this result is consistent with Al-Aatari and Al-arussi (2016) who revealed a significant positive relationship between government ownership and ROA by applying OLS regression in Oman.

Furthermore, institutional ownership has a significantly positive effect on ROA. Similarly, Arouri et al. (2014) find that the coefficient of institutional ownership is significant and positive in the GCC countries during 2010 based on multivariate regression analysis.

Secondly, fixed-effects estimation is applied to correct for unobservable heterogeneity effects that cause endogeneity. The results show that insider ownership has no effect on performance. This result is similar to Himmelberg et al. (1999), pham et al. (2011) and Buallay et al. (2017) who find that the relationship between insider ownership and firm value is no longer significant after controlling for unobservable heterogeneity by applying the fixed-effects estimation. Furthermore, Government and institutional ownership also do not affect performance. Hence, the results from the fixed-effects method support the previous concerns about the bias in the OLS regression in examining the relationship between CG mechanisms and firm performance.

Yet, fixed-effects only account for unobservable heterogeneity and in the presence of simultaneity, the results will be biased as discussed in Wintoki et al. (2012). Therefore, system dynamic GMM will be applied to fully account for endogeneity.

According to the dynamic system GMM estimates for the relationship between ownership and performance, the signs of the coefficients for insider and insider squared are in the opposite direction of those obtained from the OLS and the

significance disappears. Similarly, government and institutional ownership both have insignificant coefficients. Further, past performance as represented by its first lag has a positive significant coefficient (0.374) at 1% level, which indicates that past performance is significantly affecting the current level of performance.

Table 4.6 illustrates the results of the relationship between insider ownership and the second performance measure which is ROE. The results are very similar to those obtained from the ROA.

Table 4.6 Insider Ownership and ROE

Dependent Variable (ROE)	OLS	FE	GMM
ROE (t-1)			0.454***
			(0.000)
Insider	0.363***	-0.156	0.239
	(0.000)	(0.436)	(0.154)
Insider squared	-0.321***	0.416	-0.217
	(0.000)	(0.167)	(0.229)
Government	0.076**	-0.434	0.144
	(0.022)	(0.122)	(0.235)
Institution	0.078***	0.098	0.054
	(0.008)	(0.420)	(0.539)
LogTA	0.024***	0.123***	0.023*
	(0.000)	(0.000)	(0.082)
Leverage	-0.200***	-0.240***	-0.150*
	(0.000)	(0.000)	(0.091)
MTBV	0.030***	0.005	0.011**
	(0.000)	(0.204)	(0.038)
Std Dev	-5.746***	-0.767	0.105
	(0.000)	(0.278)	(0.898)
Constant	-0.174*	-1.628***	-0.343**
	(0.074)	(0.000)	(0.041)
R-squared	0.444	0.076	
AR(1) test (p-value)			0.021
AR(2) test (p-value)			0.390
Sargan over id test (p-value)			0.000
Hansan over id test (p-value)			1.000
Diff-in-Hansan			1.000

This table presents the results of the regression on the relationship between insider ownership and ROE.
The model
$Y_{it} = \alpha + \beta_1 Insider_{it} + \beta_2 Insider_{it}^2 + \beta_3 Gov_{it} + \beta_4 Instit_{it} + B_5 Size_{it} + \beta_6 Lev_{it} + \beta_7 MTBV_{it} + \beta_8 STDEV_{it} + \beta_9 LogTA_{it} + \epsilon$
The sample is covering the period from 2009-2014. OLS is the ordinary least squares method. FE is the fixed-effects method. GMM is the system dynamic GMM method. TA are total assets. MTBV is the market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (average daily price) calculated yearly. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan and Sargan tests of over-identification restriction test the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

OLS results show that there is a significantly positive (significantly negative) relationship between insider ownership (insider ownership squared), and ROE; indicating a non-linearity between insider ownership and ROE. Government and institutions ownership have a significantly positive impact on firm performance.

However, fixed-effects results show that insider ownership does not impact ROE. Similarly, government and institutional ownership both do not affect performance.

The results of the dynamic system GMM estimates show that although the signs of the coefficients are similar to those of the OLS, the significance vanishes for both insider and insider squared ownership, and the influence has declined. The results also show that government and institutional ownership do not affect ROE. Moreover, the first lag of ROE has a significantly positive coefficient (0.393) at the 1% level on the current level of performance indicating that past performance affects the current performance and this finding supports the argument of a dynamic relationship in CG variables.

Nevertheless, the results based on the dynamic GMM for both performance measures reject hypothesis H3 and show that when accounting for endogeneity in addition to including past performance in the estimation, the relationship between insider ownership and performance disappears. These insignificant results are in line with the findings of Nobanee et al. (2017), whom apply dynamic GMM to control for the possibility of unobserved heterogeneity and conclude that the relationship between ownership concentration and performance in non-financial firms listed on the Saudi stock exchange is insignificant. Similarly, Pham et al. (2011) and Schultz et al. (2010) did not find any significantly relationship between insider ownership and performance in the Australian market by applying dynamic system GMM.

Hence, based on the dynamic system GMM regression, the agency theory assumptions concerning the relationship between insider ownership and both performance

measures (ROA and ROE) are not supported in non-financial firms in the Saudi market.

4.8.2 Family Ownership

Going back to table 4.2 which presents the summary statistics, the average of family ownership is 45%, indicating that families own a significant number of shares and play a vital role in the Saudi market. Table 4.7 below presents the correlation matrix between variables. Overall, most correlation coefficients are considerably low. The correlation between the two accounting measures is high (r = 0.93). There is a high correlation between total assets and both leverage and governmental ownership (r = 0.53) and (r = 0.51), respectively; indicating that government has shares in large companies, further, family and governmental ownerships have positive correlation with performance, institutional ownership has a negative correlation with performance although it is economically insignificant.

Nevertheless, the correlation matrix only partially explains the relationship between leverage and CG variables. Hence, more advanced models will follow.

Table 4.7 Correlation Matrix

	ROA	ROE	Family	Gov	Instit	Lev	Log TA	MTBV	Std. Dev
ROA	1.00								
ROE	0.93	1.00							
Family	0.13	0.20	1.00						
Gov	0.15	0.13	-0.18	1.00					
Instit	-0.02	-0.06	-0.18	-0.14	1.00				
Lev	-0.21	-0.12	0.03	0.00	0.20	1.00			
Log TA	0.01	0.04	-0.01	0.51	0.26	0.53	1.00		
MVTB	0.37	0.39	0.12	-0.04	-0.08	-0.18	-0.31	1.00	
Std. Dev	-0.32	-0.32	0.03	-0.26	0.02	0.00	-0.31	0.13	1.00

This table presents the correlation coefficients for our sample between the variables. The sample is covering the period from 2009-2014. ROA is return on assets. ROE is Return of equity. Gov is government ownership. Inst is institutional ownership. Lev is book value of total debt/book value of total assets. TA is total assets. MTBV is market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (average daily price) calculated yearly.

Table 4.8 Family Ownership and ROA

Dependent Variable (ROA)	OLS	FE	GMM
ROA (t-1)			0.390***
			(0.000)
Family	-0.263***	-0.314	-0.536*
	(0.000)	(0.574)	(0.057)
Family Squared	1.218***	0.874	1.991**
	(0.000)	(0.741)	(0.025)
Family Cubic	-1.010***	-0.443	-1.567**
	(0.000)	(0.878)	(0.021)
Government	0.034*	-0.083	-0.074
	(0.076)	(0.661)	(0.438)
Institution	0.0495***	0.048	0.024
	(0.005)	(0.555)	(0.643)
LogTA	0.011***	0.073***	0.022**
	(0.003)	(0.000)	(0.047)
Leverage	-0.142***	-0.156***	-0.154**
	(0.000)	(0.000)	(0.011)
MTBV	0.017***	0.003	0.008***
	(0.000)	(0.297)	(0.007)
Std Dev	-3.823***	-0.519	-0.596
	(0.000)	(0.275)	(0.280)
Constant	-0.036	-0.965***	-0.287**
	(0.619)	(0.002)	(0.041)
R-squared	0.429	0.064	
AR(1) test (p-value)			0.051
AR(2) test (p-value)			0.413
Sargan over id test (p-value)			0.007
Hansan over id test (p-value)			1.000
Diff-in-Hansan			1.000

This table presents the results of the regression on the relationship between family ownership and ROA.
The model
$Y_{it} = \alpha + \beta_1 Family_{it} + \beta_2 Family_{it}^2 + \beta_3 Family_{it}^3 + \beta_4 Gov_{it} + \beta_5 Instit_{it} + B_6 Size_{it} + \beta_7 Lev_{it} +$
$+\beta_8 MTBV_{it} + \beta_9 STDEV_{it} + \beta_{10} LogTA_{it} + \epsilon$
The sample is covering the period from 2009-2014. OLS is the ordinary least squares method. FE is the fixed-effects method. GMM is the system dynamic GMM method. TA is total assets. MTBV is market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (average daily price) calculated yearly. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan and Sargan tests of over-identification restrictions test the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

Table 4.8 presents the results of the relationship between family ownership and ROA as a performance measure from the three models already described in the methodology section. Since past papers find that there is a non-linear relation between family ownership and performance, the squared and cubic values of family ownership

are included in the regression to find out if a cubic relationship between family ownership and performance appears in the Saudi market.

First, the results of the OLS regression show that the coefficients of the family and family cubic terms are negative; they are positive for the family squared term. Those coefficients are all significant; these results support the cubic specification for the relation between family ownership and performance. Moreover, Government ownership has a significantly positive impact on firm performance, and this result is consistent with Al-Matari and Al-Arussi (2016) who revealed a significantly positive relationship between government ownership and ROA by applying OLS regression in Oman.

Further, institutional ownership has a significantly positive effect on ROA, similar to Arouri et al. (2014) who find that institutional ownership is significantly positive in GCC countries during 2010 based on multivariate regression analysis.

Secondly, fixed-effects shows similar signs for the coefficients of family ownership variables as the OLS, however, the only significant family ownership variable is the squared value. Government and institutional ownership have no impact on ROA and this is similar to the findings in the previous section on insider ownership.

The results of the dynamic system GMM estimation show that the directions of the coefficients are similar to those of the OLS except for government ownership; the relationship between ROA and both family ownership and family cubic is significant and negative and the relationship between the square value of family ownership and ROA is positive and significant.

Furthermore, braaking points are calculated; performance decreases until ownership reaches 16.8%, after that performance increases until ownership reached 67.9%, then decreases again. These results support the argument of a cubic relationship between family ownership and performance, as the later decreases with lower family

ownership, then increases with moderate ownership, and finally decreases again as ownership exceeds a certain level.

At low levels of family ownership, the negative relationship between family ownership and performance indicates the existence of some sort of agency problems that affect the firm's profitability. The turning point in the non-linear relationship between family ownership and performance varies between 12.9% and 16.8% for OLS and GMM, respectively. These low percentages imply less power and control of family shareholders on management and calls for further monitoring and provisions to ensure that managerial decisions are made in the best interest of shareholders. Hence, the negative relationship between family ownership and performance at lower levels below 12.9% and 16.8% for OLS and GMM, respectively, could be attributed to the potential conflict that might arise between principals and agents when principals, in this case the family, do not have full control over management's decisions.

Later, the increased percentage of family ownership over 12.9% and 18.6% for OLS and GMM, respectively and below 67.5% and 67.9% for OLS and GMM, respectively, gives family shareholders more power over management which works in the best interest of shareholders resulting in higher or better performance.

Finally, when family shareholding increases above 67.5% and 67.9% for OLS and GMM, respectively, they will have strong control over management and may reward themselves in several ways that could take the form of siphoning funds, which may explain the lower observed ROA.

The results also show that government and institutional ownership do not affect ROA. Moreover, the impact of the first lag of performance (0.39) is highly significant at the 1% level, suggesting that the current level of performance is highly affected by past performance. Nevertheless, the results based on GMM confirm hypothesis H4, there is non-linear relationship between family ownership and performance.

The results on the relationship between family ownership and performance based on the ROE are shown in table 4.9.

Table 4.9 Family Ownership and ROE

Dependent Variable (ROE)	OLS	FE	GMM
ROE (t-1)			0.429***
			(0.000)
Family	-0.391***	-1.019	-0.780**
	(0.001)	(0.220)	(0.038)
Family Squared	2.051***	4.620	3.102***
	(0.000)	(0.241)	(0.007)
Family Cubic	-1.844***	-4.245	-2.543***
	(0.000)	(0.325)	(0.003)
Government	0.005	-0.428	-0.032
	(0.885)	(0.128)	(0.847)
Institution	0.007	0.0952	0.019
	(0.810)	(0.433)	(0.789)
LogTA	0.031***	0.128***	0.044***
	(0.000)	(0.000)	(0.009)
Leverage	-0.185***	-0.246***	-0.207**
	(0.000)	(0.000)	(0.037)
MTBV	0.029***	0.005	0.014**
	(0.000)	(0.180)	(0.011)
Std Dev	-6.222***	-0.866	0.389
	(0.000)	(0.221)	(0.712)
Constant	-0.254**	-1.684***	-0.699***
	(0.013)	(0.000)	(0.003)
R-squared	0.434	0.078	
AR(1) test (p-value)			0.023
AR(2) test (p-value)			0.396
Sargan over id test (p-value)			0.000
Hansan over id test (p-value)			1.000
Diff-in-Hansan			1.000

This table presents the results of the regression on the relationship between family ownership and ROE.
The models
$Y_{it} = \alpha + \beta_1 Family_{it} + \beta_2 Family_{it}^2 + \beta_3 Family_{it}^3 + \beta_4 Gov_{it} + \beta_5 Instit_{it} + B_6 Size_{it} + \beta_7 Lev_{it} +$
$+\beta_8 MTBV_{it} + \beta_9 STDEV_{it} + \beta_{10} LogTA_{it} + \epsilon$
The sample is covering the period from 2009-2014. OLS is the ordinary least squares method. FE is the fixed-effects method. GMM is the system dynamic GMM method. TA are the total assets. MTBV market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (aveis rage daily price) calculated yearly. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan and Sargan tests of over-identification restrictions test the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

The results are also very similar to those of the ROA. OLS regression shows that the coefficients of the family ownership variables are all significant; family and family cubic are negative while family squared is positive and those results are supporting the

cubic pattern of the relationship between family ownership and performance. However, unlike ROA, government as well as institutions ownership have no significant influence on ROE.

Moreover, based on the fixed-effects estimation, the results indicate that the relationship between family, government and institutional ownership, and ROE is insignificant.

Further, the dynamic system GMM estimations have similar signs to those of the OLS regression apart from the government ownership. family ownership has a cubic relationship with ROE. The later decreases with lower family ownership below 11.2% and 15.5% for OLS and GMM, respectively, then increases with the increased percentage of family ownership over 11.2% and 15.5% for OLS and GMM, respectively and below 62.9% and 65.8% for OLS and GMM, respectively, and finally it decreases again as ownership exceeds 62.9% and 65.8% for OLS and GMM, respectively.

These results are similar to those of the ROA; at lower levels of family ownership there could be conflict between principal and agent and in this case, family does not have full control.

Later, the increased percentage of family ownership over 12.9% and 18.6% for OLS and GMM, respectively and below 67.5% and 67.9% for OLS and GMM, respectively, gives family shareholders more power over management which works in the best interests of shareholders resulting in higher or better performance.

Finally, when family shareholding increases above 67.5% and 67.9% for OLS and GMM, respectively, they will have strong control over management and may reward themselves in several ways that could take the form of siphoning funds, which may explain the lower observed ROA.

