Board Characteristics, Ownership Structure and Agency Costs: UK Evidence

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ABSTRACT

The term "Corporate Governance" always proliferates after large accounting scandals and crises; practitioners claim that governance mechanisms are the cause of these failures, and worldwide reforms take place after each failure; however, these reforms did not succeed in preventing the subsequent falls down. Although corporate governance mechanisms are introduced to monitor and control the managerial opportunistic behaviour in order to reduce the agency costs; most of the prior studies were directed towards investigating the role of governance mechanisms in enhancing firm performance as an indirect proxy of lower agency conflicts, and hence, lower agency costs. This study adds to the debate around the usefulness and the effectiveness of the corporate governance mechanisms in controlling the managerial opportunistic behaviour and reducing agency costs.

This study contributes to the governance literature by investigating and comparing the impact of a comprehensive set of governance mechanisms reflecting a wide spectrum of board characteristics and ownership structure on agency costs over the period 2005-2011; in addition to providing a comparison of before and after the financial crisis periods using a large sample of firms listed in FTSE All-Share index. In doing so, two different agency costs proxies are utilised; asset utilisation which reflects the managerial efficiency; and the interaction of free cash flow with growth opportunities which reflects investment decisions agency costs. This comparative analysis extends the governance literature that investigated the pre and during the crisis periods by adding the pre and post the 2008 financial crisis comparison. Lastly, this study considers more than one theoretical paradigm; the empirical evidence lends the support to the agency and resource dependence perspectives and provides partial support to the stewardship view.

The results clearly show that not all governance mechanisms lead to lower agency costs; thus, one prescribed structure does not fit all. Moreover, the efficiency of the governance mechanisms is directly affected by surrounding economic conditions (e.g., steady and abnormal conditions); in other words, governance mechanisms which help in reducing agency costs during the normal economic condition could turn out to be useless, inefficient and in some cases detrimental to the managerial effectiveness after the financial crisis. Moreover, the reported results support the claim that interrelation between the different governance mechanisms should be considered in future governance studies.

DECLARATION

No part of this thesis has been submitted elsewhere for any other degree or qualification in this or any other university. It is all my work unless referenced to the contrary in the text.

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Abu Huraira reported: The Prophet Muhammad, peace and blessings be upon him, said, "He who does not thank the people is not thankful to Allah." Source: Sunan Abi Dawud 4811

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This PhD. thesis is lovingly dedicated to

My father Prof. Samir Allam, my first teacher ever
My mother, the first love of my life
Your unlimited love, scarifies, prayers and support have sustained me throughout my life and helped me to become what I am now.

My Brothers, their wives and my lovely niece and nephews
for all their love, prayers and best wishes throughout my life

Ahmed and Yousef
for lighting up my life with their love and beautiful smiles

To my beloved wife
for always scarifying, supporting, helping, and standing by me

Love you all,

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CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

The concept of corporate governance is the focus of attention for investors, practitioners and regulators; however, this concept always flourishes after large accounting scandals and crises. In the early 1990's Polly Peck and Maxwell in the UK, after the new millennium Xerox 2000, Enron 2001 and WorldCom 2002 in the U.S., Parmalat in Italy 2003 and Lehman Brothers 2008 in U.S., Olympus Corporation in Japan 2011 and the list goes on; are examples of large and well known corporations that shaped the progression of corporate governance reforms, codes and regulations. After every scandal, investors as well as practitioners call for stricter regulations to protect shareholders' wealth as they argue that the existing regulations –before the scandals– did not provide the sufficient protection from the opportunistic management and their fraudulent practices; which led to the global financial crisis and the global recession followed this crisis. Baker (2010), Spiegel (2011) and Brandtner and D'Ecclesia (2012) mention that the U.S. subprime mortgage crisis led to the global recession, which impacted on the financial as well as non-financial institutions.

In response to these calls, regulatory bodies revise those existing regulations and enact stricter codes. Brandtner and D'Ecclesia (2012) mention that one of the immediate responses to the financial crisis was setting new rules that are stricter and require the market players with more transparency. Ferrero-Ferrero, Fernández-Izquierdo and Muñoz-Torres (2012) suggest that the roots of the financial crisis are related to the weakness of the governance systems. In November 2008, the International Corporate Governance Network issued a statement on the 2008 financial crisis. They mention that corporate governance is the cause and the solution of the crisis at the same time, suggesting an agenda that includes a number of issues to work on to avoid any future crises. Likewise, Kirkpatrick (2009) concludes in a report published by The Organisation for Economic Co-operation and Development (OECD) about the corporate governance lessons from the financial crisis; he

concludes that the OECD corporate governance principles should be revised in order to determine whether there is a need for more guidelines and/or clarifications or not.

Having said that, the scandals of, the above mentioned, well-known companies show that stricter regulations did not stop the later scandals and provide a clear evidence that corporate governance practices failed to perform their desired goals concerning the protection of shareholders' interests and wealth. Thus, this raises questions about the effectiveness and usefulness of corporate governance codes; the calls for reforms with more strict regulations and codes of practices, and the usefulness of forcing firms to follow predetermined governance structure. The past scandals, crises and codes revisions, clearly, demonstrate that, although, the concept of corporate governance is aged more than three decades, but it is still under progression, and there are more changes will happen to this concept and its associated mechanisms and practices in the near future.

Corporate governance as a concept, mechanisms and codes of practice were introduced to help in mitigating the undesirable consequences of the separation between ownership and control which is known as the agency problem. The agency problem refers to the misalignment between managers' interests and those of shareholders. Managers are responsible for managing shareholders' wealth; however, they are aware that they exert the full effort, but have a minor share of the output; this share could take the form of their compensation package and return on their investments in case of having an ownership stake. Consequently, managers start to exploit their delegated authority to extract private benefits from their control. This exploitation could take more than one form like work shirking, managerial entrenchment, perquisite consumptions and other forms; resulting in agency costs represented in more monitoring costs and reflected in lower returns on shareholders' investments, all are incurred by the shareholders.

According to the agency theory, the implementation of good corporate governance practices should help in mitigating the agency problem and reducing agency costs (Agrawal and Knoeber, 1996; Singh and Davidson III, 2003; Renders, Gaeremynck and Sercu, 2010; Andreou, Louca and Panayides, 2014). Ang, Cole and Lin (2000), Fleming, Heaney and McCosker (2005) among other researchers demonstrate that much of the literature since the seminal work of Jensen and

Meckling (1976) claim that agency costs have an important and strong impact on firm's main decision; e.g., the contracting, financial and managerial decisions represented in executive compensation, capital structure, dividend policy, accounting policy choice. All of these decisions have a direct impact on the shareholders' wealth. Consequently, good governance practices should help in curtailing the suboptimal behaviour of managers regarding these decisions (Renders, Gaeremynck and Sercu, 2010), and control the managers' costly incentives; all of this should lead to an improvement in the firms' performance (Florackis and Ozkan, 2009). Prior literature (e.g., Jensen and Meckling (1976); Fama and Jensen (1983b), among others) mentions that poor performance results from poor management, this reflects the need of more monitoring (Hermalin and Weisbach, 1988). Thus, from an agency perspective, corporate governance mechanisms should control management's behaviour and mitigate the agency conflicts between managers and shareholders; which should reduce the agency costs and would be reflected on better performance.

1.2 MOTIVATION

Having said that, corporate governance mechanisms are introduced to mitigate the consequences of the agency problem, in the corporate governance literature, a major concern was directed towards examining the efficiency of ownership structure (in terms of board ownership and block holding); and the characteristics of the board of directors (in terms of size, composition and leadership structure) in aligning managers' interests with those of shareholders to enhance firm performance and increase firm value. However, this stream of research failed in providing consistent results confirming the role of governance mechanisms in enhancing firm performance. Larcker, Richardson and Tuna (2007) mention that the empirical studies investigating the association between corporate governance attributes and various accounting and economic measures have provided inconsistent and mixed results. These mixed results fail to provide an imagination about the optimal governance structure that firms should follow (Core, Holthausen and Larcker, 1999).

Many plausible reasons could be behind these mixed results: **First**, a large number of the prior studies concentrate on investigating the impact of a single or a limited number of corporate governance mechanisms e.g., Bhagat and Black (1996); McConnell and Servaes (1990); Yermack (1996) and Cui and Mak (2002).

Examining the impact of a single governance mechanism ignores two vital issues; first, firms use more than one mechanism to control and monitor management's behaviour; second, the interrelationship between the examined mechanisms and other non-examined mechanisms. Similarly, this argument applies for using limited number of mechanisms.

Consistent with these arguments, Bathala and Rao (1995) argue that firms rely on more than one mechanism to manage the agency conflicts between managers and shareholders; each mechanism helps in controlling different aspects of agency conflicts. Ward, Brown and Rodriguez (2009) assert that by arguing that corporate governance is a set of mechanisms that work together to protect shareholders' interests and wealth; a common problem in the prior studies that researchers have examined different corporate governance mechanisms in isolation from each other and with limited contingencies of firm performance and external monitoring. Zattoni and Van Ees (2012) support this argument by underscoring the need to examine a comprehensive set of complementary governance mechanisms; they conclude that it is difficult to examine the impact of a single mechanism in isolation from other mechanisms. Likewise, Core, Holthausen and Larcker (1999) argue that examining the impact of single governance attribute in isolation ignores the fact that corporate governance attributes can complement or substitute each other, thus, the unmeasured attributes could affect the efficiency of the measured attribute. For instance, firms could have the same degree of board independence; however, the presence of main blockholders could lead to different monitoring outcomes (Desender *et al.*, 2013).

The empirical analysis of Henry (2010) lends the support for this argument. He provides evidence that implementing the individual governance mechanisms in isolation from other mechanisms does not reduce agency costs. Grove *et al.* (2011) find evidence that support the argument that the governance attributes should be examined simultaneously. Besides, some researchers ignore the fact that firm characteristics and the relationship with the external environment have a significant impact on shaping the firm's governance structure. Thus, the absence of a comprehensive measure of corporate governance or neglecting the interdependence between different governance mechanisms and/or not considering the surrounding environment that may affect corporate governance practices is a key problem, and

results in different results. Moreover, Bathala and Rao (1995) add that the uncertain relationship between governance mechanisms and different agency costs proxies and firm performance measures could be explained by the offsetting changes in other mechanisms and the omission of other mechanisms from the employed models. These arguments clearly support the necessity of examining and considering the contingencies and the interrelations among the different governance mechanisms.

Second, prior studies that tried to investigate the impact of corporate governance practices as a comprehensive set of practices used different sets, different proxies and indices to measure the quality level of corporate governance and its impact on mitigating agency problems and improving firm performance; Brown, Beekesc and Verhoeven (2011, p.102) state that "the plethora of corporate governance measures can make it well-nigh impossible to explain conflicting results."

One more reason for these mixed and different results may be due to the problem of endogeneity or that each firm chooses its own practices, which are consistent with its environment and circumstances to achieve its goal of shareholders' wealth maximization. Ward, Brown and Rodriguez (2009) state that firm's governance bundle is a function of firm performance, and what determines whether the mechanism within the bundle act as substitutes or complements is the firm's performance. Renders, Gaeremynck and Sercu (2010) argue that econometric problems and/or each firm chooses the governance practices that maximize the shareholders' wealth based on its characteristics may be the reason(s) behind the mixed results. Similarly, Brown, Beekesc and Verhoeven (2011) mention that prior studies ignored the endogeneity problem and used the estimated parameters from the ordinary least squares (OLS) to consent that the movement towards better corporate governance practices should lead to better performance or/and value, ignoring the unobserved heterogeneity; as there are some unobservable factors that could impact the investigated relations. Himmelberg, Hubbard and Palia (1999) endorse this argument and mention that ignoring the unobserved heterogeneity issue leads to model misspecification.

Thus, this study aims at integrating a comprehensive set of corporate governance mechanisms and considering the endogeneity problem as well as the unobserved heterogeneity in an attempt to investigate the impact of corporate governance

mechanisms on agency costs and provide more accurate associations. The study results shed the light that for future research, researchers should consider that utilising limited number of governance mechanisms or examining these mechanisms in isolation will bring out inconsistent and incomparable results, which could mislead the future researchers and policy makers as well.

Corporate governance mechanisms are introduced to monitor the management behaviour in order to reduce the agency costs. However, there is no direct test that can investigate the role of governance mechanisms in mitigating agency conflicts, thus, in prior literature, researchers assume that an effective mechanism should enhance firm performance leading to higher value (Bathala and Rao, 1995). Consequently, prior studies examine the relationship between governance mechanisms and different performance variables assuming that high performance is an indirect reflection of lower agency conflicts, or in other words, better performance or high value are indirect proxies for lower agency costs. A limited number of studies[1] has been directed and focused on investigating, quantifying, and promoting various proxies to measure agency costs and examine the impact of the different governance mechanisms on the magnitude of agency costs. Even these studies were suffering from either concentrating over one mechanism (e.g., Ang, Cole and Lin (2000); Fleming, Heaney and McCosker (2005); Wellalage and Locke (2011)) or including a limited number of corporate governance mechanisms (e.g., Singh and Davidson III (2003); McKnight and Weir (2009); Ibrahim and Samad (2011)). Moreover, these prior studies do not consider many of the firm characteristics that could shape the firm's governance structure and other econometrics problems as mentioned earlier.

Thus, in this study, the researcher adopts Desender *et al.* (2013)'s view that rather than examining the effectiveness of governance mechanisms by assessing their impact on firm performance measures, a more accurate assessment could be obtained by accessing managements decisions related to potential conflicts between managers and shareholders. Consequently, in this study, the researcher investigates the effectiveness of the governance mechanisms by examining their impact on agency

[1] These studies are reviewed in details in chapter 4.

cost proxies that are related to management efficiency and investment decisions of the free cash flow.

It is widely argued in the governance literature that institutional settings and regulatory framework have a significant impact on the governance structure chosen by the firm. Considering that the UK system is a "comply or explain" system, which means that all listed firms should provide evidence that they are either complying with the governance code or provide explanations for their noncompliance; it should be expected that following this code would lead to lower agency conflicts and hence lower agency costs. Having said that, Belghitar and Clark (2014) mention that UK studies failed to provide solid evidence that corporate governance mechanisms reduce agency costs.

Given that the surrounding environment affects the impact and the shape of the firm's governance structure; the financial crisis and the comparison between the influence of different mechanisms before and after the crisis do help in analysing the roles of these mechanisms in different conditions, identify which mechanisms are efficient and in what conditions, helps in understating how firms react to adapt after such crises and which mechanisms help to recover from the crisis and survive during the recession period followed the crisis; such analysis could be useful for future planning. Ferrero-Ferrero, Fernández-Izquierdo and Muñoz-Torres (2012) and Van Essen, Engelen and Carney (2013) provide evidence that the role of the corporate governance mechanisms is affected by the surrounding economic circumstances; what is more, they find evidence that during the crisis some of the governance mechanisms are useless and others are harmful for the firm performance.

This study examines the above mentioned points in many ways. First, the study examines the role of a comprehensive set of governance mechanism on three different agency costs proxies which have been introduced by the prior literature to identify which of these mechanisms have a significant role in reducing agency costs. Then the researcher compares between the role of these mechanisms on two different economic circumstances; before and after the financial crisis. By reviewing the prior literature, it was found that prior literature investigated the influence of financial crisis on the effectiveness of corporate governance mechanism e.g., Ferrero-Ferrero, Fernández-Izquierdo and Muñoz-Torres (2012); Van Essen, Engelen and Carney

(2013) have the following limitations. They compare the effectiveness of the different governance mechanisms before and during the financial crisis, besides, their dependent variables are firm performance rather than agency costs proxies. Consequently, this study contributes to the governance literature by extending the scope of these studies by including the post crisis analysis and using different proxies of agency costs. The results provide clear evidence that different economic circumstances should lead to different governance structure for mitigating agency costs.

To conclude, the main motives of this study are, first, most of the prior studies were directed towards investigating the impact of corporate governance on financial performance or firm value, these studies failed to provide consistent results that can help in driving a model of the efficient governance structure. Second, limited number of studies has examined the relation between corporate governance and agency costs. Third, this study examines whether the impact of corporate governance mechanisms is contingent on the economic conditions or not, and if yes, what are the mechanisms that were efficient during the steady conditions and which mechanisms are more efficient after abnormal economic conditions. Fourth, this study considers a comprehensive set of governance mechanisms and utilises new measures compared to prior studies as well as firm characteristics. Fifth, the lack of studies that investigate the relationship between corporate governance mechanisms and agency costs in the UK context. Sixth, the lack of recent study in the UK context, prior UK studies utilise short time horizon for old data sets.

1.3 RESEARCH QUESTIONS AND HYPOTHESES

The aim of this study is to empirically investigate the impact of corporate governance mechanisms, and the compliance with the UK corporate governance code on the agency costs of the UK firms. Besides, this study aims at comparing the role of the utilised governance mechanisms before and after the 2008 financial crisis. These aims are reflected on the following research questions:

"To what extent, do corporate governance mechanisms help in reducing the agency costs of the UK firms?"

"To what extent, does the compliance with the UK corporate governance code help in reducing the agency costs of the UK firms?"

"To what extent, does the impact of the corporate governance mechanisms change during the recession period follow the 2008 financial crisis?"

"Does ownership identity affect the impact of ownership on agency costs?"

Table 1 Summary of the research questions, objectives and the methods utilised to answer these questions

Research question	Objective	How answered
To what extent, do corporate governance mechanisms help in reducing the agency costs of the UK firms?"	To examine the overall impact of corporate governance mechanisms on equity agency costs	A comprehensive set of corporate governance mechanisms were regressed against equity agency cost measures
To what extent, does the compliance with the UK corporate governance code help in reducing the agency costs of the UK firms?"	To examine the impact of the compliance with the UK corporate governance code on reducing equity agency costs	Four composite measures to capture the recommended characteristics of board composition as well as board subcommittees were constructed. Hypotheses *4a*,*4b*,*4c* and the board composition was examined in section 6.5.4
To what extent, does the impact of the corporate governance mechanisms change during the recession period follow the 2008 financial crisis?"	To capture the change of the impact of corporate governance mechanisms before and after the global recession followed the financial crisis.	Two subsamples were constructed to capture the pre-crisis period (2005-2007); and during the recession period (2009-2011)
Does ownership identity affect the impact of ownership on agency costs?"	To examine whether the identity of shareholders in terms of being institutional or individual blockholders and being the CEO or executive or nonexecutive director affects equity agency costs.	The researcher split the board ownership ratio was split according to the identity of the director (CEO, executive and non-executive) hypotheses ***6a,6b,6c***; likewise, the block holding ratio based on the identity of the block holder (individual or institution) hypotheses ***7a,7b,7c.***

To answer the above-mentioned research questions, the researcher developed the following hypotheses, these hypotheses consider a wide range of corporate governance mechanisms, ownership structure; moreover, they are grounded in the theoretical arguments and the empirical evidence provided by the prior literature. In the empirical investigation, the researcher controls for a number of firm characteristics that could have a potential impact on agency costs and the firm's governance structure; and considered the econometric problems that prior studies were suffering from. In doing so, baseline model and 3 different sub models were developed to examine the main hypotheses and the sub hypotheses.

H1: There is a negative association between board size and agency costs.

H2: There is a negative association between the percentage of independent board members and agency costs.

H3: There is a positive association between duality and agency costs.

H4: Board subcommittees are negatively associated with agency costs.

> ***H4a:*** *An effective audit committee is positively associated with lower agency costs.*
>
> ***H4b:*** *An effective remuneration committee is positively associated with lower agency costs.*
>
> ***H4c:*** *An effective nomination committee is positively associated with lower agency costs.*

H5: There is a negative association between board ownership percentage and agency costs.

H6: The identity of the owner director has a significant impact on agency costs.

> ***H6a:*** *There is a negative association between CEO ownership percentage and agency costs.*
>
> ***H6b:*** *There is a negative association between executive directors' ownership percentage and agency costs.*
>
> ***H6c:*** *There is a negative association between non-executive[2] directors' ownership percentage and agency costs***.**

[2] Non-executive director as a term in this hypothesis includes both independent and non-independent directors.

H7: There is a negative association between block holding percentage and agency costs.

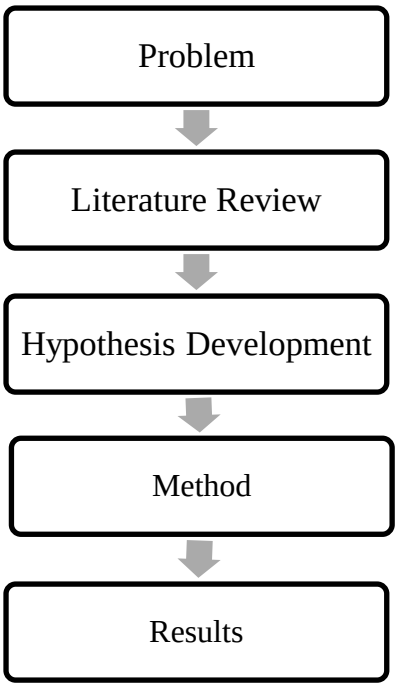
H8: The identity of the blockholders has a significant impact on agency costs.

> ***H8a:*** *There is a negative association between institutional block holding percentage and agency costs.*
>
> ***H8b:*** *There is a negative association between individual block holding percentage and agency costs.*

1.4 RESEARCH METHODOLOGY

Saunders, Lewis and Thornhill (2009) describe the process of conducting research as an onion, with many layers; it starts with an outer layer of research philosophy and ends with techniques and procedures the researcher follows to conduct his research. By applying this view to this study, the researcher can claim that this study has a positive philosophy, with a deductive approach, and it is an archival research study.

Figure 1 The Positivist Approach



Source: Smith (2003a, p.19)

In this study, the researcher follows the traditional positivist approach as described by House (1970). Smith (2003a) illustrates that the traditional positivist approach starts with identifying a research problem, formulating the study's hypotheses grounded in theory and prior literature; besides, researchers should ensure the acceptability of the hypotheses. House (1970) argues that the accuracy in measuring the hypotheses and identifying the variables correctly will enhance the researchers' ability in evaluating the results, stating and comparing results more precisely. After that, the researcher identifies the suitable methods to examine the research hypotheses and report the results and the findings of this research (Smith, 2003a).

This study utilises a large sample (1431 firm–year observations) of the UK nonfinancial firms incorporated in the FTSE ALL-Share index over the period 2005–2011 inclusive. The data set of this study is panel data set, thus it takes the advantages of the cross section and time series nature of the data set, considers the unobserved heterogeneity and requires utilising panel data regression models. Moreover, this study considers the endogeneity problem in the robustness check section.

1.5 STUDY CONTRIBUTIONS AND IMPORTANCE.

This study contributes to the current corporate governance literature and the debate around the usefulness and effectiveness of the corporate governance mechanisms in protecting shareholders' wealth in many aspects. These contributions evolve from the difference between the current study and prior studies.

First, this is the first study that investigates the impact of a comprehensive set of corporate governance mechanisms on the agency costs in the UK context; after considering that comprehensive set, the study results demonstrate that not all governance mechanisms lead to lower agency costs, what's more, it was found that some mechanisms increase firm's agency costs.

Second, this study is the first study that compares between the impact of the corporate governance mechanisms before and after the financial crisis. Prior studies were limited to investigating the role of corporate governance before and during the financial crisis and in different contexts from the UK context. The study results show

that the role of the governance mechanisms changes with the changes of the surrounding environment.

Third, this study utilises a set of new measures of different corporate governance mechanisms that never been used in similar studies. These new measures include composite measures for every board subcommittee, utilising the industry adjusted measures to control for the variations across the different industries, differentiate between blockholders in terms of institutional and individual blockholders instead of generalising that blockholders are effective or not, the evidence provided in this study shows that the identity of the blockholder has a role; and finally the split of the board ownership into three categories which are the CEO, executive and non-executive directors' ownership.

Last but not least, along with these points; this study utilises a large (1431 firm year observations) and recent data set data (2005-2011) of the UK firms compared to prior studies in the UK context, e.g., Florackis (2008) utilised total observations of 897 over the period 1999-2003; McKnight and Weir (2009) used data set covering the period 1996-2000 with a total of 534 observations; Belghitar and Clark (2014)'s study covers the period 2000:2004, and they mainly examine the compensation structure as agency costs mitigating mechanism. The current UK corporate governance code (2014) is the fifth amendment after these studies. Furthermore, this study utilises a longer time horizon of seven years compared to these studies.

1.6 THESIS STRUCTURE

This thesis comprises seven chapters. This chapter provides an introduction to this study. The researcher started this chapter by providing the reader with a brief introduction about this study, followed by the motivations of this study, then the research questions that reflect the motivations and the aims of this research. After that, the researcher summarises the research methodology of the study followed by a view of how this study contributes to the current literature; the researcher ends this chapter by providing a brief summary about the structure of this study.

The remainder of this thesis is organised as follows:

Chapter two provides a detailed discussion of theoretical perspectives that have shaped the corporate governance research and helped in the development of the corporate governance concept, mechanisms and practices; and have been employed in this study throughout the hypotheses development and results discussion.

Chapters three and four provide a summary of the relevant literature review for this study. Chapter three starts with introducing the corporate governance concept followed by the theoretical argument and the empirical evidence from the prior literature that has been used to develop the study hypotheses for each of the corporate governance mechanisms utilised in this study. Besides, this chapter provides the theoretical argument for the agency costs proxies utilised in this study. Chapter four complements this litreture review by providing a critical review for prior empirical studies that investigated the association between the corporate governance mechanism and agency costs.

Chapter five covers the methodological approach of this study. This chapter starts with a brief review of the research philosophy and approaches; then it introduces the operationalization of the dependent, independent variables. Then the theoretical argument, the empirical evidence and the operationalization of the control variables utilised in the empirical models of this study. After that the analytical procedures and the rationale behind using panel data regression models are provided; then, the researcher introduces the empirical models and explores the sample and data collection process.

The first part of chapter six reports the descriptive statistics of the sample and the correlations among the study variables. The second section includes the empirical investigations of the research questions, and the findings and discussion of these findings. Through the third section, the research reports a number of tests to check the robustness of the reported results.

This thesis ends with chapter seven which provides the summary and the conclusions drawn from this study, restating the contributions along with the implications of the study. Chapter seven ends with stating the limitations of this study, and providing potential avenues for future research.

CHAPTER 2
THEORETICAL FRAMEWORK

2.1 INTRODUCTION

In this chapter, the researcher explores a number of theories and different schools of thought that discuss the concept of corporate governance from different views and angles. These theories, in addition to other theories, have contributed to the evolution of the corporate governance literature and shaped this literature. All of these theories are pursuing the efficacy of the firm performance by increasing the effectiveness of the management and protecting shareholders' wealth; however, these different theories provide different and sometimes contradictory views toward the management, their behaviours and the motives behind these behaviours.

It has been argued that the development of the corporate governance concept as well as the different areas incorporated under this concept have been developed from a variety of disciplines, including finance, management, economics, accounting and law (Mallin, 2013). Thus, in this chapter, the researcher shows and discusses the main theories that directly touch and related to this study in terms of developing the study hypotheses and explaining the empirical findings. The structure of this chapter proceeds as follows. The researcher will first explore the most dominant theory that explains the agency relationship which is the agency theory, followed by stewardship theory and ends with the resource dependence theory.

2.2 AGENCY THEORY

Many theories have been applied to investigate the principal-agent relationship, and provide the theoretical foundation of corporate governance mechanisms; however, there is a common agreement among researchers (e.g., Davis, Schoorman and Donaldson (1997); Daily, Dalton and Cannella (2003); Judge (2012); Krause, Semadeni and Cannella (2014), among others) that agency theory has been the most dominant theoretical framework in the corporate governance literature. Daily, Dalton and Cannella (2003) justify this popularity of the agency theory for two main reasons; first, agency theory reduces the complex relationships within firms to a simple, clear and logical conflict of interests between the principals and managers at

which both are utility maximizers; second, the pervasive belief that humans are individualistic, self-serving, and they only seek their own interests. Fleming, Heaney and McCosker (2005) mention that agency theory helps in the evolution of the corporate governance literature by introducing the need, the rationale and the role of different governance mechanisms in disciplining managers' irrational and self-interested behaviours.

In the following sections, the researcher briefly reviews the theoretical foundation of the principal-agent problem, the different forms of agency problems and the agency costs.

2.2.1 The Agency Problem

A major advantage of large corporation that it enables investors to reap the benefits of producing in large scale with reduced costs. However, large corporations require financial resources that go beyond the ability of a single investor. This entails the need of collecting more resources from more than one investor and spread the ownership among a large number of owners. Taking into consideration that not all investors have the managerial abilities, and time, or even the ownership stake that qualifies them to take the right of managing and controlling their firms; they have to delegate such responsibility to a professional management. Park and Jang (2010) argue that the separation of ownership and control could be advantageous for the shareholders as it brings investors with capital and managers with experience to create an investment entity; such situation is expected to be a win-win situation for both parties. However, different argument has been proposed in the finance literature.

Agency problem starts to evolve once owners decide to leave their wealth and business affairs to managers who should take care of shareholders' wealth and interests (Nordberg, 2010). In such case, the control of the firm becomes separate from ownership. This separation results in the principal-agent relationship. Muth and Donaldson (1998) state that a cornerstone in the agency theory argument is that as firms grow in size, the power of control over the firm move from the shareholders to the professional managers who are in charge of running the day to day activities, and they might use their delegated power in achieving their own goals at the expense of

shareholders. Without control, self-serving agents can easily compensate themselves with more than what they actually deserve, extract private benefits, consume more perquisites, and in some cases to steal owner's wealth.

The agency problem can be traced back to Adam Smith, in his book *"The wealth of nations."* He noted that company managers would not be expected to be worried and vigilant with shareholders' money as with their own (Letza, Sun and Kirkbride, 2004; Wearing, 2005). Smith (1776) points out this problem by stating that managers are not vigilance watchers of the owner's wealth; moreover, they might expropriate owner's wealth.

"The directors of such companies, however, being the managers rather of other people's money than of their own, it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company" (Smith, 1776, p. 606).

In 1932, Berle and Means claimed that as a result of separation of ownership and control in modern corporations, managers became unbounded to pursue their own goals rather than the shareholders' goals (Letza, Sun and Kirkbride, 2004). Given that managers gain the full benefit of being opportunistic and pursuing their own goals, while they only bear part of the costs which is equivalent to the proportion of their ownership stake, if they have (Bathala and Rao, 1995); and no cost if they don't hold any ownership stake.

Inspired by the original papers by Spence and Zeckhauser (1971) and Ross (1973), substantial attention has been given to the development of the theory of the agency relationship (Jensen, 1983, p. 334). A theory that articulates the relationship between the owners of the firm and the controllers of the firm. Agency theory is grounded on a number of assumptions about the agent that explain his behaviour (Wright, Mukherji and Kroll, 2001); a basic assumption of the agency theory is that principals and agents, both, are rational actors; they will choose to maximize their own utility (Jensen and Meckling, 1976; Davis, Schoorman and Donaldson, 1997) with the minimum cost and effort. This opportunistic behaviour is the commonly mentioned assumption by agency theorists (Wright, Mukherji and Kroll, 2001)**.** Thus,

it was normal that, the researchers' attentions were directed towards the analyse of aligning the interest of managers with those of principals by using compensation structures, and the potential problems associated with these structures (Jensen and Smith, 1984).