The negative relationship between family ownership and performance is consistent with Gomez-Mejiaet et al. (2001), who report that family ownership is associated with high entrenchment in Spanish firms. On the other hand, the positive relationship is in line with Connely et al. (2012), who find that firms with high family ownership have better performance since they have considerable invested wealth in their firm and, thus, are encouraged to improve its value. Further, the results also show that government and institutional ownership do not affect ROE.

The influence of the first lag of performance (0.429) is highly significant at the 1% level, also suggesting that past performance highly affects the current level of performance.

The results based on the dynamic system GMM accept hypothesis H4, there is a non-linear relationship between family ownership and performance measured by ROE.

Finally, for all the above presented dynamic system GMM models, the tables also show the results of the specification tests. Including the Arellano and Bond test of second order serial correlation AR(1) and AR(2), the Hansan/Sargan tests of over-identification restrictions and difference in Hansan test for exogeneity of the instruments. AR (2) test results indicate that we cannot reject the null hypothesis of no second order serial correlation, Hansan/Sargan test results indicate that we cannot reject the null hypothesis that the instruments are valid and finally the difference-in-Hansan test results indicate that we cannot reject the hypothesis that instruments used in the level equations are exogenous.

4.8.3 Robustness Checks and Alternative Specifications

In regards to the GMM estimation method, the literature shows contradicting results; however, some prior studies have applied the dynamic GMM (including the first lag value of the dependent variable in the estimation) while others have applied the static GMM and those studies have concluded different results. Yet, it has been argued that current performance is affected by past performance and since dynamic GMM estimations have been applied in the previous section and the results have shown that past performance significantly affects current performance, therefore, additional analysis is performed as a robustness but without the first lag of performance to find out whether excluding past performance from the analysis will affect the results.

4.8.3.1 Insider Ownership

Table 4.10 presents the results of the static system GMM that has been applied to find out the relationship between insider ownership and performance measured by ROA and ROE.

Table 4.10 Insider Ownership Static GMM

	ROA	ROE
Insider	0.273**	0.386*
	(0.029)	(0.059)
Insider squared	-0.280*	-0.458*
	(0.087)	(0.079)
Government	0.193	0.315*
	(0.108)	(0.089)
Institution	0.105	0.141
	(0.121)	(0.248)
LogTA	0.017	0.042**
	(0.140)	(0.043)
Leverage	-0.204***	-0.253**
	(0.001)	(0.028)
MTBV	0.013**	0.023***
	(0.010)	(0.003)
Std Dev	-2.015**	-3.326**
	(0.012)	(0.022)
Constant	-0.187	-0.498*
AR(1) test (p-value)	0.034	0.025
AR(2) test (p-value)	0.381	0.253
Sargan over id test (p-value)	0.000	0.000
Hansan over id test (p-value)	1.000	1.000
Diff-in-Hansan	0.999	1.000

This table presents the results of the regression on the relationship between insider ownership and ROA and ROE. The model

$Y_{it} = \alpha + \beta_1 Insider_{it} + \beta_2 Insider_{it}^2 + \beta_3 Gov_{it} + \beta_4 Instit_{it} + B_5 Size_{it} + \beta_6 Lev_{it} + \beta_7 MTBV_{it} + \beta_8 STDEV_{it} + \beta_9 LogTA_{it} + \epsilon$

The sample is covering the period from 2009-2014. GMM is the system static GMM method. TA are the total assets. MTBV market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (average daily price) calculated yearly. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan and Sargan tests of over-identification restrictions test the validity of the instruments. Diff-in-Hansan testa the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

Interestingly, the results show that insider ownership and insider squared are both significant and confirm the non-linearity of the relationship between insider ownership and performance. When insider ownership is less than 48.7% and 42.1% for ROA and ROE, respectively, performance increases as insider ownership increases, and this supports the convergence of interest effect. However, when insider ownership is more than that, performance will decrease with the increase of insider ownership, thus supporting the entrenchment effect.

These turning points are consistent with Lang et al. (1989), who conclude that it is below 50% of insider ownership. Further, the positive effect of insider ownership is

also consistent with the finding of Alonso-Bonis and de Andrés-Alonso (2007), who apply the static GMM and confirm the positive relationship between ownership concentration and the market value of firms in the Spanish market. Their conclusion supports the argument of ownership structure as a monitoring mechanism.

Government ownership has significantly positive effects on ROE, yet on ROA, government ownership is close to significance with a p-value of 0.108. Institutional ownership has no significant impact on performance.

Further, these results are supported by the findings of Cheung and Wei (2006) who point out that ownership and performance can be importantly explained by their respective lagged values and once the lagged dependent variables are included in the regression.

4.8.3.2 Family Ownership

Table 4.11 below presents the results of the static system GMM that has been applied to find out the relationship between family ownership and performance measured by ROA and ROE.

Table 4.11 Family Ownership Static GMM

	ROA	ROE
Family	-0.493**	-0.800*
	(0.039)	(0.067)
Family Squared	2.380***	4.213***
	(0.007)	(0.007)
Family Cubic	-2.088***	-3.804***
	(0.004)	(0.002)
Government	-0.070	0.0812
	(0.532)	(0.668)
Institution	0.045	0.080
	(0.600)	(0.552)
LogTA	0.037***	0.065***
	(0.001)	(0.001)
Leverage	-0.282***	-0.398***
	(0.000)	(0.000)
MTBV	0.012***	0.023***
	(0.001)	(0.001)
Std Dev	-1.278*	-1.274
	(0.078)	(0.194)
Constant	-0.421***	-0.814***
	(0.006)	(0.002)
AR(1) test (p-value)	0.033	0.019
AR(2) test (p-value)	0.310	0.225
Sargan over id test (p-value)	0.000	0.000
Hansan over id test (p-value)	1.000	1.000
Diff-in-Hansan	1.000	1.000

This table presents the results of the regression on the relationship between family ownership and ROA and ROE.
$Y_{it} = \alpha + \beta_1 Family_{it} + \beta_2 Family_{it}^2 + \beta_3 Family_{it}^3 + \beta_4 Gov_{it} + \beta_5 Instit_{it} + B_6 Size_{it} + \beta_7 Lev_{it} +$
$+\beta_8 MTBV_{it} + \beta_9 STDEV_{it} + \beta_{10} LogTA_{it} + \epsilon$
The sample is covering the period from 2009-2014. GMM is the system static GMM method. TA are the total assets. MTBV is market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (average daily price) calculated yearly. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan and Sargan tests of over-identification restrictions test the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

Those results confirm the cubic relationship between family ownership and performance, as the coefficients of family and family cubic are significantly negative while the coefficient of family squared is significantly positive. The signs of those coefficients are the same as those obtained from the dynamic GMM. The interpretations of these findings are the same as those mentioned earlier in section 4.8.2. When family ownership is lower than 12.4% and 11.2% for ROA and ROE, respectively, family does not have sufficient control and there might be conflicts between family owners and managers. Furthermore, when family ownership increases

above 12.4% and 11.2% for ROA and ROE, respectively and below 63.6% and 62.6% for ROA and ROE, respectively, it will result in higher performance and it could be due to increased power of family shareholders over management. Finally, when family owns more than 63.6% and 62.6% for ROA and ROE, respectively, their control will be strong over managers and they might reward themselves by siphoning the profits.

However, governmental and Institutional ownerships have no significant impact on performance. The results from the robustness tests confirm different consequences for insider and family ownerships. Insider ownership turns significant only when applying the static system GMM and supports both the convergence of interest and entrenchment hypotheses while family ownership continues to be significant and supports the quadratic relationship between ownership and performance.

4.8.3.3 Market Return

This section includes robustness tests between insider and family ownership structure and performance. The market return will replace and be compared to ROA and ROE in sections 4.8.1 and 4.8.2.

Table 4.12 shows the results of the regression on the relationship between insider ownership and the market return. In the OLS regression, the coefficients of ownership variables turn to be insignificant. In the fixed-effects model, the results are essentially the same for ownership variables, all coefficients are insignificant except for institutional ownership where the coefficient becomes significantly positive compared to ROA and ROE in section 4.8.1. The GMM model shows similar results for ownership variables in section 4.8.1, except for the lagged value of market return where the sign changes from positive for ROA and ROE to negative for market return.

Table 4.12 Insider Ownership and Market Return

Dependent Variable (MR)	OLS	FE	GMM
MR (t-1)			-0.156***
			(0.002)
Insider	0.110	0.175	0.114
	(0.522)	(0.781)	(0.844)
Insider squared	-0.243	-1.167	-0.313
	(0.320)	(0.217)	(0.691)
Government	-0.027	-0.501	0.117
	(0.695)	(0.569)	(0.761)
Institution	-0.005	0.760**	0.031
	(0.942)	(0.046)	(0.906)
LogTA	0.044***	0.159	0.090*
	(0.001)	(0.108)	(0.075)
Leverage	-0.147*	0.0231	-0.104
	(0.055)	(0.908)	(0.579)
MTBV	0.042***	0.081***	0.052***
	(0.000)	(0.000)	(0.001)
Std Dev	9.281**	11.130***	15.490**
	(0.014)	(0.000)	(0.037)
Constant	-0.595**	-2.514*	-1.581**
	(0.019)	(0.077)	(0.018)
R-squared	0.300	0.325	
AR(1) test (p-value)			0.000
AR(2) test (p-value)			0.023
Sargan over id test (p-value)			0.000
Hansan over id test (p-value)			1.000
Diff-in-Hansan			0.969

This table presents the results of the regression on the relationship between insider ownership and market return. The model

$Y_{it} = \alpha + \beta_1 Insider_{it} + \beta_2 Insider_{it}^2 + \beta_3 Gov_{it} + \beta_4 Instit_{it} + B_5 Size_{it} + \beta_6 Lev_{it} + \beta_7 MTBV_{it} + \beta_8 STDEV_{it} + \beta_9 LogTA_{it} + \epsilon$

The sample is covering the period from 2009-2014. OLS is the ordinary least squares method. FE is the fixed-effects method. GMM is the system dynamic GMM method. TA are total assets. MTBV is the market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (average daily price) calculated yearly. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan and Sargan tests of over-identification restriction test the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

Table 4.13 shows the results of the regression on the relationship between family ownership and the market return. The coefficients of ownership variables are insignificant, unlike the results in section 4.8.2 where ROA and ROE where the proxies for performance.

The results based on the fixed-effects model are essentially the same for ownership variables, all coefficients are insignificant except for institutional ownership where the

coefficient becomes significantly positive compared to ROA and ROE in section 4.8.2.

The GMM model shows different results for ownership variables from those in section 4.8.2, the lagged value of performance changes from significantly positive to significantly negative and family ownership variables are no longer significant.

Table 4.13 Family Ownership and MR

Dependent Variable (MR)	OLS	FE	GMM
MR (t-1)			-0.168***
			(0.001)
Family	0.208	-0.693	-0.491
	(0.548)	(0.792)	(0.742)
Family Squared	-0.581	3.119	1.559
	(0.638)	(0.802)	(0.752)
Family Cubic	0.282	-3.570	-1.431
	(0.789)	(0.793)	(0.706)
Government	-0.034	-0.640	0.069
	(0.610)	(0.471)	(0.881)
Institution	-0.002	0.757**	-0.054
	(0.981)	(0.050)	(0.838)
LogTA	0.043***	0.173*	0.125***
	(0.002)	(0.089)	(0.003)
Leverage	-0.142*	-0.028	-0.228
	(0.064)	(0.889)	(0.301)
MTBV	0.042***	0.080***	0.051***
	(0.000)	(0.000)	(0.004)
Std Dev	9.226**	11.360***	16.530**
	(0.013)	(0.000)	(0.019)
Constant	-0.581**	-2.742*	-2.317***
	(0.028)	(0.061)	(0.005)
R-squared	0.299	0.313	
AR(1) test (p-value)			0.000
AR(2) test (p-value)			0.017
Sargan over id test (p-value)			0.001
Hansan over id test (p-value)			1.000
Diff-in-Hansan			1.000

This table presents the results of the regression on the relationship between family ownership and market return. The model

$Y_{it} = \alpha + \beta_1 Family_{it} + \beta_2 Family_{it}^2 + \beta_3 Family_{it}^3 + \beta_4 Gov_{it} + \beta_5 Instit_{it} + B_6 Size_{it} + \beta_7 Lev_{it} + +\beta_8 MTBV_{it} + \beta_9 STDEV_{it} + \beta_{10} LogTA_{it} + \epsilon$

The sample is covering the period from 2009-2014. OLS is the ordinary least squares method. FE is the fixed-effects method. GMM is the system dynamic GMM method. TA are the total assets. MTBV market value of common equity/book value of common Equity. Std.Dev is the Standard deviation of the log (aveis rage daily price) calculated yearly. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan and Sargan tests of over-identification restrictions test the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

4.9 Conclusion

This chapter examined the effect of ownership structure (insider, family, governmental and institutional ownerships) on the Saudi firms' performance (ROA and ROE) based on a sample of 599 firms-year; the sample includes listed firms in TADAWUL from 2009-2014. This chapter adds to the literature by providing evidence on the impact of ownership structure on performance in the Saudi market that has been scarcely analysed in the literature. We adopt a more comprehensive model and estimate the relationship between ownership structure and performance using different econometric techniques. Starting with OLS as a base model estimation, results indicate a causal relationship, however, the OLS assumes strict endogeneity and the results must be interpreted with caution. Secondly, the fixed-effects results reveal no relationship, however, fixed effect only account for unobservable heterogeneity. Finally, the dynamic system GMM is applied, insider, governmental and institutional ownership not showing any significant relationship with performance; however, family ownership produces significant quadratic relationship with performance. Further, based on the argument of Cheung and Wei (2006) who point out that ownership and performance can be importantly explained by their respective lagged values and once the lagged dependent variables are included in the regression, the current level of ownership is affected by its lagged value. Therefore, a static system GMM is applied as a robustness check and results show that family ownership has the same results as those obtained from the dynamic system GMM, confirming the cubic relationship with performance.

Family ownership has similar results in terms of the significance of the coefficients in both the dynamic and static system GMM methods; when family ownership is approximately lower than 11%, it could be that family suffers from lack of control,

therefore the relationship with performance is negative; when ownership is between approximately 11% and 62%, performance increases, perhaps due to the increase in the power of family shareholders over management; and finally when family ownership is approximately higher than 62%, performance decreases and it could be because family will have sufficient control that will allow them to siphon the profits.

However, insider ownership results of the static system GMM in section (4.8.3.1) contradict those obtained from the dynamic system GMM in section (4.8.1); insider ownership turns to be significant, thus confirming the non-linearity of the relationship between insider ownership and performance. This evidence is in line with the convergence of interests and the entrenchment hypothesis. Nevertheless, those results confirm that the lagged dependent variable is vital in describing its current values. If the effect of lagged dependent variables is ignored, there may be a spurious relationship between ownership and performance (Cheung and Wei, 2006).

Stock market return is also examined as robustness tests and the results of insider ownership are similar to those obtained from ROA and ROE, however, for family ownership, the coefficients of family ownership are no longer significant.

This chapter provides new evidence in terms of the relationship between ownership structure and performance. It reveals that one reason of the mixed results in the literature is due to the incorporation or exclusion of the lagged values of the dependent variable in the regression. Further it contributes to the literature by showing new evidence on how the performance of Saudi firms that are owned by families changes with the change of their level of ownership. A further explanation of the mixed results in the literature is the different econometric techniques, different time periods and markets; in addition to the variety of the performance measures that are used to assess performance and the definition of family and ownership concentration. This argument is supported by Demsetz and Villalonga (2001).