In 1976, Jensen and Meckling proposed the first definition of 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*" (Jensen and Meckling, 1976, p. 308).

Brennan (1995) mentions that Jensen and Meckling (1976) were the first researchers who emphasise the role of contracts in mitigating principal-agent conflicts. According to the agency relationship, and based on the established contract between the shareholders and management, managers (agents) are required to provide some services represented in managing principals' wealth in exchange for a predetermined compensation package. This requires the agents to take some decisions, and work for the best interest of the shareholders putting their own/personal interests aside. Considering that managers control firm's affairs and resources, and they take decisions on behalf of the principles that affect the welfare of both parties (Brennan, 1995); managers could recognise the private benefits they can extract from this control (Clacher, Hillier and McColgan, 2010). Accordingly, a conflict of interest between managers and shareholders is something possible. Once the divergence between the principals and agents' interests starts to appear, a number of problems will surface, which are known as "The Agency problems." The conventional agency problem between the principals and agents arises because of the separation between the decision making process which is carried by the managers and the resulting risk from such decisions which is borne by the shareholders (Clacher, Hillier and McColgan, 2010). However, managers, as well, bear the consequences of their bad decisions in many ways like being dismissed and lose their jobs, besides losing their reputation on the labour market. In early studies, it has been argued that the desired alignment between managers' interests with those of shareholders can be influenced and achieved by using two means, the compensation motives and/or the replacement threat (Brennan, 1995).

Under the agency theory, managers are expected to be opportunistic, seeking only their own goals and interests, using the delegated decision making authority to maximize their own utility, and often failing to act in the best interests of shareholders (Jensen and Meckling, 1976; Fama and Jensen, 1983b; Eisenhardt, 1989; Letza, Sun and Kirkbride, 2004; Ward, Brown and Rodriguez, 2009), this will be translated into a reduction in the firm's profits (Fama and Jensen, 1983b), and affecting the wealth of the principals (Wright, Mukherji and Kroll, 2001; Letza, Sun and Kirkbride, 2004). Such assumptions are plausible if both parties (principals and agents), as mentioned by Jensen and Meckling (1976), are utility maximizers seeking high utility with lower effort.

Hart (1995) argues that in addition to the separation of ownership and control, the lack of monitoring could cause the danger that managers will pursue their own goals at the expense of the shareholders (e.g., managers may overpay themselves and give themselves extravagant perks, carry out unprofitable but power enhancing investments, and entrench themselves). This lack of monitoring activities and the free ride of monitoring duties (results from the lack of incentives by the dispersed shareholders) will lead to the emergence of the problem of how to monitor the managers' activities and ensure that they are working with the best of shareholders' interests. Consistent with this, Ang, Cole and Lin (2000) state that non-monitoring shareholders do not incur any monitoring costs; however, they get the full benefits of the monitoring activities of other shareholders, thus, shareholders become less enthusiastic to perform their monitoring role as their ownership stake decreases. Another problem arises from the agency relationship is the risk sharing problem, which results from the difference of preferences and attitudes towards risk between managers and shareholders (Eisenhardt, 1989).

The research on the agency relationship has created two main streams that aim to address the principal-agent relationship (Jensen, 1983). The positive (or positivism) agency approach and the principal-agent approach; both streams focus on formulating the contracts that frame the principal-agent relationship considering that both parties are self-interest and utility maximizers; besides, each stream seeks the minimization of the agency costs associated with the agency relationship (Jensen, 1983).

For the positive approach, the governance mechanisms are the main concern; as these mechanisms can help in monitoring and curtail the opportunistic behaviour of the management in such situations that there is a conflict of interests between managers and shareholders (Eisenhardt, 1989); whereas, the principal-agent approach, which is mathematical and non-empirical in nature, has focused on risk sharing and the form of the optimal contract between the principal and the agent (Jensen, 1983).

These two approaches complement each other; the positive approach proposes different contacting alternatives, while, the principal-agent approach considers many aspects like outcome uncertainty, information availability, risk aversion and other variables to identify the most efficient contract (Eisenhardt, 1989).

Wright, Mukherji and Kroll (2001) argue that formal contracts that organise the economic exchanges between principals and agents can mitigate the agency costs. Consistent with this, Denis (2001) mentions that a proper contract is one of the tools that can bond managers and align their interests with those of shareholders. Eisenhardt (1989) suggests that an outcome based contract could mitigate the management's opportunistic behaviour. Optimal contracts should clearly describe the courses of action that managers should follow, thus, perfect or complete contact is something difficult to write and infeasible as it is related to future circumstances that can't be predicted; moreover, in case of unexpected events that are not mentioned in the contract, managers have to get back to the principal to get their opinion which is infeasible as well for many reasons, such as sudden circumstances that require prompt action; besides, principals are not well informed about the surrounding circumstance and they lack the required qualifications to manage their wealth and that why they hired professional managers (Shleifer and Vishny, 1997). Thus, as the complete or perfect contracts are something infeasible in real world, firm's governance structure becomes important as it provides a way to deal with the future actions that have not been stated in the contracts (Hart, 1995).

Fama and Jensen (1983b) propose another control mechanism for the management's opportunistic behavior. They argue that assigning the different decision making procedures (managing and monitoring of the decisions) to different agents (the management and the board of directors) with providing the proper incentives that encourage the mutual control between the different agents. In support

of this proposal, Muth and Donaldson (1998) mention that this separation enhances board's independent control; however, it is complicated because enforcing this separation needs independent board.

The agency relationship results in a number of conflicts of interests between shareholders and other parties. Problems result from agency relationship can be classified into **first,** the divergence of interests between the managers and the shareholders *"Principal–Agent problem"*; **second,** the divergence of interests between the major blockholders and the minority of shareholders *"Principal-Principal Problem"*; and **third,** the divergence of interests between the shareholders and the bondholders (Denis, 2001; Kim and Lee, 2003; Ibrahim and Samad, 2011). Managers and shareholders might have their incentives to shift the risk from the shareholders to the debt-holders; they might choose projects with higher risk rather than the agreed risk level at debt issuing negotiations; as they will gain the full profits in case of project success, and the debt holder will incur the loss in case of project failure. Recently, Ertugrul and Hegde (2008) mention the *outside director-shareholder* conflict, which appears as a result of the lack of incentives of the outside directors to act in the best interest of shareholders. This study, however, is limited to the principal-agent problem and thus, the equity agency costs, and partially investigates the impact of directors' ownership on equity agency costs.

The conflict of interests between managers and shareholders cause several agency problems like work shirking, excessive perquisite consumption, entrenchment, overinvestment (Jensen and Meckling, 1976; Jensen, 1986; Ertugrul, 2005; Fleming, Heaney and McCosker, 2005; Ertugrul and Hegde, 2008; Mustapha and Ahmad, 2011), and Risk sharing (Eisenhardt, 1989; Denis, 2001; Ward, Brown and Rodriguez, 2009). A brief discussion of these problems is provided in the following subsections; however, it worth mentioning that this study is limited to agency costs related to work shirking and overinvestment.

2.2.1.1 Work shirking

Work Shirking is considered as one of the most important consequences of the agency problem. Shirking refers to the lack of effort of the agent, which means that the agent doesn't exert the contracted upon effort or the requisite efforts (Eisenhardt,

1989; Romano, Bhagat and Bolton, 2008); as a result of their limited ownership stake (Fleming, Heaney and McCosker, 2005). Jensen and Meckling (1976) state that as the manager's ownership claim falls, their incentive to devote appropriate effort to creative activities falls, and they might avoid such project because it requires much trouble or effort to manage or to learn about technology. In other words as mentioned by Dühnfort, Klein and Lampenius (2008), as the managers' ownership stake decreases, they become more inclined to misuse and consume firm's resources and exert less effort until they reach the equilibrium point at which the marginal utility of his extra consumption and less involvement in firm's affair is equal to the marginal utility of their profit reduction (the difference between their profit before and after selling part of their ownership stake).

According to agency theory, managers have their incentive for shrinking and consuming excessive (Fleming, Heaney and McCosker, 2005). Managers appreciate that they are the only ones who bear the entire costs of their works, whereas the output of their efforts represented in the increase in profits and firm's value is shared with the shareholders (Romano, Bhagat and Bolton, 2008) or most of their efforts outcomes go to the shareholders. Moreover, managers realise that the cost of their shirking is incurred by the shareholders and they gain all the benefits of this shirking (Demsetz and Lehn, 1985). Thus, effort shirking could be the way that managers reach the balance between their exerted efforts and the return they get (Wright, Mukherji and Kroll, 2001).

2.2.1.2 Perquisite Consumption

Perquisite consumption presents a portion of the management utility (Bryan, Nash and Patel, 2006). Jensen and Meckling (1976) show that managers, apart from being owners or not, take decisions that maximize their total utility including pecuniary and non-pecuniary benefits. However, the decrease of managers' ownership stake influences their behaviour toward the excessive consumption. Managers get the full benefit of their perquisite consumptions, but they bear only part of its cost equivalent to their ownership stake (if they have ownership stake), thus, managers with no ownership stake get the full utility of their perquisite consumptions without incurring any cost, and even if they have any ownership stake less than 100%, they will incur costs lower than the benefits they get.

2.2.1.3 Entrenchment

Managerial Entrenchment is the extent to which managers have the ability and incentives to pursue their self-interest and expropriate wealth from shareholders (Florackis and Ozkan, 2009, p. 498) without the fear of shareholders' reactions towards this expropriation. Managerial entrenchment is defined as the actions (by managers) that reduce the effectiveness of control mechanisms designed to regulate the management behaviours (Ward, Brown and Rodriguez, 2009, p. 654), this definition has concentrated on the managerial ability to overcome the control mechanisms set up by the shareholders to regulate their actions and activities.

The agency theory is based on the opportunism assumption. Considering that managers have their own interests that contradict with the shareholders' interests, and they aim to achieve these interests at the expense of the shareholders; but at the same time, shareholders are aware with the consequences of the separation of ownership and control; and thus, they set a number of controlling mechanisms that aim at minimising the opportunistic behaviour of managers. However, managers have their own ways and tools to entrench themselves and nullify the control mechanisms. Ertugrul (2005) states that managers having substantial voting power could be entrenched, and this allows them to pursue their own interests rather than the value maximizing policy. For instance, Florackis, Kostakis and Ozkan (2009) mention that entrenched managers prefer lower than optimal leverage, choose leverage with longer maturities, keep large amounts of cash under their control, pay lower dividends and overinvest.

2.2.1.4 Over Investment

Jensen (1986) argues that firm which generates large free cash flow, but having low growth prospects is more prone to agency problems than other firms. The diversion of interests between managers and shareholders, in addition to the availability of cash flows under the managers' control that exceed the available investment opportunities and the required funds to maintain firm's current asset base, initiates the potential of unwise investment of these cash flows in suboptimal investments (Richardson, 2006). Normally, managers might choose to keep and retain cash under their control, while, shareholders prefer more dividends, this

conflict of interests is aggravated if the firm has free cash flows more than their growth prospects. Managers of these firms have their incentives to make their firms grow beyond the optimal size (overinvestment) and waste the free cash flow on non-profitable projects, such incentives are the increase in the managers' power, the tendency of firms to reward middle managers through promotion rather than year-to-year bonuses (Jensen, 1986), job security are more related to the firm size rather than the performance (Weir, Laing and McKnight, 2002); and compensation is much related to firm size as well; Clacher, Hillier and McColgan (2010) mention that many compensation studies provide evidence that firm size is primal determinant for executive remuneration. Stulz (1990) argues that managers with no ownership stake gain their utility from managing larger firms, thus, they have the incentive to increase firm size. Adding to this, McConnell and Servaes (1995) mention that coupled with having their own incentive (getting rewarded for expanding and increasing firm size), managers have the opportunity represented in cash flows under their control.

2.2.1.5 Risk Sharing

Risk sharing is another form of divergence of interest between managers and the owners, as they both have different perceptions and preferences toward risk, and every one of them has his own way to mitigate risk. Fama (1980) argues that managers invest their human capital in the firms they work for; the return on this investment is represented in the compensation amounts they get from the firm; their compensation package is determined based on firm's success or failure under their management. Thus, managers are expected to be risk averse as they can't diverse their employment, and they don't have the option to diversify their risks (livelihood & wealth) as a large portion of their wealth is tied in their company's performance. Managers receive direct cash flows from the firm in the form of salary, bonus and other incentives; moreover, their future employment prospects and livelihood are dependent on the survival of the firm; this divergence of risk preferences between managers and shareholders creates the potential conflicts of interest in regard to the investment policy (Denis, 2001; Ward, Brown and Rodriguez, 2009). Ward, Brown and Rodriguez (2009) also state that managers could be risk averse as a result of the use of excessive ownership, as the managers' ownership increase, a large portion of their wealth become tied up in the firm. Thus, managers could be risk averse in decisions regarding the firm, in order to lower their personal wealth

risk (Wright, Mukherji and Kroll, 2001); and this could lead to sub-optimal utilisation of the resources under the control of risk averse managers or foregoing profitable investment opportunities because of these opportunities' risk levels do not match with managers' preferences (Belghitar and Clark, 2014). Such argument could imply that managers are not opportunistic; they are just trying to mitigate their own risks.

Contrariwise, shareholders could be risk neutral or risk seeker as they can diverse their investment portfolio. They can diversify their portfolios to eliminate the unsystematic risk (risks of the underperformance at a particular firm) (Wright, Mukherji and Kroll, 2001; Farinha, 2003a; Ward, Brown and Rodriguez, 2009), so their main concern is the market risk, or on other words the risk associated with market-wide fluctuations of stock returns so in the case of the project failure, this failure will have a relatively small negative impact on their total wealth (Farinha, 2003a).

2.2.2 The Agency Costs

As mentioned early in this chapter, the agency problem results from the divergence of interests between managers and shareholders. This misalignment of interests results in agency costs. Jensen and Meckling (1976, p.308) define the agency costs as *"The sum of the monitoring expenditures by principals, the bonding expenditures by the agent, and the residual loss."*

Monitoring costs were described by Jensen and Meckling (1976) as the costs related to the creation of proper incentive plans for the agents to ensure the alignment of their interests with those of shareholders. In addition to these costs incorporate the expenses associated with the process of observing, measuring and controlling agents' behaviours (Clacher, Hillier and McColgan, 2010). Bonding expenditures are the second component of agency costs. Jensen and Meckling (1976) mention that bonding expenditures represent the incurred costs by the agents to reassure the principals that all decisions are directed towards the maximizing shareholders' wealth, and that they are working for the principals' best interest. The efforts of providing accurate and timely information to shareholders is a clear example of bonding costs (Clacher, Hillier and McColgan, 2010). Residual loss is the third

component of agency costs as mentioned by Jensen and Meckling (1976). Monitoring costs and bonding costs are not sufficient to completely align the interests of managers with those of shareholders (Clacher, Hillier and McColgan, 2010). Thus, there is a possibility of a divergence between the outcome of agent's decisions and the value maximizing decisions, such divergence causes a reduction of shareholder wealth (Jensen and Meckling, 1976).

In an agency relationship, both principals and agents are expected to incur agency costs; principals bear the monitoring cost, and the agent bears the bonding costs as well (Jensen and Meckling, 1976). Agency costs include all costs related to the process of structuring, monitoring, and bonding a set of contracts among agents with conflicting interests, in addition to the residual loss incurred due to a) the cost of full implementation of contracts exceeds the benefits (Fama and Jensen, 1983a; Jensen, 1983) or b) the returns and firm value become lower than what they should be if the principals are controlling the firm and managing their wealth (Jensen and Meckling, 1976; Donaldson and Davis, 1991). Hence, agency costs are incurred when shareholders introduce mechanisms to monitor and align managers' interests with their own interests (Weir, Laing and McKnight, 2002), and to ensure that managers are working with the shareholders' best interests; and it also includes the bonding costs incurred by the agent to reassure principals that he is working for principal's best interest. The magnitude of agency costs depends on the owners' and other monitoring parties abilities in monitoring and controlling the managers' behaviours (Ang, Cole and Lin, 2000). Wright, Mukherji and Kroll (2001) argue that agency cost can't be totally eliminated unless the principal and the agents become the same person. This clearly shows that as long as there is an agency relationship, there are agency costs, the monitoring mechanisms aim, only, to reduce these costs as the elimination of these costs is difficult if not impossible.

Principals bear all of these costs either directly as the monitoring costs and the residual loss, or indirectly in the form compensation for the managers who are working with the best interest and maximize shareholders' wealth instead of decreasing it (Peebles, 2007); nonetheless, Fama and Jensen (1983b) argue that agents bear the monitoring costs as their compensation plans are adjusted in respond

to the monitoring costs incurred by the principals (Clacher, Hillier and McColgan, 2010).

By reviewing the literature of agency theory, agency costs can be classified according to their source to: equity agency costs, and debt agency costs. The equity agency costs result from the problems associated with the conflict of interests between the managers and shareholders (e.g., work shirking, excessive perquisite consumption, and other problems mentioned in the previous section); however, the debt agency costs result from the problems associated with the conflict of interests between the bondholders and shareholders which are the underinvestment and assets substitution (Bryan, Nash and Patel, 2006; Manso, 2008). Jensen and Meckling (1976) state that the agency costs associated with debt consist of: the effect of debt on the firm investment decisions and its consequences on firm value, monitoring and bonding expenditures by the bondholders and the owner-manager, and the bankruptcy and reorganization costs. It is worth mentioning that this study is limited to the equity agency costs that results from the conflict of interests between managers and shareholders.

To conclude, agency theory is the dominant theoretical perspective in the corporate governance literature. However, there is a need to use other theoretical perspectives that complement the agency view (Eisenhardt, 1989); consistent with this recommendation, many researchers use different theoretical perspectives as complements rather than substitutes for agency theory; using a multi-theoretical approach will enrich the corporate governance research, propose a number of mechanisms and structures that can enhance both managerial and financial performance (Daily, Dalton and Cannella, 2003). Lasfer (2006) supports this idea; he gives an example for deploying different frameworks on the board of directors; from an agency theory perspective, the board should be small, independent with a majority of independent non-executive directors and clear division of responsibilities between the CEO and chairman; on the other hand, by deploying organizational and managerial framework, board should perform their advisory roles to achieve superior performance and the CEO should be given the needed authority that matches with his responsibilities.

In the previous section, the researcher reviewed the agency relationship, the different agency problems and the costs associated with the agency relationship, in the following two sections provide a brief discussion about other theoretical approaches have been used in corporate governance literature, and been utilised throughout this study in terms of developing the study hypotheses and discussing the results.

2.3 STEWARDSHIP THEORY

Wright, Mukherji and Kroll (2001) argue that two main paradigms could be employed in order to understand the agents' behaviour in reality; which are the economic and the managerial perspectives. The economic perspective underscores the rationality and utility maximization of both agency relation parties; while the managerial perspective is interested in understanding the manager's behaviour and the motives behind these behaviours (Wright, Mukherji and Kroll, 2001). Both perspectives consider the rationality of the manager and his intention to maximize his utility, but applying different perspectives.

The stewardship theory was first introduced by Donaldson and Davis during the meeting of the Academy of Management 1989[3] (Donaldson, 1990), they propose it as a counterweight to the agency theory as it deals with some of the reductionist assumptions of the agency theory (Pastoriza and Ariño, 2008). Many researchers and practitioners as well view the agency perspective as being completely biased against managers, assuming that money is the only incentive for managers (Nordberg, 2010) and they call for applying a more positive view towards managers and what motivates them. For instance, Donaldson (2005) and Ghoshal (2005) argue that agency theory, as economic based theory, proposes managers from a self-interested view, which is a negative view, thus they call for more positive theories that view managers as positive contributors to the firm. Stewardship theory provides this view, as it considers managers as good stewards rather than opportunistic agents (Donaldson, 1990).

[3] Their presented paper during this meeting has been published in 1991.

Recalling from the agency theory, managers are agents who have their own interests that might deviate from the interests of shareholders, managers with deviated interests will seek their personal goals at the expense of shareholders, and hence, there is a need for tools that could align their interests and control management's behaviour as well.

Stewardship theory has psychological and sociological roots and provides an opposite view compared to the economic model of man that underpins the agency theory. Stewardship is grounded in managers' benign intentions and incentives (Donaldson, 2005). It provides a behavioural perspective of how managers' interests can be aligned with shareholders' interests and the reasons behind this alignment. The central thesis of this theory is that managers are not opportunistic as they are described by the agency perspective. Managers are inspired to be good stewards and responsibly utilise firm's assets for the best interest of shareholders (Donaldson and Davis, 1991). Managers and shareholders share the same goal which is to efficiently utilise the firm resources to achieve the highest possible performance which should be reflected positively in shareholders' wealth. Consequently, stewardship theory assumes that there is no conflict of interests between managers and shareholders (Muth and Donaldson, 1998). Moreover, stewardship theory views governance structures as empowering mechanisms rather than controlling mechanisms (Davis, Schoorman and Donaldson, 1997).

Stewardship theory assumes that managers are not self-interested agents motivated by financial motives only; there are other motives (intrinsic motives) that influence, direct and control managers' behaviours. Intrinsic motives like responsibility, need for achievement, satisfaction of successful performance, recognition, following the business ethics and getting the respect of others (Donaldson, 1990; Muth and Donaldson, 1998; Van den Berghe and Levrau, 2004) influence managers' behaviours. Considering these motives instead of the self-interested goals, make the conflict of interest results from the separation of ownership and control is invalid or at least not applicable for all managers (Muth and Donaldson, 1998). Managers may exert more than the required effort and enjoy performing responsibly for the sake of personal need of achievement and self-actualization; this kind of agents over evaluate the utility of their achievement than

the exerted efforts, and it is noteworthy that this kind of agents may not consume prerequisite in their employment (Wright, Mukherji and Kroll, 2001).

Such assumptions, clearly contradict with the self-serving motives and behaviour proposed by the agency scholars, this contradiction in assumptions results from the roots of each theory; the economic roots of the agency theory and the psychological and sociological roots of stewardship theory. Davis, Schoorman and Donaldson (1997) claim that stewardship theory explains the behavioural causes that lead to the alignment of interests between managers and owners. They argue that there are limitations – physiological limitations- to the managerial opportunism assumption of the agency theory, so this assumption of the divergence of interests is not applicable for all managers. Besides, the variation of the executive managers' performance can be referred to whether the organisational structure facilitates and allows executive managers to take the proper and effective actions or not (Donaldson and Davis, 1991; Davis, Schoorman and Donaldson, 1997). Daily, Dalton and Cannella (2003) support this argument, they consider stewardship theory as a complement and contrast at the same time to agency theory; they indicate that, in many situations, there is a convergence of interests between managers and shareholders' interests, for instance, prospered financial performance matches with shareholders' interests and enhances the managers' high reputations in the labour market as professional managers.

Thus, it can be concluded that stewardship theory is based on rationality but from an entirely different perspective; managers, as stewards for the principals, find their utility in achieving the performance goals set for them, and by improving this performance they are serving most of the stakeholders. Consistent with this, Davis, Schoorman and Donaldson (1997) state that stewards perceive more utility from cooperative behaviour rather than self-dealing behaviour, so they choose the alternative that maximizes their utility, which can be considered rationality but from a different perspective.

Agency theory assumes that shareholders lost their control over their firms by hiring a professional management (Muth and Donaldson, 1998). However, stewardship theory argues that the transfer of control from the shareholders to professional managers benefits rather than harming shareholders' wealth and required for the development of large and complex firms. Managers who are

identified with the firm and its values, involved in its daily activities and more attached to its success are more likely to act as stewards rather than agents (Muth and Donaldson, 1998; Nordberg, 2010).

Nordberg (2010) mentions that the stewardship theory does not ignore the possibility that managers could be opportunistic and seek their own interests rather than shareholders' interests. Thus, Davis, Schoorman and Donaldson (1997) recommend that both perspectives (the economic agency and the psychological stewardship) should be utilised according to each case and firm circumstances, as it is a principal-manager choice. The perceptions and attitudes of both parties shape the principal-agent relationship and direct it to be either agency or stewardship relationship. Davis, Schoorman and Donaldson (1997) argue that managers' choice is contingent to their psychological motivation and the way they perceive the situation, likewise the principal. However, Nordberg (2010) mentions that poor results could happen if the shareholders wrongly identify and treat stewards as agents and establish strict control mechanisms, or the shareholders assume that their managers are stewards while they are unfettered agents seeking their own goals; thus, there is a need for governance mechanism that differentiates between stewards and agents.

To summarize, according to stewardship theory, managers are expected to be stewards rather than opportunistic agents, they have that same interests and goals as the shareholders. Thus, the call for monitoring and controlling managers' behaviour is not totally correct; firms should recognise the suitable monitoring scheme based on whether the manager is an agent or a steward. The application of this theory could have a number of implications for the design of the corporate governance mechanisms and the corporate governance research as well. This stewardship view calls for employing a different view towards managers and appreciate them as experts and consider their specific firm knowledge about the firm, generally apply a positive view towards managers. Also, this theory calls for more executive presentation on the board of directors; the combination of the CEO and chairman post is not detrimental as proposed by the agency theory, and finally, the increase on the managerial ownership will lead to more convergence of interests rather than managerial entrenchment.

2.4 RESOURCE DEPENDENCE THEORY

The resource dependence theory was first introduced by Pfeffer (1972), and later developments were done by Aldrich and Pfeffer (1976) and Pfeffer and Salancik (1978). They provide a view of the organisation from an external perspective and show how firms interact with their external environment. Bearing in mind that external environment has a significant impact on the firm's businesses and its current and future affairs; it is reasonable to expect that firm's management will start to take actions that respond to and mitigate the impact of the environmental conditions to the least in an endeavour to assure firm's success and enhance firm's performance (Pfeffer, 1972).

Aldrich and Pfeffer (1976) mention that the resource dependence model is grounded in an indisputable notion that, for firm's survival and competitiveness, there is a need for resources and professional services that, definitely, can't be entirely generated internally, and hence, there is a need for creating connections and transacting with external environment to get the required resources and services. Such argument is consistent with Pfeffer (1972) claim that organisational interdependence reduces firm's autonomy and increases uncertainty.

Pfeffer and Salancik (1978) argue that organization in broad term of activities, inputs and outputs is part of the environment at which it works in, thus the firm affects and get affected by this environment; the firm controls resources that might be needed by other firms; and also, other firms might control their needed resources. Later, the resource dependence theory becomes an influential theory that was utilised, in organisation research and strategic management, to explain how firms adapt and deal with environmental uncertainty and interdependence (Hillman, Withers and Collins, 2009). Uncertainty constrains the firm's ability in controlling their resources, directs firm's strategies and even the firm's daily activities (Hillman, Cannella and Paetzold, 2000). Building connections with organizations and directors outside the firm provide more sources of information and environmental awareness and allow firms to reduce uncertainty regarding the availability of resources (Muth and Donaldson, 1998). One more advantage of linking the firm with its external environment is reducing firm's transaction costs; recruiting outside directors who are aware of the best ways to deal with different parties of external environment could

reduce the effort exerted by the management, and reduce the transaction costs (Hillman, Cannella and Paetzold, 2000).

Pfeffer and Salancik (1978) argue that the most appropriate way to manage the environmental interdependence is to control the sources of this dependence, thus, they suggest a number of mechanisms that the firm can utilise to minimise firm's environmental dependency; board of directors and mergers are examples of these mechanisms. Pfeffer (1972); Johnson, Daily and Ellstrand (1996) and Hillman, Shropshire and Cannella (2007) assert this by mentioning that board of directors is a crucial bonding mechanism between the firm and its external environment. In spite of the fact that agency theory is the cornerstone that has been employed in the board of directors literature, the resource dependence theory has a great influence in this area; moreover, reviewing the board of directors literature reveals that resource dependence theory is supported more than other perspectives including the agency theory itself; furthermore, resource dependence theory is more helpful and successful in understanding board's dynamics (Hillman, Withers and Collins, 2009). In a reflection of the argument that the environment has a great influence over the firm, Hillman, Cannella and Paetzold (2000) and Hillman, Shropshire and Cannella (2007), among others, mention that board composition and membership could change in response to environmental changes; such changes might propose new resources to be acquires, thus new linkages should be established; and hence, new directors are required. Similar argument was early proposed by Pfeffer (1972); he argues that board is shaped in response to the external links in which the firm needs to construct; firms with more capital needs are more likely to recruit more bank representatives to their boards.

Under this theory, one of the major responsibilities of the board members is to act as boundary spanners. They have their personal connections, relations and communications with external parties that should be utilised to secure the required resources of the firm. These resources are essential for the firm's daily activities, help it to survive, enhance firm's performance and in some cases like rare resources, it might be a competitive advantage for the firm. Hillman, Shropshire and Cannella (2007) mention that the resource dependence theory focuses on the matching between the directors' skills, experiences, capabilities and connections with external environment and the firm's necessities. In other words, the value that the director

will add to the firm and to what extend this value matches with the firm's needs. In support of this argument, Dalton *et al.* (1999) mention that evidence from the prior literature (e.g., Pfeffer and Salancik (1978), among others,) reveals that, consistent with the resource dependence theory, large boards reflect firm's ability to build more connections with the external environment; helping in better management of the environmental interdependence and uncertainty, which enhances firm performance. Daily, Dalton and Cannella (2003) give some instances of boundary spanning roles, which could be legal advices from the outside director who is solicitor or partner in a law firm, financial advices about the available sources of fund or getting the support of a board member who works at a financial institution to get the required finances.

Board interlock is a clear application of the resource dependence theory (Johnson, Daily and Ellstrand, 1996). The resource dependence theory, also, argue that interlocking directorates is one of the practices that can be employed to manage environmental interdependency (Zajac, 1988). Interlocking enables firms, through the shared board members, to create bonds between firms and create a common interest network (Davis, 1996). Pfeffer and Salancik (1978) mention that interlocking is a flexible and easy way to employ and enhance firm's ability to manage the environmental uncertainty and interdependence; by appointing external members to the board, the firm establishes connections with the external environment; and hence, firms gain many advantages like access to resources, information exchange and gaining legitimacy.

In addition to these benefits, the advice and counsel service the external board members provide, as it is a kind of information that firms can gain from those members; empirical research provides evidence that supports these proposed benefits (Hillman, Withers and Collins, 2009). Another advantageous information the firm can gain from external directors is their nominations of new directors the firm can recruit (Davis, 1996). Davis and Cobb (2010) state that appointing executives of suppliers, customers, former parliament members, politicians, and cabinets, and venture capitalist to sit on the board could help in gaining their supports, contacts, open new channels in front of the firm and more financing sources. Davis (1996) states that the decisions which are taken by one board, within the same network, become the raw information for the decisions taken by other boards. The interlocked

directors could be the CEOs of other firms rather than other directors. Johnson, Daily and Ellstrand (1996); Dalton *et al.* (1999) and Adams, Hermalin and Weisbach (2010), among others, argue that CEOs of other firms are expected to have a relevant and practical experience of how to deal with the complex business environment; thus appointing CEOs as outside directors should provide the board with valuable advice and counsel.