Chapter 5 The Determinants of Capital Structure

5.1 Introduction

Capital structure is the relative amount of equity and debt, and represents the sources of funds that the company uses to finance its operations. Several theories have been implemented explain the disparity in capital structure among firms; those theories propose that companies choose their capital structure based on the costs and benefits that are associated with equity and debt financing. However, the debate on determining a firm's optimal capital structure is still going on and the academic literature has not been successful yet in providing consistent conclusions.

It is claimed that when a company has good CG it will have better performance, higher transparency and accountability, hence, it will be able to easily issue debt at a lower cost in comparison with companies that perform badly because debt holders will be more confident to lend good performing companies. Therefore, good CG is an important factor in determining capital structure.

Since the seminal paper of Modigliani and Miller (1958) capital structure has been one of the most controversial topics in CG, with an extensive amount of studies have been undeetaken and several theories of capital structure formed to compete with the Modigliani and Miller (1958) proposition including pecking order theory and agency theory.

Jensen and Meckling (1976) define agency relationship as a contract under which the principal (owner) engages the agent (manager) to perform some services on their behalf which involves delegating some decision-making authorities to the agent. Their argument founded the agency cost of debt hypothesis. Their argument is that diversified shareholders are risk neutral, motivated to invest in risky projects with

high expected returns, which will cause debt holders who are risk averse to claim higher interest paid to their debts, and hence the cost of debt will be higher.

However, Shleifer and Vishny (1997) claim that large undiversified shareholders are likely to have different incentives in comparison with those who have diversified ownership; they desire to reduce the cost of debt as they are long term investors and frequently get financing from the debt market.

There are several CG mechanisms to control managerial behaviour; ownership is one of these internal mechanisms and it has been widely examined in the literature. It has been argued in the literature that ownership structure is one of the options to reduce the conflict between shareholders and bondholders and hence, reduce the agency cost of debt. Anderson et al. (2003) state that the conflict in this situation appears between shareholders and debt holders. They further investigate the relationship between family ownership and cost of debt in the US market. Their result shows that debt holders suppose that family firms protect their interests and thus, family ownership reduces agency costs of debt.

Managerial ownership is also believed to align the interests of managers with shareholders and increase transparency and hence, debtholders will ask for lower interest rates when lending the company and reduce the cost of debt. Similarly, institutional ownership and governmental ownership are thought to effectively monitor management, enhance performance and reduce the cost of debt. Alonso-Bonis and de Andrés-Alonso (2007), show that firms with the state ownership have less debt in Spain.

Further, a huge number of papers have empirically studied the determinants of capital structure in developed and emerging markets, yet, the results are inconclusive. For example, Rajan and Zingales (1995) examined the determinants of capital structure in G-7 countries, including size of the firm, tangibility, market to book ratio and

profitability. Booth et al. (2001) analysed choices of capital structure in 10 developing countries, and found that capital structure determinants in those countries are affected by the same factors as in the developed countries. Meanwhile numerous authors (Shah and Hijazi, 2004; Gaud et al., 2005) investigated the determinants of capital structure in different countries worldwide. Further, some papers have focused on Arab and GCC countries such as Sbeiti (2009), Omet and Mashharawe (2002), Barakat and Ayyash et al. (2013) and very few examined capital structure in the Saudi market context including Alzomaia (2014), Twairesh (2014) Al-Ajmi at al. (2009), Abdullah (2005) and Al-Sakran (2001).

Since there is lack of research investigating the relationship between ownership and capital structure, in GCC countries in general and in the Saudi market in particular, this thesis examines the determinants of capital structure by investigating the role of different CG variables and ownership groups on the level of leverage in the context of the listed firms in the Saudi market, based on unbalanced panel data from 599 non-financial Saudi listed companies over a 6-year sample covering the period from 2009-2014. It also examines the extent to which capital structure theories that have been applied in the western countries are applicable to the Saudi market, especially with the Saudi market bearing its own distinctive features.

The Saudi market is unique in the sense that the government owns a great percentage of the companies' shares, also a lot of companies are family owned, hence, it is believed that those factors will affect the choices of capital structure. A further feature of the Saudi market is that it has its own unique tax system in which companies are not subjected to pay income tax; however, companies pay 'Zakat', an Islamic tax based on the Islamic law (Sharia'a). Zakat tariff is equal to a 2.5% flat rate and it is deductible from earnings and holdings.

Moreover, most of the studies on the Saudi market that examined the relationship between CG and capital structure, have included some variables that are found in the financial statements of the company such as profitability, size, growth, liquidity and tangibility, while some other studies have included ownership variables such as family, government and institutional ownership. However, none of them have considered insider ownership, although it is considered to be an important determinant of capital structure and has been extensively analysed in the literature. Therefore, this chapter contributes to the literature by including insider ownership to the analysis.

In addition, since the Saudi CG code was established in 2006 and revised in 2009, this is the first attempt to analyse the determinants of capital structure including a recent sample period, as previous studies on the Saudi market have included years in which the Saudi code was not established yet.

Another major contribution of this chapter is the control for any potential relationship between the firm and banks, in particular the existence of a bank representative in the BODs. This study includes a new variable that has not been examined before in the literature, which is the bank connection, to examine whether such a relationship impacts levels of debt. More detailed explanations of this variable will be outlined in the data section. To our best knowledge this is the first attempt to include this variable in analysing the determinants of capital structure.

In this chapter, the relevance of two conventional capital structure theories including the pecking order theory and the agency cost theory in the case of publicly listed companies in Saudi Arabia, are examined. Further, several statistical techniques have been applied to identify out the determinants of capital structure. OLS is the most used method in the literature, hence it is applied to compare our finding with previous papers. However, it has been recently argued that CG variables suffer from endogeneity problems and since the OLS does not account for it, it might produce

biased results. Therefore, the fixed-effects model is then applied as it is believed that it deals with endogeneity. Finally, the dynamic system GMM is applied because it has been claimed that there is an individual effect that cannot be captured by the fixed effect, thus dynamic system GMM is the most appropriate method.

The remainder of this chapter proceeds as follows: after the introduction in section 5.1, section 5.2 presents theories of capital structure. Section 5.3 explains factors affecting capital structure. Section 5.4 discusses the impact of corporate governance on capital structure. Capital structure patterns internationally are present in section 5.5. Section 5.6 discuss the relationship between ownership structure and capital structure from both theoretical and empirical perspective. Sample selection, data set, collection methods and variables are explained in section 5.7. Methodology is presented in section 5.8. Section 5.9 presents the results. And finally, section 5.10 concludes the chapter.

5.2 Theories of Capital Structure

Capital structure is defined as the proportion of all types of capital in the firm including equity, debt and preferences. It is also referred to as the degree of debt in financing. In general, there are two main sources of capital, equity and debt. However, debt is considerably cheaper as the interest payments on debt are excluded from tax. [20] Capital structure theories attempts to find out the optimal ratio of debt and equity. Furthermore, it is essential to understand the notion behind it. In financial context, the aim of any decision is to increase the value of the firm and maximize the shareholders' wealth. Some of the theories of capital structure assume that a change in capital structure would have an impact on the value of the firm.

The change in capital structure implies changes in the level of debt and hence will impact the interest paid by the firm. Since the interest paid are exempt from taxes, it will increase the net income and hence increase earnings per share. It is generally believed that the increase in earnings per share will increase the firm value. From this point of view, financial leverage is a tool to enhance the value of the firm. On the contrary, increasing financial leverage will increase the level of interest payment to the debt holders and hence will increase the risk of bankruptcy. One clear goal of the debate on leverage is to find an optimal capital structure that maximizes the value of the firm.

After the publication of Modigliani and Miller's (1958) (henceforth, MM) "irrelevance theory of capital structure", several theories of have emerged as attempts to explain capital structure of companies and to find out if there is an optimal capital structure. Drobetz and Fix (2003), state that: *"While the MandM capital structure*

[20] Some countries do not have taxes such as Saudi Arabia.

irrelevance theorem clearly rests on unrealistic assumptions, it can serve as a starting point to search for the factors that influence corporate leverage policies." (p. 3).

Those theories suggest that there are several factors that may influence the capital structure of firms. A discussion of the most commonly accepted capital structure theories is provided below.

5.2.1 Modigliani and Miller's

The theories of capital structure start with the MM (1958) capital structure irrelevance proposition, before that there was no generally accepted theory of capital structure. (Luigi & Sorin, 2009). MM theory assumes that capital markets are perfect where there are not any transaction or bankruptcy costs, there are not information asymmetry problems, there are no taxes, and managers act in the interests of shareholders.

Furthermore, the MM theory has two propositions. The first is that the value of the firm is irrelevant to its capital structure. The second proposition is that leverage increases the expected earnings per share but not the value of the firm as the share price remains constant.

Although the MM theory has been criticized in the literature for being unrealistic and purely theoretical in explaining how firms finance their operations as it assumes that capital markets are perfect, it motivated the development of other theories on capital structure and researchers in the financial context have been interested in the issue of capital structure (Danso & Adomako, 2014). Nevertheless, when the assumptions of the MM propositions are relaxed, capital structure becomes important in affecting the value of firms (Sheikh & Wang, 2010).

5.2.2 Agency Theory

Based on agency theory, managers do not always act in the best interests of the

shareholders. There are two main conflicts between the stakeholders of a firm. The first is between managers and shareholders; managers are tempted to use the profit of the firm for their personal interests at the expense of the shareholders and may also choose a capital structure that is suboptimal to the shareholders. The second is between shareholders and creditors; when a firm is on the edge of bankruptcy, shareholders will have no incentives to invest more even if the available projects are positive NPV for the reason that the added value from those projects will mostly benefit debtholders. This implies that firms with high levels of debt may reject positive NPV projects (Myers 1977).

According to Harris and Raviv (1991), if the investments of the firm gain returns higher than the face value of the debt, shareholders will benefit. On the contrary, if the investments fail, shareholders will have limited liabilities. However, the theory suggests that managerial ownership, compensation contracts and monitoring by board of directors may reduce the conflict of interests between managers and shareholders. Also, it suggests that firms raise debt to control the agency problems and limit the availability of free cash flow to managers.

5.2.3 Trade-Off Theory

Trade-off theory developed out of the MM theory, it added corporate income tax to the original irrelevance assumption. It produced the benefit of earnings from the debt tax shield. Trade-off theory predicts that in order to find an optimal capital structure, firms trade off the costs and benefits of both debt and equity. Managers try to balance the benefits of debt tax shield against the expected costs of financial distress. According to the theory, each firm will have a different target debt to equity ratio; firms with more tangible assets are expected to borrow more as their exposure to the costs financial distress is less. On the contrary, firms with more intangible assets are

expected to borrow less as their exposure to the costs of financial distress is more. The theory also predicts that managers try to take advantages of the tax deductibility on interests paid in debt, hence, the higher the marginal tax rate the higher the level of debt. Also, firms with lower non-debt tax shields such as depreciation and more taxable income will be encouraged to borrow more (DeAngelo & Masulis, 1980). Moreover, it predicts that as earnings increase, firms will use more debt to take more advantages of the tax debt shields. There are two types of the trade-off theory: the static and the dynamic.

5.2.3.1 Static Trade-Off Theory

Static trade-off theory affirms that firms have an optimal capital structure, which they determine by trading off the costs against the benefits of the use of debt and equity. Although debt has an advantage of the debt tax shields, it has a disadvantage of the financial distress potentials. Also, there are additional costs in using debt and equity, agency cost is one of them. The agency cost is a result of the conflict and asymmetric information between stakeholders and managers (Jensen and Meckling 1976 and Jensen (1986). Consequently, adding this cost to the static trade-off theory implies that when a firm decides its capital structure, it trades of the costs of both agency cost and financial distress among the benefits of debt tax shields.

5.2.3.2 Dynamic Trade-Off Theory

Dynamic trade-off model implements the role of time in determining the optimal capital structure. It considers some factors that are ignored in a one-period model such as expectation. In dynamic model, the financing margin that the company expects in the next period is significant in financing decision. Some companies expect to raise funds, while others expect to pay out funds in the following period. Hence, the

optimal capital structure depends on what is expected to be optimal in the next period. However, trade-off theory did not take into consideration the issue of information asymmetry; the assumption was later considered and it led to the pecking order theory that which was based on the information asymmetry and conflicts between insider and outsider.

5.2.4 Pecking Order Theory

Pecking order theory suggests that firms prefer internal over external financing. They prefer financing from retained earnings, then by debt and finally by issuing equity (Myers and Majluf, 1984). It states that -whenever possible- firms avoid issuing new equity to avoid the reduction of the share price due to the information asymmetry between current shareholders and potential investors.

Pecking order theory is considered one of the most important theories of capital structure; it assumes that there is information asymmetry between outsiders and insiders, it also assumes that firms do not have a specific target for capital structure; however, firms have a specific preference order when they choose to finance their projects. Based on the information asymmetry between insiders and outsiders, if firms use retained earnings to finance their projects and do not issue equity, they will resolve the information asymmetry.

The argument of this theory is that there is information asymmetry between managers and investors; managers are aware of the true value of the firm, while investors are not. When the firm is under-priced, managers will be reluctant to issue equity, and investors realize that managers did not issue equity because the firm is undervalued. Furthermore, if managers issue under-priced equity, the wealth will be transferred from shareholders and, therefore, internal funds from retained earnings and debt are preferable than issuing equity. Moreover, as asymmetric information between

managers and shareholder increases, issuing equity becomes more expensive. However, issuing debt might result in revealing some of the firm's news and would lead to monitoring and market discipline when using external capital. Furthermore, financial managers prefer to maintain financial flexibility by not using all their debt capacity; hence internal funding based on retained earnings is preferable as it has the least information costs and provides financial flexibility at the same time. Accordingly, the firm should finance its assets through internal funding whenever possible, then by debt and finally through the issue of equity; which has the highest adverse selection problems.

5.2.5 Signalling Theory

Signalling theory stems from information asymmetry between shareholders and managers of the firm. if managers believe that shares of the firm are overvalued, they will issue equity. On the contrary, if managers believe that the shares of the firm are undervalued, they will first raise debt then issue equity as a last resort. The theory was developed by Ross (1977), who claims that when managers have inside information, their choice of capital structure will signal information to the market. He also suggests that the market's perception of the value of the firm will increase with the increase of debt.

It has been argued theoretically that managers increase debt when they are confident about earnings in the future as issuing debt commits managers to make interest payments in the future and failure to pay could lead to bankruptcy. Hence, issuing debt has a positive sign to the market that the firm will have sufficient cash flows to pay debt.

5.2.6 Market Timing Theory

A recent theory of capital structure is market timing theory by Baker and Wurgler (2002). This theory states that the current capital structure is a cumulative outcome of past attempts to time the equity market. According to the theory, firms issue shares when they recognize that their shares are overvalued and they buy back their share when their shares are undervalued. Hence, corporate financing decision and capital structure is affected by the stock price fluctuations. It is important to note that based on the theory, there is no optimal capital structure. The decision on how firms structure their capital depends on timing strategies of equity markets.

Market timing theory has two versions and they both result in similar capital structure dynamics. The first assumes the economic agents to be rational; managers will issue equity directly after a release of positive information that reduces the information asymmetry between managers and stakeholders, the decrease in information asymmetry corresponds with an increase in the share price. Hence, managers create their own timing opportunities to finance their projects (Luigi & Sorin, 2009).

The second version of market timing theory assumes that economic agents are irrational and there is a time-varying mispricing of the stock; managers issue equity when they believe its costs is irrationally low and repurchase equity when they believe its costs is irrationally high (Baker & Wurgler, 2002; Luigi & Sorin, 2009).

5.3 Factors Affecting Capital Structure

There are several factors that affect capital structure decisions and they have been empirically analysed in the literature; Rajan and Zingales (1995) listed some of these factors including market-to-book ratio, sales, profitability and tangibility.