To sum up, the resource dependence theory views the firm as an open system that interacts with the surrounding environment. By considering the scarcity of both tangible and intangible resources coupled with the strong competition between firms to secure their needed resources, the firm has, continuously, to open connections and bridges with the external environment; which is one of the board of director vital roles. Grounded in this perspective, many arguments in the governance literature mention that firms could move to large boards with more interlocked directorships to build the required connections that can help in securing the needed resources.

2.5 SUMMARY

This chapter shows that there are many theoretical perspectives that can be utilised to understand managers' behaviours; these different perspectives have a different impact on practitioners, policy makers and researchers. Zattoni and Van Ees (2012) propose a number of suggestions for developing the corporate governance research, one of them was to employ other theoretical perspectives as complements or alternatives to the agency theory. Adoption of one perspective could lead to incomplete understanding of the role of corporate governance; and limits the researcher's ability in interpreting the study results. Thus, researchers should employ different perspectives during the hypotheses development stage, and the results interpretation stage. Likewise, policy makers should understand that firm characteristics and the environment surrounding the firm could lead to adapting certain governance structure to cope with the surrounding environment; in other words, one structure does not fit different firms with different circumstances.

This chapter, also, highlights the contradiction and collisions among the different theories, and demonstrates how the same practice could be correct from a certain perspective, and totally wrong from the other perspective. For instance, board size,

more executive directors sitting on the board, duality of CEO roles, all of these examples could be beneficial or detrimental according to the theory employed. Another example, on the one hand, researchers could see interlocking directorate as a threat as it reduces board independence from an agency perspective, but on the other hand, the resource dependence theory considers interlocking as a prerequisite to allocate and securing the needed resources for the firm (Dalton *et al.*, 2007).

CHAPTER 3
LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

3.1 INTRODUCTION

In the previous chapter, the researcher reviewed the main theories that have shaped the corporate governance research. Bearing in mind that this study aims at investigating the impact of corporate governance mechanisms on reducing the agency costs; in addition to comparing the impact of those mechanisms during two different economic contexts (pre and post the 2008 financial crisis). The researcher, in this chapter, aims at providing a review of the corporate governance literature which is related to the study and has been utilised, along with the theoretical framework provided in the previous chapter, in developing the study hypotheses. This chapter includes three main sections; in the next section, the researcher reviews the concept of corporate governance; followed by a review of the different mechanisms introduced in the literature to mitigate the agency conflicts and have been utilised in the empirical analysis. Finally, the last section of this chapter provides a review of the agency costs proxies utilised in the prior literature.

3.2 CORPORATE GOVERNANCE DEFINITIONS

Corporate governance as a field of study evolves from the potential problems result from the conflict of interests that are associated with the separation of ownership and control (Hart, 1995; Denis, 2001; Gillan, 2006); with the presence of fundamental conditions that inspire principal-agent relationship basically goal conflicts, information asymmetry (Ward, Brown and Rodriguez, 2009), and the difficulty of managing these conflicts through a perfect or complete contract; Fama and Jensen (1983b) mention that such contracts have costs related to structuring and enforcing them. Moreover, it is impossible to completely contract all the principals' actions (Brennan, 1995; Clacher, Hillier and McColgan, 2010).

Thus, there is a need for some mechanisms that can control the principal-agent relationship and protect principals from agents' opportunistic behaviour and discipline managers; and ensure the efficacy of these mechanisms. Consistent with this, Daily, Dalton and Cannella (2003), among others, claim that a main concern of

one corporate governance research stream was examining the role and efficacy of the different corporate governance mechanisms on dealing with these conflicts and protecting shareholders' interests from the self–interested managers. This research stream, as mentioned in the previous chapter, is known as the positive approach.

The term corporate governance has many definitions in the literature, but there is no generally agreed definition for it. However, there are some common points between these definitions. Letza, Sun and Kirkbride (2004) and Brickley and Zimmerman (2010), among others, state that the literature shows two common objectives for corporate governance, the first objective is concerned mainly with how to satisfy the narrow shareholders' interests through maximizing their wealth, the second and the more broader one is concerned with how to satisfy the social expectations and to take a social perspective. Brickley and Zimmerman (2010), also, mention that every researcher should be cautious while he defines this term as it affects the research focus, direction, structure, and results interpretation.

Many definitions were proposed for the term corporate governance, Cadbury Report (1992, p.15) defines corporate governance as "*The system by which companies are directed and controlled."* A similar but more detailed definition was provided by The OECD; as they define corporate governance as *"Procedures and processes according to which an organisation is directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among the different participants in the organisation – such as the board, managers, shareholders and other stakeholders – and lays down the rules and procedures for decision-making"* (OECD, 2005). Compared to Cadbury's definition, this definition provides more details about how firms should be directed and controlled and the role of the governance structure in organising the relations between the different parties dealing with the firm.

Chris, Theodoros and Vasilios (2014) replicate the OECD definition by highlighting the importance of efficiency in corporate governance; they define it as *"a network of principles and practices based on which a company is organised and governed so that the long term needs of shareholders and stakeholders will be preserved in the best possible manner"* (Chris, Theodoros and Vasilios, 2014, p.370). Daily, Dalton and Cannella (2003) provide a different angle of corporate

governance and its role in increasing the utility from firm's resources. They define corporate governance as *"The determination of the broad uses to which organisational recourses will be deployed and the resolution of conflicts among the myriad participants in organisation."* (Daily, Dalton and Cannella, 2003, p.371). Thus, corporate governance, as a broad concept is concerned with both the efficiency and the effectiveness of the firms, as defined by Van den Berghe and Levrau (2004, p.64) "*corporate governance is about doing things right and doing the right things; twofold condition [that] often neglected."*

A comprehensive definition is given by Bloomfield (2013); he provides a definition that reflects the Cadbury definition, other definitions in the literature and enfolds brief explanation of the alternative theories that contributed to the evolution of the corporate governance research and practices. He defines corporate governance as

"The governing structure and processes in an organisation [nexus of contracts] that exit to oversee the means by which limited resources are efficiently directed to competing purposes [transaction cost theory] for the use of the organisation and its stakeholders, including the maintenance of the organisation and its long run sustainability [stewardship theory], set against a background of managerial and shareholder behaviour implicitly measured against a framework of ethics and backed by regulation and laws [agency theory]" (Bloomfield, 2013, p.25).

Based on the researcher's motives and objectives, the researcher agrees with the definition provided by Shleifer and Vishny (1997) which is:

"*Corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment*" (Shleifer and Vishny, 1997, p.737).

From the previous survey of the different corporate governance definitions, the researcher can conclude that there is no agreed definition for the term corporate governance. Yet, there are some common points between all definitions; for instance, corporate governance is set of mechanisms and regulations, which are introduced to control the relationship between managers and shareholders in addition to other stakeholders, protect the shareholders from managers' detrimental acts; ensure the

maximum utilisation of the firm resources on the way that serves stakeholders' goals and to clarify the rights and distribute the responsibilities among the different parties dealing with the firm. In the following section, the researcher demonstrates corporate governance mechanisms that have been introduced in the prior literature and utilised in this study.

3.3 CORPORATE GOVERNANCE MECHANISMS

The literature provides many corporate governance mechanisms that can be used to solve the agency problem and mitigate its costs. Agency theory introduced many governance mechanisms that aim to monitor managers' behaviour and ensure that they are working for the best interest of shareholders. Another possible way to align the interest of management with those of shareholders is the use of incentives that are linked with the firm performance and shareholders' welfare (Jensen and Meckling, 1976; Eisenhardt, 1989; Donaldson and Davis, 1991; Ward, Brown and Rodriguez, 2009). The early work of Jensen and Meckling (1976) mentions a number of tools that can be used to align the managers' interests with those of shareholders such as proper compensation plans, auditing, establishment of control systems and so forth. The introduced mechanisms by Jensen and Meckling (1976) reflect the two perspectives for disciplining managers' behaviour which are the use of incentives and the controlling perspectives.

Generally, corporate governance mechanisms can be classified into internal and external governance mechanism. Jensen (1993) states that the role of the internal mechanisms is to give an early warrning about the firm performance, in order to get the firm back to its correct track before the problem turn to be a crisis. However, the long list of accounting scandals and crises put question marks against the effeciency of the governance mechanisms. Agrawal and Knoeber (1996) classify corporate governance mechanism into internal and external mechanisms according to the parties at which each mechanism relies on to monitor (the source of monitoring) and motivate the managers. Denis and McConnell (2003) classify the internal governance mechanisms into: board of directors and ownership structure; and the external governance mechanisms into: the legal system and the market for corporate control. Jensen (1993), Gillan (2006), among others, provide other classifications for corporate governance mechanisms. All of these mechanisms aim at protecting the

shareholders' wealth and the affairs of other parties who deal with the firm from the opportunistic behaviours of the management. However, it may be worth mentioning that as mentioned in the Cadbury (1992) report that there is no governance system can totally prevent fraud and incompetence.

In this study, the researcher is concerned with the internal corporate governance mechanisms, mainly the board of director's characteristics and the ownership structure. The following sections are organised as follows. First, the researcher introduces board responsibilities, then board characteristics in terms of size, independence (composition and separation of CEO and chairman duties), board committees; then ownership structure in terms of board ownership and block holding ownership.

3.3.1 Board of directors

The lion share of researchers' and practitioners' interest has been devoted to the board of directors. Prior literature of board of directors includes a massive number of studies that examine the different characteristics of board of directors and the role of these characteristics in enhancing board effectiveness. Ibrahim and Samad (2011) mention that such characteristics like board size, board composition and duality are governance mechanisms that aim at monitoring and reducing agency costs result from the conflict of interests of shareholders and managers. Similarly, Van den Berghe and Levrau (2004) mention that such interest can be observed through the growing interest of governance rating companies in including a score of board effectiveness in their rating indices. This growing interest reflects the demand of the market parties for these scores to rate and evaluate board performance.

According to agency theory, board of directors is a vital control mechanism. The board can be described as the only elected mechanism (Bebchuk and Weisbach, 2010). Board members are elected and authorised by the shareholders to monitor and control over the management (Bathala and Rao, 1995); thus, they should thoroughly represent the shareholder's interests. Shareholders delegate the role of the internal control to the board of directors; however, they keep for themselves such vital decisions like the new board appointment, the external auditor and other critical decisions (Fama and Jensen, 1983b).

Board of directors represents the head of the internal control mechanisms that can curtail the undesired self-interested behaviours and actions of managers (Fama and Jensen, 1983b; Donaldson and Davis, 1991; Jensen, 1993). Among its responsibilities, board is responsible for recruiting, monitoring, assessing, compensating the CEO and fire him in such cases, and deciding for the CEO successor (Raheja, 2005) in addition to providing advice for the top management (Fama and Jensen, 1983b; Jensen, 1993; Shivdasani and Yermack, 1999) and to ratify and monitor important decisions (Fama and Jensen, 1983b) (e.g., firm's future projects (Raheja, 2005)) that are supposed to maximize shareholders' wealth (Denis and McConnell, 2003).

Hence, board of directors is the first control mechanism that can be employed to monitor and control managers, and to be sure that the management is considering shareholders' interests in their decisions. However, It may be worth mentioning that board's role is to direct the firm, not to manage it (Van den Berghe and Levrau, 2004). Besides, the board of directors has other roles in addition to the monitoring role. Board members are expected to provide the board with valuable services that should enhance firm's performance (Zahra and Pearce, 1989). In line with that, Van Essen, Engelen and Carney (2013) mention that board of directors has different roles to perform; however, in the literature, there is a consensus among the researchers that monitoring the executive managers is the primary task and role for the board.

The different roles of the board can be simply classified into: *the traditional role* which is to represent shareholders' interests, evaluating the CEO performance and approving changes in the firm's bylaw; and *the strategic role* that related to setting the firm's mission and goals, and evaluating and approving important decisions like acquisitions and divestments (Pearce and Zahra, 1991). Hillman, Cannella and Paetzold (2000) mention that the board of directors has two main roles; *the agency role* which is related to the process of ratifying management's decisions and strategies and monitoring the implementation of these strategies. The second role, grounded in the *resource dependence* theory, is the resource provision role which incorporates all activities that link the firm with the external environment to reduce environment uncertainty and bring resources to the firm in terms of information,

skills, tangible resources among other critical resources (Hillman, Withers and Collins, 2009).

Johnson, Daily and Ellstrand (1996), Lasfer (2006) categorize board roles to the *control (agency) role* in which the board is responsible for monitoring the executive management, *strategic and policy making role* which can be seen as the advisory role; such role requires the board members to have the experience, insight, knowledge and information to guide and direct the management towards the right strategic direction and decisions that can avoid conflict of interests between managers and shareholders, and finally, *resources acquiring role*, part of board members' responsibilities is to recognize and attain the needed resources for the firm.

Similarly, Stanwick and Stanwick (2002) classify board roles to three integrated roles. The first role is *agency responsibility*, as stewards for the shareholders; a board member should represent and protect shareholders' interests. The second role is a *fiduciary responsibility*. This role overlaps with the agency responsibility; Stanwick and Stanwick (2002) argue that the board has a legal responsibility towards the shareholders to ensure that shareholders' interests are fully represented and to take all required actions (e.g. selecting, evaluating the CEO, monitoring firm's management, evaluating its performance and firing the CEO in some cases) to perform this role. The third role is to help the firm to acquire the needed resources using their relationships with the external parties, and this could help in reducing the uncertainty related to this issue.

To conclude, as mentioned by Zahra and Pearce (1989), the roles of the board of directors can be classified into control, strategy and service roles. Each researcher prioritises these roles according to the theoretical perspective they adopt (e.g., from the agency theory perspective board roles are ordered control, service and strategy; whereas, resource dependence views the order as service, strategy and control). Regardless of the employed theoretical perspective, these roles are integrated and constitute board's duty; effective boards are expected to consider and exercise all of these roles.

Executing these different roles is a challenge to the board members and requires them to maintain the proper balance between performing the monitoring and the other supportive roles. This is coupled with the importance of building good relationships with executives and gain their trust but keeping some distance at the same time (Daily, Dalton and Cannella, 2003); and understand that managers resent the monitoring role performed by the board as its objective is to observe them and suppress their self–interested decisions (Lasfer, 2006).

In an early study by Mace (1979); it was found that a huge gap between the mentioned roles of boards in the academia and reality is present. Mace (1979) mentions that, in reality, board of directors advises and counsels the top management, but they are not decision makers; board can discipline the CEO and top management; but select the CEO, only, in the case of crisis like sudden death of the CEO or terribly poor performance, apart from that, they don't select the CEO, as in many cases the CEO designate is being nominated by the former CEO. Hermalin and Weisbach (1988) mention that both the academic and the business evidence show that the CEO dominates over the choice of their successor. Moreover, Shivdasani and Yermack (1999) endorse this argument by adding that board members, themselves, in most cases are nominated and selected by the CEO and executive management, who they are supposed to monitor after being appointed. Hermalin and Weisbach (1991) refer that to the free-riding problem that prevents shareholders from selecting new board members.

While we study the different roles and responsibilities of the board, we have to recall that in order to understand and study the board and its different roles; we need to deploy different theoretical perspectives. Daily, Dalton and Cannella (2003) support this idea by claiming that the control role can be conceptualized well by deploying the agency theory, bearing in mind that monitoring the management is a central component of the agency theory and according to this theory, the separation of ownership and control gives the opportunity for the managers to work at their own goals at the expense of shareholders; but agency theory fails to explain the resources acquiring and strategic roles of the board which are critical responsibility of the directors. From the sense that, the counsel and advice, the resources acquiring and the strategic roles are kind of information sharing between the board member and the

firm; the resource dependence theory is more relevant to explain these roles (Hillman, Cannella and Paetzold, 2000; Hillman, Withers and Collins, 2009). Dalton *et al.* (1999) mention that, on the one hand, from an agency theory perspective, the control role is a vital role of the board and only maintained with a board with a majority of independent board members; on the other hand, board has other indispensable responsibilities like securing the needed resources and providing the needed counsel and advice for the top management, such roles cannot be substituted by the control role. Having said that, Zahra and Pearce (1989) argue that agency theory provides a comprehensive definition of board responsibilities and emphasis on how the board should perform their different duties and monitoring executive management to protect shareholders. Such arguments endorse the need of employing different theoretical perspectives while studying board responsibilities.

It has been argued in the prior literature that board characteristics like board size, composition, the separation between the CEO and the chairman roles and board subcommittees have a significant impact on board effectiveness. Usually, most of the governance codes or reforms following crises or large scandals include recommendation for these factors. Van den Berghe and Levrau (2004) argue that the disclosure of these structural elements enables the market to evaluate the board effectiveness. In the following sections, the researcher reviews the theoretical bases, and the empirical evidence reported in the prior literature for these board characteristics in terms of enhancing firm performance.

3.3.1.1 Board size

Board size refers to the number of directors sitting on the firm's board. The number of board members gives an indication of the potential performance of the board and hence, firm performance. However, in the board literature, there is a debate around the optimal board size. Jensen (1993) argues that an effective board should not be more than eight members to enhance and improve firm's performance, and make it difficult for the CEO to control over and inspire the board. Lipton and Lorsch (1992) suggest that the optimal size should not go beyond ten members. However, other researchers, e.g., Coles, Daniel and Naveen (2008); Linck, Netter and Yang (2008); Lehn, Patro and Zhao (2009), among others, provide empirical

evidence that the optimal board size depends of firm characteristics as well as the environment surrounding the firm.

By reviewing the board literature, the researcher can claim that there are three main streams that provide different views towards the optimal size of the board, each stream has its own justification, advocates, and supported with empirical evidence; in this section, the researcher will review the arguments that frame every stream and the empirical evidence provided by each stream.

The first stream argues that large boards are more beneficial to the firm and enhance firm performance. Advocates of this stream argue that large boards enable the firm to recruit and acquire more experts from different industries, business background, with diversified capabilities, expertise, education and knowledge, which should help in performing both the monitoring and advising roles of the board, in addition to helping the firm in securing the needed resources by using the connections of the different board members; moreover, large boards are more powerful than small one in front of the CEO, and thus, it is difficult for the CEO to control over large boards. In large boards, the CEO influencing ability is diluted, and it is more difficult for the CEO to dominate over the board (Muth and Donaldson, 1998). Besides, large boards reflect more monitoring activity, as it enables the firm to add more monitors to the board, and facilitates board activities because of the possibility of sharing the work load among the board members (Larmou and Vafeas, 2010).

In support of this perspective, Florackis (2008) argues that large boards are necessary for the organizational effectiveness, as they are more powerful than small boards. Furthermore, large board limits the desire and the ability of the CEO to dominate over the board and the decision making process (Muth and Donaldson, 1998; Kyereboah-Coleman and Biekpe, 2006). Cheng (2008) advocates large boards by claiming that the decision making literature provides evidence, which supports this notion. He argues that although large groups suffer from coordination and communication problems within the group, however, this problem can lead to positive results, as it will take more efforts and discussions from large boards – as a large group– to reach consensus, this will be reflected into more compromised and less extreme decisions, and more stable performance. In addition, large boards are

expected to be more independent compared to small ones; large groups take more effort and time from the CEO build and reach consensus on critical and important decisions, thus the CEO influence is diluted (Muth and Donaldson, 1998) and it becomes more difficult for the CEO to dominate over the board (Muth and Donaldson, 1998; Hussainey and Al-Najjar, 2012). Which is consistent with the above-mentioned claim by Cheng (2008).

Dalton *et al.* (1999) summarized the main advantages listed in the literature regarding the board size. Their listed advantages are based on the resource dependence view and present a clear reflection of the impact the environment could have on the firm. Dalton *et al.* (1999) mention that large boards might reflect more abilities to secure the required and needed resources for the firm. Board size also could be affected by the environmental uncertainty, which means that the more uncertain environment the larger board we should expect; large board increases the possibility of interlocking and this should benefit the firm in securing the critical resources; large board facilitate performing different roles of the board; finally, large boards can offer the board the ability to add more experts which can be translated to high level of quality advice and counsel to the CEO; such advice is not obtainable from the insiders.

Lehn, Patro and Zhao (2009) state that a major advantage of a large board is the amount of information they bring to the board. Such information about the external environment and the factors affecting firm performance like product market, technology, regulations, competitors etc. is essential for the board to perform their monitoring and advisory role (Lehn, Patro and Zhao, 2009) and help in performing the resource acquiring role as well. Moreover, Dalton *et al.* (1999) argue that recruiting outside directors who are CEOs of other firms is expected to provide well advice and counsel to the CEO as they have relevant experience required for dealing with the complex business environment, this can be magnified by increasing the board size and recruiting more CEOs to the board. Klein (2002b) argues that limiting the board size to a certain limit, constrains the number of directors who can serve in different board subcommittees, and hence, the firm has to rely on executive directors to comply with the committees' structure requirements.

However, advocates of a small board argue that large boards could suffer from many problems like, coordination and communication problems, directors' free-riding among other problems related to large groups. Many researchers (e.g., Jensen (1993), Yermack (1996), among others) argue that large board means slower decision making, less coordination and more communication problems; large boards are less effective and easy to be controlled by the CEO, above this, there is a possibility for the free-riding problem.

Eisenberg, Sundgren and Wells (1998) endorse these claims and mention that communication and coordination problems, losing the ability to control over the management and the board composition are the main factors that make large boards are ineffective. Likewise, Ahmed, Hossain and Adams (2006) argue that large boards are more subject to the bureaucratic problems and slower decision making. Besides, Lehn, Patro and Zhao (2009) argue that coordination costs significantly influence board effectiveness. John and Senbet (1998) mention that large boards could enhance the monitoring abilities of the board; yet, this benefit could be offsetted by the cost associated with poor communications and slow decision making, which is a common theme of large groups.

Furthermore, it is difficult in large boards to reach consensus on important decisions and limits the board's ability to control over the management (Van den Berghe and Levrau, 2004). Dalton et al. (1999) and Van den Berghe and Levrau (2004), among others, mention that much research argues that large boards are more subject to coalitions and frictions that lead to more conflicts inside the board, and hinder the board's ability to reach consensus. Lipton and Lorsch (1992) argue that in large boards directors are not able to involve in more discussions and express their opinions; therefore, the assumed value of adding more experts is no longer present. This promotes that small boards grant the firm more chances to discover and utilise the board members' talents and get the most from them (Muth and Donaldson, 1998).

Lehn, Patro and Zhao (2009) mention that the free-rider problem associated with large board stems from the observation that the average influence of the board member varies inversely with board size. Ahmed, Hossain and Adams (2006) endorse this argument and mention that in large boards, the board's different responsibilities become diffused. This will lead to the domination of certain members

over the board (Muth and Donaldson, 1998); which give a good chance for the CEO and insiders to control the board and direct the board's decision in the way that serves their own goals. Alexander, Fennell and Halpern (1993) argue that CEO can easily control over large boards; when the board is comprised of members with different experiences and different business backgrounds, and when there is a disagreement among them towards a certain issue, this situation gives the CEO an advantage to influence the board and control over it. Moreover, in that case, the CEO can use different techniques like coalition building; control the information flow and the information content and dividing and conquering to gain from this disagreement, and fully control the board (Alexander, Fennell and Halpern, 1993; Dalton *et al.*, 1999). Another factor that allows the CEO and insiders to dominate over the board, is that the directors, themselves, have no incentive to invest in information and hence, they can't monitor the management effectively (Lehn, Patro and Zhao, 2009). However, small boards could affect negatively the effectiveness of the board in performing their other roles.

To sum up, advocates of small boards argue that large boards are subject to a number of problems, which are social loafing, free-riding, lack of cohesiveness, poor communication, difficulty for reaching consensus, slow decision making, and subject to large groups' frictions and conflicts; all of these problems combined together lead to the CEO domination over the board and could affect the board performance and effectiveness.

In the corporate governance literature, it is argued that small board overcome the large boards' problems; so, we should expect that small boards do not suffer from such problems like communication and coordination problems, and there is no chance for the members of small boards to free ride from their duties and responsibilities, and hence, small boards are expected to perform their monitoring role more efficient than large boards. It might be argued that large board enhance boards in terms of more monitors, more expertise and diversified knowledge; however, Lipton and Lorsch (1992) argue that five or six well selected independent directors can provide the firm the required diversity in terms of knowledge and perspectives. Small boards are more effective in deciding the incentive plans for the CEO and its relation to his performance, and dismissing the CEO for poor performance (Yermack, 1996). Small boards reflect more social cohesion, more

opportunities for in-depth discussions and participation of all members, and should make the board more effective (Lipton and Lorsch, 1992; Muth and Donaldson, 1998; Van den Berghe and Levrau, 2004). In line with this stream, Van den Berghe and Levrau (2004) mention that most of the corporate governance rating systems do prefer small boards and overweight small board than large ones.

The third stream argues that the board of directors has many different roles, firm specific characteristics shape the need of each role, and which role is more important than other, which is reflected on the board size. This view has two different but integrated arguments. The first argument (e.g., Pfeffer (1972); Pfeffer and Salancik (1978); Hillman, Cannella and Paetzold (2000); Hillman, Withers and Collins (2009), among others) mentions that the external environment, the firm's needs and the need to build connections with external parties, also, have a direct influence over the board structure in terms of size and proportion of outside directors. Grounded in resource dependence theory, Pfeffer (1972) and Pfeffer and Salancik (1978) argue that board size is a function of the firm's need to integrate with the external environment and to manage interdependence. Pfeffer and Salancik (1978, p.172) state that *"The greater the need for effective external linkage, the larger the board should be."* The second argues that firm specific characteristics like size, the need to advise and other characteristics have a direct impact on board (e.g., Boone *et al.* (2007); Guest (2008); Linck, Netter and Yang (2008), among others). Pfeffer (1972) argues that board size is affected by rather the firm is in a need for outside capital, firm size, and the industry at which the firm is affiliated with. Pearce and Zahra (1992) mention that environmental uncertainty and other firm characteristics have direct influence over the board structure. Hillman, Cannella and Paetzold (2000) argue that changes on board reflect the changes happen in the external environment and the firm's attempts to cope with these changes. Denis and Sarin (1999) find that firms change their board structure in respond to the changes in the business environment.

Guest (2008) state that as the need of the advisory role increases, there is a need for more experts to be added to the board; thus a large board is beneficial in such case. In line with this argument, Coles, Daniel and Naveen (2008) mention complexity as one of the characteristics that can affect board size; they mention that

for complex firms, there is a need for a large board compared to simple firms, this large board enhances the firm's value. Lehn, Patro and Zhao (2009) propose other characteristics like firm size, growth prospects, geographical expansion, and mergers that have a direct impact on board size; they argue that for large firms, geographical expanding firms and firms with new mergers, there is a need for large boards; whereas, for firms with high growth prospects, the environment changes rapidly, which requires fast respond from the board and quick decisions which make small boards are more efficient.

However, there are occasional circumstances that could lead to an increase in board size. Rosenstein and Wyatt (1990) justify the appointment of new insiders could be because of the need of firm specific knowledge or the new appointed member is going to be the CEO designate. Hermalin and Weisbach (1988) mention that the CEO succession could lead to the increase of the number of the insiders in the board, and this number decreases after the CEO change. The researcher has noticed such incident during the data collection stage, for one year the number of the board members increases to offset the decrease the number after the retirement of the CEO or the chairman. Adding potential CEO or chairman candidates to the board exposes them to more firm affairs, which adds to their experience and at the same time, gives the chance for other board members to evaluate these candidates and choose among them (Hermalin and Weisbach, 1988). Larmou and Vafeas (2010) report that poor performing firms tend to increase the board size; that increase is associated with better value; however, after a certain point, the increase in board size reduces firm's value; what is more, the market reacts positively for adding new members and negatively for decreasing large boards.

Lehn, Patro and Zhao (2009) argue that the trade-off between the benefits of appointing a new member to the board and the coordination costs as well as the possibility for free-riding problem that results from this new appointment are what control the board size. Furthermore, the theoretical perspective, also, has an impact on the firm decision about board size (Dalton *et al.*, 1999). Yermack (1996) mentions that the predominant trend is to reduce the board size, especially in the cases of failure and crisis; such action is supported by institutional investors. this action is consistent with the agency perspective; however, the resource dependence theory

induces an opposite strategy, which is to expand the board in the interest of securing the continuous follow of critical resources.

It is argued that large boards suffer from the coordination and communication problems that make it difficult for the board to reach consensus on critical issues; however, Cheng (2008) finds evidence show that the board size is inversely associated variability of stock returns and accounting performance measures like ROA, Tobin's Q and other measures. Using a sample of Italian non-financial firms, Di Pietra *et al.* (2008) find no evidence that board size has a significant role in enhancing firm performance. However, they find evidence that industry affiliation affects this result and for some industries, large board is more effective. Dalton *et al.* (1999) conduct a meta–analysis using 131 samples composed of 20620 firms from 27 different studies, they find a positive association between board size and firm performance measured by many accounting and market based measures; this relation stands for both large and small firms, but with greater effect for small firms. Dalton *et al.* (1999) mention that the meta–analysis technique can show the presence of the investigated relationship without explaining the roots for these relationships, they state that although the findings show this positive relationship between board size and performance indicators, the meta–analysis cannot help in identifying which of the board roles that influence this relation, or it is a result of the different roles of the board. Eisenberg, Sundgren and Wells (1998) find evidence that small boards suffer from communication and coordination problems as well as large boards.

Yermack (1996) finds that small boards enhance firm value for the U.S. firms; however, he reports that diversified firms tend to have larger boards than less diversified firms. This implies that firm size is one of the determinants of board size. Conversely, Lehn, Patro and Zhao (2009) find evidence that board size does not appear to have any significant impact on firm performance; they utilised a large sample of the U.S. firms over the period 1935-2000.

Based on interviews with 60 board directors from Belgian, Van den Berghe and Levrau (2004) state that high quality discussion is one of the frequent elements raised by the directors, and reflects how such element is important for the board effectiveness; each director should have the opportunity to discuss and represent their ideas; critical, in-depth and open discussions most probably should lead to better

decisions. By considering the coordination, communication and free-riding problems that are expected to take place in large boards, this finding indirectly supports the claim that small boards are more effective.

Coles, Daniel and Naveen (2008) find that the relationship between board size and firm value is an inverted U shaped relation; suggesting that neither very small nor very large boards are optimal; similarly, Dalton et al. (1999), among others, conclude that the case with the board size is not about being large or small; it is a matter of having the board that is able to perform the board's different roles effectively. Dalton et al. (1999) added that the board has to be compromised to reach the appropriate size and include the right mix that fills all different board roles. Hillman, Withers and Collins (2009) assert that the type of director, and the value added by appointing this director should be considered in deciding firm's board structure. Pearce and Zahra (1992) find that such characteristics like leverage, growth prospects, environmental uncertainty and past performance do influence board structure in terms of size and structure. Guest (2008) reports that board size is positively associated with the need of the advisory roles, and there is evidence of association between board size and monitoring benefits.

Hermalin and Weisbach (1998) find that small boards are more efficient for firms with high growth prospects, while for large firms, large boards are more appropriate. Similar to these findings, Lehn, Patro and Zhao (2009) find that firm characteristics have a direct impact on board size; the board size tends to increase with the increase in firm size, and decrease with the increase of growth opportunities. Eisenberg, Sundgren and Wells (1998) find evidence supporting the argument that small boards are more effective in reducing the agency problems. They find a negative association between board size and industry adjusted return on assets for a large sample of Finish small and medium sized firms.