Baker and Martin (2011) state that *"Observable leverage factors should be related to capital structure theories because they are assumed to proxy for the underlying forces that drive these theories, such as the cost of financial distress and information asymmetry."* (p. 23).

Titman and Wessels (1988) and Harris and Raviv (1991), argue that the choice of independent variables is fraught with difficulty. However, the expected relationship between leverage and influencing factors are not always clear; Harris and Raviv (1991) state that it has been generally agreed in the available studies that leverage increases with fixed assets, growth opportunities and firm size; and it decreases with volatility, the probability of bankruptcy, profitability and uniqueness of the product. On the other hand, the results of Titman and Wessels (1988) show that volatility, collateral value and future growth do not have any impact on leverage ratios.

This section will discuss factors that are often examined in empirical analysis of capital structure theories including size, profitability, asset tangibility, age, growth and tax. Furthermore, most of these factors are included in the empirical analysis of this chapter; in addition to a new variable that is included in this chapter named bank connection[21].

5.3.1 Firm Size

Size of the firm is considered one of the factors affecting the use of debt. Generally

[21] More details will follow is section 5.3.6.

larger firms are more diversified and face lower default risks, hence, they tend to use debt more than smaller firms (Titman and Wessels 1988). Accordingly, trade-off theory predicts a positive relationship between size and debt. Vasiliou and Ventoura-Neokosmidi (2007) argue that banks are willing to loan large firms more than small firms as large firms are less risky and their probability of default it low; hence, they can negotiate and raise debt at lower interest rates.

Agency theory predicts that larger firms hold more debt than small firms in their capital structure. On the other hand, large firms are better known, have lower information asymmetry, they are also more transparent; hence people will be more encouraged to participate in their capital which will enable them to easily issue equity. Therefore, large firms should have lower level of debt (Drobetz and Wanzenreid 2006). This view is supported by pecking order theory as it predicts a negative relationship between firm size and leverage.

The empirical evidence on the relationship between size and leverage is mixed. Gwatidzo and Ojah (2009) analyze firms in South Africa and Zimbabwe; they measure size of the firm as the logarithm of the total assets and find a positive relationship between size and leverage. Likewise, Deesomsak, Paudyal and Pescetto (2004) find a positive relationship between leverage and size measured by the logarithm of total assets for firms in the Asia-pacific region. For Chinese firms, Huang and Song (2006) also report a positive relationship between leverage and size.

On the contrary, there are studies that conclude a negative relationship between size and leverage. Rajan and Zingales (1995) conclude that size is negatively related to leverage for firms in Germany. Beck et al. (2008) point out that large firms use external sources compared with small firms. Further, Titman and Wessels (1988) report a negative relationship between firm size and financial leverage.

Similarly, Delcoure (2007) find a negative relation between size and long-term debt for firms in European transition economies. Nunkoo and Boateng (2010) apply the GMM technique and find an inverse relationship between size and long-term debt ratio in Canadian firms. Accordingly, the following hypotheses are proposed:

H7a: there is a significant positive relationship between firm size and leverage.

H7b: there is a significant negative relationship between firm size and leverage.

5.3.2 Profitability

Different theories have different predictions about the effect of profitability on leverage. MM argue that profitable firms tend to have more debt due to the tax deductibility of interest payments.

Also, agency costs suggest that profitable firm should issue more debt to discipline managers by paying cash to bondholders and prevent them from investing in negative NPV projects, as those profitable firms tend to have free cash flow problems (Jensen, 1986).

Pecking order theory argues that profitable firms will have lower level of debt as they prefer to use retained earnings for financing, then debt and then issue equity. Hence, the theory predicts that the relationship between profitability and debt is negative. When investments exceed retained earnings, debt level increases; and when investments are less than retained earnings, debt level decreases (Myers and Majluf 1984).

Trade-off theory suggests that there is a positive relationship between profitability and debt as more profitable firms will take advantages of the deductibility of interest payments for tax purposes.

Rajan and Zingales (1995) and Wald (1999) find a negative relationship between profitability for the United States, United Kingdom and Japan, respectively. Also,

Booth et al. (2001) examine a sample of emerging markets and find a negative relationship between leverage and profitability. Gwatidzo and Ojah (2009) find a negative relationship for firms in South Africa and Ghana. On the contrary, they find a positive relationship between profitability and debt in Nigeria.

Hence, the following hypotheses are formulated:

H8a: there is a significant positive relationship between profitability and leverage.

H8b: there is a significant negative relationship between profitability and leverage.

5.3.3 Liquidity

Liquidity ratios are calculated by dividing the current assets by the current liabilities. It measures the ability of the firm to pay off its short-term liabilities with the current assets. Liquidity also has mixed predicted effects on leverage. Based on the pecking order theory, companies prefer internal funds over debt, thus, companies with more liquid assets will be able to use those assets to finance their investments instead of using external debt. Hence, pecking order theory suggests a negative relationship between liquidity and debt. The agency theory suggests that managers of firms might be interested in investing liquid assets in unprofitable projects, thus firms with a high portion of liquid assets should use more debt to prevent managers from investing in non-profitable projects.

Omet and Mashharawe (2003) analyse non-financial firms in Jordan, Kuwait, Saudi and Oman; and find that liquidity is significantly negative. Šarlija and Harc (2012) conclude that the relationship between liquidity and leverage is negative.

Therefore, the following hypotheses are specified:

H9a: there is a significant positive relationship between liquidity and leverage.

H9b: there is a significant negative relationship between liquidity and leverage.

5.3.4 Tangibility

Asset tangibility is a measure of collaterals that a firm can offer to debt holders in the case of bankruptcy, it is measured by the ratio of fixed-to-total assets; a high ratio of assets tangibility indicates a high level of security to debt holders in the case of bankruptcy.

There is a general belief in the literature that there is a direct relationship between assets tangibility and the level of leverage; however, the direction of this relationship is ambiguous. Charalambakis & Psychoyios (2012) state that asset tangibility is one of the main determinants of capital structure.

Companies are asked to disclose information about their assets to the creditors. And when a company has sufficient tangible assets it will have lower agency costs of debt due to low information asymmetry (Booth et al., 2001 and Rajan and Zaingales, 1995). Furthermore, managers may invest in risky investments at the expenses of bondholders "the risk shifting strategies", which will result in agency costs of debt. However, if the firm has a high value of collateral assets, the costs of debt could be lessened. Hence, agency theory assumes that assets tangibility will be positively related to debt (Jensen and Meckling 1976).

According to pecking order theory, firms with high level of tangible assets will have lower information asymmetry and hence, they can issue equity at lower costs; therefore, firms with higher tangibility will have lower leverage ratios.

Furthermore, firms with high level of tangible assets are less likely to default and they will have easier access to external funds because they can use those tangible assets as collaterals (Michaelas et al., 1999). Accordingly, the trade-off theory predicts a positive relationship between asset tangibility and debt level.

Rajan and Zingales (1995) examine a sample of large firms in different countries

including Canada, France, Germany, Italy, Japan, the UK and the U.S; they report a positive relationship between leverage and asset tangibility for firms in most of their sampled countries. Gwatidzo and Ojah (2009) analyse firms in Nigeria and South Africa and conclude that there is a positive relationship between leverage and tangibility. Abor and Biekpe (2005) examine firms in Ghana, they show that the relationship between leverage and tangibility is negative.

Considering the above discussion, the below hypotheses are proposed

H10a: there is a significant positive relationship between tangibility and leverage.

H10b: there is a significant negative relationship between tangibility and leverage.

5.3.5 Growth

Growth is calculated by dividing the market value of common equity by the book value of common equity. It is suggested by theories of capital structure that growth is related to firm financing behaviour.

Agency theory suggests a negative relationship between growth and debt, agency costs are greater for firms with higher expectations of growth opportunities (Myers 1984). Those firms may be reluctant to issue more debt in order not to increase the risk of bankruptcy. Hence, debt may not be their first financing option. Furthermore, growing firms have less free cash flow problems resulting in fewer debt.

Trade-off theory suggests that firms with more growth opportunities have less leverage as they have less incentives to underinvest. Furthermore, those firms could face high costs of financial distress (Fama and French, 2002).

Pecking order theory has unprecise predictions; the simple prediction suggests that the relationship between leverage and growth is positive, debt increase when investments exceed retained earnings and decrease when investments are less than retained

earnings. Therefore, taking into consideration profitability, leverage is expected to be higher for firms with more investment opportunities.

Pecking order theory also has a more complicated prediction on the relationship between growth and leverage; this version considers future and current financing costs. When managers expect their firm to have large growth opportunities, they might maintain a low-risk debt capacity to avoid financing with equity in the future. This view of the pecking order theory suggests a negative relationship between expected growth opportunities and current leverage. Future growth predictions are intangible and cannot be collateralized, hence researchers believe that it is negatively related to debt (Barclay and Smith, 2005).

However, the relationship between growth and capital structure depends on the measure used to capture growth. Rajan and Zingales (1995) find negative relationship between growth opportunities and debt. Also, Ngugi (2008) find this relationship negative in Kenya. On the other hand, Al Najjar (2011) shows a positive relationship between leverage and growth opportunities for Jordanian firms.

Hence, the following hypotheses are going to be tested:

H11a: there is a significant positive relationship between growth and leverage.

H11b: there is a significant negative relationship between growth and leverage.

5.3.6 Bank Connection

This is a dummy variable equal to one when a member in a firm's board is also a member in the board of a listed bank, and zero otherwise. It is meant to measure the connection of a company with banks and the effect of this connection on leverage. The existence of a bank related member on the board of the firm would increase the leverage of the underlying firm as it is expected that the connection with banks will make it easier to get loans and hence increase the level of leverage.

Accordingly, the following hypothesis will be tested:

H12: there is a positive relationship between bank connection and leverage.

5.3.7 Age[22]

It is believed that older firms are more stable and able to survive for a longer period of time. Also, those firms can obtain debt easier than young firms. Hence, older firms will most likely have more debt. Ramalho and Silva (2009) claim that older firms especially those with better reputation will have lower cost of debt. Therefore, the relationship between debt and age is expected to be positive. Johnson (1997) examine a set of publicly listed firms drawn from the Compustat database, and finds a positive relationship between age and debt.

5.3.8 Corporate Taxes

MM (1958) have introduced taxes to the irrelevance model, they suggest that taxes are fundamental in determining leverage. Modigliani and Miller (1963) show that the interest tax shield encourage firms to raise more debt. Hence, they predict a positive relationship between tax and leverage.

The trade-off theory predicts that firms will issue more debt when tax rates are higher because firms can benefit from tax deductibility of the paid interests and reduce the amount of tax they pay.

Frank and Goyal (2009) find a positive relationship between tax and market value measures of leverage; however, thy find that this relationship is negative for book value measures of leverage. Ngugi (2008) shows that the relationship between tax and leverage is insignificant in Kenyan companies.

[22] Age is not considered in the empirical analysis of this chapter as data on age is not available.

5.4 The Impact of Corporate Governance on Capital Structure

Corporate governance is the system by which companies are directed and controlled. (Cadbury, 1992). It is usually linked to the existence of agency problems and it goes back to the separation of ownership and control and the conflict of interests between managers and shareholders. Pass (2004) suggests that corporate governance is concerned in the BODs and their duties to successfully manage the company.

Modern corporate theories consider agency costs one of the elements of capital structure, and corporate governance is believed to reduce agency costs. Therefore, corporate governance is linked to capital structure through their connection with agency costs. Furthermore, there is a general belief that good corporate governance practices in a firm will positively affect its capital structure. However, empirical literature fail to reach a consensus on the relationship between corporate governance and capital structure.

Good corporate governance will improve the efficiency and effectiveness of the firm, hence the interests of managers and shareholders will align and agency conflicts will reduce. Moreover, since sound corporate governance will protect shareholders' interest, improve transparency and reduce agency problems, it will be easier for firms with good corporate governance to obtain loans. Firms with good corporate governance encourage foreign institutional investors to invest in them, positively impact share price and might make it cheaper to source funds (Thomson & Bereau, 2009).

Velnampy and Pratheepkanth (2012) state that good corporate governance practices are essential to reduce investors' risk, attract capital and improve firm's performance. Core et al., (1999) state that weak corporate governance practices will worsen agency problems as managers can easily obtain their own benefits at the expenses of

shareholders.

The Cadbury Committee (1992) considers board structure as an important corporate governance mechanism that would improve performance of the firm. Yet, board characteristics varies across countries as they depend on business, political, legal and economic environment.

There is no globally accepted set of corporate governance principles that can be applied to board structures as they depend on business practices and the legal, political and economic environment. It has been argued in corporate governance literature that board structure of firms influences their capital structure decision (Berger et al., 1997; Friend and Lang, 1988; Wen et al., 2002).

The main board structure characteristics that has been identified in the literature to influence capital structure include board size, board composition, CEO duality and managerial compensations. Those characteristics will be discussed below.

5.4.1 Board Size and Capital Structure

BODs is in charge of managing the firm, has the highest governing authority and plays a fundamental role in deciding how the firm finance its operation. It has been argued in the literature that board size affects the ability of directors to monitor and control managers. Furthermore, the relation between size of the board and capital structure has been extensively analysed but the results are mixed.

Larger BODs may be more effective in raising capital than smaller boards. Berger et al. (1997) examine firm listed in US, and conclude that firms with larger BODs will have lower leverage ratios, they argue that when BODs is large it can ensure that managers are following lower levels of leverage. Anderson et al. (2004) analyse a sample of S&P 500 firms; and find that the relationship between costs of debt and board size is negative, they suggest that lenders are concerned with corporate

governance mechanisms that enhance accounting process and prevent managers from opportunistic behaviours. Berger et al. (1997) claim that firms with larger boards will have lower levels of leverage as they force managers to keep levels of leverage low to avoid extra risk. Hasan & Butt (2009) examine listed companies in Pakistan; and conclude that board size is negatively related to leverage ratio.

On the other hand, there are several papers that show a positive relationship between board size and debt. The argument on this positive relationship is that larger boards might result in difficulties to make decisions. Conflicts arising from larger boards may affect corporate governance of the firm and increase agency costs. Hence, leverage will be used as a tool to reduce the conflicts. Furthermore, firms with larger boards will be entrenched as they are more monitored by regulatory authorities hence, they are more likely to have higher levels of debt (Wen et al., 2002).

Bopkin and Arko (2009) examine firms on Ghana stock exchange, and find that board size is positively related to capital structure. Sheikh & Wang (2012), examine non-financial firms listed on the Karachi stock exchange, and conclude that there is a positive relationship between board size and leverage.

Wen et al. (2002) analyse Chinese firms and conclude that the relationship between board size and leverage is insignificant. Bulathsinhalage and Pathirawasam (2017) and Kajananthan (2012) conclude that board size insignificantly affect capital structure in Sri Lanka. Similarly, Hussainey (2012) find insignificantly association between board size and debt in UAE.

5.4.2 Board Composition and Capital Structure

There have been mixed results on the impact of board composition on capital structure. For instance, Weisbach (1988) claims that independent and outside directors effectively monitor top managers. Berger (1997) concludes that companies with lower

non-executive directors on the board will have lower leverage ratios in their capital in US. Similarly, Abor (2007) and Sheikh and Wang (2012) find that the relationship between the percentage of non-executive directors on the board and leverage is positive in Ghana and Pakistan, respectively. In Sri Lanka, Bulathsinhalage and Pathirawasam (2017) find that board composition has a positive effect on capital structure, while Kajananthan (2012) find insignificant relationship between board composition and leverage. A possible interpretation of this positive relationship is that non-executive directors reduce agency problems between managers and shareholders which result in higher levels of debt. Furthermore, firms with more non-executive directors will ensure that the company has a better corporate governance and can easily obtain debt.