Prior literature provides three different views toward the optimal board size. Advocates of large boards argue that large boards are more effective in terms of performing the controlling and strategic roles of the boards; besides, large boards enhance the firm ability to build more connections with the external environment to secure the required resources. Conversely, advocates of small boards argue that small boards are more efficient than large boards, in terms of less coordination and

communication problems, thus the CEO can't easily dominate over the board and control the decision making process, and because of the small number, there is no chance for directors to free ride from their responsibilities. The third stream argues that board size is determined according to firm's needs, characteristics and surrounding environment. As mentioned early, each stream has the empirical evidence that supports their argument. In this study, the researcher adopts the view that large boards are more efficient and required especially during the abnormal economic circumstances (post crisis recession period); thus the researcher aims at investigating the relationship between board size and agency costs by testing the following hypothesis:

H1: There is a negative association between board size and agency costs.

3.3.1.2 Board independence.

In the corporate governance literature, the term board independence denotes to the independence of the board from the CEO and executive management control. Such independence is affected by two main factors, which are board composition and board leadership structure. The subsequent two sections show the arguments around the optimal board composition and the separation between CEO and chairman responsibilities.

3.3.1.2.1 Board composition

The researcher has mentioned in the previous section that board of directors has many roles and responsibilities towards shareholders as being their elected stewards, these roles can be summarized into the control role, the strategic support role and the resource acquiring role.

In corporate governance literature, It has been argued that performing these roles effectively, particularly the monitoring role, is subject to board composition and affected by presence of independent board members; assuming that independent directors are more likely to perform their different roles (especially the monitoring role) effectively compared to executive board members. In the literature on board of directors, it is argued that board composition signals the degree of board independence from the CEO and the executive management (Dalton *et al.*, 1999).

Board composition refers to the identity of the board members, and which category dominates over the board. Muth and Donaldson (1998) mention that normally the term board composition denotes to the proportion on non-executive directors sitting on the board. Predominantly, board members can be classified into executives (insiders) and non-executives board members. Executive directors are those directors with a current employment connection with the firm. Non-executive directors are classified into affiliated (grey) directors and independent non-executive directors. Affiliated directors are those who have a current or former connection with the firm, but after their appointment, they do not hold any executive positions within the firm. Independent non-executive directors are those who are free from any present or past personal or business connections with the firm. The UK corporate governance code lists a number of criteria that should be present in the board member in order to be considered as an independent board member.

Dalton *et al.* (2007) referred that there is a – as they named it -***"Novel way"*** that can categorize and assess board members according to their independence, which is known as "Interdependence". According to this criterion, regardless of being affiliated or independent director, if the board member was appointed by the CEO or during his service period, so this member can be classified as interdependent; while, if the board member was appointed before the current CEO, it is plausible to assume that this board member will be more independent and less loyal to the CEO. Dalton *et al.* (2007) , also, mentioned that this variable has not get the expected researchers' attention. All of these categories are based on the agency role and aim to capture the director's ability to represent shareholders' interests and ensure that managers are working for the best interest of shareholders; however, the overstress on the independence issue and controlling over the management could negatively affect the firm performance (Hillman, Cannella and Paetzold, 2000).

Although there is a consensus on the way of classifying board members, the empirical literature provide many variables to measure board composition. Daily, Johnson and Dalton (1999) find that by reviewing the corporate governance literature, many variables were proposed to reflect board composition, these variables are centred on classifying director to insiders, outsiders (non–executive), affiliated directors, independent non–executive, interdependent directors, what is

more, based on this categorization, each variable is calculated using different formulas, they share the same denominator which is the total number of board members, but with a different numerator.

Such classification matches with the agency perspective that underscores the monitoring role over board's other roles. Hillman, Cannella and Paetzold (2000) provide a different taxonomy for board directors relying on the board's resource dependence roles and the type of information the director provides to the board. They mention that board members can be classified into insiders who mainly provide firm specific information (internally focused); business experts are those directors provide external information about the market, competition, and generally link the organisation with the external environment; support specialists are those directors with specific knowledge and expertise (e.g., law, finance); they also serve as a hub with the external environment; and finally, community influential, those directors provide non-business information that directly affects firm's relation with the external environment. Hillman, Cannella and Paetzold (2000) add that the insider – outsider classification is appropriate for studying the board control role, whereas, their taxonomy is appropriate for studying the resource dependence roles.

From an agency theory perspective, the board of directors should be dominated by independent outside directors. Dealing with the agency problems requires objective and totally independent directors, in terms of employment, business connections and other gains (Hillman, Cannella and Paetzold, 2000). This enhances their ability to carry out their monitoring role and ensure board's independence from the CEO. Dalton *et al.* (1999) assert this by mentioning that an independent board is a major prescription of agency theory, effective boards are those boards that are largely comprised of independent outside directors. According to the agency assumptions, managers are not fully entrusted, and hence; the board of directors should be present to monitor and control their actions and decisions (Muth and Donaldson, 1998) and take the corrective actions in such cases.

However, from a stewardship perspective, executive directors can act for the best interest of shareholders as they have other incentives that motive their behaviour rather than the self-dealing behaviour proposed by agency theory. Thus, the presence of executive board members is preferred and required for superior performance;

considering their technical and firm specific knowledge, their easy access for the needed information and above this their responsibility towards the firm and their intrinsic motives (Muth and Donaldson, 1998). This perspective argues that nominating executive directors as board members could be considered as a reward, and encourage them to perform their responsibilities toward the shareholders (Donaldson, 1990). Building on the assumptions of stewardship theory about managers and their motives; the control role and the importance of independent board members is no longer required and thus, inside dominated boards are more efficient and perquisite for superior performance.

Resource dependence theory provides a different view with regard to board composition. Directors are bridges that connect the firm with the external environment, and help the firm in securing the necessary resources to survive and deal with environmental uncertainty; outside directors could help in securing the required resources, linking the firm with the external environment and could be considered as a relevant source of timely information for insiders (Muth and Donaldson, 1998). Pfeffer (1972) argues that in some cases, management does not seek the advising and counselling services from the outside board members; management uses them as instruments to build connections with the external environment to acquire information and guarantee the needed resources.

Interlocking directorate could serve this purpose and connect the firm with its external environment and maintain required resources (Muth and Donaldson, 1998; Dalton et al., 2007). Johnson, Daily and Ellstrand (1996), Dalton et al. (1999) and Adams, Hermalin and Weisbach (2010), among others, argue that recruiting outside directors who are CEOs of other firms is expected to provide well advice and counsel to the CEO and top management as they have relevant experience required for dealing with the complex business environment, this can be magnified by increasing the board size and recruiting more CEOs to the board.

However, advocates of agency theory consider that interlocking as a direct threat for board independence as it neutralizes the role of outside directors (interlocked CEOs) as external monitors (Dalton *et al.*, 2007). Some scholars (e.g., Fahlenbrach, Low and Stulz (2010), among others) find evidence that supports this argument and shows that interlocking has negative impacts on firm performance as the interlocked

directors might not act as active monitors over their colleague CEOs. Such example highlights the expected conflict between the agency theory, on the one hand, and resource dependence theory on the other hand. From an agency theory perspective, interlocking is considered as a threat and could reduce board independence, conversely, from resource dependence theory, it can be seen as a prerequisite for allocating and securing the needed resources, and for firm survival (Dalton *et al.*, 2007). Such collision could be solved by enacting some rules that govern the board membership and prevent harmful interlocking; also, by considering that there is a direct interlock which occurs when two firms exchange their directors and indirect interlock that occurs when there is an exchange of directors between firms; indirect interlocking should be promoted and not considered as a threat. Briefly, the agency perspective calls for more independent directors to ensure board independence, while the stewardship theory calls for more executives and resource dependence theory calls for more outsiders to enhance firm connectivity with the external environment.

The real market practices provide evidence that the domination of outside board members over the board did not either enhance the performance or prevent the scandals; Bhagat and Black (2002) state that the case of Enron is an obvious example; Enron's board had 11 independent members out of total size of 14 board members. This could imply that fully independent board is not the solution, or the grantee for the alignment between the management's interests with shareholders' interests. Muth and Donaldson (1998) argue that an executive who is identified with the firm and involved in firm's daily activities may be more committed towards the firm and its long term performance than non-executive directors. Baysinger and Butler (1985) mention that adding executive directors to the board could be considered as a kind of strategic manoeuvre; the CEO nominates his favoured subordinates to the board as a kind of reward, and introduces them to the board as potential senior managers. Furthermore, Dalton *et al.* (1999) added that executive directors can provide the technical advice and counsel to the independent board members and other board members as well using their own experience and specific knowledge about the firm and its daily activities, likewise, affiliated directors can help in securing the needed resources; however, the main criticize is that they might not be fully independent from the CEO.

Therefore, adding insiders to the board brings many advantages. Insiders are expected to be more influential in the board meetings; they have access to more firm specific information, and they know more about the firm activities, compared to outside directors, such information and knowledge qualify them to evaluate the management performance effectively (Fama and Jensen, 1983b). Muth and Donaldson (1998) claim that board performance can be enhanced be having board with a majority of executive directors, this can be justified by fast communication between them and the more technical information they do have about the firm and its operations. Klein (1998) mentions that based on their firm specific knowledge, insiders are more valuable for the board in terms of reviewing the long term investment plans and projects, the dividend policy and the potential sources of funds. Kumar and Sivaramakrishnan (2008) argue that, based on the CEO's private information about the firm; independent directors might perform worse than dependent members on the CEO. Baysinger and Butler (1985) and Dalton *et al.* (1999) , among others, argue that executive director can provide the board with relevant firm specific information. Such information about the firm, its competitive environment, current strategies and future plans (Hillman, Cannella and Paetzold, 2000) and help them in evaluating the management (Fama and Jensen, 1983b; Baysinger and Butler, 1985; Van den Berghe and Levrau, 2004); as they are more informed about firm's present projects, upcoming investments plans, and the quality of these investments (Raheja, 2005).

However, this information and the evaluation criteria are questionable and could be misleading if the CEO is dominating over the inside directors and controlling the flow of information to outsiders. Rosenstein and Wyatt (1997) argue that the presence of insiders in that the board raise the question of how the board can evaluate the management's performance effectively and independently. They argue that for board with a majority of insiders, they have the voting power that enables them to control over the board's decisions.

It is unlikely to find that the uniform increase in outside directors will lead to uniform impact on firm performance, firms might decrease the outsider representation on the board to minimise the outsiders monitoring over the board; but in other cases, the domination of outsiders over the board could be detrimental to

firm performance (Duchin, Matsusaka and Ozbas, 2010). Thus, Increasing the number of non-executive directors does not mean that the board will be more effective (Chris, Theodoros and Vasilios, 2014). Eisenberg, Sundgren and Wells (1998) mention an important threat of outside directors domination; they argue that outside directors could be risk averse, they care about their reputation on the market as expert monitors; thus, they might reject a potentially profitable project because of the risk associated with that project is higher than their preferences; they think that their gain is limited in the case of the project success, whereas, they will incur the full loss from their reputation in the market in the case of the failure of the project; this could have a negative impact on their performance and affect the firm value. Moreover, non-executive directors are expected to serve on many boards, thus they might not have the time to acquire the required information about the firm (Lipton and Lorsch, 1992; Hart, 1995), go over the details (Lipton and Lorsch, 1992; Bathala and Rao, 1995; Hart, 1995), and understand firm's affairs to provide sound judgements, thus, their effectiveness is questionable (Bathala and Rao, 1995).

Having said that, Bebchuk and Weisbach (2010) argue that the empirical work shows that board independence is clearly and positively reflected on various decisions like executive compensation, CEO succession, controlling the time of granting options and other decisions. In the same vein, Van den Berghe and Levrau (2004) argue that board independence controls such debatable and conflicting issues that are related, for example, to the nomination of new members, remuneration of top management. Daily *et al.* (1998) mention that the directors who are under the influence of the management are more likely to align themselves with the management rather than the shareholders. Thus, insiders and dependent non-executive directors are expected to work for the interest of the management not the shareholders.

Non-executive directors can be considered as the control instrument over both of the board of directors and the top management. Many researchers (e.g., Fama and Jensen (1983a), Daily, Johnson and Dalton (1999), Coles, Daniel and Naveen (2008), Krause, Semadeni and Cannella (2014), among others, claim that non-executive board member's primary occupation is independent from the firm's management, this independence enables them to monitor effectively the CEO and the executive

management, critically evaluate their performance and to determine the appropriate compensation levels for the executives. The merit of independent directors comes from their ability to judge firm performance objectively compared to inside directors; this point originates the importance of the independent directors and limits the insiders' effectiveness (Ahmed, Hossain and Adams, 2006). Also, effective independent directors can help in protecting the shareholders and mitigating the consequences of duality (Fama and Jensen, 1983b; Brickley, Coles and Jarrell, 1997). However, Rosenstein and Wyatt (1990) claim that the role of the outsiders in judging the management's performance is questionable, by considering that management has an influential role in appointing new directors to the board. Nonetheless, given that most companies have nomination committees that are expected to be independent from the CEO; this claim does not stand anymore. Gordon (2007) mentions that independent board members are not constrained with the management vision, and this is one of their advantages; moreover, they can identify the available information in the market about the firm performance, e.g. stock prices in a different manner than executive board members. Furthermore, outside directors could be considered as a relevant source for timely information for insiders (Muth and Donaldson, 1998).

Non-executive directors have many advantages that could benefit the board and serve shareholders' interests. Non-executive directors give the chance to enrich the board with different experiences from different and diversified fields (Pearce and Zahra, 1991; Florackis, 2008), assure that executive management is working in line with the shareholders' interests (Weir, Laing and McKnight, 2002), enhance board objectivity (Pearce and Zahra, 1991) and prevent managerial entrenchment (Fama and Jensen, 1983a; Eisenhardt, 1989; Krause, Semadeni and Cannella, 2014). Also, connections with organizations and directors outside the firm provide more sources of information and environmental awareness and allow firms to reduce uncertainty about the availability of resources (Muth and Donaldson, 1998). Moreover, non-executive directors are expected to add to the board performance taking into account the knowledge and experience gained during their employment progress (Ahmed, Hossain and Adams, 2006).

Adams, Hermalin and Weisbach (2010) mention that by reviewing the board members, we could find that outside directors are CEOs of other firms; as they are supposed to have the managerial skills and the aware of the business practises and problems that face the firms. Dalton *et al.* (1999) endorse this by demonstrating that recruiting CEOs of other firms as outside directors is expected to enhance the advice and counsel provided by the board to the top management, given that they have de-facto experience of the complex business environment. Moreover, this helps in building and extending the environmental connections as proposed by resource dependence scholars. Moreover, Fahlenbrach, Low and Stulz (2010) find that market reacts positively to the appointment of a CEO to the board as an outside director; however, the operating performance decreases as a result of the appointment of an interlocked CEO. They also report that the appointment of CEOs as outsiders do not affect the operating performance of the recruiting firm and do not affect other decisions like the CEO compensation.

In addition to having the required experience and qualification that add to the board and qualify them as expert monitors, non-executive directors are required to be independent from the CEO (Pearce and Zahra, 1991; Weir, Laing and McKnight, 2002; Hermalin and Weisbach, 2003), the more independent board, the less influence of the management over the board (Muth and Donaldson, 1998). Also, non-executive directors should care about their good reputation in the labour market (Fama and Jensen, 1983b; Weir, Laing and McKnight, 2002; Hermalin and Weisbach, 2003) as good monitors taking into account that the labour market prices them according to their performance as an expert monitor (Fama, 1980).

It is must also be noted that in order to perform their roles effectively non-executive directors need to have access to the relevant information. Non-executive directors are not supposed to be as shareholders their evaluation for the management is based on the public information (Bebchuk and Weisbach, 2010). Getting the right and accurate information is a critical problem that faces outside directors (Van den Berghe and Levrau, 2004). Lack or limited information significantly shapes the effectiveness of the independent directors and limits their value to the firm (Gordon, 2007; Ravina and Sapienza, 2010); independent directors might have the necessary requirements to be good monitors but without the relevant information, it will be

difficult to imagine that they can perform their roles effectively (Ravina and Sapienza, 2010). Duchin, Matsusaka and Ozbas (2010) find that the cost of information is a determinant of outside directors effectiveness; they find that the cost of getting information about the firm is inversely associated with performance; moreover, they report that for firms with high information acquiring costs, adding outside directors worsens firm performance. Van den Berghe and Levrau (2004) mention that poor communication between non-executive and executive directors; slow information flow from the firm to the directors, or that the non-executive directors themselves are not interested to get the information; all of these factors affects independent directors' effectiveness.

Thus, Non-executive directors may not do their job properly as a result of being less informed about the firm's strategy (Florackis, 2008; Brickley and Zimmerman, 2010) or the lack of the required skills to do this job (Florackis, 2008); or they may prefer to align themselves with the interests of the top management because they don't hold an important portion of the firms' stocks (Jensen, 1993; Ibrahim and Samad, 2011) or because of the management's big role in their nomination (Ibrahim and Samad, 2011). Ravina and Sapienza (2010), among others, show that the independent director is like other directors, they are influenced by their motives and the environment they work within, which means that we should not assume that they will work only to maximize shareholders' wealth; they might also pursue their own goals.

Many suggestions were introduced in the literature about the optimal board composition. Jensen (1993) provides an extreme suggestion as he suggests that the CEO should be the only executive member of the board, and the rest of the board should be independent members, he also suggests that independent directors can arrange regular meeting with other executives in an ex–officio manner in order to expand their knowledge about the firm, check for the future CEO candidates, and transfer their knowledge to the top management about the board and its processes. This suggestion could raise the board independence to its highest level; however, it requires the outside directors to spend more time and exert more efforts to get and understand the required information and discuss firm's affairs with executive

directors, which could be very difficult, especially if those outside directors work on other boards.

Lipton and Lorsch (1992) provide a reasonable suggestion that two third of the board should be independent directors. Mace (1979) suggests that based on the board size, the majority of board members should be independent directors with two or maximum three insiders. He also recommends that boards should not comprise bank representatives or any other representatives of professional service providers to ensure board independence. This could indicate that the director's affiliation to certain institutions could affect the performance of the board. Eisenberg, Sundgren and Wells (1998) mention that bank representatives express the interest of their employers; thus, they might be risk averse and refuse profitable projects because of the risk associated that project, this could be reflected in lower returns. However, Dalton *et al.* (1999) mention that the case with the board composition is not about the domination of certain category (independent non-executive, non-executive or executive) over the board, it is a matter of having the board that is able to perform the board's different roles effectively. They added that the board has to be compromised to reach the appropriate structure and include the right mix that fills all different board roles.

Independent directors are perceived by some commenters and institutional investors as a critical mechanism to monitor the management, the more independent board, the more monitoring activities, and this means good corporate governance practices (Bhagat and Black, 2002; Romano, Bhagat and Bolton, 2008). Likewise, board independence is a cornerstone in all rating systems, Van den Berghe and Levrau (2004) report that almost all corporate governance rating systems include a criterion about board independence; this inclusion reflects the importance of such criterion in corporate governance debate. Gordon (2007) states that the call of more independent directors is related to the increase attention towards the monitoring role of the board rather than other roles; because of considering maximizing shareholders' wealth as a crucial objective for the management.

Ravina and Sapienza (2010) state that most of the recommendations for more independent boards rest on an assumption that if the director has business relations with the firm, or personal relations with the top management, this will affect his

independence, and he might do his roles ineffectively particularly the monitoring role. Consequently, to ensure board effectiveness and exceptional performance, the board should comprise a majority of independent directors. Such assumption is consistent with the agency perspective. Corporate governance rating systems have followed that assumption; board independence is underscored in almost all governance rating systems (Van den Berghe and Levrau, 2004). However, according to Dalton *et al.* (2007) some researchers suggest that irrespective to board composition; boards are not totally independent; and even if the board members were independent during their appointment, by time they become less independent or become naturalized.

The presumed relationship between board independence and superior firm performance has motivated large investors and policy makers to call for and support any initiatives for board changes for the sake of protecting their investments and getting high returns. Bebchuk and Weisbach (2010) add governance scandals and financial crises as additional reasons for the call of reforms pursuing more independent boards and committees.

Consequently, policy makers in most countries have followed this alleged relationship between board independence and firm performance; they enacted a number of rules that force firms to limit the number of insiders and directing the board composition to be more independent; for instance, The UK Corporate Governance code (2010) states that at least half of the board excluding the chairman should be independent directors, the same recommendation was stated by New York Stock Exchange "NYSE", as they mention that the majority of the board should be independent directors according to the listed the criteria of independent directors. Fogel and Geier (2007) commented on this ruling by claiming that there are no either logical or practical experiences that endorse the idea that independent board is the pledge for better corporate governance practices or provide shareholders with a superior financial performance. Outside dominated board could give an indication that the board is more independent from the CEO and top management, and thus, the board can provide the guidance and monitor the CEO and executive management effectively, but it does not mean that the CEO will follow or comply with the board's

opinion (Dalton *et al.*, 1999). However, in such case, the board is responsible to take such actions to ensure that the CEO will comply or get dismissed.

Given that the empirical evidence of the relationship between board composition and firm performance is mixed, inconsistent and failed to confirm such proposed relationship; Hermalin and Weisbach (1998) and Daily, Johnson and Dalton (1999) argue that setting regulations that force for a certain board structure could be counterproductive. There is much empirical work which provides evidence that board is endogenously selected according to firm characteristics (e.g.,Coles, Daniel and Naveen, 2008; Guest, 2008; Lehn, Patro and Zhao, 2009). Nevertheless, Bebchuk and Weisbach (2010) defended for the opposite view which is regulators have to prevent the managerial opportunism behaviour by executive directors that could destroy shareholders' wealth, also, without such regulations executives might dominate the board, and this will lead to less independent boards.

The above-mentioned recommendations and suggestions are grounded in the agency perspective, which assumes that the board has to be more independent, in order to perform their roles in an effective way, and this should be positively reflected on the firm performance. However, corporate governance literature provides no clear or systematic relationship either between board composition and financial performance, or between board composition and agency costs.

Dalton and Dalton (2011) describe the literature of the relationship between board composition and firm financial performance by *"astonishingly inclusive."* Daily, Johnson and Dalton (1999) show that there are more than two dozen of variables that have been used in the literature to capture board composition as a variable; these different forms have been related to multiple financial performance indicators. Using structural equations confirmatory factor analysis, they find that these different measures of board composition don't reflect or measure the board independence. Accordingly, Harris and Raviv (2008) and Lehn, Patro and Zhao (2009) suggest that researcher should carefully interpret the results of the relationship between board structure and firm performance.

Hermalin and Weisbach (1998) demonstrate a model for comparing between endogenously determined and exogenously imposed boards; they find that

endogenously selected is more effective than the imposed one in terms of board's independence. They argue that specifying a certain proportion of outsiders, certainly, will lead to an outside dominated board; however, this does not necessarily mean that the board becomes more independent as the CEO and other board members can direct the nomination and selection of new board members in the way that serves their own goals. Pfeffer (1972) argues that in most instances, the new board members are nominated, and even, selected by the management. This implies that the management controls the board; thus board independence is a questionable issue. Managers can nominate directors who are independent according to the regulator's definition, but, in reality, they are not independent from the management (Duchin, Matsusaka and Ozbas, 2010).

Lipton and Lorsch (1992) and Jensen (1993) argue that board size affects the effectiveness of independent directors. They argue that in large boards, because of the communication problems; independent directors don't have the chance to express their ideas and discuss firms' affairs in more details. Eisenberg, Sundgren and Wells (1998) endorse this argument but from different perception, they argue that the proportion of independent directors is a function of the board size, as the board size increase; more outside members could be added to the board. Outside directors who care about their reputation in the market could be risk averse, and hence they might refuse positive net present value project because the risk associated with such project is higher than their preferences; given that their gain in the case of the project success is limited, while in the case of the failure of the project, they will incur the total loss from their reputation in the market; all of this affect the overall performance of the board and affect the firm value (Eisenberg, Sundgren and Wells, 1998).

Similar to board size, it is argued that firm characteristics have a great influence on board composition. Pfeffer (1972) argues that there are many factors that shape the board and its composition, among these factors are the need for external capital, firms that require large capital and more access to capital markets are expected to have more representatives from financial institutions are sitting on their board with less presence of insiders; the industry at which the firm operates in, for regulated industries, boards are expected to have more outsiders; and the professional services the firm needs.

Furthermore, the firm's past performance could affect the board structure. Hermalin and Weisbach (1988) and Pearce and Zahra (1992) find evidence that board composition changes in response to firm performance; more outside directors replace the inside directors after the poor performance. Following the same logic, after the crisis, based on the agency theory perspective, the crisis is a clear reflection of poor performance, practises and poor management, thus, the reform calls seek more monitoring over the management, such monitoring achieved by the increase of the number of independent directors, but by considering that adding more directors to the board will increase the board size, the only way to accommodate more outsiders without inflating the board is to decrease the number of insiders.

Bathala and Rao (1995) argue that for high growth firms that operate in turbulent environments, the need for insiders' specific knowledge about the firm and their advantages surpass the monitoring role, for such firms, there is a severe demand for faster, more innovative decision makers with more knowledge about the firm to deal with the fast changes in the environment; thus, insider dominated boards are more necessary and important than outside dominated ones. Lending the support to this argument, Chancharat, Krishnamurti and Tian (2012) find evidence that for high growth firms where the cost of acquiring information for outsiders is high, insiders can complement the role of outsiders and enhance the effectiveness of the board.

The empirical evidence shows another factor that can influence the board composition and the role of the independent directors which is ownership structure and the type of ownership. For example, Ibrahim and Samad (2011) find that the impact of independent directors on reducing agency costs differs with the ownership type; independent directors have a significant role in reducing agency costs for non-family controlled firms, and no impact for family controlled firms. This result suggests that the controlling family could neutralise independent directors, or family members are dominating over the board and the decision making process. As they have more access to internal family information compared to other board members (Haniffa and Cooke, 2002), which can influence the board's decisions and the firm's strategic vision; moreover, Ibrahim and Samad (2011) argue that for family controlled firms, independent directors are less informed about the family's specific interests, thus, independent directors most probably will deviate from these unknown

interests. This lack of specific information could encourage the controlling family to either marginalise the independent directors' role or increase the number of family members on the board in order to dominate over the board and control the decision making process; thus the independent directors become useless. However, as there are other shareholders who have interests that should be considered, policy makers should consider that conflict of interest between owners, and set a certain rule for firms that have a controlling shareholder (institution, individual or family) who owes over 50% of the outstanding shares. Bhagat and Black (1996) argue that the role of directors and the choice of being active or passive monitors are subject to their ownership stake as well as the CEO ownership stake. They argue that the role of the independent directors is affected by the CEO ownership, as they assume that the interest of the CEO who has a substantial ownership stake is aligned with the interests of shareholders, and hence there is no need for monitoring efforts.

Bujaki and McConomy (2002) find evidence supports the argument that independent boards members are more likely to be independent of the management, and perform their monitoring role. Besides, there is evidence in the literature that poor performing CEOs are more likely to be substituted if the firm has board of directors dominated by independent directors; Hermalin and Weisbach (1998) report that independent boards are more likely to substitute CEOs after poor performance. Hussainey and Al-Najjar (2012) find evidence that independent boards are able and more likely to perform their monitoring roles. Al-Najjar and Hussainey (2009) report that outside dominated boards pay less dividends, such results suggest that firms with low governance tend to pay more dividends in order to build market reputation. Ibrahim and Samad (2011) find empirical evidence that independent directors provide the required counsel, advice, enriches the board experiences, and provides more control over the firms' management, consequently; this helps in reducing the conflict between managers and shareholders and hence reduces agency costs.

Rosenstein and Wyatt (1990) find evidence that market receives the appointment of a new independent director as a good signal from the firms; this signal is reflected on higher stock returns and higher firm value, even though that the board was already dominated by independent directors before that new appointment(s), this new appointment could be understood by the market that the firm is about to start new

investments, and hence specific knowledge is needed to be added to the board. Conversely, Shivdasani and Yermack (1999) find that the market reaction is lower if the CEO is involved in the selection process. Likewise, the market reaction to the appointment of a new inside director to the board is totally different; Rosenstein Rosenstein and Wyatt (1997) find evidence that the market does not react to the appointment of new insider as it reacts to the appointment of outside directors. This could imply that the market perceives the appointment of an executive director as a normal or required procedure that will not either benefit or harm firm performance.

Hermalin and Weisbach (1991) find that there is no association between board composition and firm performance; they argue that no relation could imply that firms have reached their optimal board composition; besides insiders and outsiders, both, can represent shareholders' interests. Lehn, Patro and Zhao (2009) find evidence that there is no significant association between board independence and firm performance for a sample of 81 U.S. firms survived during the period 1935-2000. Moreover, they find that for some firms (e.g., high growth firms) there is a need to have an inside dominated board. Larmou and Vafeas (2010) find that independent directors do not enhance the value of poor performing firms. Likewise, Duchin, Matsusaka and Ozbas (2010) find that adding more outsiders to the board neither benefit nor harm firm's performance for a sample of 1054 U.S. firms during the period 2000–2005; generally, outsiders do benefit the firm, but actually their performance is affected by the costs they incur to acquire the required information about the firm. Agrawal and Knoeber (1996) find a negative association between board independence and firm performance measured by Tobin's Q for a sample of 383 U.S. firms.

In an examination of the notion that board independence is expected to be an indicator of good governance, Bhagat and Black (2002) used a large sample of 934 U.S. firms over the period 1985-1995. They find that low performance firms move toward more independent boards, but at the same time their findings do not provide any evidence that the increase of board independence improves their performance; above that, they find no evidence that firms with more independent boards outperform firms with less independent board, and the relationship between board size and firm performance is inconsistent.

Challenging the fact that independent directors cannot get the required information to monitor the management; Ravina and Sapienza (2010) employed an innovative and indirect way to assess shared information between the independent and executive directors to check if this information is adequate to monitor the executive team. They used a sample from the U.S. market during the period 1986: 2003 to analyse and compare the trading behaviour in the companies' stock. Their results were interesting as they find that both executive and independent directors make abnormal returns compared to the market, with a relatively small difference in the returns between the executive and independent directors during the study period. Apart from the fact that they used private information to gain these returns, their reported results show that the independent directors can get the needed information to assess and monitor the management performance, and they can help in maximizing shareholders' wealth. What is more, when they added the Gompers, Ishii, and Metrick (2003) Governance Index (G–index) score as a variable, their findings show that for well governed firms, there is no difference between the abnormal returns for both executive and independent directors, while firms with low G–index score, there is a difference in the returns, which means that independent directors working at well governed firms are more informed than independent directors working at poor governed firms. These findings endorse the argument that governance structures can play a critical role in enhancing shareholders' wealth subject to the directors' behaviour and personal incentives.

To sum up, as mentioned by Pfeffer (1972), the basic argument about board composition rests on two main issues, first, the board's knowledge about the firm and its affairs; second, the advantages and experiences the board members bring to the firm; but simultaneously, board size and composition are reflections of the firm's responds to the external environment. By considering that each category of board members has its own duties, board composition reflects the trade-off between two different needs, the need for the monitoring, advisory and strategic support roles provided by the independent directors and the need of firm specific information provided by executive directors (Klein, 2002b); in order to perform effectively and take the right decisions.