On the other hand, Wen et al. (2002) conclude that the relationship between non-executive directors and leverage is negative in China. They argue that non-executive directors effectively monitor managers of the firm and force managers to keep lower levels of leverage. A possible explanation is that non-executive directors monitor managers efficiently and effectively, hence, managers are forced to seek lower gearing levels for achieving superior results.

5.4.3 CEO Duality and Capital Structure

CEO duality implies that the CEO of the company also serves as the chairman of the BODs. CEO duality has been found to influence a firm's financing decision. It might be deteriorating for the company's performance if the two positions are held by the same person. Fama and Jensen (1983) claim that firms must separate managing and controlling decisions; managing the firm involves the right to initiate and implement expenditure plans for the resources of the firm whereas controlling the firm involves the right to approve and monitor those plans. Hence, the roles of the CEO and the

chairman should be separated. It has been argued that CEO duality indicates that managing and controlling decisions are not separated and will eventually lead to agency problems. On the other hand, CEO duality increases power and control to the CEO (Boyd, 1995).

Vakilifard et al. (2011) analyse Iranian listed companies; and conclude that the relationship between duality and debt is positive. That is, when the duties of the CEO and the chairman are separated it means that corporate governance is better and there is less agency problems, consequently, the level of leverage will be less. Similarly, Abor (2007) examines listed firms in Ghana and find a positive relationship between CEO duality and leverage.

5.5 Capital Structure Patterns Internationally

The main theories of capital structure have their own hypotheses in regards to the relationship between leverage and firm-specific factors.[23] Furthermore, several studies have done cross-country comparisons of the effect of firm-specific factors on capital structure patterns. Rajan and Zingales (1995) examine capital structure in 7 developed countries, they conclude that leverage is affected by the same factors across the different countries; MTB ratio, profitability, size and tangibility are important in determining leverage in 7 industrialized countries. Similarly, Frank and Goyal (2009) show that MTB asset ratio, size, tangibility, profitability, industry median leverage and inflation affect capital structure in US.

Booth et al. (2001) show that the same firm-specific factors (size, tangibility, and profitability) affect financing decisions in 10 developing countries confirming previous findings from developed countries. However, country-specific factors such as capital market development, inflation and growth rates affect capital structure of firms differently. Fan et al. (2012) examine a sample of 39 developed and developing countries and conclude that country-specific factors such as the development of bond and equity markets affect firms' capital structure. Oztekin and Flannery (2010) analyze firms in 37 countries with different institutional features, they examine the relationship between leverage and the factors suggested by Rajan and Zingales (1995) and Frank and Goyal (2009); and find out that only industry median leverage, tangibility, and firm size have significantly impact on leverage.

It has been also argued that not only firm-specific factors will affect capital structure, but also financial environment of the country in which firms operate. Firms in different countries may trade-off between information asymmetry costs, bankruptcy

[23] Already discussed in section 5.3.

cost and tax benefits. Oztekin and Flannery (2010) argue that firms in countries with weak institutional environment will find it more valuable to benefit from taxes. Moreover, firms in countries with greater costs of distress will need more collaterals and lenders in those countries will assure that bankruptcy and agency costs will be reduced.

Countries around the world have different economic development levels, legal systems and financial environments. These differences have significant impacts on the cost of capital, hence, capital structure in terms of the combination of debt and equity differs considerably across countries. Atkin and Glen (1992) state that there is no reason to suggest that firms in both developed and developing countries have different objectives. However, since capital markets in developed countries are more advanced than those of the developing countries, it is believed that capital structure may vary.

Theoretically, it is suggested that solid legal system will enforce the rights of investors, hence firms in those countries, in which property rights are protected, are expected to rely more on external financing.

Furthermore, it has been argued in the literature that institutional environment differences among countries affect capital structure. (Booth et al., 2001 and Fan et al., 2012). Even among developed countries such as US and European countries, institutional environment affect financing policies (Graham and Harvey, 2001; Bancel and Mittoo, 2004)

Financial and legal atmosphere of the country also affects the use of external financing. For instance, when the financial markets are less developed, legal and financial systems are weak and the protection of shareholders is lower, firms will less likely issue equity for financing (La Porta et al., 1997; and Rajan and Zingales, 1998). Demirguc-Kunt and Maksimovic (1998) conclude that the relationship between stock

market development and leverage is negative in 30 developed and developing countries.

Several studies have examined the patterns of capital structure in firms from different economies. Corbett and Jenkinson (1996) examine capital structure patterns in United states, United Kingdom, Germany and Japan; and find that firms in those countries rely on internal funds for financing. Lemmon et al. (2010) examine a considerably long period, they analyse firms listed in Comustat and CRSP from 1971 to 2001; and find out that firms mainly rely on internal funds for financing. Rajan and Zingales (1995) find out that firms in UK and Germany have less leverage in comparison with firms in USA during 1987-1991. Similarly, De Jong et al. (2008) analyse firms in 42 industrializes countries and show that firms in Germany have the lowest leverage.

However, the results of the studies on capital structure depend on the measure of leverage. If market values of debt are used, firms in UK and USA would appear more leveraged than firms in Germany (Corbett and Jenkinson, 1996). Rajan and Zingales (1995) show that if leverage is measured by book value, firms in Canada are the most levered and firms in Germany are the lowest, whereas, if leverage is measured by market value, firms in Italy are the most levered and firms in UK and Germany are the lowest.

The financial system of the country (banked-based vs market-based economy) is another factor that has an important influence on capital structure of firms as it directly affects the sources of available funds.

Demirguc-Kunt and Levine (1999) analyse 30 developed and developing countries, they conclude that the variations in capital structure are mainly caused by the differences in legal system, banks and stock market developments. They show that countries with market-based economy will have better accounting standards, lower level of corruptions and stronger shareholders' rights. Hence, those countries will

encourage firms to issue equity and their level of leverage ratios will be lower than firms operating in bank-based financial system Likewise, Fan et al. (2012) study firms in 39 countries and verify the argument that capital structure is significantly affected by institutional differences among countries and it is one of the most important factors that affect capital structure.

De Jong et al. (2008) analyse the impact of firm-specific and country-specific factors on leverage in 42 countries worldwide; and shows two new results. First, they show that firm-specific determinants of leverage vary across countries. For instance, when bond market in a country is developed, it will ease issuing and trading bonds and may result in higher level of leverage in this country. On the other hand, if the country has a developed stock market, the effect will be the opposite. Second, they show that although country-specific factors have a direct impact on capital structure of firms, those country-specific factors also have an indirect impact as they influence the firm-specific determinants of leverage. For instance, if the bond market in a country is developed, the importance of assets tangibility as collaterals will be limited. Stated differently, if tangibility affects leverage in one country but not in the other one, this may be due to the indirect country-specific factors on capital structure.

Gao and Zhu (2015) examine the relationship between information asymmetry and capital structure of firms in 39 developed and developing countries, they particularly focus on the effect of institutional environment on this relationship; they argue that country-specific factors such as legal system, disclosure requirements and market development may influence the relationship between information asymmetry and capital structure. They show that information asymmetry increases the use of debt and this positive relation is more noticeable in countries that have developed banks.

Nevertheless, studies have shown that firm-specific factors that influence leverage are similar across countries. However, there are some country-specific factors other than

firm-specific factors that have significant influences on capital structure and those country-specific factors vary across countries such as tax rate and inflation.

Legal and financial systems also have a strong impact on capital structure but they might not have the same influence on debt across countries. For instance, USA and UK have similar capital market and financial institutions but their levels of debt are very different. On the other hand, USA and Japan have very different legal systems and financial institutions but their levels of debt are very similar.

5.6 The Relationship between Ownership Structure and Capital Structure

While ownership structure is widely believed to impact capital structure of the firm, there is no clear prediction about the relationship between ownership structure and leverage. Although it is expected that a relationship between ownership structure and capital structure exists, the results in the empirical literature are mixed.

The Saudi government owns a large percentage of the country's listed companies; by August 2014, the Saudi government owned more than 35% of the listed companies' shares, furthermore, this ownership represents only government ownership that exceeds 5% of the firm, which means that the actual ownership of the government is way larger than 35%. [24]

Therefore, this chapter will consider government ownership as a determinant of capital structure. Government ownership provides companies with some benefits (e.g., grants, lands) to assist the company, which in turn will support the development of the economy. Hence, a negative relationship between government ownership and leverage is suggested under pecking order theory. The ownership of the Saudi government in listed companies is made through governmental institutional investors who invest on behalf on the Saudi government (Al Kahtani, 2013). Usually these governmental institutions will have a person representing them in the BODs of the listed company. Those companies have higher transparency and suffer to a lesser extent from the agency problems and hence they don't need to utilize debt to minimise the potential agency conflicts between managers and shareholders. Therefore, based on the agency theory, the relationship between governmental ownership and debt is assumed to be

[24] For more information http://www.aleqt.com/2014/09/14/article_886608.html

negative. Jensen and Meckling (1976) claim that when managers own shares in the firm they will have less incentive to expropriate shareholder's wealth and their interests will be aligned to those of the shareholders. Further, Al-Aajmi at al., (2009) find a negative relationship between government ownership and leverage in the Saudi market.

Institutional ownership is suggested to have a positive relationship with debt as those institutions act as a source of debt; further, those institutions act as monitors and hence are assumed to reduce agency costs.

Anderson and Reeb (2003), state that family ownership will reduce the cost of debt, since families are a unique class of shareholders; they show concern over the firm's reputation and are keen to pass their holdings on to future generations. Therefore, it is expected that family ownership will reduce the cost of debt. Studies that have analysed family ownership have used different definitions for family ownership, however, in this research, a firm will be considered as a family firm if the family owns 20% or more of the firm's shares, and at least 2 or more of the family members are on the BODs.

Yet, the results in the literature are mixed in regards to the relation between ownership structure and performance. Chen and Steiner (1999) find a positive relationship between managerial ownership and leverage. Bathala et al. (1994) and Crutchley et al. (1999) report a negative relationship between the coefficient of institutional ownership and leverage. Short et al. (2002) reveal a positive relationship between management ownership and leverage in UK firms. Similarly, Gill et al. (2012) find that family ownership has a positive effect on leverage in India. On the other hand, Al-Ajmi et al. (2009) find a positive relationship between family ownership and capital structure in the Saudi market.

According the above discussion, the following hypotheses are formulated:

H13: there is a negative relationship between government ownership and leverage

H14: there is a positive relationship between family ownership and leverage

H15: there is a positive relationship between insider ownership and leverage.

H16: there is a positive relationship between institutional ownership and leverage.

Nevertheless, an extensive amount of literature has been devoted to identify the determinant of capital structure around the world; however, very few papers have examined the capital structure in the Saudi market context, including Kalyanaraman and Altuwaijri (2016), Alzomaia (2014), Twairesh (2014), Sbeiti (2010), Abdullah (2005), Al-Ajmi et al. (2009), Omet and Mashharawe (2002), and Al-Sakran (2001).

The results from these studies are inconclusive. Harris and Raviv (1991) argue that these conflicting results arise from the study of different time periods, the use of different measures of leverage and explanatory variables, and different methodologies. They argue that in measuring leverage some items can be included or excluded such as account payables, receivables and other short-term debt; hence applying different measures of leverage would shift the results.

Further Sbeiti (2010) argues that GCC countries are an interesting case to investigate whether the determinants of capital structure in firms operating in those markets are similar to those operating in developed countries.

Hence, this chapter aims to fill in the huge gap in the literature in regards to the relationship between CG and capital structure in the Saudi context by analysing important factors that are relevant to capital structure and to the Saudi context in particular. This chapter covers a recent sample data that reflects the effects of the Saudi Governance Code and a considerably extended sample period compared to previous studies, and by applying advanced econometric techniques to control for problems associated with endogeneity that previous studies on the Saudi market suffer from.

5.7 Sample and Data Set

The sample and data set are similar to those used in the first and second empirical chapters of the thesis; a sample of 599 non-financial firms listed on the Saudi stock exchange from 2009-2014 are included in the analysis. Since financial firms are different in their structure and accounting practices, they were excluded. (Barontini and Caprio, 2006 and Bohren and Strom, 2010).

The data set of the sample is an unbalanced panel data set. The reason for choosing this data set is that it controls for variables that cannot be observed or measured across companies and controls for variables that change over time but not across companies, i.e. it accounts for individual heterogeneity. [25]

Data on ownership including family, insiders, government, institutional ownership and bank connection variables is taken from the annual managerial reports and financial statements available on the Saudi stock exchange website (TADAWUL).

Further, the financial information on performance, accounting ratios and firm size was taken from DataStream. For some years and some companies, there were missing financial data in DataStream, hence, the researcher had to get the missing data from Bloomberg to complete the data set.

[25] Data is explained in section 3.5.

Table 5.1 List of Variables

Leverage	(Book Value of Total Debt / Book Value of Total Assets) *100
Ownership variables	
Family Ownership	% of Shares Owned by a Family and at least 2 of the BODs are Family Members
Insider Ownership	% of Shares Owned by Board Members
Government Ownership	% of Shares Owned by The Government
Institutional Ownership	% of Shares Owned by Institutions
CG Characteristics	
ROA	(Return / Total Asset) * 100
Firm Size	Log of Total Assets
MVTB	Market Value of Common Equity / Book Value of Common Equity
Tangibility	Fixed Assets / Total Assets
Liquidity	Current Assets / Current Liabilities
Bank Connection	Dummy Variable = 1 if a board member is a member in a bank's board, and = 0, otherwise

However, there is no clear-cut definition in the literature of leverage. In this chapter, the leverage ratio is defined as the ratio of book value of total debt to the book value of total assets. The reason behind considering the book value is the high volatility of the Saudi stock market during the period of the analysis. This approach is similar to Sbeiti (2010) Alzomaia (2014). Further, the total debt is considered instead of the long-term debt due to the new established and illiquid bond market in the Saudi market.

5.8 Methodology

This thesis employs STATA software for the analysis. Correlation matrix is then calculated to find out the link between variables. Further, the VIF (variance inflation factor) is calculates to check the existence of any multicollinearity between the variables.

However, previous studies that are concerned with the determinants of capital structure have used different statistical techniques, multiple regression being one of the most used ones in the literature. Therefore, to find out the determinants of capital structure, this chapter will start with a dynamic OLS regression to compare the results with the literature.

Furthermore, it has been widely argued that CG variables are endogenous and when this endogeneity is not considered in the analysis, the results from the OLS will be biased (Demstez, 1983; Himmelberg et al., 1999 and Palia, 2001). Hence, the second regression method that is going to be used is the fixed-effects model as it is commonly used to deal with endogeneity concerns. OLS and fixed-effects methods are applied to verify our sample data.

The third and main method to be applied is the system GMM since it has been argued that CG variables are endogenous and there is an individual effect that cannot be captured by fixed-effects models, hence the most efficient method is the system dynamic GMM.

Consequently, in order to find out the determinants of capital structure in the Saudi stock market, three estimation methods are going to be applied: dynamic OLS, fixed-effects regression and system dynamic GMM.

5.8.1 OLS Regression Model

$$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 ROA_{it} + \beta_3 Size_{it} + \beta_4 MVTB_{it} + B_5 Tan_{it} + \beta_6 Liq_{it} +$$
$$+\beta_7 Fam_{it} + \beta_8 Gov_{it} + \beta_9 Instit_{it} + \beta_{10} BK.CN_{it} + \epsilon \quad (5.1)$$

$$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 ROA_{it} + \beta_3 Size_{it} + \beta_4 MVTB_{it} + B_5 Tan_{it} + \beta_6 Liq_{it} +$$
$$+\beta_7 Insider_{it} + \beta_8 Gov_{it} + \beta_9 Instit_{it} + \beta_{10} BK.CN_{it} + \epsilon \quad (5.2)$$

5.8.2 Fixed-Effects Model[26]

5.8.3 System Dynamic GMM Model[27]

De Miguel et al. (2004) claim that GMM estimation accounts for heterogeneity and endogeneity, and since firms are heterogeneous there are some characteristics that affect the value of the firm and are hard to obtain and enter in the model. Further, ignoring those characteristics will lead to biased results.

Hence, this chapter applies dynamic system GMM regression and includes one lag of leverage as an explanatory variable in the model. Two-step dynamic system GMM estimation is applied and it assumes that all regressors except the year and the industry dummies are endogenous.

[26] More details are found in section 3.7.3
[27] More details are found in section 3.7.4

5.9 Analysis and Results

In this section, we explain and discuss the results from estimating the determinants of capital structure in the Saudi listed companies from 2009-2014. In order to compare the findings of past research and highlight the potential problems from ignoring the dynamism of capital structure, this chapter estimates the determinants of capital structure by applying three methods including dynamic OLS, fixed effect and dynamic GMM, controlling for both industry and year.

In the Saudi market, on average families own 44.6% of family firms' shares as shown in table 5.2, and usually those firms are also managed by the family; further there are firms that are highly owned by insiders but those insiders are not family, so to avoid the duplication, the analysis for each method is going to be done twice; the first model will include a family ownership variable to control for family owned firms and the second model will include an insider ownership variable to control for insider owned firms.

Table 5.2 Descriptive Statistics of Firm Characteristics and Performance Measures

Variable	Mean	Std. Dev.	Min	Max	Median
Leverage	0.210	0.193	0.000	0.697	0.182
ROA	0.076	0.088	-0.640	0.464	0.063
TA	13,000,000	42,000,000	53,487	340,000,000	2,115,824
MTBV	2.480	1.810	0.450	14.670	1.960
Tang	0.493	0.240	0.000	1.122	0.512
Liquidity	2.540	3.140	0.156	46.530	1.735
Family Ownership	0.446	0.212	0.200	0.950	0.435
Gov Ownership	0.258	0.235	0.025	0.837	0.157
Institutional ownership	0.288	0.194	0.050	0.750	0.274
Insider Ownership	0.177	0.214	0.000	0.959	0.096
Bank Connection	0.440	0.500	0.000	1.000	0.000

This table presents the descriptive statistics including mean, median and standard deviation for the firm characteristics, leverage and ownership variables. The sample is covering the period from 2009-2014. Leverage is the book value of total debt/book value of total assets. ROA is return on assets. TA is total assets. MTBV is market value of common equity/book value of common Equity. Tangibility is fixed assets/total assets. Liquidity is current assets/current liabilities. Bank connection is a dummy variable = 1 if a board member is a member in a bank's board, 0, otherwise.

Table 5.2 presents summary statistics for the dependent and all independent variables. Leverage ranges from 0% to 69.74%, with a mean of 21.05%. This ratio is very similar to Sbeiti (2010) who finds that the mean leverage ratio in the Saudi market is 20%. However, Alzomaia (2014) finds that the mean leverage ratio in the Saudi market is 33%. Another interesting point to mention is that the leverage ratio for the Saudi market has not changed a lot since the findings of Omet and Mashharawe (2002) who find out that leverage ratio of the Saudi market is 26% (their sample period is 1996-2001). Furthermore, leverage ratios in the Saudi market are comparable with other countries in the GCC though Saudi Arabia remains the lowest among them. (Omet and Mashharawe, 2002 and Sbeiti, 2010). However, the leverage ratio in Saudi Arabia is much lower than that of developed countries and other developing countries. Rajan and Zingales (1995) report that the debt ratios for listed companies is 54% for the UK, 58% for the USA, 71% for France and 73% for Germany. In comparison to some developing countries, Booth et al. (2001) report that debt ratio is 67% for India and 59% for Turkey, again higher than Saudi Arabia. The result could be explained by the illiquid and new bond market in Saudi Arabia. Profitability measured by ROA has a mean of 7.7% and this finding is comparable to Sbeiti (2010) who finds that profitability equals 7.8% from 1998 to 2005, and to Alzomaia (2014) who finds that the average profitability is 6% during 2000-2010 in the Saudi market.

Log of total assets measures the size of firms; what is worth noting is that Saudi firms have increased dramatically in their size. Our results show that the mean of total assets is 14.7 whereas Alzomaia (2014) reports that the mean of total assets of the Saudi market is 12.28. Furthermore, Sbeiti (2010) and Omet and Mashharawe (2002) report that the average of total assets of the Saudi market are 5.93 and 5.86, respectively. The average liquidity is 2.54 and is very similar to the findings of Omet and Mashharawe (2002), and Sbeiti (2010) who find that liquidity equals to 2.35 and 2.24, respectively.

Table 5.3 presents the correlation coefficients between the variables. Overall, most correlation coefficients are considerably low. The highest correlation is between family and insider ownership, as mentioned earlier that there are firms that are highly owned by insiders but those insiders are not family.

There is a high correlation between total assets and both leverage and governmental ownership (r = 0.51), further, the correlations between leverage and profitability, liquidity and MTBV variables are negative. Finally, all ownership groups have positive correlation with leverage although government ownership has an economically insignificant correlation with leverage. Having a board member who is also a member in a bank's board (represented by the bank connection variable) is positively correlated with leverage.

Nevertheless, the correlation matrix partially explains the relationship between leverage and CG variables. Hence, more advanced models will follow.

Table 5.3 Correlation Matrix

	Lev	ROA	TA	MTBV	Tan	Liq	Fam	Gov	Inst	Insid	BK.CN
Lev	1.00										
ROA	-0.17	1.00									
TA	0.51	0.04	1.00								
MTBV	-0.14	0.23	-0.31	1.00							
Tan	0.25	-0.01	0.25	-0.01	1.00						
Liq	-0.18	0.1	-0.08	-0.05	-0.09	1.00					
Fam	0.03	0.13	-0.01	0.12	-0.2	-0.06	1.00				
Gov	0.0	0.15	0.51	-0.04	0.22	0.07	-0.18	1.00			
Inst	0.2	-0.02	0.26	-0.08	0.07	0.07	-0.18	-0.14	1.00		
Insid	0.12	0.15	-0.06	0.11	-0.11	-0.12	0.71	-0.28	-0.29	1.00	
BK.CN	0.21	0.05	0.31	-0.1	0.24	-0.04	-0.14	0.29	0.01	0.03	1.00

This table presents the correlation coefficients between the variables. The sample is covering the period from 2009-2014. Lev is book value of total debt/book value of total assets. ROA is return on assets. TA is total assets. MTBV is market value of common equity/book value of common Equity. Tan is fixed assets/total assets. Liq is current assets/current liabilities. Fam is family ownership. Gov is government ownership. Inst is institutional ownership. Insid is insider ownership. BK.CN is bank connection, a dummy variable =1 if a board member is a member in a bank's board, 0, otherwise.

In addition, the VIF test is applied to check if the problem of multicollinearity exists, the results of the test below in tables 5.4 and 5.5 show that the variables do not suffer from multicollinearity problem.

Table 5.4 VIF for Determinants of Capital Structure (Family Owned Firms)

Variable	VIF	1/VIF
Lev (t-1)	2.96	0.33
ROA	1.6	0.62
Log TA	5.41	0.18
MTBV	1.66	0.60
Tangibility	2.62	0.38
Liquidity	1.29	0.77
Gov Ownership	3.18	0.31
Institutional Ownership	1.69	0.59
Bank Connection	1.40	0.71
Family Ownership	1.61	0.61
Mean VIF	2.57	

Table 5.5 VIF for Determinants of Capital Structure (Insider Owned Firms)

Variable	VIF	1/VIF
Lev (t-1)	2.95	0.33
ROA	1.68	0.59
Log TA	5.37	0.18
MTBV	1.65	0.60
Tangibility	2.70	0.36
Liquidity	1.29	0.77
Gov Ownership	3.55	0.28
Institutional Ownership	1.88	0.53
Bank Connection	1.40	0.71
Insider Ownership	2.04	0.49
Mean VIF	2.61	

Table 5.6 The Determinants of Leverage

		(1)			(2)	
VARIABLES	OLS	FE	GMM	OLS	FE	GMM
Leverage (t-1)	0.864***	0.344***	0.594***	0.863***	0.352***	0.625***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-0.074**	-0.104**	-0.113	-0.088**	-0.101**	-0.128
	(0.037)	(0.018)	(0.321)	(0.025)	(0.021)	(0.208)
SIZE	0.014***	0.192***	0.032***	0.012***	0.187***	0.030**
	(0.000)	(0.000)	(0.009)	(0.000)	(0.000)	(0.011)
MVTB	0.001	0.005*	-0.000	0.001	0.004*	-0.001
	(0.411)	(0.059)	(0.961)	(0.554)	(0.087)	(0.605)
Tangibility	0.067***	0.202***	0.188***	0.063***	0.206***	0.186***
	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.002)
Liquidity	0.000	-0.002	0.002*	0.000	-0.002	0.002*
	(0.650)	(0.193)	(0.072)	(0.721)	(0.206)	(0.075)
Gov Ownership	-0.068***	-0.103	-0.204*	-0.049*	-0.108	-0.183
	(0.004)	(0.552)	(0.098)	(0.054)	(0.533)	(0.131)
Family Ownership	-0.008	0.242	0.000			
	(0.685)	(0.128)	(0.994)			
Institutional Ownership	-0.018	-0.038	0.0018	-0.006	-0.038	-0.040
	(0.292)	(0.644)	(0.984)	(0.756)	(0.642)	(0.668)
Bank Connection	0.012*	-0.001	0.032*	0.011*	-0.002	0.030*
	(0.062)	(0.953)	(0.085)	(0.063)	(0.818)	(0.056)
Insider Ownership				0.022	0.073	0.060
				(0.170)	(0.204)	(0.337)
Constant	-0.214***	-2.760***	-0.531***	-0.184***	-2.681***	-0.481***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.005)
R-squared	0.923	0.490		0.924	0.487	
AR(1) test (p-value)			0.017			0.015
AR(2) test (p-value)			0.777			0.807
Hansan test (p-value)			1.000			1.000
Diff-in-Hansan (p-value)			1.000			0.922

This table presents the results of the regression on the determinants of leverage.
The models
$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 ROA_{it} + \beta_3 Size_{it} + \beta_4 MVTB_{it} + B_5 Tan_{it} + \beta_6 Liq_{it} + +\beta_7 Fam_{it} + \beta_8 Gov_{it} + \beta_9 Instit_{it} + \beta_{10} BK.CN_{it} + \epsilon$
$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 ROA_{it} + \beta_3 Size_{it} + \beta_4 MVTB_{it} + B_5 Tan_{it} + \beta_6 Liq_{it} + +\beta_7 Insider_{it} + \beta_8 Gov_{it} + \beta_9 Instit_{it} + \beta_{10} BK.CN_{it} + \epsilon$

The sample is covering the period from 2009-2014. Model (1) includes family ownership and model (2) includes insider ownership. Leverage is book value of total debt/book value of total assets. ROA is return on assets. TA is total assets. MTBV is market value of common equity/book value of common Equity. Tangibility is fixed assets/total assets. Liquidity is current assets/current liabilities. Bank connection is a dummy variable = 1 if a board member is a member in a bank's board, and = 0, otherwise. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan test of over-identification restrictions tests the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

Table 5.6 represents the results of the relationship between leverage, CG variables and ownership variables. Model (1) includes family ownership variable and model (2)

includes insider ownership variable. Further, past year leverage is included as a dependent variable. OLS, fixed-effects and system GMM results are included in the table. It can be observed from the results that the current level of leverage is significantly affected by its lagged value, in all models and statistical methods and this verifies the adoption of the dynamic model which is in line with the finding of Vieira et al. (2014).

5.9.1 Size

Large firms are usually more diversified, have less information asymmetry and hence are expected to have more leverage than smaller firms. The coefficient in the OLS regression of size is equal to 0.0140 in model (1), and is similar to the findings of Al-Sakran (2001), Omet and Mashharawe (2002), Al-Ajmi et al. (2009), Sbeiti (2010) and Alzomaia (2014) who apply the OLS regression and conclude that there is a significantly positive relationship between firm size and leverage. Fixed-effects' results show that firm size positively significantly affects leverage with a coefficient of 0.192 in model (1), a result comparable to the ones obtained by Omet and Mashharawe (2002) and Al-Ajmi et al. (2009) - whose coefficient is equal to 0.197- by applying the fixed-effects models to the Saudi market. Likewise, Ayyash et al. (2013) find a positive and significant relationship between firm size and leverage in the UAE. Dynamic system GMM also produces a coefficient equal to 0.0319 and it is significant. This finding is similar to the findings of Santos et al. (2014), who conclude that the size of the firms is positively related to debt in 12 Western European countries by applying the dynamic GMM.

Hence, the results from the OLS, fixed-effects and dynamic system GMM support hypothesis H7a and conclude that the size of the firm has a significantly positive effect on leverage.

5.9.2 Profitability

Empirical studies have concluded mixed results in regards to the relationship between profitability and leverage, yet in the Saudi market in which there is no tax, companies cannot take advantage of debt by reducing their taxable income, and most profitable companies usually keep retained earnings.

However, OLS and fixed-effects suggest a negative and significant relationship between ROA and debt and this finding is similar to the findings in other studies on the Saudi market that apply the OLS model, such as Al-Ajmi et al. (2009); Alzomaia (2014) and Kalyanaraman and Altuwaijri (2016). Further, Omet and Mashharawe (2002) apply both OLS and fixed-effects on the Saudi market and also conclude that the relationship between ROA and debt is significantly negative. Nevertheless, the negative relationship between leverage and profitability is consistent with the pecking order theory. On the contrary, Al-Sakran (2001), Abdullah (2005) and Sbeiti (2010) produce an insignificant relationship between profitability and leverage in the Saudi market based on OLS regression.

However, the dynamic system GMM also suggests a negative relationship between ROA and debt but this relation is no longer significant. However, since the GMM is considered as a more appropriate model in determining capital structure, it could be concluded that the significantly negative results in the OLS and fixed-effects estimations were due to endogeneity and firm specific characteristics that could not be captured by these two models. Further, based on the findings of the dynamic GMM regression, we reject hypotheses H8a and H8b, results support neither the agency nor the pecking order theories.

5.9.3 Liquidity

In both the OLS and fixed-effects models, liquidity appears to be insignificant but once GMM is applied, liquidity turns to have a significantly positive effect on leverage, though the effect is economically insignificant. A few papers have analysed the effect of liquidity on leverage in the Saudi market. Among those papers are Abdulah (2005) and Sbeiti (2010) who find a negative and significant relationship by applying OLS regression. Further, Ayyash et al. (2013) find a significantly negative relation between liquidity and leverage in the UAE market. Alnajjar and Taylor (2008) report a positive relationship in the Jordanian market. However, the finding here is based on the GMM model; it can be concluded that the positive and significant relationship between liquidity and leverage supports hypothesis H9a, and is in line with agency theory, which suggests that firms with more liquid assets should use more debt to prevent managers from investing in non-profitable projects.