Considering the theoretical arguments around board composition, from an agency perspective, an independent board is more efficient than the insider dominated one in terms of performing their monitoring role, which should lead to less agency conflicts and lower agency costs. Resource dependence theory argues that adding more outsiders, especially CEOs of other firms, will enhance the firm's ability in building their own network and secure the required resources. Taking both theories together, both seek the efficiency of the board of directors, but from different views; agency theory underscores the montoring role and board independence issue; resource dependence is interested in bringing more outside directors to take the advantage of their experience and connections with the external enviroment. Moreover, the UK corporate governance code endorses the importance of having a board with a majority of independent directors; thus, in this study, the researcher examines the following hypothesis.

H2: There is a negative association between the percentage of independent board members and agency costs

3.3.1.2.2 Leadership structure

Unitary leadership structure (Brickley, Coles and Jarrell, 1997) or Duality means that the CEO chairs the board of directors. In other words, as Krause, Semadeni and Cannella (2014, p.256) define CEO duality, "[duality is] the practice of a single individual serving as both CEO and board chair"

The literature provides two contradictory standpoints regarding the separation between the CEO and chairman posts. The first argument is based on the agency theory and supports the separation between the role of CEO and the chairman; this separation supports board independence, and enables the board to perform their monitoring role effectively. The second perspective is grounded in the stewardship theory, which argues that combining both roles together enhances board performance and reduces the conflict of views.

The chairman –with the help of the board– has many responsibilities. He is responsible to head the board meetings, direct and ensure that the board are performing their roles effectively. Such roles are to provide the needed advice to the CEO and top management, monitor the performance of the executives, selecting,

hiring, evaluating and setting the compensation plans for the CEO and top management; and to take such corrective decisions, like, dismissing the CEO or any member of the top management in such situations of poor performance. These mentioned roles show that there might be a conflict of interest if the same person is performing the same roles; however, this conflict of interest is manageable if the board is independent of the CEO, and the board has independent subcommittees that have the responsibilities of setting the suitable remuneration, nominating the new board members and monitoring firm's financial aspects. Fama and Jensen (1983a) mention that one of the ways to manage the agency problem is to separate between the management and the control of decisions. Thus, this can imply that the separation between the CEO and chairman posts is one of the tools that can be utilised to mitigate the agency problem.

The board is responsible to assess and monitor the performance of the CEO and the executive management; as mentioned early in this chapter. From an agency theory perspective, performing this critical role is subject to the board independence. Thus, there is an imperative need for the board leader to be totally independent of the CEO and the executive management to enable the board to perform their monitoring function (Jensen, 1993); as a result, it is a prerequisite to separate between the CEO and chairman posts (Dalton and Dalton, 2011), in addition to having a board with a majority of independent directors to maintain board independence. Prior literature puts the duality as the first reason behind the failure of the board to perform their monitoring roles over the CEO and top management (Brickley, Coles and Jarrell, 1997).

Dalton *et al.* (2007), among others, consider the separation between the CEO and the chairman as the second element of board independence. Duality has been argued as an obstacle for the board to perform their monitoring role. Taking into consideration that the board has a monitoring role over the CEO and the executive management, Jensen (1993) asserts that it is impossible for the CEO as a chair of the board to monitor himself objectively without being biased toward his personal interests and utilities. Besides, the presence of the CEO as the board chairman hinders the ability of the executive board members to perform their monitoring role effectively. Several reasons could stand behind this shortage, like they work under

the patronage of the CEO, and/or they are selected and nominated by the CEO to be board members, and/or being financial dependent on the firm.

Duality implies that one person has a great influence over the firm's decision making process (Adams, Almeida and Ferreira, 2005); and it gives the CEO the chance of taking decisions that serve their personal interests (Dey, Engel and Liu, 2011). This domination over the decision making process contradicts with Fama and Jensen (1983a)'s suggestion of separating the management of the important decisions at all levels within the organization form the control of these decisions. Decision management is concerned with the initiation and implementation of such decisions that are related to the allocation of firm's different resources; the top management is responsible for this phase, while the decision control refers to the ratification and monitoring the implementation; which enters under the responsibility of the board (Brickley, Coles and Jarrell, 1997). Such separation is required to control managerial discretion. However, Brickley, Coles and Jarrell (1997) argue that duality does not violate in any form the proposed separation of decision management and control. They argue that the board has different committees that are responsible to take important decisions; besides, even with the CEO dual role; the board retains the right of hiring and dismissing the top management. Combining the roles of the CEO and the chairman roles is expected to be detrimental to the firm and shareholders' wealth, this negative effect is expected to be aggravated if the CEO is the main (or one of the main) shareholder (Chris, Theodoros and Vasilios, 2014).

Given that one of the roles of the board is to protect the shareholders from the managerial opportunism and entrenchment, the chairman should be independent of the executive management; duality is expected to compromise the board's ability to monitor the CEO and the executive management (Fama and Jensen, 1983a; 1983b; Donaldson and Davis, 1991) and make it difficult for the board to replace poorly performing CEOs (Brickley, Coles and Jarrell, 1997; Goyal and Park, 2002). Adams, Hermalin and Weisbach (2010) mention that duality gives the CEO more power and control over the other parties sitting on the board, including the independent directors. This implies that duality dilutes the board's power in monitoring and controlling the executive management performance. The separation between the two posts, aims at constraining and diluting the CEO's authority (Muth and Donaldson,

1998; Van den Berghe and Levrau, 2004; Van Essen, Engelen and Carney, 2013) and curtails his ability to control over the board, which should enhance the board's ability to perform their monitoring role (Muth and Donaldson, 1998; Van den Berghe and Levrau, 2004). It could be said that the consequences of the duality can be mitigated by independent board and and other control mechanisms; however, Shivdasani and Yermack (1999) argue that the CEO is a key player in shaping the firm's governance system; and affects the performance of other governance mechanisms.

Consistent with this, Mace (1979) mentions that in the case of dispersed ownership among thousands of owners, the CEO has the power to control over the board and draw the board's role in the way that serves his own interests. Accordingly, the separation between the CEO and chairman positions is a prerequisite for the board to be effective. Chairman should be fully independent to perform his responsibilities effectively. Consequently, this separation should lead to less agency conflicts and better performance (Florackis, 2008). Wearing (2005) mentions that the combination of both roles accumulates too much authority in the hands of the CEO, thus, it becomes a difficult task to stand against that dual CEO. In line with this argument, Muth and Donaldson (1998) mention that the separation between the roles of CEO and the chairman make the board more free to judge the CEO and management performance independently and critically. Jensen (1993) adds to this by stating that the CEO almost decides the board meeting agenda, and the information provided to other board members. So, if the same person is occupying both posts, the CEO can easily control the flow of information and manipulate the provided information to control and restrain the ability of the board members to do their monitoring role (Jensen, 1993; Van Essen, Engelen and Carney, 2013).

Consistent with that perspective that stresses over the importance of separating between the CEO and chairman posts, the successive corporate governance codes starting from the Cadbury (1992) report ending with The UK Corporate Governance Code (2014) view that this division of responsibilities is vital to prevent the concentration of authority and decision making in the hands of one person, hence, these codes recommend separating between these responsibilities, otherwise firms have to explain the reason of their nonconformity with the code. Besides, the code

mentions that the chairman on his appointment should be independent according to the code mentioned criteria.

Stewardship theory provides a totally opposite viewpoint; combining the roles of CEO and chairman is a motive rather than a threat. Duality and working under the vision of a single leader has its advantage. Duality leads to a unified follow of commands with no doubt about the roles and responsibility of each role and eliminates the problems of shared power and control (Donaldson, 1990; Donaldson and Davis, 1991). Besides, if the same person occupies both positions, they will be more informed about the firm's operating environment and the firm's strategy (Weir, Laing and McKnight, 2002; Brickley and Zimmerman, 2010). Furthermore, duality combines strategy formulation stage with the implementation stage (Muth and Donaldson, 1998); the separation between these two posts causes confusion to the different parties dealing with the firm regard who is in charge and who is responsible about bad performance (Brickley, Coles and Jarrell, 1997).

Moreover, Donaldson and Davis (1991) and Muth and Donaldson (1998) claim that duality empowers the CEO and motivates him to work hard and act as a responsible leader of the firm; also, the long term employment relationship bounds the CEO with the firm. Consistent with this, Adams, Hermalin and Weisbach (2010) mention that the chairman position could be awarded for the well performing CEO as a kind of appreciation and motivation. Van Essen, Engelen and Carney (2013) argue that duality is advantageous during the conditions of the crisis and uncertainty; it enhances the management team's ability to respond quickly to the rapid changes during the crisis periods, taking quicker decisions, working under single leader and single vision, which limit the conflict between CEO and chairman.

Adams, Almeida and Ferreira (2005) agree that the separation of the CEO and chairman posts dilutes the CEO power, but at the same time it reduces the probability of extraordinary performance. Additionally, the CEO's interests can be aligned with the shareholders' interest by the use of long term compensation plans (Donaldson and Davis, 1991), and other incentives like stock ownership, and reputational concerns can motivate him to be more interested in doing his job effectively and maximizing shareholder's wealth (Brickley and Zimmerman, 2010) such argument is consistent with the agency theory view towards those situations at which duality is

inevitable (Donaldson and Davis, 1991). Brickley, Coles and Jarrell (1997) argue that although the advocates of unitary leadership structure argue that this separation reduces the agency costs related to the monitoring of the CEO behaviour; nonetheless, this separation leads to another form of agency costs related to monitoring the behaviour of the independent chairman (monitoring the monitor); furthermore, there are costs associated with sharing the information between the CEO and chairman and the incompleteness of transferred information; add to this, the costs related to the change in the succession process and the need to hire the old CEO as chairman during the new CEO probation period, and finally, the extra compensation paid for the chairman.

Brickley, Coles and Jarrell (1997) provide a rational argument around the costs associated with the separation between the CEO and the chairman posts; however, the researcher can claim that all of these costs could be incurred by the firm even in the case of duality. In the case of duality, the firm will incur the costs of monitoring the CEO behaviour. The information transfer costs could be incurred by the firm as well in the case of duality as there is a need to share information with all board members not only between the CEO and the chairman; moreover, in case of duality the CEO has the power and the opportunity to control the information flow to the outside directors; during the handing over period, if there is a need to appoint the retied CEO in the board during this period for the sake of knowledge transfer, this could be case regardless there is duality or not; lastly, the same amount which is called as extra compensation for the chairman could be paid to the CEO for his extra role as chairman of the board.

In spite of this argument around duality, (Dalton and Dalton, 2011), Dey, Engel and Liu (2011), among others, state that the empirical literature failed to provide a systematic relationship between the separation between the CEO and chairman positions and the financial performance; as it fails to provide a clear conclusion towards the consequences of CEO duality. Brickley, Coles and Jarrell (1997) argue that the calls for the separation between these two posts don't consider the costs associated with this separation, and neglect the fact that each argument has its own theoretical foundation, it is not clear which argument is correct, and even the empirical evidence is mixed. Dey, Engel and Liu (2011) argue that firms choose their

leadership structure based on their business environment and according to the tradeoff between the benefits and costs of both leadership structures.

Goyal and Park (2002) find evidence that the turnover rate of CEOs is lower for firms combining the two posts. This could confirm the proposed argument that duality grants the CEO more power over the board and CEOs can entrench themselves for being replaced. Adams, Almeida and Ferreira (2005) find evidence that combining the CEO and chairman posts leads to the concentration of power of decision making in the hands of the CEO which leads to more performance variability regardless the performance measure used e.g., stock performance, ROA or Tobin's Q; however, they could not find evidence that duality leads to lower performance.

Conversely, Donaldson and Davis (1991) find evidence that U.S. firms that do not separate between the CEO and chairman roles outperform other firms with no duality. Dey, Engel and Liu (2011) find evidence that the subsequent performance of the U.S. firms that responded to investor calls or pressures to split the CEO and chairman posts is significantly low. They mention that the decision or either combine or split these posts differs from firm to another and is subject to firm circumstance that direct the firm towards the combine or the split, thus the calls for a general regulation to force firm to split the CEO and chairman require careful consideration. Brickley, Coles and Jarrell (1997) provide empirical evidence that the costs of the separation between the CEO and chairman posts exceed the benefits of the separation; nonetheless, they mention that benefits and costs associated with the leadership structure vary across firms; consequently, the optimal leadership structure will vary as well.

However, Boyd (1995) finds evidence that CEO duality could have a positive impact under certain industrial conditions; the change of these conditions changes this impact to be negative; for instance, their findings suggest that duality could be advantageous for complex firms and resource scarcity conditions. Faleye (2007) finds evidence that firm characteristics are key determinants of the occurrence of the duality or not, what is more, he reports evidence that firm characteristics as well as CEO characteristics do affect the relationship between duality and firm performance; thus, the calls for separating the CEO and chairman responsibilities ignore such

relationships, and hence these calls might be counterproductive. Likewise, Elsayed (2007) argues that the relationship between duality and performance is non–monotonic; it is dynamic relation that varies according to the firm characteristics and/ or industry context. In his investigation of the UK context, he finds no evidence that CEO duality can be blamed for poor performance; moreover, he finds that there is no optimal leadership structure; both duality and separation have associated costs and benefits.

Prior empirical studies provide mixed and inconsistent results even within the one context; however, most of the governance recommendations all over the world do support the separation between the CEO and chairman posts. The incidence of duality is rare in the UK, this because the successive governance codes in the UK prohibit duality, and firms with dual leadership structure should explain the reasons behind choosing this structure. In the U.S. context, over 80% of the U.S. firms combine the role of the CEO and the chairman posts during the period 1970's to the early 1990's (Yang and Zhao, 2014); as the regulations in the U.S. that do not obligate firms to separate between these two posts. However, from March 2010 the U.S. security and exchange commission (SEC) requires firms to disclose their leadership structure and justify their chose in accordance to the company's circumstance (Dey, Engel and Liu, 2011); during 2010, the figure of CEO duality fell to reach around 54% (Yang and Zhao, 2014).

To sum up, two arguments were proposed for the duality issue. The first argument, which is based on the agency theory, claims that duality is detrimental for board independence and affects firm performance; moreover, by considering that the inside directors could be inefficient monitors, and they are not expected to aggressively criticise the CEO's practices and the top management performance; the board of directors as a monitoring tool becomes useless and ineffective governance mechanism. Contrary to this argument, stewardship theory proposes an opposite view, the CEO and other managers are stewards rather than agents; they share the same goal with the shareholders; thus, there is no conflict of interests and no opportunistic behaviours should be expected from the CEO and other managers, and hence, the combination of the CEO and chairman roles is non-hazardous; moreover, this combination allows for the unity of the formulation and implementation of the

firm's strategies and long term plans. It is worth mentioning that the points raised by the agency theory as obstacles and weakness points of duality are the same points used by the stewardship theory to raise the importance, and the advantages which duality brings to the firm; it is all about how the researcher's view towards the manager and his motives.

As argued by Brickley, Coles and Jarrell (1997) separating the CEO and chairman posts is efficient if it leads to reduce the agency costs incurred by shareholders and increases the benefits of the separation, thus in this study, the researcher investigates the following hypothesis:

H3: There is a positive association between duality and agency costs.

3.3.1.3 Board's committees

Academics, practitioner and regulators agree and underscore the importance of the board subcommittees and their independence. The presence of independent board committees enhances board independence. Besides, board subcommittees' primary role is to act as independent monitors over the management (Klein, 1998) and their presence withdraws some of the CEO power (Mace, 1979), moreover, board subcommittees can be considered as tools that can be used to mitigate the agency problem (Chris, Theodoros and Vasilios, 2014).

Such committees are composed of members with certain qualifications, and they have certain responsibilities, thus, they are expected to handle their responsibilities more efficiently than the diversified board (Klein, 1998). John and Senbet (1998) report evidence that independent committees enhance the monitoring abilities of these committees. Independent audit committees, a nomination committee that nominates directors directly to shareholders are the additional layers that cover the board deficiency and control management behaviours (Nordberg, 2010) and enhance board effectiveness. Anderson and Reeb (2004) mention that shareholders delegate the responsibility of preparing a list of nominees to choose among them to the nomination committee. Thus, the nomination committee should consider the firm's specific needs and nominate those directors who will add to the firm and have the experiences needed by the firm.

Shivdasani and Yermack (1999) mention that the literature is full of evidence that CEO uses his authority in the selection of new directors, what is more, the literature also provides evidence that outside director might not be nominated for re-election because they were criticising the top management strategies and performance. In line with these claims, Anderson and Reeb (2004) report that the independence of the nomination committee has a significant impact on the board composition in terms of the percentage of the independent directors serving on the board. Klein (1998) finds evidence that presence of the CEO as a member of the nomination committee affects the independence of the audit, nomination and remuneration committees. Likewise, Shivdasani and Yermack (1999) find that the involvement of the CEO in the nomination committee is detrimental for board independence, as it reduces the number of the directors who are likely to monitor the CEO and top management. However, Adams, Almeida and Ferreira (2005) could find no evidence that the CEO involvement in directors selection has significant impact on firm performance.

One of the audit committee responsibilities is to ensure and support the independence of the external auditor (Carcello and Neal, 2003) as external auditors need this support to perform their vital role (Carcello and Neal, 2000); besides, the audit committee is responsible to monitor the financial reporting process, the internal and external audit process; reduce the conflict between the management and the external auditor to the minimum (Klein, 2002a) and to ensure that the disclosed information to outsiders (shareholders, debt holders, potential investors) is timely and unbiased. In other words, reduce the information asymmetry between management and external parties dealing with the firm (Klein, 1998). Carcello and Neal (2000) provide evidence that the audit committee composition affects the independency of the external auditor's report. Carcello and Neal (2003) find that the characteristics of the audit committee affect the committee's ability and effectiveness in performing their roles. They find that independent, expert and less dominated by shareholders committees protect the external auditors from being dismissed after issuing critical and disapproving reports. Klein (2002b) finds that the independence of the audit committee is affected by a number of factors; among these factors are the board size, compositions and the firm's growth prospects. She mentions that firms incur costs to expand the board and add more independent directors, also, the complexity and uncertainty associated with high growth firms require inside

dominated boards, which is reflected in the committee composition. However, the UK follows that comply or explain principle, thus most of the companies follow the code recommendations it terms of having an independent audit committee.

Turning now to the remuneration committee, one of the primary roles of the board of directors is to set the appropriate compensation package for the CEO and the executive management (Jensen, 1993); remuneration committee can help in reducing the agency conflict between managers and shareholders by helping in offering the executive management with the compensation packages that help in aligning the interests of management with those of shareholders (Klein, 1998). Prior literature argues that such function is affected by board composition; however, Daily *et al.* (1998) argue that the composition of the remuneration committee is the determinant of the CEO compensation rather than the board composition. For example, they mention that if the remuneration committee is comprised of CEOs of other firms, they are more likely to pay more for the CEO, same argument was proposed for the affiliated directors and interdependent directors, the more affiliated and/or interdependent director the more compensation paid for the CEO. Nonetheless, Fahlenbrach, Low and Stulz (2010) find no evidence that the appointment of CEOs as outsiders affect the CEO compensation, CEO turnover, or other critical decisions, including the investment ones; however, for interlocked CEO the impact is negative.

In the UK corporate governance codes (2010, 2014), nomination, audit, and remuneration committees must be present. These board committees are required to ensure that the board of directors is working in line with the shareholders' interests. The code mentions the roles and the structure of these committees. Nomination committee is responsible for recommending and checking the eligibility of the nominated board members who could be appointed. Remuneration committee should decide the suitable remuneration level to attract, retain and motivate managers for better performance. Finally, the audit committee is to monitor and review the internal and external auditors, and monitors the integrity of the firm's financial statements. The presence of board subcommittees gains the same importance and considered in almost all corporate governance rating systems; this inclusion is grounded in the proposition that board subcommittees enhance board operations (Van den Berghe and Levrau, 2004).

Much research in the prior literature has investigated the impact of the characteristics of board subcommittees in different performance measures and earning management. In this study, the researcher investigates the role of these committees in mitigating the agency conflicts and reducing agency costs. Following Zaman, Hudaib and Haniffa (2011) the researcher applies a composite measure for the characteristics of an effective audit committee, and extends this technique to the nomination and remuneration committees. These composite measures are based on the recommendations of UK corporate governance code for the remuneration committees; and Smith Report (2003) for the audit committee. With respect to audit committee, Smith Report (2003) and other reports published in 2010, 2012 by the Financial Reporting Council state that each firm should have an audit committee with at least three members, all of them should be independent, with at least a member has recent and relevant financial experience, and the committee meetings should not be less than three meetings per year. In regard to the remuneration committees, the UK corporate governance code recommends that this committee should have at least three members, with a majority of independent members. Likewise, the code recommends that nomination committee should have a majority of independent directors.

Following these recommendations, the researcher examines the impact of the compliance with these recommendations on agency costs by examining the following hypotheses:

H4: Board subcommittees are negatively associated with agency costs.

> ***H4a:*** *An effective audit committee is positively associated with lower agency costs.*
>
> ***H4b:*** *An effective remuneration committee is positively associated with lower agency costs.*
>
> ***H4c:*** *An effective nomination committee is positively associated with lower agency costs.*

3.3.2 Ownership structure

Equity ownership provides holders with certain rights to the cash flows of the firms (Denis and McConnell, 2003), and this provides them with the rights and incentives to monitor and control firm's management. Moreover, there is some

evidence in the corporate governance empirical literature, e.g., Ibrahim and Samad (2011), among others show that the ownership structure and the ownership type affect the role of other governance mechanisms on reducing the negative impacts of agency conflicts and hence mitigating agency costs. In this study, the researcher investigates the impact of board ownership, block holding and owner's identity on agency costs.

3.3.2.1 Board ownership

Agency problems arise as a result of the separation between ownership and control. Managers are not the owners, they have their own interests, and there is a possibility that they might work to achieve these interests at the expense of shareholders. Thus, prior literature proposes managerial ownership as one of the tools that can be used to align the management's interests with the shareholders' interests and motivate them to take actions and decisions that maximize the firm value (Jensen, 1993; Weir, Laing and McKnight, 2002; Denis and McConnell, 2003; Brickley and Zimmerman, 2010). Similar argument could be could be made in regard to outsider directors. Outside directors have no incentive to exert the required effort to monitor the management effectively (Lehn, Patro and Zhao, 2009) as they don't have a significant share of the firms' stocks (Jensen, 1993; Ibrahim and Samad, 2011). Thus, outside directors are more likely to free-ride from their monitoring role and align themselves with the management.

In the literature, there are two main hypotheses in regard to the managerial ownership, which are the convergence of interest hypothesis and the entrenchment hypothesis. It has been argued that as the managerial ownership increases, the interest of the management becomes more aligned with those of the shareholders, and this should lead to better decisions and higher firm value. Jensen and Meckling (1976) mention that the managerial ownership is a critical instrument to assure the alignment of interests between managers and shareholders; they argue that the more managerial ownership the less agency costs. Fleming, Heaney and McCosker (2005) state that, managers start to shirk work and exert less effort and sometimes do not seek out good investment opportunities as a result of their low ownerships stakes.

Singh and Davidson III (2003) claim that the extent of managerial ownership reflects the degree of alignment of interest between shareholders and managers. Similarly, Bhagat and Black (1996) mention that directors' ownership stake influences their role as well as their choice of being active or passive monitors, besides, they argue that the role of the independent directors is affected by the CEO ownership, as they assume that the interests of the CEO who has a substantial ownership stake is aligned with the interests of shareholders, and hence the independent directors' monitoring role become no longer required.

Similar view was proposed by Denis, Denis and Sarin (1997a), they mention that as managers' ownership stake increases, they become less likely to get involved or take decisions that reduce shareholders' wealth, as such decisions will be reflected on their personal wealth as well. Muth and Donaldson (1998) endorse that argument by mentioning that the increase in the managerial ownership links the managers' future risk with their decisions and the impact of these decisions on firm's value. Likewise, Eisenberg, Sundgren and Wells (1998) argues that outside directors are expected to be risk averse if they have no ownership stake, and they care about their reputation in the market; consequently, they might refuse valuable projects because of the risks associated with such project, as their gains are limited in the case of success, whereas, in the case of failure, their reputation will be dramatically affected; however, this attitude will change completely if those directors have a substantial ownership stake; they will shift from risk averse directors to risk takers.

Jensen (1993) supports this idea and refers that the conflict of interests between managers and owners, and the resulting problems of this conflict arise because board members do not have ownership stake on the firms that they work for, he claims that if board members have ownership stake and this stake increases by time they spend on the firm; we can expect more alignment between the interests of management and owners, because this ownership stake will bind the managers' wealth with the shareholders' wealth which will be affected by their decisions. In support of this argument, Crutchley and Hansen (1989) mention that managerial ownership is a relevant tool which can be used to reduce the costs of agency conflicts. Likewise, Rosenstein and Wyatt (1997) find evidence that managerial ownership dominates

over the board composition in aligning the interests of the management with those of shareholders.

Based on the previous mentioned arguments, and Jensen and Meckling (1976) prediction regarding the separation of ownership and control, a linear relationship between managerial ownership and lower agency costs should be expected. However, the empirical results provide mixed results. Himmelberg, Hubbard and Palia (1999) and Demsetz and Villalonga (2001) provide evidence that managerial ownership has no significant role in improving firm performance. Whereas, Andreou, Louca and Panayides (2014) find managerial ownership is associated with better performance for a sample of U.S. maritime transport firms over the period 1999-2010. Ang, Cole and Lin (2000), Singh and Davidson III (2003), Fleming, Heaney and McCosker (2005), Florackis (2008), among others, find that the increase in managerial ownership helps in reducing the agency costs. Holderness, Kroszner and Sheehan (1999) find evidence that the managerial ownership is positively associated with better performance until it reaches a certain point, beyond this point, the proposed assumption between managerial ownership and performance is insignificant.

Turning now to the entrenchment hypothesis, this hypothesis argues that managers will use their ownership stake to entrench themselves and pursue their own goals at the expense of other shareholders. Brickley and Zimmerman (2010) argue that the impact of managerial ownership on firm value depends on the trade–off between the alignment and entrenchment effects. Consistent with this argument, Lasfer (2006) argues that the increase of the managerial ownership will make the managers more powerful, and will have a negative impact on the other corporate governance mechanism, by the increase of their ownership stake, they will be able to control the board composition, appointing a chairman who is unlikely to monitor, increasing the number of the board members to create and increase the impact of communication problems among the board members and so on. Likewise, Denis, Denis and Sarin (1997b) argue that high managerial ownership shields the top management from being disciplined for their poor performance, they report evidence showing that for firms with high managerial ownership, the turnover of top executives is weakly associated to performance.

Many studies show that managers' interests are aligned with outside shareholders at extremely low and extremely high ownership levels, between these extremes managers become entrenched and act to pursue their own goals and extract the private benefits of control (Pergola and Joseph, 2011). Morck, Shleifer and Vishny (1988) find evidence that the relationship between managerial ownership and performance is a nonlinear relationship; they find that firm value increases as the managerial ownership increases from 0% to 5%, and slightly increases after the 25%, between the 5% and 25% firm value decreases; which implies that U.S. managers are entrenched within the 5%-25% range. McConnell and Servaes (1990) and McConnell and Servaes (1995) report a nonlinear relationship between managerial ownership and firm value for the U.S. firms; similar results were reported for the UK context by Short and Keasey (1999) and for the Spanish context by De Miguel, Pindado and De la Torre (2004); however, McConnell and Servaes (1990) mention that although there is a negative association between managerial ownership and firm value after a certain point, but the firm value is higher than the 0% managerial ownership. Short and Keasey (1999) find that UK managers are entrenched at higher ownership levels compared to their U.S. counterparts. Hermalin and Weisbach (1991) find that CEO ownership has a significant impact on firm performance; they report evidence that for the ranges 0%-1% and 5%-20% CEO ownership enhances firm performance, whereas, between 1%-5% and beyond 20% the impact turns to be negative. Bhagat and Black (1996) find that directors' ownership is related with the performance of their monitoring role; likewise, they argue that as the CEO ownership increases, the CEO interests become more aligned with those of shareholders, therefore, there is no need for external monitoring by independent directors.

Park and Jang (2010) find evidence supports the non-monotonic relationship between managerial ownership and performance. They find that the convergence of interest hypothesis is valid for as the managerial ownership is between 5% and 40%, over this level, the entrenchment hypothesis becomes valid, and the performance starts to decline. This indicates that the optimal point of managerial ownership is between 5% and 40%, below the 5% and beyond the 40% levels, managers start to expropriate firm resources and extract private benefits, which is reflected on bad performance. Wellalage and Locke (2011) find evidence supports the U–shaped relationship between managerial ownership and agency costs. They find that high

agency costs occur at very low and high managerial ownership. This result supports the notion that managers with no or limited ownership stake have the incentive to expropriate firm resources and consume more perquisites. On the other hand, when managerial ownership increase and exceed the optimal limit, managers start to entrench themselves and cause more agency costs. Chen, Hou and Lee (2012) find an inverted U-shaped relationship between managerial and directors' ownership and the performance of Taiwanese hotels over the period 1997-2009.

In this study, the researcher aims at investigating the impact of managerial ownership on agency costs by examining the following main and subhypotheses; moreover, the possibility of nonlinear association is examined in the further analyses section.

H5: There is a negative association between board ownership percentage and agency costs.

H6: The identity of the owner director has a significant impact on agency costs.

> ***H6a:*** *There is a negative association between CEO ownership percentage and agency costs.*
>
> ***H6b:*** *There is a negative association between executive directors' ownership percentage and agency costs.*
>
> ***H6c:*** *There is a negative association between non-executive directors' ownership percentage and agency costs***.**

3.3.2.2 Large shareholders

Blockholders, or large shareholders (individuals or institutions) are introduced, in the literature, as a tool to monitor firm's management and mitigate the agency problems between managers and shareholders. Shareholders with a small ownership stake do not have the incentive and/or the resources to monitor the management. Desender *et al.* (2013) add that it is difficult for dispersed owners to coordinate their monitoring efforts. Hermalin and Weisbach (1991) argue that small shareholders are less like to choose the firm's new board members. Thus, large shareholders because of their large ownership stake, they are motivated to do the monitoring role over firm's management; furthermore, they have the resources, capabilities and the experience to do that role; additionally, it is easier to coordinate their monitoring efforts. Moreover, Desender *et al.* (2013) maintain that ownership concentration can

substitute the monitoring role of the board; besides, the role of ownership concentration varies with the identity of the blockholder. Nordberg (2010) mentions that owners who have substantial investments in a business entity can perform the monitoring and controlling tasks over the management and perhaps the outcome of such monitoring tasks exceeds monitoring costs they have incurred. In the same way, Brown, Beekesc and Verhoeven (2011) mention that blockholders might target poor performing firms, as they expect and aim at recovering their investment costs through enhancing targeted firm's performance.

The corporate governance literature considers blockholders as one of the corporate governance mechanisms (Romano, Bhagat and Bolton, 2008); as the substantial shareholding can motivate the shareholders to exercise their monitoring role. Blockholders as monitors are expected to have an influential role in improving accounting and market performance (Singh and Davidson III, 2003). Shleifer and Vishny (1997), Denis and McConnell (2003), Romano, Bhagat and Bolton (2008), among others, argue that because of their large ownership stake, blockholders gain the enough power and motive that make them more likely to do their monitoring role and avoid the free-rider problem of monitoring duties that occurs between the small shareholders and to influence management in such cases.

Florackis (2008) mentions that the monitoring benefits are related to the proportion of equity hold, thus the large ownership stake, the more incentive to monitor management compared to small shareholders. Likewise, Singh and Davidson III (2003) argues that the proportion of block holding reflects to what extent there external monitoring exercised over the management. Large blockholders can help in aligning the interests of the CEO with those of shareholders in general and particularly in case of duality (Brickley, Coles and Jarrell, 1997). Institutional blockholders can exercise their monitoring role more effectively; thus, institutional block holding helps in resolving the monitoring free-riding problem that results from the dispersed ownership (Jensen, 1993). Khan (2006) mentions that institutional blockholders are more likely to perform their monitoring role compared to other owners. An effective monitor is expected to have the expertise and the financial incentive to monitor firm management and limits the management's control over the firm (Clacher, Hillier and McColgan, 2010); such conditions and incentives are present in institutional blockholders or large blockholders in general. Moreover,

institutional investors can pressure incompetent directors and influence board practices in response to poor performance (Van den Berghe and Levrau, 2004) and help in reducing the agency costs of the excess cash flows under the control of management (Khan, 2006).

Large blockholders might have substantial proportion of their wealth invested in one firm; this is sufficient motivator to keeping an eye, and to get involved in the firm's affair to protect their investments (Van Essen, Engelen and Carney, 2013). Bathala and Rao (1995) and Crutchley *et al.* (1999) mention another possible influencer, they argue that institutional investors recognize that the efficacious monitoring of managers' actions leads to better performance, which is reflected on high stock prices, the alternative for not performing such role is to sell their large potions with loss, which is unreasonable. Ang, Cole and Lin (2000) argue that large shareholders are effective monitors. They find evidence suggests that the concentration of ownership in the hands of one main blockholder or one family with a controlling ownership stake reduces agency costs.

Nevertheless, the empirical work shows that this mechanism is a double edged sword as the blockholders have the discretion and the incentives to extract private benefits of control as they bear only a fraction of the costs, but gain the full benefits (Gugler and Yurtoglu, 2003); and this causes another form of conflict of interests between the blockholders and the minority of shareholders; this problem is known as principal–principal problem.

With a controlling shareholder, the fundamental governance problem is not the opportunism by executives and directors at the expenses of public shareholders; it could be the opportunism by controlling shareholder at the expense of minority of shareholders (Bebchuk and Weisbach, 2010); once the large shareholders gain close to full control, they will start to expropriate the minority of shareholders which will lead to a reduction in the firm value (Brown, Beekesc and Verhoeven, 2011) by generating private benefits of control that are not shared with minority of shareholders (Shleifer and Vishny, 1997; Brown, Beekesc and Verhoeven, 2011) like transfer of assets and profits out of the firm for the benefit of those who control it (tunnelling), and choosing the management which helps them to achieve their private goals.(Denis and McConnell, 2003). Much research supports this argument that large

blockholders have incentives to expropriate the wealth of minorities and extract private benefits; e.g., Wellalage and Locke (2011) find evidence that this problem is aggravated when the main blockholder is one of the managers. However, Henry (2010) expects that large shareholders interest in mitigating the agency conflicts will exaggerate at high levels of ownership.

The empirical evidence on the association between block holding and performance is mixed. McConnell and Servaes (1990) find no association between block holding ownership and firm value; however, they find that the presence of blockholders enhances the role of managerial ownership in increasing firm value; besides they find that institutional ownership enhances the value of the U.S. firms. Short and Keasey (1999) found no significant association between block holding and performance for a sample of UK firms. While, De Miguel, Pindado and De la Torre (2004) find that the association between block holding and firm performance is nonlinear for a sample of Spanish firms over the period 1990-1999. Van Essen, Engelen and Carney (2013) find that the impact of large blockholders on enhancing firm performance is subject to the identity of the blockholder for a sample of European countries during the financial crisis period 2008-2009. Andreou, Louca and Panayides (2014) find that block holding is associated with better performance in the U.S. context. Singh and Davidson III (2003), Chen and Yur-Austin (2007), Ibrahim and Samad (2011) report evidence that block holding helps in reducing the agency cost for the U.S. and Malaysian contexts respectively; whereas, Weir, Laing and McKnight (2002) report that block holding does not influence firm performance of the UK firms; and McKnight and Weir (2009) report the same for the association between block holding and agency costs.

To sum up, prior literature provides two different hypotheses in regard to block ownership. The monitoring hypothesis assumes that blockholders have the incentive and the capabilities to monitor and control management's behaviour on behalf of the dispersed shareholders. However, according to the expropriation hypothesis, blockholders have the opportunity to misuse their controlling power, extract private benefits and achieve their own interests at the expense of the minority of shareholders.

In this study, considering the limited evidence in the prior literature about the role

of blockholders as a governance mechanism in the UK context, the researcher aims at, first, to investigate the impact of block holding on agency costs, and then investigate whether the identity of blockholders affects the relationship between block holding and agency costs by examined the following hypothese. The possibility of nonlinear association as well as the possibile impact of the number of blockholders are examined in the further analyses section.

H7: There is a negative association between block holding percentage and agency costs.

H8: The identity of the blockholders has a significant impact on agency costs.

> ***H8a:*** *There is a negative association between institutional block holding percentage and agency costs.*
>
> ***H8b:*** *There is a negative association between individual block holding percentage and agency costs.*

3.4 MEASURING AGENCY COSTS

The corporate governance literature provides a number of agency costs proxies that have been utilised in the prior studies, in the following section the researcher starts with the utilised proxies in this study, then, reviews the different proxies utilised in this prior literature.

3.4.1 Asset utilisation

The seminal work of Jensen and Meckling (1976) brought the attention to the agency problem and its associated costs. Their work can be considered as the first successful attempt to operationalize the agency relationship, the costs associated with that relationship and the different sources of these costs. To do so, Jensen and Meckling (1976) compared the manager's behaviour in two different states. The first state is that the manager is the sole owner; the second state is that the manager's ownership portion decreases. They assumed that in the first case where the manager owns 100% of his firm, his decisions will be directed toward maximizing his pecuniary utility as well as non-pecuniary one. Conversely, as the owner-manager's ownership stake starts to decrease, divergence between his interests and the new owner(s)' interests will start to emerge resulting in agency costs, given that the manager will not bear the full costs of his non-pecuniary benefits, but he will get the full benefit (Jensen and Meckling, 1976). They articulated this relationship by

estimating the firm value as a function of owner-manager's ownership stake; they argue that firm's value will decrease by the decrease of manager's ownership portion.

To the best of my knowledge, the work of Ang, Cole and Lin (2000) can be considered as the first study that quantifies and introduces quantitative measures that can capture the agency costs and gained the most attention. They operationalized this proposed theoretical framework of Jensen and Meckling (1976) by introducing the operating costs to sales ratio[4], and the asset utilisation ratio[5] as proxies for agency costs. The rationale behind using these measures as proxies for agency costs was that agency costs result from managers' irrational decisions that maximize their utility at the expense of shareholders. These decisions represent inefficient behaviour and the deviation from their supposed and contracted behaviour as agents. This deviation can be best captured by using management efficiency measures based on the assumption that agency costs reflect the managerial inefficiency resulting from the separation of ownership and control. Moreover, these measures have been frequently used as efficiency appraises in the accounting literature (Ang, Cole and Lin, 2000).

With the purpose of validating these measures as agency costs proxies and to demonstrate their ability in reflecting agency costs, they had to have a base case of zero agency costs as a benchmark to compare and capture any changes in agency costs with the changes in the management type and ownership structure.

They conducted their study using a sample of small firms. The rationale for choosing small firms as a population of their study is that according to Jensen and Meckling (1976) a zero agency costs case could be only observed in firms with 100 % managerial ownership. This implies that a zero agency costs case requires two conditions, which are the full ownership concentration ratio (100%) under the control of one person, and this person should be the manager. Clearly, it is very difficult to find such case among large listed firms.

To operationalize their argument, they applied multidimensional categorizing technique by splitting their sample into two main groups reflecting whether the manager is the owner or not. Under each group, there are subcategories reflecting

[4] They argue that operating costs to sales ratio captures the perquisite consumption.
[5] They argue that asset utilisation ratio reflects work shirking and poor investment decisions, exert less efforts, and perquisite consumption.

four different ownership structures varying from 100% owned by a primary owner to no single owner or family owning more than 50%. This applied methodology enables them to compare between the groups and capture the changes that happen to the proposed measures as the ownership structure changes. Then, they did difference of mean and median comparisons of the agency costs for every subgroup across the two main management groups. After that, they investigated these relations using multiple regression (OLS). The regression results endorsed the primary results.

Their findings provide evidence that there is a strong difference (1% significance level for some groups) between the agency costs between the two main groups (management type) across the different ownership structures subgroups. In conclusion, they provide evidence that the changes in these measures can be attributed to the degree of the separation between ownership and control.

Based on these findings, many researchers in the literature (e.g., Singh and Davidson III (2003); Fleming, Heaney and McCosker (2005); Ang and Ding (2006); Florackis (2008); McKnight and Weir (2009); Henry (2010); Ibrahim and Samad (2011), among others) have used these measures as proxies for agency cost in different countries with different governance environments and institutional settings. These measures were utilised either in its basic form or with slight modification, but these measures still the main foundation for the different agency costs proxies used in the literature. This study was a good initiative to shed the light on the need for developing measures for agency costs, and it was the starting point to conduct research in this area and to develop other measures that could capture agency costs from different views.

In support of the validity of these efficiency measures as agency costs proxies, Ibrahim and Samad (2011) find evidence that family controlled firms experience lower agency costs proxied by asset utilisation and operating expenses to sales ratio. These results add to the existing evidence that agency costs increase by the separation of ownership and control; moreover, this supports the claim that these proxies provide a good reflection of agency costs.

3.4.2 The interaction of growth prospects with free cash flow.

This measure was employed in many studies it the literature, e.g., Doukas, Kim and Pantzalis (2000), Doukas, McKnight and Pantzalis (2005), McKnight and Weir (2009), Henry (2010) and Belghitar and Clark (2014) as a proxy of agency costs. Their postulate of this measure is based on Jensen (1986)'s argument that firms with high free cash flow and limited growth opportunities are more prone to agency problems, and thus, incur more agency costs. Managers of such firms have incentives to expropriate free cash in many ways, e.g., excess perquisite consumption, and suboptimal investment projects.

3.4.3 Other agency costs measures used in the literature

Corporate governance literature provides several attempts to capture agency costs. These attempts were inspired by Ang, Cole and Lin (2000) work. In this section, the researcher will provide the other agency costs proxies that have been used in the prior literature.

3.4.3.1 Selling, general and administrative (SG&A) expenses to sales ratio.

This measure was developed by Singh and Davidson III (2003) derived from Ang, Cole and Lin (2000) operating costs to sales ratio proxy, and then employed in a number of studies (e.g, Florackis (2008); Ibrahim and Samad (2011), among others). Singh and Davidson III (2003) argue that this proxy is more suitable to capture agency induced managerial expropriation of firm's resources. Excessive compensation and perquisite consumption are the common managerial expropriation forms. Singh and Davidson III (2003) argue that SG&A includes the compensation paid, other expenses related to the nonmonetary benefits (e.g., offices, furniture, cars, and so on) and other expenses items that can be used to cover-up perquisites expenditure (e.g., selling and advertising expenses). Such expenses that are under the discretionary authority of the management could be a good proxy of agency costs (Singh and Davidson III, 2003; Florackis, 2008; Henry, 2010).

3.4.3.2 Number of firms acquired by a firm.

There are many motivations that can explain managers' desire to go beyond the optimal size of their firms. Jensen (1986) demonstrates that growing beyond the optimal size grants them more power as they have more resources under their control, besides, they can get extra compensation given that link between firm size and compensation. Denis and McConnell (2003) claim that acquisitions could be one of the tools that managers can use to maximize their managerial utility of growing beyond the optimal size instead of maximizing shareholders' wealth.

By considering this argument and the findings of prior literature that there is a negative association between acquisitions and shareholders' wealth; McKnight and Weir (2009) claim that the number of acquisitions can be used as an agency cost proxy that reflects wasting shareholders' wealth in unprofitable investment projects.

3.4.3.3 Tobin's Q

This measure was employed in Henry (2010)'s analysis. He claims that although this measure has been used in the prior literature as performance proxy, but it can reflect the impact of managerial decisions related to agency problems and hence agency costs propensity. He argues that dealing with the agency problem requires taking such decision that improves and enhances firm value, thus, high Q ratio indicates good managerial performance, better dealing with agency problems and lower agency costs.

This argument is the same argument that has been used in the prior literature that good performance is an indication of lower agency costs; as a result few studies have been directed towards developing robust measures of agency costs as the main concern of the agency conflicts. Corporations scandals and financial crises are examples of that good performance is not the proper reflection of less agency conflicts, low levels of expropriation of shareholders' wealth and thus lower agency costs.

3.5 SUMMARY

In this chapter, the researcher reviewed the concept of corporate governance, the different internal mechanisms that have been introduced in the prior literature as means of motoring and controlling the opportunistic behaviour of the management; highlighting the basic arguments around each mechanism and then provides the study hypotheses. After that the researcher reviewed the different agency costs proxies that have been utilised in the prior literature. None of the above-mentioned measures that have been employed in the prior literature can capture and represent an exact figure for the agency costs incurred by the firm because of the divergence of interests between managers and shareholders, or as it well known the consequences of the separation between ownership and control. However, these employed measures help in expressing the existence of agency costs, the level of agency costs and to operationalize the consequences of managerial deficiency. In the next chapter, the researcher extends this literature review by providing a critical review of the empirical studies that have investigated the relationship between different corporate governance mechanisms and different agency costs proxies.

CHAPTER 4
CORPORATE GOVERNANCE AND AGENCY COSTS

4.1 INTRODUCTION

In this chapter, the researcher completes what he has started in the previous chapter in terms of reviewing the corporate governance literature. The literature of corporate governance is full of a massive number of studies that have investigated the relationship between corporate governance mechanisms on the one side, and firm performance, firm value, or other financial and accounting aspects on the other side. By considering that the study's aim is to investigate the association between governance mechanisms and agency costs, the main concern of the researcher in this chapter is to concentrate on the studies that directly investigate the relationship between corporate governance and different proxies of agency costs. These studies are explored in the next section for the aim of presenting that prior studies have provided mixed results in terms of the impact of corporate governance on agency cost and highlighting the limitations of these studies that have inspired this study. The researcher ends this chapter with Table 2, which provides a brief summary of these studies mentioning the main variables, the context and study period, the analysis techniques and the key findings.

4.2 THE IMPACT OF CORPORATE GOVERNANCE MECHANISMS ON AGENCY COSTS: A SURVEY OF EMPIRICAL STUDIES

Ang, Cole and Lin (2000) proposed the first endeavour of providing quantitative measures for agency costs. They investigate the impact of the managerial ownership and external monitoring exercised by banks on the operating expenses to sales ratio and asset utilisation ratio as proxies for agency costs after controlling for a number of firm characteristics, viz. firm age, firm size measured by sales volume and debt to asset ratio, which might influence the magnitude of agency costs.

In doing so, they use a sample of 1708 U.S. small firms from the National Survey of Small Business Finances (NSSBF) for the financial year 1992. They start their analysis by investigating the presence of significant differences between the two

management structures (owner–manager and outside–manager) using mean and median comparison. These analyses provide preliminary evidence that high agency costs are associated with the separation between ownership and control. Ang, Cole and Lin (2000) find that firms managed by outsiders rather than owners suffer from high operating expenses to sales ratio; also, their evidence suggests that operating to sales ratio increase by the decrease in the ownership concentration ratio. Consistent with these findings, firms managed by outsiders rather than owners suffer from low asset utilisation ratio, asset utilisation ratio decreases by the decrease in the ownership concentration ratio.

Afterward, they employ multiple regression (OLS) to investigate these relations. By doing so, they provide the first quantitative evidence that supports the predictions of Jensen and Meckling (1976). Ang, Cole and Lin (2000) find evidence that the separation of ownership and control is associated with high agency costs. Their evidence suggests that firms managed by their owners incur lower agency costs compared to other firms managed by non–owner managers. Moreover, they find that agency costs increase as the manager's ownership stake decreases.

In more details, they find an inverse relationship between managerial ownership and agency costs. High agency costs for firms that are not totally owned by the management compared to the base case (firms managed by their owners); moreover, they find evidence suggests that agency costs increase by the increase of the number of non–managing shareholders. Besides, they find that agency costs increase when the manager has no ownership stake. Their evidence also suggests that banks play an important monitoring role that helps in reducing agency costs in the U.S. context. These results confirm and provide evidence supporting the notion that as the manager's ownership portion declines, the possibility of agency conflicts increases and thus, agency costs increase.

This influential paper by Ang, Cole and Lin (2000) can be considered as the building block for the empirical literature of agency costs; several researchers (e.g, Singh and Davidson III (2003); Fleming, Heaney and McCosker (2005); Florackis (2008); McKnight and Weir (2009); Henry (2010); Ibrahim and Samad (2011), among others) have employed either the proposed proxies by Ang, Cole and Lin (2000) or derived other proxies from their proxies.

Nevertheless, this influential paper is not without limitations. First, the different ownership structures were captured by using dummy variables rather than employing ownership concentration ratios as continuous variables. It may be more beneficial to use continuous variables as they can capture the trend, the changes, the impact of the different ownership structures, and the different ownership percentages on agency costs compared to the use of dummy variables that only reflects the presence of different ownership structures. Second, they investigate these relationships using data for only one year. Third, they did not check for the correlation between the employed variables.

Standing on Jensen and Meckling (1976) predictions and the findings of Ang, Cole and Lin (2000); Fleming, Heaney and McCosker (2005) examined empirically the impact of the separation between ownership and control in the Australian small and medium-sized enterprises (SME) context. In their replication of Ang, Cole and Lin (2000) work; Fleming, Heaney and McCosker (2005) used a sample of 7613 firm–year observations over a two-year period (1997 and 1998). They employed the operating expenses to sales ratio and asset utilisation ratio as proxies for agency costs. However, Fleming, Heaney and McCosker (2005) extended Ang, Cole and Lin (2000) analysis by utilising more variables in their model to reflect other dimensions of ownership structure that investigate in more details the predictions of Jensen and Meckling (1976) and provide more evidence supporting these predictions. Moreover, Fleming, Heaney and McCosker (2005) control for more variables that could affect the magnitude of the agency costs (bank debt to total assets, return on assets, research and development expenditures to sales, firm size, industry, and Firm age); and utilised a larger sample of SMEs – compared to Ang, Cole and Lin (2000) – for two years as a check of stability for their results.

Fleming, Heaney and McCosker (2005) followed the same methodology as Ang, Cole and Lin (2000), by creating a base case (100% owner managed case) of no agency costs, and compared its agency costs proxies with other levels of separation between ownership and control using *t*–tests and Mann–Whitney *U*–tests. Afterward, they employed the OLS regression method.

Fleming, Heaney and McCosker (2005) find evidence that, to some extent, supports both the predictions of Jensen and Meckling (1976) and the findings of Ang, Cole and Lin (2000) in the Australian context. The findings show that the separation between ownership and control leads to more agency costs. Fleming, Heaney and McCosker (2005) report a significant negative association between managerial ownership and agency costs; similar association between ownership concentration and agency costs. Agency costs decrease as the managerial ownership and the ownership concentration increases, their evidence reveals that as the main blockholder (individual or family) ownership stake falls below 50%, the agency costs increase significantly. Moreover, their findings suggest that agency costs vary across the industries, this finding makes them recommend for controlling for industry in agency costs studies. Contrary to Ang, Cole and Lin (2000) results, there is no evidence that supports the argument that debt helps in reducing agency costs in the Australian context; this non consistency or results can be attributed to the use of different measures of debt.

Moving from the SMEs context to large corporations context, Singh and Davidson III (2003) extend the work of Ang, Cole and Lin (2000) to the context large U.S. corporations by investigating the impact of the ownership structure on the agency costs using two time series observations of 118 cross-section units for two non-consecutive fiscal years (1992–1994). Their first proxy for agency costs is asset utilisation, as it was proposed by Ang, Cole and Lin (2000). However, they marginally modify the expenses to sales ratio (the second measure of Ang, Cole and Lin (2000)) to be the Selling, General & Administrative (SG&A) expenses to sales ratio. They argue that their modified proxy can capture the managerial discretionary expenses related to perquisite consumption and excess managerial remuneration; thus this proxy can be considered as a robust representation of agency costs.

Singh and Davidson III (2003) employed different ownership variables in that aim of representing different ownership structures. These variables are the managerial ownership and outsider block holding (non–managing owners holding 5% or more of the outstanding shares). Grounded in the proposition that corporate governance mechanisms can complement and/or substitute each other, they control for board size, board independence, percentage of executive board members, firm size and

leverage; however, board variables were employed in different models not in the same model.

Univariate median comparison and multiple regression methods were employed. Regarding the multiple regression models, Singh and Davidson III (2003) employed and reported the results of both fixed effects and random effects models, without applying Hausman (1978) specification test to examine which model is more consistent and relevant to their data set; as a result of that, different results were reported for the same model. Also, Singh and Davidson III (2003) run their models with and without controlling for the industry memberships, this yields almost the same results for asset utilisation models and different results for the SG&A models. However, the Adjusted R square for the industry controlled models are much higher compared to the unadjusted counterparts; which confirms the importance of considering the differences between different industries while studying corporate governance issues.

Singh and Davidson III (2003) find evidence in line with Ang, Cole and Lin (2000) findings for the role of managerial ownership in reducing agency costs. In terms of asset utilisation as an agency costs proxy, they find that high managerial ownership increases asset utilisation, and hence lower agency costs. This reflects the alignment of managers' interests with those of shareholders. Their finding supports the convergence of interest hypothesis; however, the results show that this relation is statistically insignificant for the discretionary expenses to sales ratio as an agency costs proxy. Furthermore, their findings suggest that outside block holding and board composition don't have any influence over the two agency costs measures; large board is associated with lower asset utilisation ratio, and has no impact on the SG&A to sales ratio; leverage ratio is negatively related to asset utilisation ratio while unrelated to SG&A ratio. These results reveal that both large boards and high leverage level increase agency costs in the U.S. context. These results stand against the notion that debt reduces agency costs and supports the arguments that small boards are more efficient than large boards for the U.S. corporations.

In a study by Chen and Yur-Austin (2007), the role of blockholders in mitigating agency problems and reducing agency costs was examined using a large sample (almost 5543 firm-year observations) of U.S. large firms over the period 1996-2001.

Besides, they investigate the role of the blockholder's identity in reducing agency costs. In doing so, Chen and Yur-Austin (2007) split block holding ratio into outsider blockholder and inside blockholder; moreover, they split inside block holding into managerial and non-managerial block holding. Chen and Yur-Austin (2007) utilise different agency costs proxies which are selling, general and administrative expenses to sales, asset utilisation and adjusted short term ratio. The fixed effect model was utilised in this study, but without applying Hausman (1978) specification test to choose between fixed and random effects model.

Chen and Yur-Austin (2007) control for firm size, leverage and industry affiliation; however, they did not consider the fact that corporate governance mechanisms can act as complements and substitutes, thus they did not control for other governance mechanisms like board size, board independence and other variables that might have a direct impact on the magnitude of the agency problems as mentioned in the prior literature. This point is clearly obvious in their low R^2 (the highest R2 in their study was 0.095) suggesting that there are other variables that have an impact on the different agency costs proxies employed in their study.

In general, Chen and Yur-Austin (2007) find that block holding plays an important role in mitigating agency problems. They find that block holding is negatively associated with SG&A and positively associated with asset utilisation; suggesting that block holding control over managers' expenses discretion and enhances management efficiency in utilising firm's resources. Moreover, Chen and Yur-Austin (2007) find that the identity of blockholders has an impact on the relationship between block holding and agency costs. Chen and Yur-Austin (2007) find that outside blockholders are more effective in reducing the managerial discretionary expenses, whereas, inside blockholders are more anxious about improving the asset utilisation. Furthermore, Chen and Yur-Austin (2007) find that only managerial blockholders can help in constraining the underinvestment problem. Overall, their evidence suggests that ownership structure plays a critical role in mitigating different agency problems. However, other governance mechanisms should be considered as well.

Florackis (2008) investigates the impact of different board characteristics, managerial ownership and ownership concentration on agency costs using a sample of 897 firm-year observations of non–financial UK firms. Besides, Florackis (2008) introduces managerial compensation, bank debt and debt maturity (short term debt) as alternative governance mechanisms and controls for the potential influence of size, growth opportunities and industry membership. In his study, he employed a different technique which is the cross sectional average regression method. According to this method, the dependent variable (agency costs proxies) is measured at a certain time point (year 2003), whereas the average score of the independent variables for a past period (1999–2002) was employed, with an exception to firm size as he used the total assets value of year 1999. Florackis (2008) argues that this method alleviates the impact of fluctuations over the study period and the presence of extreme value.

Florackis (2008) employed two agency costs proxies used in the prior literature which are asset utilisation and SG&A to sales ratio. Florackis (2008) argues that managerial compensation, bank debt and debt maturity have an impact on reducing the agency costs and hence can be considered as effective alternatives and complements of governance mechanisms. His findings, to some extent, support that argument; he finds evidence that short term debt, the use of cash compensation, executive ownership and ownership concentration reduce agency costs; however, the results do not show any evidence for the nonlinear relationship between managerial ownership and agency costs. The results, also, show that large boards are significantly associated with high agency costs, whereas, duality and the number of non–executive directors have no significant impact on agency costs in the UK context.

However, A number of comments can be made with regard to this study; first, Florackis (2008) utilised Pearson's correlation matrix to check for correlations between the continuous variables only; however, the correlation matrix did not show any abnormal coefficients; based on the fact that the correlation matrix might not capture the presence of perfect multicollinearity among the employed variables, further check using VIF could be more appropriate. Second, although the utilised regression method mitigates the fluctuations over the study period, he excluded the top and lower 1% values for all variables employed in this study, which contradicts with the rationale of using this method. Third, Florackis (2008) utilised the average score of the independent variables over the period 1999-2002, with an exception to

the size as it was measured for the year 1999, there is a possibility that there are changes that occurred over the study period with regard to the firm size, and these changes could have a significant implication over the other governance mechanisms employed in this study e.g., board size, independence, managerial compensation and the capital structure; moreover, the dependent variable was measured for 2003; which is one year after the period used to compute the independents average; this could imply inconsistency among the utilised variables.

Using a sample of 534 firm–year observations for the period 1996–2000 inclusive, McKnight and Weir (2009) examine the role of compliance with the Combine Code recommendations on reducing agency costs. McKnight and Weir (2009) argue that adopting these recommendations should reduce or at least have no impact on agency costs. If this not the case, this means that firms are not only forced to adopt a value destroying governance structure, but also they incur extra costs.

In this study, McKnight and Weir (2009) examine the influence of the endorsed characteristics of board of directors in the Combined Code of practices, specifically the percentage of non–executive directors in the board, CEO Duality, the presence of the nomination committee, the presence of executive directors in the nomination committee on the agency costs measured by the industry adjusted assets turnover, number of acquisition and the interaction of growth prospects and free cash flows. McKnight and Weir (2009) considered the potential influence of firm size and leverage on agency costs; nonetheless, they did not control for the influence of other variables that might affect agency costs like other governance mechanisms (e.g., board size and block ownership) and industry membership.

McKnight and Weir (2009) find very interesting evidence that the combine code recommendations seem to have minor or no effect on agency costs, more remarkable, McKnight and Weir (2009) find that the presence of the nomination committee and its recommended composition leads to more agency costs. Likewise, institutional ownership is associated with high agency costs. However, their finding suggests that the increase of the managerial ownership and leverage reduces agency costs.

Compared to the earlier studies mentioned throughout this section, McKnight and Weir (2009) applied the Hausman (1978) specification test to choose between the fixed and random effects models; furthermore, McKnight and Weir (2009) considered the endogeneity issue by applying corporate governance variables as instrumental variables to check the robustness of their results, and reported both results, which were –with the exception to two variables– somewhat consistent; however, it would be better to check for endogeneity before employing the instrumental variables.

Henry (2010) investigates the impact of the corporate governance recommendations mentioned in the ASX (Australian Securities Exchange) corporate governance council code on agency costs from a voluntary compliance perspective. In doing so, he utilises a sample of 1124 firm–year observations non-financial firms from the largest ASX-listed companies – based on market capitalization value – over the period 1992–2002 inclusive, a period that covers 10 years before the introduction of the Australian corporate governance code in 2003. Henry (2010) argues that investigating such relation from a voluntary perspective will provide a clear view of the relationship between the introduced code, the compliance with the code and agency costs in accordance with the firm agency environment.

Henry (2010) mentions that not all mentioned recommendations at the governance code can be measured in an ex–ante basis; hence, only the role of measurable attributes represented in board size, board independence, duality, the presence of different subcommittees and board remuneration was examined. Moreover, Henry (2010) considers the potential influence of other governance and monitoring attributes (director's ownership, institutional ownership, external ownership, leverage, dividend pay–out, firm risk, and firm size) that can influence the magnitude of agency costs. Four different proxies of agency costs were employed, which are asset utilisation ratio, discretionary expenditure ratio (SG&A to sales ratio), Tobin's Q and Interaction of free cash flow and growth prospects.

Before employing the fixed effects regression and Tobit regression models, Henry (2010) checked for the possible endogeneity between the employed variables and uses instrumental variables for the endogenous variables. The empirical results reveal that the implementation of individual corporate governance recommended

attributes have no impact on agency costs; however, the overall conformity with the code recommendations significantly reduces agency cost.

This investigation provides a new insight towards the role of corporate governance mechanisms as an integrated structure in reducing agency costs. However, this study is not without limitation. First, Henry (2010) investigates the impact of having the recommended committees rather than the compliance with the recommended committee's composition. Second, Henry (2010) did not consider the variations across the industries; third, Henry (2010) utilised the fixed effects regression model without applying Hausman (1978) specification test to choose between the fixed effects and random effects models. Fourth, the reported correlation coefficients were below the critical value; however, he should utilise the VIF to check for the presence of perfect multicollinearity among the employed variables.

Ibrahim and Samad (2011) investigate the impact of three characteristics of the board of directors (board size, the fraction of independent non-executive directors sitting on the board and duality) on the agency costs measured by asset utilisation and expense to sales ratio. Ibrahim and Samad (2011) investigate that relation from a different perspective, as they comparatively investigate the impact of the examined mechanisms in the context of family and non-family control of the Malaysian public listed firms; the potential influence of various firm characteristics such as leverage level, firm size and firm age that might influence their investigated relationship was considered in their analysis.