5.9.4 Tangibility

Tangibility has significantly positive effects on leverage in all three methods (OLS, FE and dynamic system GMM). The results of the OLS regression are similar to Kalyanaraman and Altuwaijri (2016) and Ayyash et al. (2013) who find significantly positive relationships between tangibility and leverage in the Saudi market and in the UAE, respectively. Further, Fauzi et al. (2013), find out similar results to those obtained from the GMM, his results show that there is a positive and significant relationship between tangibility and leverage in New Zealand listed firms. The positive and significant relationship between tangibility and leverage supports the view that tangible assets increase the ability of the firm in issuing debt as those tangible assets can be used as collateral and reduce agency costs.

On the contrary, Omet and Mashharawe (2002) and Al-Ajmi et al. (2009) find this relationship to be negative and significant in the Saudi market by applying OLS and fixed-effects. Alzomaia (2014) finds a significantly negative relationship by applying OLS in the Saudi market. Sbeiti (2010) also finds a negative relation between tangibility and leverage in the Saudi market, but her results are insignificant.

The significantly positive relationship between tangibility and leverage supports hypothesis H10a, and is in line with agency theory that states that firms with more tangible assets can access the debt market easily.

5.9.5 Market Value/ Book Value of Equity (Growth)

OLS shows an insignificantly positive relationship between MTBV and leverage and those results are similar to the findings of Al-Sakran (2001) and Kalyanaraman and Altuwaijri (2016). Fixed-effects show a significantly positive relationship similar to Sbeiti (2010) who finds a significantly positive relationship between MTBV and leverage in the Saudi market by applying the fixed-effect models. Dynamic system GMM shows an insignificantly negative relationship.

However, since this research is relying on the dynamic system GMM model, it could be concluded that there is no relationship between MTBV and leverage in the Saudi market and that the discrepancy in the signs of both coefficients in the OLS and fixed-effects models is due to endogeneity and firm specific characteristics that cannot be captured by these two models. The findings based on the GMM regression do not support the agency or the pecking order theories and hypotheses H11a and H11b are rejected. Hence, the analysis based on the GMM produces new and contradicting results to those obtained in previous studies on the Saudi market. The results are in line with those of Karadeniz et al. (2009) who show that there is an insignificant relationship between growth and debt in Turkish firms by utilizing GMM.

5.9.6 Ownership

Government ownership in general has a negative impact on leverage, however the significance differs among the applied econometrical methods. First, the OLS models suggest significantly negative effects of government ownership. Other papers that have studied the relationship between government ownership and leverage have produced mixed results. Al-Sakran (2001) applied the OLS in the Saudi market during 1995-2000 and suggests that government ownership coefficients are insignificant and varies between positive and negative based on the leverage definition. Second, the fixed-effects models suggest that government ownership has insignificant effects on leverage. Al-Ajmi et al. (2009) state that government ownership has negative and significant effects on leverage by applying OLS, fixed-effects and random-effects for a sample of 53 companies during 2003-2007. Finally, based on the dynamic system GMM, government ownership produces mixed significant results. In model (1) where family ownership is controlled for in the regression, government ownership has a significantly negative coefficient (-0.204, p = 0.0979).

Firms in which family ownership is controlled for, have a significantly negative impact of government ownership on the level of debt, and based on the GMM model, an increase by 1% of government ownership will decrease leverage by 20%. This result indicates that family-owned firms rely on government to get funding and this explains the significantly negative relationship between government ownership and debt.

On the other hand, the results show that in model (2) when insider ownership is embedded into the regression, government ownership turns to be insignificant (-0.183, p = 0.131); the reason for this insignificant relationship could be that those firms rely more on debt and that government ownership does not substitute debt financing, and it

could be that leverage is explained by factors other than government ownership. Moreover, there are several ways in which the owners can align the interest of managers with those of theirs. These methods include managerial ownership[28] and the use of debt to reduce agency costs by issuing debt, the managers of the firm are obliged to make periodic payments of interests and principal. These periodic payments reduce the amount of free cash flow available for use by managers and hence reduces the agency conflict between owner and managers.

Since government ownership is insignificant and does not replace debt from the market, it could be argued that the purpose of using debt is to control for any potential conflicts of interests and is compatible with raising debt levels to monitor managerial actions. This argument could explain why leverage is not necessarily affected by government ownership in those companies in which insider ownership is controlled for.

However, although the coefficients of government ownership based on the GMM method vary between significant and insignificant, the negative signs support both the pecking order and agency theories.

Interestingly, other ownership groups including family, institution and insider ownership have an insignificant impact on leverage regardless of the model and regression method applied.

Therefore, based on the findings concerning the ownership groups, hypothesis H13 is accepted whereas hypotheses H14, H15 and H16 cannot be accepted.

Nevertheless, past research that examines the relationship between different ownership groups and leverage concludes mixed results. Al-Ajmi et al. (2009) argue that institutional ownership has a positive and significant impact in the Saudi market, when leverage is measured by the debt ratio and the ratio of long-term debt.

[28] Managerial ownership forms part of the employed data variable insider ownership.

According to Alnajjar and Taylor (2008), although the effect of family ownership in the Jordanian non-financial companies is negative in all leverage models, it is not significant when the leverage is measured as the ratio of short term liabilities to total assets. Further, Ayyash et al. (2013) report that government ownership has an insignificantly positive impact on leverage in UAE firms.

5.9.7 Bank Connection

This is a dummy variable equal to one when a member on the BODs of a listed firm is also a member on the BODs of a listed bank, and zero otherwise. It is meant to measure the connection of the company with banks and examine the impact of this connection on leverage. Interestingly, the results in table 5.5 show that both the GMM and OLS regressions suggest that there is a significantly positive relationship between bank connection and leverage and this implies that when a company has a board member who is also a member on a bank's BODs, this might make it easier or cheaper to get funds from the bank. The fixed-effects model suggests that there is an insignificant relationship between bank connection and leverage. Since this thesis considers the GMM method as the main econometric technique, the conclusion is that bank connection has a significantly positive impact on leverage, i.e. the stronger the connection with banks the higher the level of debt. Therefore, we accept hypothesis H12.

Table 5.6 also shows the results of the dynamic system GMM specification test as well as including the Arellano and Bond test of second order serial correlation AR(2), the Hansan test of over-identification restrictions and difference in Hansan test for exogeneity of the instruments. Based on the AR(2), we cannot reject the null hypothesis of no second-order serial correlation. Further, the Hansan test indicates that we cannot reject the null hypothesis that the instruments are valid. The difference-in-

Hansan test suggests that we cannot reject the null hypothesis that the instruments that are used in the level equations are exogenous. Hence, the results of those diagnostic tests suggest that there is no second order serial correlation, the model has valid and exogenous instruments.

Finally, table 5.7 below summarizes the results. As shown in the table, four variables confirm the agency theory and three variables confirm the pecking order theory. Although, several theories have been analysed in the literature, however, it has been argued that there is no single theory that can completely explain the relationship between CG characteristics and the levels of debt. The results of this chapter support this argument; there might be more than one theory to be applied to the Saudi market and there is no single inclusive theory to explain the determinants of capital structure in the Saudi market.

Table 5.7 Findings and Confirmation of Theories According to GMM.

Variable	Pecking order theory	Agency theory
Size (+)		√
Profitability (-)		
Liquidity (+)		√
Tangibility (+)	√	√
Government (-)	√	√
Growth (-)		

This table presents the coefficients' signs of the significant variables and its confirmation of each theory.

5.9.8 Robustness Test

5.9.8.1 Excluding Bank Connection

This section includes robustness tests to investigate the determinants of capital structure in Saudi listed firms. Two robustness tests are conducted. The first robustness test is similar to the basic model in the previous section, but excludes the bank connection variable from the analysis and keeps ownership variables (family and insider) in addition to CG variables to find out if removing the bank connection variable will shift the results. And the second robustness test excludes the bank

connection variable as well as ownership variables and keeps only CG variables.

Table 5.8 Robustness of The Determinants of Capital Structure

	CG + Family			CG + Insider			CG		
VAR	OLS	FE	GMM	OLS	FE	GMM	OLS	FE	GMM
Lev (t-1)	0.869***	0.344***	0.553***	0.869***	0.353***	0.604***	0.888***	0.351***	0.519***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-0.065*	-0.104**	-0.080	-0.083**	-0.101**	-0.086	-0.072**	-0.099**	-0.164
	(0.055)	(0.017)	(0.447)	(0.030)	(0.020)	(0.413)	(0.036)	(0.022)	(0.124)
SIZE	0.014***	0.192***	0.046***	0.012***	0.187***	0.036**	0.009***	0.186***	0.0429***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.026)	(0.000)	(0.000)	(0.000)
MVTB	0.001	0.005*	0.001	0.000	0.004*	0.000	0.000	0.004*	0.001
	(0.508)	(0.059)	(0.734)	(0.699)	(0.089)	(0.965)	(0.954)	(0.076)	(0.637)
Tan	0.072***	0.202***	0.218***	0.066***	0.206***	0.216***	0.058***	0.208***	0.244***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Liq	0.000	-0.002	0.002*	0.000	-0.002	0.002*	-0.000	-0.001	0.000
	(0.798)	(0.192)	(0.061)	(0.879)	(0.206)	(0.072)	(0.755)	(0.207)	(0.767)
Gov	-0.061***	-0.102	-0.255*	-0.038	-0.106	-0.199			
	(0.008)	(0.552)	(0.091)	(0.117)	(0.539)	(0.232)			
Fam	-0.012	0.242	-0.009						
	(0.535)	(0.127)	(0.908)						
Inst	-0.022	-0.0381	-0.007	-0.006	-0.040	-0.028			
	(0.217)	(0.638)	(0.931)	(0.735)	(0.624)	(0.742)			
Insid				0.0254	0.0711	0.0723			
				(0.115)	(0.210)	(0.369)			
Constant	-0.222***	-2.759***	-0.720***	-0.184***	-2.677***	-0.604***	-0.141***	-2.674***	-0.693***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.010)	(0.000)	(0.000)	(0.000)
R-sq	0.923	0.490		0.923	0.487		0.922	0.486	
AR(1)			0.018			0.015			0.003
AR(2)			0.878			0.916			0.813
Hansan			0.999			0.999			0.494
D-in-H			0.365			1.000			1.000

This table presents the results of the regression on the determinants of leverage.
The models

$$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 ROA_{it} + \beta_3 Size_{it} + \beta_4 MVTB_{it} + B_5 Tan_{it} + \beta_6 Liq_{it} + +\beta_7 Fam_{it} + \beta_8 Gov_{it} + \beta_9 Institit_{it} + \epsilon$$

$$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 ROA_{it} + \beta_3 Size_{it} + \beta_4 MVTB_{it} + B_5 Tan_{it} + \beta_6 Liq_{it} + +\beta_7 Insider_{it} + \beta_8 Gov_{it} + \beta_9 Institit_{it} + \epsilon$$

$$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 ROA_{it} + \beta_3 Size_{it} + \beta_4 MVTB_{it} + B_5 Tan_{it} + \beta_6 Liq_{it} + \epsilon$$

The sample is covering the period from 2009-2014. Model (1) includes family ownership and model (2) includes insider ownership. Leverage is book value of total debt/book value of total assets. ROA is return on assets. TA is total assets. MTBV is market value of common equity/book value of common Equity. Tangibility is fixed assets/total assets. Liquidity is current assets/current liabilities. Bank connection is a dummy variable = 1 if a board member is a member in a bank's board, and = 0, otherwise. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan test of over-identification restrictions tests the validity of the instruments. Diff-in-Hansan tests the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

The results for the first and second robustness tests are shown in table 5.8 and are to a large extent similar to those obtained from the preliminary analysis presented in table 5.6; OLS and fixed-effects models suggest a negative and significant relationship between profitability and leverage. Nevertheless, the negative relationship between leverage and profitability is consistent with the underdeveloped bond market. It also supports the hypothesis of the pecking order theory; companies prefer internal sources of funding from retained earnings especially since the Saudi market is a tax-free market in which companies do not pay tax on retained earnings.

However, GMM shows that ROA is no longer significant though it is still negative and thus, the results of profitability do not support the pecking order theory which is contrary to the results of OLS and fixed-effects. This strengthens the argument for the need of applying the GMM model.

In all models, the size of the firm has a significantly positive effect on leverage and this supports the agency theory. Tangibility has a significantly positive effect on leverage in all three models, which supports the assumptions of both agency theory and pecking order theory. Further, in both the OLS and fixed-effects models, liquidity appears to be insignificant but once GMM is applied, liquidity turns to have a significantly positive effect on leverage. This finding also supports both the agency theory and the pecking order theory, in which they assume that there is a positive relationship between liquidity and the levels of debt. Government ownership in general has a negative impact on leverage, however the significance differs among the applied models and the ownership variables. First, OLS suggests a significant effect of government ownership in firms where family ownership is controlled for and an insignificant impact on firms where insider ownership in controlled for. Second, the fixed-effects models suggests that government ownership has an insignificant effect on leverage. Finally, based on the GMM, the results on the effect of government

ownership on leverage are mixed. Model (1) where family ownership is included in the regression shows a significantly negative relationship between government ownership and debt (-0.255, p = 0.0908). This result supports the findings in the previous section and also indicates that family firms depend on government to get funds.

On the contrary, in model (2) where insider ownership is included in the regression, the relationship between government ownership and debt is insignificant (-0.199, p = 0.232). This result also supports the findings in the previous section, and could be interpreted as those firms where insider ownership is controlled for, rely more on debt and government ownership does not substitute debt financing; further it could be the case that leverage is explained by factors other than government ownership.

Controlling for conflict of interests due to managerial ownership is compatible with raising debt levels to monitor managerial actions. Therefore, government ownership is insignificant and is not replacing issuing debt from the market. This argument could explain why leverage is not necessarily affected by government ownership in those companies in which insider ownership is controlled for.

However, although the coefficients of government ownership based on the GMM method, vary between significant and insignificant, the negative signs support both the pecking order and agency theory.

In addition, family, institutional and insider ownership variables have insignificant impacts on leverage. These results are also similar to the results obtained from the basic model in the previous section.

Table 5.8 also shows the results of the dynamic GMM specification tests, including the Arellano and Bond test of second order serial correlation AR(2), the Hansan test of over-identification restrictions and difference in Hansan test for exogeneity of the instruments. Based on the AR(2), we cannot reject the null hypothesis of no second-

order serial correlation. Further, the Hansan test indicates that we cannot reject the null hypothesis that the instruments are valid. The difference-in-Hansan test suggests that we cannot reject the null hypothesis that the instruments used in the level equations are exogenous.

5.9.8.2 Government Ownership of Bank Connected Firms

However, since this thesis is based on the GMM model, the previous results in table 5.6 and table 5.8 show that government ownership has a significantly negative effect on leverage in firms where family ownership is controlled for, and thus is considered a substitute for debt financing in these firms. Furthermore, bank connection as shown in table 5.6, facilitates debt financing and increases levels of debt for Saudi firms. Given the asymmetric effects of these two factors, this chapter, further, examines the effect of bank connection on government owned firms.

To do so, a new variable is constructed, namely, GOV.BK.CN which is the product of the government ownership percentage multiplied by the bank connection dummies. This variable represents firms that have both government ownership as well as bank connection and replaces the bank connection dummy in the preliminary model in table 5.6.

However, significantly negative coefficients of the GOV.BK.CN variable would indicate that firms who are connected with banks and at the same time have government ownership, will have lower levels of leverage; indicating that those firms would use government ownership as a source of finance and to reduce their leverage.

On the other hand, positive and significant coefficients would indicate that bank connected firms whom also have government ownership do not get funds from the government, hence, they utilize government ownership for purposes other than financing or funding. The positive coefficients of the GOV.BNK.CN means that

although the government is owner in the company, the company still have more leverage, indicating that those firms with government and bank connection do not rely on government in getting funds i.e. government ownership in those firms does not substitute debt financing. The results are presented in table 5.9.