In doing their analysis, Ibrahim and Samad (2011) utilised a sample of 2030 firm–year observations (875 family firms and 1155 non family firms) over the period 1999–2006 inclusive. In order to classify firms to be family or non-family controlled, Ibrahim and Samad (2011) set two criteria at which firms should fulfil at least one if not both. First, at least one of the board members should be a member of the controlling family; second, the family should have a control over at least 20 percent of the outstanding shares. They first start their analysis by testing differences in means for both family and non-family for all variables; they find that only board independence significantly differs in family and non-family firms.

Given that their data set is a panel data set, Ibrahim and Samad (2011) utilised the Hausman (1978) specification test to check the appropriate model for the employed data set; the test result was in favour of the fixed effects model. However, Ibrahim and Samad (2011) did not consider the possible endogeneity among their model's variables; moreover, VIF diagnostic test to check for perfect multicollinearity among the employed variables could be a required robust check even if the correlation matrix does not show any abnormal or extreme correlation coefficients.

Ibrahim and Samad (2011) find evidence that the ownership structure affects the role of other governance mechanisms in mitigating agency conflicts and hence agency costs. Their findings assert Jensen and Meckling (1976) predictions that agency costs arise as a result of the separation of ownership and control and there is a need for monitoring and controlling mechanisms. Their results for the full sample show that large board and independent board members significantly efficient in reducing agency costs measured by asset utilisation. Interestingly, the results show that duality increases (reduces) asset utilisation (operating to sales ratio).

Ibrahim and Samad (2011) report the same results for family and non-family controlled firms with the following exceptions: their reported results show that the proportion of independent non-executive board members does not affect agency costs for family controlled firms; however, their findings also provides significant evidence that independent directors are an important tool to monitor and advise the management and hence reduce agency problems and its related costs. Their evidence also suggests that duality helps in reducing agency costs for family controlled firm, whereas it increases agency costs of non-family controlled firms.

In a very recent study, Van Essen, Engelen and Carney (2013) investigated the influence of corporate governance mechanisms on firm performance for a sample of 1197 firms from 26 different European countries before and during the financial crisis. Their main objective is to examine the robustness of both firm and country-level corporate governance mechanisms, and to what extent these mechanisms are able to mitigate the crisis impact. Their main assumption is that during crisis, firms need more flexibility, decisive management and fast respond reaction to the new circumstance and changes in the external environment. Van Essen, Engelen and Carney (2013) claim that corporate governance mechanisms that are assumed to

enhance and boost performance during the steady state could be harmful during the crisis conditions. Van Essen, Engelen and Carney (2013) based their argument on the idea that the different corporate governance mechanisms restrict and limit management initiatives to deal with the crisis.

Van Essen, Engelen and Carney (2013) used a wide range of governance mechanisms to capture board characteristics (e.g., board size, board independence among other variables). Van Essen, Engelen and Carney (2013) construct a number of dummy variables that capture the identity of the largest blockholder owning 10% or more; however, these utilised dummy variables capture the ownership concentration and identity of the largest blockholder rather than investigating the impact of ownership structure on performance. Besides, Van Essen, Engelen and Carney (2013) utilised other variables to capture the CEO characterises and compensation. In addition to these variables, a number of variables to capture the country-level governance mechanisms that reduce the principal–principal conflict and shape the legal environment were utilised.

Hierarchical Linear Modelling (HLM) technique was employed to run 2 levels (firm and country) regression equations. Their study provides striking results. For the pre–crisis period, Van Essen, Engelen and Carney (2013) find that almost none of the corporate governance mechanisms –used in their study – have a significant impact on the firm's performance measured by industry adjusted abnormal return. Only audit and remuneration committees' independence are significant but with different signs negative and positive respectively; and leverage is significantly positive in one model out of three different models. However, during the crisis, Van Essen, Engelen and Carney (2013) find that board size, number of board meetings, CEO duality, nomination committee independence, institutional and governmental block holding influence performance positively. The results also show that the number of board committees and the use of stock options, variable pay as compensations tools and leverage are negatively associated with performance. As a robustness check, Van Essen, Engelen and Carney (2013) re-estimate the analysis using OLS, which confirmed the HLM results.

From the previous discussed literature review, the researcher can conclude the following points, which raise the importance of the current study and have been considered during the empirical analyses:

First, The purpose of the previous studies, e.g., Ang, Cole and Lin (2000), Fleming, Heaney and McCosker (2005), Singh and Davidson III (2003) was to investigate how ownership structure affects managerial effectiveness and agency costs. Other studies aimed at investigating the impact of compliance with governance codes on agency costs. McKnight and Weir (2009) examine how the compliance with the combined code affects agency costs of the UK firms using a limited number of board characteristics and did not consider the fact that the unmeasured variables do affect the investigated relationship; while Henry (2010) examines the impact of voluntary application of the governance rules mentioned in the ASX governance code on the agency cost for a sample of Australian firm pre the introduction of the code. Second, most of the studies have been applied in different contexts than the UK context. Third, none of the UK studies have employed a comprehensive set of corporate governance mechanisms as this study. Fourth, studies employed in the UK context used old data set, and smaller sample compared to this study; thus, this study provides the most recent investigation of the role of corporate governance mechanisms in mitigating agency costs; the time span of this study covers the period 2005-2011 inclusive utilising a large sample of non-financial firms (1431 firm-year observations). And finally, this study adds to the literature by comparing between the role of a large set of governance mechanisms before and after the financial crisis, limited number of studies have investigated the impact of the financial crisis on governance mechanisms, even these studies were limited by examining the role of governance mechanisms before and during the crisis and the dependent variables were firm performance proxies rather than agency costs proxies. This study lends the support to such studies and reveals that the role of the governance mechanisms is affected by the business and economic conditions surrounding the firm.

4.3 SUMMARY

This chapter has reviewed the prior studies that have, directly, investigated the relationship between corporate governance mechanisms and agency costs. During this review, the researcher highlighted the main limitations of these studies and based on these limitations the researcher developed the study research strategy.

As mentioned in the previous section, most of these studies were applied in different contexts, and even the UK studies utilised a limited number of governance mechanisms using old data sets. In this study, the researcher utilises more comprehensive set of governance mechanisms in terms of board characteristics, ownership structure and ownership identity; besides, the researcher considers different firm characteristics that have been claimed as having a direct impact on the firm's governance structure.

One of the common limitations of the discussed studies throughout this chapter relates to the analyses techniques of these studies. Thus, the researcher claims that using panel data regression models instead of OLS could overcome this limitation. Moreover, considering the possibility of multicollinearity, employing Hausman (1978) specification to identify which panel regression fits with the data set and examining for endogeneity, identify the endogenous variables before employing instrumental variable regression 2SLS methods, all of these points together could provide more accurate and unbiased results.

In the following chapter, the researcher provides the operationalization of the utilised variables, the rationale and the advantages of using panel regression compared to OLS, the empirical models and ends with the study sample and data collection procedures.

Table 2 Summary of empirical studies on the impact of corporate governance mechanisms and agency costs.

Study	Variables			Sample Size, & Time	Context	Analysis Technique	Main Finding(s)
	Agency costs	Independent	Control				
Ang, Cole and Lin (2000)	Operating costs to sales ratio	Owner manager: a dummy variable with the value of 1 if the manager is one of the owners, 0 otherwise	Firm size	1708 small firms	U.S.	Mean and median tests of comparison t-test and Mann-Whitney U-test	An inverse relationship between managerial ownership and agency costs.
	Asset utilisation ratio	Number of non-managing shareholders	Firm age	1992			Agency costs increase by the increase of the number of non-managing shareholders.
		Primary blockholder ownership percentage					Agency costs increase when the manager has no ownership stake.
		Family control A dummy variable = 1 if one family controls over 50% of the equity, 0 otherwise					
		Number of banks the firm deals with					
		Debt to assets ratio					
		Longest banking relationship					

Study	Variables			Sample Size, & time	Context	Analysis technique	Main Finding(s)
	Agency costs	Independent	Control				
Singh and Davidson III (2003)	Asset utilisation	Managerial ownership	Firm size	118 large corporations	U.S.	Univariate median comparison	High managerial ownership increases asset utilisation.
	Selling, General and Administrative expenses to sales (SG&A)	Non–managing blockholders holding 5% or more	Leverage	Two years 1992 and 1994			Outside block holding and board composition have no significant impact on agency costs.
		Board size				Pooled OLS regression	Large board increases agency costs (low asset utilisation ratio).
		Board independence					Leverage ratio is negatively related to asset utilisation ratio.
		Percentage of executive board members					
Fleming, Heaney and McCosker (2005)	Operating cost to sales ratio	Dummy variable that takes the value of 1 if the manager is one of the owners percentage of ownership	Percentage of equity provided venture capital provider	7613 small and medium size firms		Mean and median test of comparison	Significant association between managerial ownership and lower agency costs.
	Asset utilisation ratio	Percentage of equity hold by main blockholder	Bank debt to total assets				Ownership concentration helps in reducing agency costs.
		Percentage of equity by non-managing owner, but part of controlling family	ROA				As the main blockholder (individual or family) ownership stake falls below 50% the agency costs start to increase significantly.

Study	Variables			Sample Size, & time	Context	Analysis technique	Main Finding(s)
	Agency costs	Independent	Control				
Fleming, Heaney and McCosker (2005)		Percentage of equity holding by non-managing owner, but not part of controlling family	R&D expenditures to sales	2 years 96-97;97-98	Australia	OLS	No evidence that debt helps in reducing agency costs.
		Dummy variable that takes the value of 1 if the manager holding 100% of the firm equity	Firm size				
		Dummy variable that takes the value of 1 if the manager holding more than 50% of the firm equity	Industry				
		Dummy variable that takes the value of 1 if the controlling family holds more than 50% of the firm equity	Firm age				
		Percentage of equity hold by parent company					

Study	Variables			Sample Size, & time	Context	Analysis technique	Main Finding(s)
	Agency costs	Independent	Control				
Chen and Yur-Austin (2007)	SG&A to sales ratio	Outsider blockholder	Firm size	5543 large firms	U.S.	Fixed effects regression	The identity of blockholders has a significant impact on the relationship between block holding and agency costs.
	Asset utilisation	Inside blockholder	Leverage	1996-2001			Outside blockholders are more effective in reducing the managerial discretionary expenses
	Adjusted short-term debt ratio (for likelihood of involving in underinvestment		Industry				Inside blockholders are more concerned with improving the asset utilisation
							Managerial blockholders can help in restraining the underinvestment problem
Florackis (2008)	SG&A to sales ratio	Board size	Size	897 non–financial firms	UK	Cross sectional average regression method	Non–executive directors have no impact on agency costs.
		Percentage non-executive directors	Growth opportunities				
	Asset utilisation	Duality	Bank debt	1999–2002 for the dependent variables			Large boards are associated with high agency costs
		Block holding ratio	Size				
		Executive directors ownership	Short term debt				
		Non-executive directors ownership	Leverage	2003 for the independent variables			Short term debt, the use of cash compensation, executive ownership and ownership concentration significantly reduce agency costs
		Executive directors salary	Growth prospects				
		The use of options	Industry				

Study	Variables			Sample Size, & time	Context	Analysis technique	Main Finding(s)
	Agency costs	Independent	Control				
McKnight and Weir (2009)	Industry adjusted asset utilisation ratio	The percentage of non–executive directors	Firm size	534 firm year observations	UK.	Fixed-effects panel regressions	Presence of the nomination committee and its recommended composition increase agency costs
	Interaction of growth prospects and free cash flows	CEO duality	Leverage	1996-2000			Institutional ownership is associated with higher agency costs
		Presence of nomination committee				Fixed effects instrumental variables regressions	The managerial ownership and leverage reduce agency costs
	Number of acquisition	Presence of executive directors in the nomination committee					
		Institutional ownership				Panel Tobit regressions	
		Managerial ownership					
Henry (2010)	Asset utilisation	Board size	Managerial ownership	A random sample of 1124 non-financial firm-year observations listed in the (ASX) 1992-2002	Australia	Fixed effects instrumental variables regressions	The overall compliance with the ASX governance code helps in reducing agency costs
	Interaction of free cash flows with growth prospects	The use of options	Institutional ownership				
	SG&A to sales ratio	Duality	External ownership			Tobit regressions	None of the individual governance mechanisms has a significant impact on agency costs

Study	Variables			Sample Size, & time	Context	Analysis technique	Main Finding(s)
	Dependent	Independent	Control				
Henry (2010)	Tobin's Q	Board independence	Dividend yield	1992-2002			
		Board remuneration	Leverage				
		Compliance index	Firm risk				
		Existence of board subcommittees namely audit, remuneration and nomination	Firm size				
Ibrahim and Samad (2011)	Asset utilisation ratio	Board size	Leverage	2030 firm-year observations	Malaysia	Pooled OLS	Large board and independent board members significantly reduce agency costs
	Operating costs to sales ratio	Board independence	Firm age	1999-2005		Fixed effects instrumental variables regressions	Duality increases (reduces) asset utilisation (operating to sales ratio)
		Duality	Firm size				Independent non-executive board members have no significant impact on agency costs for family controlled firm.
						Random effects	Block holding reduces agency costs
							Duality helps in reducing agency costs for family controlled firm, whereas it increases agency costs of non-family controlled firms

CHAPTER 5
RESEARCH METHODOLOGY

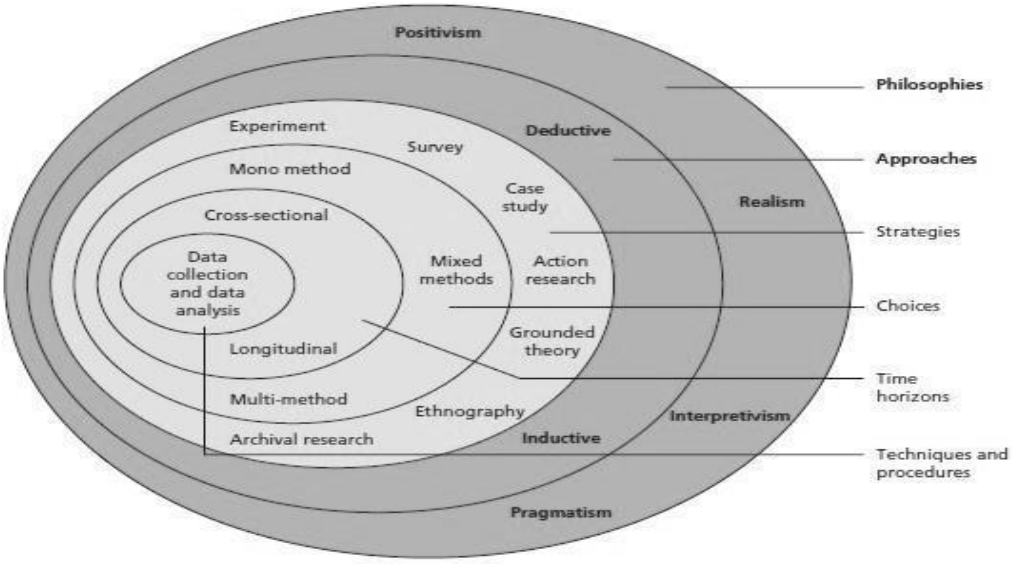
5.1 INTRODUCTION

The process of conducting empirical research starts with choosing the research topic followed by reviewing the related theories and previous literature to identify a researchable gap, this identified gap is then transformed to research question(s); based on the research question, researchers decide which methodology is proper to conduct this specific research, which should be reflected on the data collection, the time horizon, and the appropriate analyses techniques, finally the researcher reports their findings and conclusions. Despite most researchers go through these stages; Laughlin (1995, p.65) mention that *"Empirical research is partial and incomplete and that theoretical and methodological choices are inevitably made whether appreciated or not."*

There are two main approaches that lead to the development of knowledge and theories, and shape the research approaches which are the epistemological and the ontological schools of thought; both refer to Greek philosophers (Lancaster, 2005). The epistemological approach develops and explains knowledge in the form of theories which are acquired from the real world (Lancaster, 2005) or in other words, the constitution of valid knowledge in a certain field of study (Hussey and Hussey, 1997; Saunders, Lewis and Thornhill, 2009); Novikov and Novikov (2013, p.14) present epistemology as *"the theory of scientific cognition; it studies the laws and capabilities of cognition, as well as analyses the stages, forms, methods, and means of cognition process, the conditions and criteria of scientific knowledge validity."* On the other hand, the ontological approach concerns the nature of reality (Saunders, Lewis and Thornhill, 2009); or developing theories grounding in the suggestions of the nature of certain phenomena with or without relating those suggestions or views to a certain knowledge base (Lancaster, 2005); it reflects the researcher's assumptions regarding the operation of the real world (Saunders, Lewis and Thornhill, 2009).

As mentioned earlier, conducting research requires the researchers to go through many stages, choose and decide between the different alternatives for each stage that should help them to appropriately answer their research question(s). Saunders, Lewis and Thornhill (2009) ably portray the stages of conducting research as an onion – illustrated in Figure 2- with many layers that researchers should go through to correctly find the answer(s) of their research question(s). Based on the research question, the researcher has, first, to choose the appropriate philosophy. Saunders, Lewis and Thornhill (2009) argue that the selected philosophy reflects the researcher's view of the real world. Then, the researcher has to choose the research approach that matches with the selected philosophy; for instance, the deductive approach is appropriate with the positivist philosophy. After deciding the research philosophy, researchers choose their strategy, method, time horizon, and finally the data collection and analysis techniques.

Figure 2 Research Onion



Source: Saunders, Lewis and Thornhill (2009, p.108)

In the same way, Hussey and Hussey (1997) mention that by applying the three levels of the word paradigm to the research; the philosophical level reflects how the researcher beliefs about the world; the social level provides the guidelines for the researcher to conduct the research; and finally, the technical view represents the methods and techniques utilised to conduct research. In the following sections, the researcher briefly reviews the different research philosophies and approaches; then states the employed philosophy, approach and strategy in this study.

5.2 RESEARCH PHILOSOPHY

Research philosophy describes the development and the nature of the knowledge; and it implicitly reflects how the researcher views the world (Saunders, Lewis and Thornhill, 2009). For Hussey and Hussey (1997), philosophical perspectives are classified into two main perspectives represent the two ends of a continuum which are the positivism and interpretivism; Saunders, Lewis and Thornhill (2009) add that philosophical perspectives could be positivism, interpretivism, pragmatism and realism; they mention that pragmatic approach is a possible alternative if the research question(s) do(es) not clearly suggest the positivism or the interpretivism approaches. The positive approach supports the use of objective methods, as this approach from an ontological view, it assumes that reality is external and objective; and based on the epistemological approach knowledge is only significant if it is based on real observations (Easterby-Smith, Thorpe and Lowe, 2002). Likewise, Hussey and Hussey (1997) mention that positivism is concerned with the interrelation between the studied variables, and it considers that only observable and measurable phenomena could be considered as knowledge. The interpretivism approach emphasis that conducting research among people is different from conducting research among objects (Saunders, Lewis and Thornhill, 2009); thus, researchers should understand and respect the differences between people on social research and objects on natural sciences research and understand the subjective necessity on social science research (Bryman, 2012).

Grounded in this study questions and objectives, the positive approach is the appropriate philosophy for this study. Identifying a research problem is the starting point for the traditional positivist approach, followed the establishment of acceptable hypotheses derived from theory and prior literature (Smith, 2003a); these hypotheses and variables should be accurately identified and measured (House, 1970). After that, the researcher identifies the suitable methods to examine the research hypotheses and report the results and the findings of this research (Smith, 2003a); it may be worth mentioning that the accuracy in measuring the hypotheses and identifying the variables correctly will enhance the researchers' ability in evaluating the reported results, stating and comparing results more precisely (House, 1970).

5.3 RESEARCH APPROACHES

Deductive approach is the common view of the relationship between theory and social research (Bryman, 2012); in simple terms, the deductive approach moves from the general to the particular (Hussey and Hussey, 1997), more clearly, deductive approach is concerned with examining a certain theory within a specific organisation or context. The deductive research develops theories or hypotheses and then tests out these theories or hypotheses through empirical observation (Lancaster, 2005; Neuman, 2014); this approach is appropriate to empirically test theoretical models (Smith, 2003a); and based on the interpretation of the data analyses, the researcher could end up with either accepting the theory, or confirming the need to revise or modify the tested theory (Sekaran, 2003; Lancaster, 2005).

Figure 3 The Deductive Approach

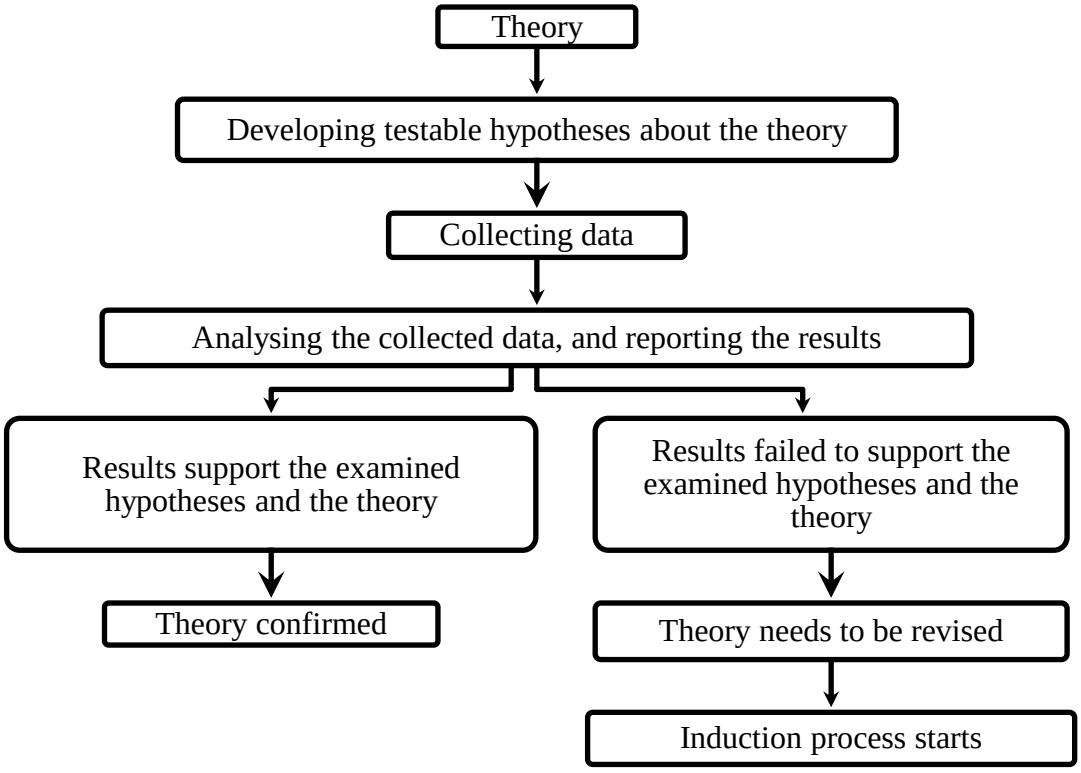


Figure 3 summarises the deduction process; it starts with deducing empirically testable hypotheses from the theory, then collecting the required data, then analysing these data, and based on the results, there are two expected outcome, either the hypotheses are accepted and the theory is confirmed or the hypotheses are rejected

and thus the theory requires revising. In the case of revising the theory, Bryman (2012) argues that this step involves the induction approach which is the reverse of the deduction process. Thus, theory is developed based on the observed reality (Hussey and Hussey, 1997; Sekaran, 2003). Inductive research is related to building a new theory rather than testing a current theory. This approach starts with empirical observations form the real world, then analysing these observations trying to find an explanation of these observations that can lead to a concrete theory (Lancaster, 2005; Neuman, 2014).

To sum up, this research follows the positivism philosophy and the deductive approach using the archival research strategy; in the following sections, the researcher illustrates the operationalization of the dependent and independent variables, then the control variables, after that, the analytical procedures are introduced, then, empirical models, and ends with the sampling and data collection procedures.

5.4 RESTATING THE STUDY HYPOTHESES

In this study, the researcher aims at investigating the impact of a comprehensive set of corporate governance mechanisms on agency costs; then investigate the impact of these mechanisms during two different economic circumstances to find which of these mechanisms help in reducing the agency costs during the steady economic conditions (pre–crisis period) and during a period that follows an abnormal event like the 2008 financial crisis (post crisis recession period).

Based on the review of theoretical arguments around each mechanism and the mixed results of the empirical literature, as mentioned in the previous chapters, the researcher has developed the following hypotheses:

H1: ***There is a negative association between board size and agency costs.***

Board size (***BRD***) is measured as the number of board members served in the board during the fiscal year. The number of board members was manually collected from firms' annual reports. Same measure was employed by many studies, e.g., Henry (2010); Ibrahim and Samad (2011); Andreou, Louca and Panayides (2014); Belghitar and Clark (2014) and Yang and Zhao (2014).

H2: ***There is a negative association between the percentage of independent board members and agency costs.***

Board composition (***IND***) is measured as the number of the independent board members as defined by the UK corporate governance code divided by board size; same measure was utilised by Henry (2010) and Ibrahim and Samad (2011), among others.

H3: ***There is a positive association between duality and agency costs.***

Duality (***DUL***) is measured by generating a dummy variable that takes the value of 0 if there is a separation between the CEO and chairman posts 1 otherwise. Prior studies utilised similar measure e.g., Florackis (2008), Henry (2010) and Ibrahim and Samad (2011).

H4: ***Board subcommittees are negatively associated with agency costs***.

H4a: ***An effective audit committee is positively associated with lower agency costs.***

Building on the recommendations of the UK corporate governance code, that require all firms to have audit committee with at least three members, all are independent, one of them should have a recent financial expertise, and this committee should have three meetings during the year as a minimum; a composite measure was developed for to assess the audit committee effectiveness. ACE variable is a dummy variable that takes the value of 1 if the audit committee is composed of three members, all of them are independent, at least one of the has financial expertise and the committee meets three times at least during the year. This composite variable was introduced by Zaman, Hudaib and Haniffa (2011).

H4b: ***An effective remuneration committee is positively associated with lower agency costs.***

The UK corporate governance code recommends that firms should have a remuneration committee with three members with a majority of independent members. REMU-COM is a composite measure (dummy variable) takes the value of 1 if the remuneration committee comprise of at least three members, and the majority of those members are independent directors.

H4c: ***An effective nomination committee is positively associated with lower agency costs.***

The UK corporate governance code recommends that firms should have a nomination committee with a majority of independent directors to assure the independence of the committee from the management. The UK corporate governance code does not mention the minimum number of the nomination committee; thus in this study, the researcher applies the minimum of three members similar to the audit and nomination committees. NOMINI-COM is a composite measure with the value of 1 if the nomination committee comprises of three members at least with a majority of independent members.

H5: ***There is a negative association between board ownership percentage and agency costs***

Board ownership (***BRDOWN***) is measured as the total percentage of the board directors' shares to the total outstanding shares. Similar measure was utilised by Florackis (2008); Ibrahim and Samad (2011) and Chen, Hou and Lee (2012), among others.

H6: ***The identity of is the owner director has a significant impact on agency costs***

H6a: ***There is a negative association between CEO ownership percentage and agency costs.***

CEO ownership percentage (***CEOOWN***) is the CEO's shares divided by the total outstanding shares; similar measure has been utilised in prior literature, e.g., Anderson *et al.* (2000), Klein (2002a).

H6b: ***There is a negative association between executive directors' ownership percentage and agency costs***.

Executive directors' ownership percentage (***EXECOWN***) is measured by dividing the executive directors' shares by the total outstanding shares (Florackis, 2008).

H6c: ***There is a negative association between non-executive directors' ownership percentage and agency costs*.**

Non-executive directors' ownership percentage (***NEDOWN***) is measured as the non-executive directors' shares divided by the total outstanding shares (Florackis, 2008).

H7: ***There is a negative association between block holding percentage and agency costs.***

Following the prior literature (e.g., Daily *et al.* (1998); Eng and Mak (2003); Anderson, Mansi and Reeb (2004); Thomsen, Pedersen and Kvist (2006); Grove *et al.* (2011); Jallow *et al.* (2012), among others), the block holding ratio (***BLK***) is the total ownership percentage of blockholders holding 5% or more of the firm's outstanding shares.

H8: ***The identity of the blockholders has a significant impact on agency costs.***

H8a: There is a negative association between institutional block holding percentage and agency costs.

Institutional block holding ratio (***INSTBLK***) is the total ownership percentage of institutions holding 5% or more of the firm's outstanding shares.

H8b: There is a negative association between individual block holding percentage and agency costs.

Individual block holding ratio (***INDVBLK***) is the total ownership percentage of individual investors holding 5% or more of the firm's outstanding shares. Similar measure was utilised by Khan (2006).

In the following sections, the researcher reviews the different agency costs utilised in this study, in addition to firm characteristics variables that should be considered while examining the above-mentioned hypotheses; as these characteristics could affect the investigated relationship, the researcher represents the analytical procedures, before consolidating all the utilised variables in the study's econometric models, and presenting the sample selection and data sources.

5.5 AGENCY COSTS UTILISED IN THIS STUDY

In this study, the researcher utilises two agency cost proxies, which are asset utilisation and the interaction between the growth prospects and the free cash flow.

5.5.1 The industry adjusted asset utilisation ratio (*adjTRN*).

Ang, Cole and Lin (2000) have introduced the assets turnover ratio as a convenient proxy of the agency costs, and it has been used in the previous literature,

e.g., Singh and Davidson III (2003), Florackis (2008), McKnight and Weir (2009), Henry (2010) and Ibrahim and Samad (2011), among others.

This ratio is used to measure the effectiveness of the management in generating sales using the firm's assets, testing that the management has exerted the required efforts to generate these sales, and assessing the quality of investment decisions taken by the management. Ibrahim and Samad (2011) mention that the high turnover rate implies that firm has generated large sales volume, and definitely cash flows using a given level of assets; which reflects the management efficacy in using firm's asset portfolios to generate value for shareholders.

Asset utilisation is considered as an inverse measure of agency costs; high asset utilisation ratio means the management is involved in utilising firm's assets in creating value for shareholders, and hence lower agency costs. While low asset utilisation means that the management does not exert the sufficient effort, makes poor investment decisions (Ang, Cole and Lin, 2000) or the firm has unproductive assets (Ertugrul, 2005; Florackis, 2008; Henry, 2010), or mismanaging firm's assets.

Considering the variation across industries in their asset intensity, and this measure is mainly tied to the assets employed and sales generated from this employment, in this study, the researcher will adjust this measure to the industry for the sake of controlling the variations across industries. Gompers, Ishii and Metrick (2003), Coles, Daniel and Naveen (2008), McKnight and Weir (2009) and Van Essen, Engelen and Carney (2013) reported that using the industry adjusted measures provide considerably strong results.

This measure is the natural log of one plus the industry assets turnover ratio. Asset turnover is the ratio of sale to total assets; this ratio was obtained from Datastream; then, the researcher calculated the industry median of asset turnover for each year, then subtract it from the from the company's figure.