Table 5.9 Robustness of The Determinants of Capital Structure

		(1)			(2)	
VARIABLES	OLS	FE	GMM	OLS	FE	GMM
Lev (t-1)	0.869***	0.344***	0.585***	0.869***	0.353***	0.602***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-0.065*	-0.103**	-0.105	-0.083**	-0.101**	-0.116
	(0.056)	(0.018)	(0.333)	(0.030)	(0.020)	(0.319)
SIZE	0.014***	0.194***	0.042***	0.012***	0.189***	0.033**
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.014)
MVTB	0.001	0.004*	0.001	0.001	0.004*	-0.001
	(0.506)	(0.062)	(0.852)	(0.701)	(0.092)	(0.865)
Tan	0.072***	0.204***	0.205***	0.066***	0.207***	0.205***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Liq	0.000	-0.002	0.002*	0.000	-0.002	0.002
	(0.786)	(0.195)	(0.054)	(0.883)	(0.210)	(0.101)
Gov	-0.069*	-0.090	-0.227*	-0.035	-0.094	-0.137
	(0.054)	(0.602)	(0.092)	(0.329)	(0.586)	(0.406)
Gov.BK.CN	0.008	-0.057	0.009	-0.003	-0.059	-0.003
	(0.749)	(0.149)	(0.884)	(0.904)	(0.135)	(0.972)
Fam	-0.012	0.247	-0.016			
	(0.526)	(0.119)	(0.833)			
Inst	-0.022	-0.029	-0.029	-0.006	-0.030	-0.028
	(0.218)	(0.724)	(0.756)	(0.737)	(0.711)	(0.746)
Insid				0.026	0.077	0.092
				(0.117)	(0.177)	(0.243)
Constant	-0.222***	-2.787***	-0.651***	-0.184***	-2.705***	-0.562***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.003)
R-squared	0.923	0.493		0.923	0.490	
AR(1)			0.016			0.014
AR(2)			0.942			0.947
Hansan Test			1.000			1.000
Diff-in-Hansan			1.000			1.000

This table presents the results of the regression on the determinants of capital structure.
The models:

$$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 ROA_{it} + \beta_3 Size_{it} + \beta_4 MVTB_{it} + B_5 Tan_{it} + \beta_6 Liq_{it} + +\beta_7 Fam_{it} + \beta_8 Gov_{it} + \beta_9 Instit_{it} + \beta_{10} GOV.BK.CN_{it} + \epsilon$$

$$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 ROA_{it} + \beta_3 Size_{it} + \beta_4 MVTB_{it} + B_5 Tan_{it} + \beta_6 Liq_{it} + +\beta_7 Insider_{it} + \beta_8 Gov_{it} + \beta_9 Instit_{it} + \beta_{10} GOV.BK.CN_{it} + \epsilon$$

The sample is covering the period from 2009-2014.Model (1) includes family ownership and model (2) includes insider ownership. Lev is book value of total debt/book value of total assets. ROA is return on assets. TA is total assets. MTBV is market value of common equity/book value of common Equity. Tan is fixed assets/total assets. Liq is current assets/current liabilities. Fam is family ownership. Gov is government ownership. Inst is institutional ownership. Insid is insider ownership. Gov.BK.CN is the product of the government ownership percentage

multiplied by the bank connection dummy. AR(1) and AR(2) are tests of first and second order serial correlation in the first differenced residuals. Hansan test of over-identification restriction tests the validity of the instruments. D-in-H is Diff-in-Hansan test of the exogeneity of the instruments that are used in the level equations. P-values are included in parentheses, *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level.

Overall, the results in table 5.9 are essentially similar to the results in table 5.6 and table 5.8 in which the original, first and second robustness tests are presented. However, although the OLS and fixed-effects show similar results to those previously obtained, the interpretation in this section will be based on the GMM. The results in table 5.9 show that for model (1) where family ownership is included in the regression, government ownership maintains its negative relationship with leverage, while government ownership of bank connected firms has a non-significant relationship with leverage and this implies that a closer relationship with banks (for firms that have government ownership) eliminates the relevance of government ownership as a substitute for debt financing in those firms.

In other words, the results in table 5.8 and 5.9 conclude that government ownership decreases leverage, meaning that firms use the government as a source of funds. Furthermore, for firms that have both government ownership and bank connection, government ownership is no longer significant indicating that this government ownership is no longer a source of funds.

Moreover, for firms with insider ownership in model (2), government ownership continues to have an insignificant impact on leverage and GOV.BK.CN also has no impact on leverage. And this support the main finding in table 5.6 that firms with insider ownership could be relying on debt and that government ownership does not substitute debt financing.

5.10 Conclusion

In this chapter, we use a sample of 599 firm-year observations of non-financial firms listed on the Saudi Stock Exchange over a 6-year sample covering the period from 2009-2014, to find out the determinants of capital structure of Saudi listed firms. Further, we examine the relevance of two conventional capital structure theories the pecking order theory and the agency cost theory in the case of publicly listed companies in Saudi Arabia.

Different statistical techniques have been applied in the chapter. OLS is firstly applied as it has been extensively used in the literature, although it has been argued that CG variables are endogenous and the OLS model could produce biased results; however, it has been applied to compare the results with the literature's. The second regression method that has been applied is the fixed-effects model to also compare with existing literature results. Furthermore, the system GMM is also applied since it has been argued that there is as individual effect that cannot be captured by the fixed-effect and that the GMM is the best econometric method to deal with the problem of endogeneity, hence the results are going to be based on the findings of the GMM regressions.

The analysis for each model is done twice; the first time including family ownership and the second including insider ownership to avoid the duplication from having both family and insider ownerships on the same regression.

Several variables have been used in order to find out the determinants of capital structure in the Saudi market including firm size, profitability, growth, tangibility, liquidity, ownership and bank connection.

The results from the GMM regressions show that liquidity, tangibility and size have significantly positive effects on leverage. Profitability has an insignificantly negative

effect and growth has an insignificantly negative effect of leverage. Government ownership has a significantly negative effect of leverage in companies where family ownership is controlled for. Bank connection has a significantly positive impact of leverage; this suggest that when a board member is also a member on a bank's board, it might make it easier for the firm to get debt from the bank.

Further, robustness tests were conducted; their finding are similar to the preliminary analysis but the first test excludes the bank connection variable and the second excludes the bank connection and ownership variables. The results are to a large extent similar to those obtained from the preliminary analysis.

However, government ownership has a significantly negative effect on leverage in firms where family ownership is controlled for, and bank connection has a positive impact on leverage; given the contradicting effects of those two variables, a further robustness test is applied to test the effect of bank connection of government owned firms on leverage. The results show that government ownership is no longer significant for companies with bank connection, i.e. those companies do not use the government as a source of funds.

Since the two theories that are examined in this chapter share similar predictions for some variables in terms of the sign, the results for those variables may support more than one theory. In general, most of the empirical results indicate that the financing decisions of Saudi Arabia's firms support the agency theory hypothesis, while some variables confirm the pecking order theory as shown in table 5.6.

Harris and Raviv (1991) contend that these conflicting results arise from the study of different time periods, and the use of different measures of leverage and explanatory variables, different methodologies, and maturity of capital markets and countries studied.

However, it has been argued in the literature that the capital structure of firms is affected by the firm's special characteristics in addition to the legal context and institutional environment of the county in which the firm operates (Deesomsak et al., 2004). According to De Jong et al. (2008), firms' characteristics differ across countries. Also, country specific factors have indirect impact on leverage and it is useful to take them into account in the analysis.

Despite extensive efforts to test these theories, a complete understanding of the factors that influence finance policies and the way these factors interact has yet to be established. This situation led Myers (2001) to conclude that *"there is no universal theory of the debt-equity choice and no reason to expect one."* (p. 81).

Chapter 6 Conclusion

6.1 Introduction

The purpose of this thesis is to examine the implementation and implications of CG practices in Saudi listed companies. Specifically, three main topics are empirically examined in this thesis including the relationship between board structure and performance, the relationship between ownership structure and performance and the determinants of capital structure. This thesis investigates listed companies on the Saudi Stock Exchange (TADAWUL) excluding banks and financial companies for the period from 2009-2014.

Although several regression methods have been applied in the literature to examine CG, OLS is the most used method. Yet, it has been recently argued that in the case of endogeneity problems, OLS might produce biased estimates and that the fixed-effects method is more appropriate. However, the fixed-effects methods assumes strict exogeneity and since CG variables have dynamic relationship, the assumption of strict exogeneity is violated. Therefore, it is has been recently suggested in the literature that the system GMM is the most appropriate method for this research.

However, this thesis applies both OLS and fixed effect techniques to compare the findings with previous studies and the dynamic system GMM is also applied to find out if the results obtained would differ from those of the OLS and fixed-effects.

Section 6.2 presents a summary of the key empirical findings in chapters 3, 4, and 5. Section 6.3 presents some concluding remarks. And finally, limitations and recommendations for future research are presented in section 6.4.

6.2 Key Findings

6.2.1 The Relationship between Board Characteristics and Performance

Chapter 3 empirically examines the relationship between board characteristics (including board independence and size of the board) and performance measured by three proxies including ROA, ROE and market return. The regression analysis is done by applying static OLS, dynamic OLS, fixed effect and finally dynamic system GMM. The relationship between board size and performance based on the Static OLS and dynamic OLS reveals that there is a significant and positive relationship between board size and performance. However, the relationship based on fixed-effects and system dynamic GMM is insignificant

The relationship between board independence and performance is always insignificant. Furthermore, the dynamic OLS always has a higher R^2 in comparison to the static OLS, and the magnitudes of the coefficients are always lower in the dynamic OLS. This implies that past performance is important is analyzing the relationship between board structure and performance. Another important finding is that the relationship between the current performance and one year lagged performance is significant and positive, and robust when alternative estimation methods and performance measures are employed. This is in line with the findings of Wintoki et al. (2012) and suggests that the dynamic relationship between board structure and performance should be taken into consideration.

Another potential explanation of the insignificant relationship between board independence and performance could be due to some inapplicability of the Saudi code, as the later defines independent directors as directors with no first-degree relative on the board; it also identifies first degree relative as father, husband, wife and children. It excludes sisters, brothers, cousins and uncles. The Saudi society is very

family-oriented, and independent directors may have their brothers, nephews, uncles and cousins on the board. Hence, they are not actually as independent as they are supposed to be.

6.2.2 The Relationship between Ownership Structure and Performance

The relationship between ownership structure (including family, insider, government and institutional ownership) and performance measured by ROA and ROE, is examined in chapter 4 of this thesis. Based on the OLS regression, the results indicate that there is a causal relationship between ownership structure and performance[29]. The fixed-effects results reveal no relationship. Finally, the dynamic system GMM shows that there is no relationship between insider, government and institutional ownership, and performance whereas family ownership bears a significant and cubic relationship with performance.

Moreover, Cheung and Wei (2006) argue that performance can be significantly explained by its past values. Therefore, a static system GMM is applied as a robustness check for this argument to find out whether there are any changes in the results when the lagged value of the dependent variable is removed from the regression. The results for family ownership are similar to those obtained form the dynamic system GMM and confirm the cubic relationship with performance. When family ownership is approximately lower than 11%, the relationship with performance is negative and it could be because family suffer from lack of control. When ownership is between approximately 11% and 62%, performance increases with the increase in family ownership and it could be due to the increase of the power of family shareholders over management, and finally when family ownership is higher

[29] Three out of four models show significant relationship between government and institutional ownership, and performance.

than 62%, performance decreases and it could be that family will have sufficient control that will allow them to siphon the profits. Hence, chapter 4 contributes to the literature by showing new evidence on how the performance of Saudi firms varies with changes in their level of family ownership.

On the contrary, insider ownership results of the static system GMM contradict those obtained from the dynamic system GMM, as insider ownership turns to be significant and confirming the non-linearity of the relationship with performance. This evidence is in line with the convergence of interests and the entrenchment hypotheses. Moreover, those results confirm that the lagged dependent variable is important in describing its current value. If the effect of lagged dependent variables is ignored, there may be a spurious relationship between ownership and structure (Cheung and Wei, 2006).

6.2.3 The Determinants of Capital Structure

Chapter 5 empirically examines the determinants of capital structure (leverage) of Saudi listed firms by investigating the role of different CG variables including ownership structure, profitability, size, growth, asset tangibility and liquidity. Furthermore, it controls for a firm's bank connection.

Two theories in capital structure are examined, the pecking order theory and the agency theory. Three dynamic statistical techniques are applied including OLS, fixed-effects and system GMM. However, the results are interpreted based on the dynamic system GMM. Furthermore, to avoid the duplication from having both family and insider ownership variables in the same regression, the analysis based on the three statistical techniques is done twice, first including family ownership and then including insider ownership.

The results show that based on the GMM regression, liquidity, tangibility and firm

size positively affect leverage. Profitability and growth have insignificant effects on leverage. Government ownership has significantly negative effects on leverage only in companies where family ownership is controlled for. Insider, family and institutional ownership do not affect the level of debt. Bank connection has a significantly positive impact on leverage. This suggests that having a board member that is also a member on a bank's board, facilitates debt financing from the bank.

Furthermore, two robustness tests were conducted; they are similar to the preliminary analysis, but the first robustness test excludes the bank connection variable and the second excludes the bank connection and ownership variables. Results are similar to those obtained from the preliminary analysis.

However, for family controlled firms, the results show that government ownership has a negative effect on leverage whereas bank connection has positive effect on leverage. Given those two countervailing effects, a further robustness test is conducted to test the effect of bank connection of the government owned firms on leverage. This is done by generating a new variable which is the product of government ownership percentage multiplied by the bank connection dummy, representing firms that have both bank connection and government ownership and replacing the bank connection dummy in the preliminary analysis. The results show that government ownership is no longer significant for companies that have a connection with a bank; those companies do not use government ownership as a source of funds.

Since the two theories that are examined in this chapter share similar predictions for some variables in terms of their sign, the results for those variables may support more than one theory. In general, most of the empirical results indicate that the financing decisions of Saudi firms support the agency theory hypothesis, with some variables confirming the pecking order theory.

6.3 Concluded Remarks

It could be concluded from the main findings of the thesis that board structure including board size and independence do not affect performance and that past findings that are based on the OLS or fixed effect must be interpreted with cautious. Furthermore, it is important to include the lagged values of the dependent variable when examining CG as not including them might influence the results. Finally, most of the findings on the determinants of capital structure support the agency theory and there is some support to the pecking order theory.

Yet the relationship between CG and performance is complicated, the mixed results worldwide could be attributed to several factors, such as the period of study, different methodologies and econometric techniques. Other factors that cannot be captured or examined such as favouritism in the Saudi context plays a vital role in the decision-making process, however it is unobservable. Another reason of the mixed results in the literature is due to the incorporation or exclusion of the lagged values of the dependent variable in the regression. Finally, the mixed results could also be due to the variety of measures is assessing performance and some variables are defined based on different criteria (e.g. ownership and leverage). This argument is in line with the findings of (Demsetz and Villalonga, 2001 and Harris and Raviv,1991).

6.4 Limitation and Recommendation for Future Research

Notwithstanding the findings of this thesis and its contribution, there are some limitations that could be fruitful opportunities for future research.

Based on what is found in the empirical chapters, a further research in the future could be conducted to analyse the effectiveness of the board committees such as the audit committee meetings and the independence of its members. Furthermore, future research could include some board characteristics such as the effect of their experience and education levels on CG. Those variables were not analysed in this thesis because of data unavailability especially in earlier years of the sample. Hence they could be left for future research, when relevant data is available.

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