5.5.2 The interaction of free cash flow and growth prospects (*QFCF*).

Jensen (1986) argues that firms that generate large free cash flow, but having low growth prospects are more prone to agency problems than other firms, as managers can waste this money on unprofitable projects. Griffin, Lont and Sun (2010) demonstrate that prior studies provide evidence that supports this hypothesis. In

addition to that, as the free cash flows are retained, the capital market cannot assess or monitor management's decision which could suggest more managerial discretion and more agency costs (McKnight and Weir, 2009). High free cash flows with little growth opportunities mean that the firm is suffering from high agency problems which indicates high agency costs.

Free cash flow variable in this study is the sum of operating income before depreciation less the sum of total income taxes, interest expenses and dividends paid (Lehn and Poulsen, 1989) expressed as percentage to total assets (Doukas, Kim and Pantzalis, 2000; Doukas, McKnight and Pantzalis, 2005; McKnight and Weir, 2009; Henry, 2010).

Following the prior literature (e.g., Doukas, Kim and Pantzalis (2000); Doukas, McKnight and Pantzalis (2005); Florackis (2005); McKnight and Weir (2009); Belghitar and Clark (2014), among others) growth prospect is measured by Tobin's Q. Tobin's Q ratio is simply the firm market value divided by assets replacement value (Lindenberg and Ross, 1981; Chung and Pruitt, 1994). In this study, an approximation of Lindenberg and Ross (1981) Q ratio will be employed. Q ratio is the sum of the market value of outstanding common shares plus the value of preferred stocks plus total debt (short term debt + long term debt) divided by total assets. McConnell and Servaes (1995); McKnight and Weir (2009) and (Chen, Hou and Lee, 2012), among others, have employed this formula in estimating the Q ratio.

Based on the assumption that firms with free cash flow and low growth prospects are subject to more agency problems between owners and managers, and hence more agency costs, a dummy variable was constructed that takes the value of 1 if the firm's growth prospect is less than the industry median and 0 otherwise. The firm is identified to have low growth prospects if the annual Q ratio is lower than the industry median, but if the firm's Q ratio is greater than the industry median this indicates that this firm has high growth prospects. The interaction between the growth opportunities and free cash flows (QFCF) is calculated by multiplying the Q dummy variable by the free cash flows. The raw values of all of the variables utilised to compute the free cash flow and the Q ratio were obtained from DataStream.

Based on this calculation, the researcher argues that this variable captures firms with potential agency problems represented in the interaction of free cash flows and low growth prospects. The potential agency costs are represented in the amount of free cash flow standardized by assets that are subject to be invested in unproductive projects. Other firms that free cash flow and high growth prospects take the value of zero.

5.6 FIRM CHARACTERISTICS (CONTROL VARIABLES)

Examining the above-mentioned hypotheses requires considering a number of firm characteristics that could affect the impact of governance mechanisms on agency costs, besides, these characteristics have been argued in the prior literature that they could shape firm's governance structure, and the magnitude of the firm's agency costs. Thus, in this section the researcher explores firm characteristics that have been controlled in this study.

5.6.1 Industry

A common practice in the prior literature (e.g., Singh and Davidson III (2003); Florackis (2008); Wellalage and Locke (2011); Belghitar and Clark (2014), among others) is to control for the industry in their analysis. Bathala and Rao (1995) demonstrate that firms adopt different agency conflict controlling mechanisms according to firm specific and industry characteristics. Singh and Davidson III (2003) mention that leverage varies by industry. Jensen (1986) mentions that some industries are subject to generating more free cash flows, while they have limited growth prospects. Thus, their industry affiliation affects their agency costs and the mechanisms utilised to control these costs. Chancharat, Krishnamurti and Tian (2012) find that industry context affects the firm's governance structure; and hence they recommend that industry should be considered in corporate governance studies. Lending a support for this argument, Pfeffer (1972) argues that board size is affected by the industry at which the firm is affiliated with. Likewise, Zahra and Pearce (1989) argue that industry affiliation affects board attributes and roles. Linck, Netter and Yang (2008) and other studies as well, show evidence that board structure tends to reflect the firm's industry, the need for monitoring of activities given the available growth opportunities and the transparency of the firm's earnings. Thus, Fleming,

Heaney and McCosker (2005) suggest that industry should be controlled in agency costs studies. However, a number of the prior studies (e.g., McKnight and Weir (2009); Henry (2010); Ibrahim and Samad (2011)) that investigate the relationship between governance mechanisms and agency costs did not control for the industrial variations across their sample; and hence, the industry affiliation should be considered as a control variable in this study.

The most common way to control for the variations across industries is to include a dummy variable as an indicator for each industry in the regression model. However, using this approach hinders the researcher's ability of utilising the panel regression models as for the fixed effects models all time invariant variables will be dropped from the regression equation. Thus, in this study, the research considers the industry affiliation by utilising the industry adjusted values for the control variables. The use of industry adjusted figures helps in controlling for the variations across different industries and yields comparable results. Such method has been used in prior literature, e.g., McKnight and Weir (2009), Fahlenbrach, Low and Stulz (2010) and Larmou and Vafeas (2010), among others. To calculate the industry adjusted values, the researcher follows the prior literature e.g., (Lang, Ofek and Stulz, 1996) by calculating the industry median of each variable for each year, then subtracts the median value from the company's figure.

5.6.2 Debt Finance

Debt financing has a critical role, and it is considered as one on the internal governance mechanisms that disciplines and aligns the managers' interest with those of shareholders; however, it might force the management to take more risky projects in order to achieve the required return by investors and cover the debt service expenses; also, it might cause a conflict of interests between debt holders and shareholders.

In the corporate governance literature, it is argued that leverage could lead to lower agency costs. Jensen and Meckling (1976) argue that debt holders can control managers' irrational behaviours by setting some provisions and constraints that prevent value destroying behaviours and decisions. Titman and Wessels (1988) argues that the agency costs of high leveraged firms is expected to be low, as

managers are not able to exploit firm's resources and consume excessive perquisites because of the rigorous monitor of debtholders. Moreover, debt agreement affects the free cash under the control of the managers, and protects it from expropriation or investing in non–optimal investments. McConnell and Servaes (1995) argues that debt could help in reducing the probability that managers will waste the free cash under their control in poor projects as they have to ensure that they have the sufficient fund to cover the debt service.

Jensen (1986) considers debt as an effective substitute of dividends. He argues that managers can decide either to pay dividends or to reinvest this cash in new projects; while by issuing debt, managers are committed to pay the interest and the principal amount at certain dates, and if they fail to do so, they will face the risk of bankruptcy, so debt is more effective than dividends in ensuring the alignment between managers' interests with those of shareholders.

Firms can benefit from debt financing in many ways. First, debt allows the market to evaluate the performance of the firm (Jensen, 1986; Agrawal and Knoeber, 1996) from different aspects. Grossman and Hart (1982) mention that in order to issue debt the market has to evaluate management's performance. So managers have to maximize the firm's value to get high evaluation that enables them to get high salaries, secure their jobs (the takeover bids will at high prices) and get the required capital from the market. Easterbrook (1984) argues that by issuing new debt, the firm's affairs are review by the external market; this proposes debt as an effective mechanism for both monitoring and adjusting the management's risk preferences. Second, debt financing limits the free cash flows under the control of the management, that might be expropriated by the management or invested in low or negative present value projects (Jensen, 1986), debt as an alternative for issuing new equity keeps the shareholder's proportion to the total equity constant compared to issuing new equity and adding new shareholders. And finally, debt puts pressures over the management, as they have to pay the interests and other debt servicing costs. Grossman and Hart (1982) argue that debt creates the threat of bankruptcy, such threat can align managers' interests with those of shareholders by inducing managers to seek more profitable projects and work for maximizing shareholders' wealth; otherwise, they will lose their jobs and all the benefits they gain from the firm. The expected bankruptcy costs were found as one of the important factors that direct the

management's decisions regarding new projects and make them more inclined to safer projects (Parrino, Poteshman and Weisbach, 2005; Pathan, 2009).

Because of debt, firms are subject to an external monitoring by debt providers, moreover, the negative consequences of the failure to pay the debt service obligations, like losing their jobs and their market reputation, can inspire managers to reduce agency costs (Henry, 2010). However, during crisis highly leveraged firms are more vulnerable to low profitability results from the high interest rates and costs of debt (Van Essen, Engelen and Carney, 2013).

Prior literature, promotes leverage as an effective mechanism to reduce agency costs. Agrawal and Knoeber (1996) and Fleming, Heaney and McCosker (2005) among others, mention that debt finance is an effective control mechanism that can be considered as alternative or complement for other control mechanisms like family and managerial ownership. Ang, Cole and Lin (2000) assert this argument, as they mention that debt financing grant creditors the right to monitor the management, especially for small and medium sized firms. Thus, leverage as bonding mechanism should reduce agency costs (Singh and Davidson III, 2003). Similarly, McKnight and Weir (2009) argue that the increase of debt founds the incentives for debt holders to monitor firm's management which should lead to lower agency costs. Doukas, McKnight and Pantzalis (2005) mention that the role of debt could not be effective till the debt ratio reaches a certain point. Doukas, Kim and Pantzalis (2000) report evidence that debt has no significant role in reducing agency costs and controlling managers' behaviour; however, they find evidence that the role of debt starts to appear after reaching a certain debt level. Ferrero-Ferrero, Fernández-Izquierdo and Muñoz-Torres (2012) find evidence that debt controls the managerial discretion during the financial crisis.

McConnell and Servaes (1995) find that firm value and debt are negatively associated for high growth firms and positive for low growth firms; moreover, debt has a significant influence over the firm's investment decisions. These results can suggest that debt holders are effective monitors for low growth firms and detrimental for high growth firms, as they can constrain firm's future projects and prevent firms from taking the advantages of the growth opportunities they have. Lang, Ofek and Stulz (1996) report similar results as they find evidence of a negative association

between leverage level and growth for firms with low growth opportunities. This could confirm that disciplinary role of debt as suggested by Jensen (1986).

However, debt could lead to different form of conflicts and agency problems; Haniffa and Hudaib (2006) argue that debt could lead to conflict of interests between debt holders and shareholders. Stulz (1990) argues that debt can reduce the agency costs related to the overinvestment problem, but at the same time, debt could lead to an underinvestment problem. This means that in some cases, debt can affect firm performance positively and negatively in other cases; thus, firms need to reach the optimal leverage level that leads to balance between the positive and negative impact of debt to enhance firm value. Thus, in this study the researcher controls for the debt level using the industry adjusted debt to asset ratio (***adjDBT)***, total debt to total assets ratio was obtained from DataStream; then, the researcher applied the industry adjustment formula.

5.6.3 Growth prospects

Denis (2001) mentions that growth opportunity is an important variable that must be considered while investigating the relationship between corporate governance and performance. Growth prospects could have a direct impact on firm's agency costs and governance structure. Jensen (1986) argues that the extent of agency problems depends on the firm's growth opportunities. He mentions that firms with high growth opportunities are less susceptible to agency problems result from the divergence of interests between managers and shareholders towards the free cash flows compared to firms with low growth prospects and excess cash flows. Agency costs are expected to be higher for high growth firms; these firms have a broad spectrum of opportunities to choose among (Titman and Wessels, 1988); thus managers can choose the investment opportunity that matches with their motives. Consistent with this argument, Florackis (2008) mentions that the magnitude of agency problems and hence the costs associated with these problems vary according to the growth opportunities the firm has; moreover, governance mechanism role and effectiveness are reliant on the interaction between the type of agency problem and firm's growth opportunities. For example, underinvestment and asset substitution problems are more severe for high growth firms, while the free cash flow agency conflict is more serious for low growth firms (Florackis, 2008). Lehn, Patro and Zhao (2009) mention

that agency costs are expected to be directly related to growth opportunities, for high growth firm, managers have the discretion to choose investments projects that could transfer shareholders' wealth to inside owners.

In a similar vein, Doukas, Kim and Pantzalis (2000) and Doukas, McKnight and Pantzalis (2005) show that for a given level of free cash flows, firms with low growth opportunities are expected to waste these cash flows in negative present value projects and hence incurring more agency costs, whereas, firms with high growth opportunities are expected to invest these flows in proper projects. This problem is aggravated if the firm has substantial free cash flows and limited profitable opportunities to invest this cash; such findings are consistent with Jensen (1986)'s argument.

In terms of the impact of growth prospects on governance structure and other firm characteristics. Denis (2001) argues that firm can benefit more from outside directors when it has few growth opportunities, while firms with high growth opportunities need the insiders' expertise. Bathala and Rao (1995) assert the argument that board composition is affected by firm's growth prospects. They mention that high growth firms work in uncertain environment, which requires a more innovative management to take strategic decision that should retain the firm's competitiveness; in such a situation, insiders are more required because of their firm specific knowledge about the firm compared to outsiders, hence, for high growth firms, insiders are more required and more valuable than outside directors. They find evidence that supports their argument in the U.S. context. Similarly, the impact of managerial ownership and debt differs in accordance to firm's growth prospects (McConnell and Servaes, 1995). Easterbrook (1984) argues that dividends pay-out is related to the firm's growth prospects. He states that paying low dividends could be an indication that the firm's growth status is high; high growth firms tend to pay dividends as soon as their growth rate starts to decline. Rozeff (1982) finds evidence that firm's past and future growth prospects have an impact on shaping firms' dividends policy. Lehn, Patro and Zhao (2009) strengthen this argument by mentioning that high growth firms require an agile governance structure that fits their specific characteristics. Thus, based on the above-mentioned discussion, firm's growth prospects should be considered in this study. Following the prior literature (e.g., Doukas, Kim and Pantzalis (2000); Doukas, McKnight and Pantzalis (2005); Florackis (2005); McKnight and Weir

(2009); Belghitar and Clark (2014), among others), growth prospects are measured by Tobin's Q ratio. Q ratio is the sum of the market value of outstanding common shares plus the value of preferred stocks plus total debt (short term debt + long term debt) divided by total assets. All variables required to estimate this ratio were obtained from DataStream; then, the researcher applied the industry adjustment formula to compute the industry adjusted growth prospects (***adjQ***).

5.6.4 Dividend pay-out

According to Goergen (2012), Rozeff (1982) and Easterbrook (1984) are the first researchers to mention the role of dividends as a governance mechanism. Bathala and Rao (1995) argue that dividend pay-out is one of the mechanisms that could have a role in mitigating the agency conflicts between managers and shareholders. Dividends help in reducing the cash flows under the management control; and hence, it reduces agency conflicts and conflicts towards the use of these cash flows (Rozeff, 1982), Easterbrook (1984) argues that regular payment of dividends directs the firm towards the capital market to raise the required funds for new projects; however, this increases the costs of obtaining the required funds from the capital market (Rozeff, 1982). Raising these funds from the market requires the disclosure of more information to the market (Bathala and Rao, 1995); such exposure to the capital market coupled with more information disclosure make firm's performance reviewed by many parties like banks, institutional investors, new investors, financial analyst. This review definitely severs the interests of shareholders as the new capital providers can be good monitors and assessors of the firm's position. Farinha (2003b) provides empirical evidence that dividend payments help in reducing the agency problems for the UK firms either as a result of external monitoring by capital markets, or reducing the amount of excess cash under the control of managers. Similar to debt, Henry (2010) argues that default risk increases by paying high dividends to shareholders because of reducing the firm's liquidity level this could reduce firm level agency costs. Moreover, he argues that the need to maintain that high level of dividends will encourage firms to manage their future earning properly and this also, will lead to lower agency costs.

Prior literature provides evidence that dividend payment affects and affected by the governance structure and firm characteristics. The dividend pay-out ratio could be affected by firms growth position; Easterbrook (1984) argues that there is an inverse relation between the firm's dividend pay-out ratio and firm's growth prospects; firms tend not to pay or pay less dividends during the flourish of their growth once their growth rate starts to decline the pay-out ratio starts to increase. Rozeff (1982) finds evidence that dividend policy is negatively associated with firm's past and future growth prospects. Bathala and Rao (1995) argue that dividends pay-out influences board composition, Rozeff (1982) also finds evidence that managerial ownership plays a role in shaping firm's dividend policy. Accordingly, there is an interdependence relationship between dividends pay out and other governance and firm characteristics; such interdependent relation should be considered in this study. Belghitar and Clark (2014) report evidence that dividend pay-out reduce the agency costs of the free cash flow of large firms. Accordingly, in this study the researcher controls for the dividend pay-out ratio; this ratio was obtained from DataStream; then, the researcher applied the industry adjustment formula to calculate the industry adjusted pay-out ratio (***adjDIVD***).

5.6.5 Firm size

It has been argued in the prior literature that firm size is one is the controlling factors of agency costs and firm's governance structure. Henry (2010) mentions that large firms are more diversified, more complex and more subject to agency problems, thus large firms are expected to incur more agency costs compared to small firms. Likewise, Ang, Cole and Lin (2000) and Wellalage and Locke (2011) argue that agency costs are associated with firm size. Their findings support this argument. Belghitar and Clark (2014) argue that the actions of the managers of small firms are easily observable compared to large firms. This suggests that small firms are easy to be monitored; thus agency costs are expected to increase with the increase of firm size.

Singh and Davidson III (2003) mention that asset utilisation may be improved with the increase of size, which implies a decrease in agency costs. They refer the increase in asset utilisation to the economies of scale and cost reduction advantage. However, other researchers (e.g., Doukas, Kim and Pantzalis (2000); Doukas,

McKnight and Pantzalis (2005), among others) argue that agency conflicts increase as the firm size increases, thus, large firms are expected to incur more agency costs and hence this would be reflected in a low asset utilisation ratio.

Pfeffer (1972) mentions that board size is affected by firm characteristics like firm size. Similarly, Zahra and Pearce (1989); Eisenberg, Sundgren and Wells (1998) and Linck, Netter and Yang (2008) argue that the factors affect the choice of board size and composition differs from large and small firms. Consistent with this, Yermack (1996) argues that as firms grow in size and become more diversified, they seek more expertise from different industries resulting in large boards. Belghitar and Clark (2014) provide evidence that the impact of governance mechanisms differs between large and small firms; large boards and board composition have a significant role in reducing agency costs of large firms. Dalton *et al.* (1999) report evidence that firm size affects the relationship between board size and firm performance, with greater impact for small firms. Thus, the impact of firm size should be considered while investigating the relationship between corporate governance mechanisms and agency costs. Titman and Wessels (1988) demonstrate that firm's capital structure is affected by firm size, small firms tend to depend on debt finance rather than issuing equity, as the cost of the latter is less than issuing new equity.

In this study, the researcher uses the natural log of total assets as a proxy of firm size. This measure has been used in many studies (e.g., Eisenberg, Sundgren and Wells (1998); Florackis (2008); Ibrahim and Samad (2011); Belghitar and Clark (2014), among others). Total assets (***ASSTS)*** value was obtained from DataStream.

5.6.6 Profitability

In the corporate governance literature, it is argued that firm performance has a direct influence on the firm's governance structure like board size, composition, leadership structure and ownership structure as well. Firms with high profits generate more cash flows, thus they are susceptible for more agency costs related to free cash flow, and attract more institutional investors (Crutchley *et al.*, 1999). Wintoki, Linck and Netter (2012) report that board structure is shaped according to firm past performance. Hermalin and Weisbach (1988) find evidence that board composition changes in response to firm performance; more outside directors replace the inside

directors after the poor performance. Likewise, Boone *et al.* (2007) report evidence that board size and composition are affected by firm performance; they find that, usually, there is an increase in the proportion of outside directors following poor performance. Guest (2008) find evidence that for well performing firms CEOs gain more negotiation power and they can negotiate for smaller and less independent boards. However, Ghosh and Sirmans (2003) report opposite results, they find that the ratio of outside directors increases with the improvements of firm performance. In this study, the researcher utilises the return on assets (***ROA***) as a proxy of firm profitability; this ratio was obtained from DataStream; then, the researcher applied the industry adjustment formula.

5.7 ANALYTICAL PROCEDURES

In this section, the researcher will explore the analytical procedures for this study. Renders, Gaeremynck and Sercu (2010) mention that a common issue with prior studies is that they suffer from econometric problems like endogeneity and/or the lack of the statistical power; besides each firm could design their governance structure that maximizes shareholders' wealth and fits with firm's specific characteristics. Similarly Brown, Beekesc and Verhoeven (2011) mention that the endogeneity problem was ignored in prior studies and the estimated parameters from the ordinary least squares (OLS) were used to provide evidence that better corporate governance practices should lead to better performance or/and value; ignoring that the examined models could suffer from unobserved heterogeneity which means that the identified relations result from unobserved factors. In other words, the problem with the OLS regression is that it treats every firm-year observation as an independent observation neglecting the fact that each firm could be repeated for a number of years; such treatment ignores firm specific characteristics which could result in misleading estimations (Di Pietra *et al.*, 2008).

In this study, the researcher considerers the model statistical power by considering a comprehensive set of governance mechanisms. Also, the researcher considers the fact that each firm has its own characteristics by employing the panel data regression models; the rationale for using panel data, its characteristics, and the employed regression models are presented in this section; moreover, the endogeneity issue is considered by applying Durbin–Wu–Hausman endogeneity diagnostic test as a

robustness check to ensure that the employed models do not suffer from the endogeneity problems.

5.7.1 Panel data

Panel data (or longitudinal data) "*are data [gathered] for multiple entities in which each entity is observed at two or more time periods"* (Stock and Waston, 2011, p.11). This indicates that the same entities should be observed at least two times over the study period. Hence, the researcher can conclude from this definition that panel dataset is a cross section time series data set; this implies that panel data can combine the advantages of the cross section and times series all together. Cameron and Trivedi (2009) assert this by stating that panel data regressions can capture and count for variations across entities and variations over time similar to the basic cross section and the basic time series regressions.

Wooldridge (2013) states the difference between panel data and independently pooled cross section; panel data the same observed unit should be followed through a certain time period (the study period), whereas, the pooled cross section could be two or more independent samples combined together, and if these samples include some observed units in common, this might happen by coincidence.

Baltagi (2008) and Gujarati (2011) list the main advantages of using panel data.

1. Given that panel data deals with the same sample units over a certain time horizon, heterogeneity across these observed units could be unobservable and could bring biased results. Contrary to time series and cross-sectional data, panel data control for individual heterogeneity by considering subject specific characteristics that could affect the results and result in biased estimates if ignored.
2. Panel data -as a combination of time series and cross sectional data- overcomes the multicollinearity that occurs in time series data. Cross section dimension adds more informative data and variability; this leads to less collinearity between variables. Moreover, it gives more degrees of freedom and enhances efficiency.
3. Panel data is more appropriate in capturing and studying the dynamics of changes.

4. Panel data is able to capture the unobservable effects in time series and cross section data.
5. Panel data models surpass time series and cross section models in terms of model construction and complication of the model. Cameron and Trivedi (2009) mention that panel data requires employing powerful estimation models and methods to tackle the consequences of adding more time periods which are not independent from the preceding periods; however, panel data methods consider this by adjusting the estimators' standard errors.

In addition to the above-mentioned advantages, Wooldridge (2013) mentions that panel data allows researchers to apply lags and investigate the impact of decisions or applying new policies, which is significant in studying the consequences of such decisions or policies that are expected to have an influence after some time.

However, panel data has its own limitations. Panel data set is a problem in itself. To construct a panel data set, this means that the same units should be observed at two or more time points and this makes it more difficult to obtain such data (Baltagi, 2008 ; Stock and Waston, 2011 ; Wooldridge, 2013). In addition to this limitation, Baltagi (2008) mentions other limitations, i.e., distortions of measurement errors which means that the respondent provides faulty responses for many reasons, panel data models require long time span, cross section dependence which is related to macro level panels, as neglecting the dependence across countries leads to misleading interpretations, and finally, selectivity problems including a) nonresponse and missing data and b) attrition and exclusion from the sample for many reasons like the delisting and merging as the case of this study. However, most of these limitations do not apply with the variables employed in this study.[6] Moreover, Wooldridge (2013) mentions another disadvantage of the panel data that it controls for the occurred changes that take place over time, but it can't control for the changes across the sample units.

Based on the above discussion about the advantages of using panel data, the researcher can conclude that employing panel data regression models through this study will provide more accurate and efficient results.

[6] See Baltagi, B. (2008) *Econometric analysis of panel data*, John Wiley & Sons. for more details regarding these limitations

5.7.2 Panel data regression models

Baltagi (2008) shows that compared to the time series and cross section regression models, panel data regression varies in having double subscript for its variables to express the identity of the observed unit and the time of observation. Moreover, the error term in the regression model captures the unobservable specific effect of the sample units and normal error term.

$$y_{it} = \alpha + X'_{it}\beta + u_{it}$$

Where, $i = 1, . , N$

$t = 1, . . , T$

$$u_{it} = \mu_{it} + \varepsilon_{it}$$

Where, μ_{it} = unobserved individual-specific effect

ε_{it} = remainder disturbance

The above-mentioned regression equation could be the same as the Pooled Ordinary Least Square (OLS) if the unobserved individual-specific effect $\mu_{it} = 0$. So, in that case, pooled OLS regression will provide efficient estimations, whereas, if the $\mu_{it} \neq 0$, panel data regression models will be more appropriate and will provide more efficient estimations.

The basic linear panel data models are fixed effects and random effects models. Fixed effects allows the independent variables to be correlated with the subject level effects tolerating a limited form of endogeneity, whereas, random effects model assumes that the independent variables are fully exogenous, and not correlated to subject level effects (Cameron and Trivedi, 2009; Stock and Waston, 2011). Moreover, the fixed effect model allows each observed unit to have its own dummy intercept, and also, fixed effects model assumes that the subject specific intercept is fixed and time invariant to account for the heterogeneity across the observed units, whereas, the random effects model assumes that these intercepts are random and time variant (Gujarati, 2011). This point differentiates between the pooled OLS and panel data regression models.

However, panel data regression models have the same assumptions as the ordinary least square (OLS) (Stock and Waston, 2011). Greene (2012, p.16) states a set of assumptions for the OLS regression model which are:

1. **Linearity** assumption states that the relationship between the dependent and independent variables should be linear.
2. **Full rank** assumption means that no perfect multicollinearity should present among the independent variable. Perfect multicollinearity means that there is a perfect linear relationship between two or more independent variables. However, Stock and Waston (2011) underscore that the imperfect multicollinearity – highly but imperfect correlation between independent variables- does not affect the estimation results.
3. **Exogeneity of the independent variables** which means that the mean value of the error term is zero, and not a function of the independent variables.
4. **Homoscedasticity and non-autocorrelation**. This assumption means that the error terms should have the same variance and not interrelated.
5. **Data generation**. Independent variables are assumed to be non-stochastic. The values of the independent variables are fixed in repeated samples without measurement errors.
6. **Normality of the error term.** The error term should be normally distributed with zero mean and constant variance.

As cited before, Stock and Waston (2011) state that the assumptions of the OLS stand for the fixed effects regression models. However, Greene (2012, p.63) mentions that the sixth assumption becomes inessential for large samples. Park (2011) and Greene (2012) demonstrates that employing panel data set will require to relax some of the above-mentioned assumptions. Given that in panel data the same unit observed at different time points, heterogeneity across the observed units and the observed variables will be present, this violates the third and the fourth assumptions, which implies that the OLS becomes biased linear estimator; however, panel data regression models are designed to tackle and deal with these problems (Park, 2011). To deal with these assumptions, the researcher employed both the correlation matrix and Variance Inflation Factor to check that there is no perfect multicollienarity between the independent variables.

Park (2011) and Wooldridge (2013) mention that a common practice of many researchers to employ both fixed and random effects models whenever they have panel data. However, this practice neglects the fact that both models have their own assumptions, and the characteristics of the dataset control of the model employed. Thus, these models should not be used as substitutes.

To avoid this common incorrect practice, Hausman (1978) specification test should be applied to decide between the fixed effects and random effects (Baltagi, 2008; Gujarati, 2011; Greene, 2012; Wooldridge, 2013). This test based on examining a null hypothesis that the individual effects are not correlated with the independent variables, thus, fixed effects, random effects and OLS are consistent, but the OLS is inefficient against an alternative hypothesis that fixed effects is consistent but random effect is biased and inconsistent (Park, 2011; Greene, 2012).

In other words, Hausman (1978) specification test examines the correlation between the subject-level effects and the independent variables in the model. The null hypothesis is that the subject effects are uncorrelated with the employed independent variables. Hence, if the null hypothesis is not rejected, this implies that the random effects model is better than the fixed effects, whereas, if the null hypothesis is rejected, this means that there is a correlation between subject effects and the independent variables, and hence, fixed effects model is appropriate than the random effects model.

Although -As aforementioned that- the panel data regression models consider the heterogeneity across the sample units. However, in this study, the researcher considered the heteroscedasticity issue following the suggestion of White (1980) that for large sample heteroscedasticity-correlated standard error can be obtained by correcting the standard errors to allow for heteroscedasticity which is known as robust standard error (Gujarati, 2011) which will yield up a heteroscedasticity – robust estimator (Cameron and Trivedi, 2009). This procedure can be done in Stata using the *vce (robust)* option of the panel regression command. However, the researcher also controlled for standard errors clustering within the firm, Heteroscedasticity and auto-correlation between variables by employing the command *vce (cluster firm)* in STATA.

Finally, Considering that the QFCF variable has many observations with a zero value; this variable is considered as censored variable and thus normal linear regression (OLS) or normal panel regression models might yield inconsistent and biased results. Tobit regression which is the common and appropriate regression model can be used for censored and truncated dependent variables (Brooks, 2014); especially, when the variable has the value of zero for nontrivial fraction of the population (Wooldridge, 2013, p. 596). The advantage of the Tobit regression is that it uses all the data set observations; but the same time it can consider the grouping limit of the data set (Jizi *et al.*, 2014). In this study, panel based Tobit regression is used to investigate the impact of corporate governance mechanisms on the interaction of the free cash flow with growth prospects as a proxy of the agency costs associated with free cash flow and investment decisions. This regression method has been utilised in prior studies, (e.g., McKnight and Weir (2009); Henry (2010); Belghitar and Clark (2014), among others).

5.8 EMPIRICAL MODELS

The basic empirical model for investigating the impact of corporate governance mechanisms on agency costs is as follows:

$$Agency\ costs_{it} = \beta_0 + \sum_{G=1}^{n} \beta_G (Governance_{it}) + \sum_{C=1}^{n} \beta_C (Control_{it}) + \varepsilon_{it}$$

where:

$Governance_{it}$ is the set of governance variables for firm *i* in year *t*

$Control_{it}$ is the set of control variables for firm *i* in year *t*

ε_{it} is the normal error term.

The baseline model illustrates in more details the main variables have been employed in this study.

Baseline model:

$$\begin{aligned} Agency\ costs_{it} &= \beta_0 + \beta_1 BRD_{it} + \beta_2 IND_{it} + \beta_3 ACE_{it} + \beta_4 DUL_{it} \\ &+ \beta_5 REMU - COM_{it} + +\beta_6 NOMINI - COM_{it} + \beta_7 BLK_{it} \\ &+ \beta_8 BRDOWN_{it} + \beta_9 ASSTS_{it} + \beta_{10} adjROA_{it} \\ &+ \beta_{11} adjDBT_{it} + \beta_{12} adjQ_{it} + \beta_{13} adjDIVD_{it} + \varepsilon_{it} \end{aligned}$$

To investigate further the role of different ownership structures on agency costs the following sub models were derived from the baseline model.

Sub model (1)

$$Agency\ costs_{it} = \beta_0 + \beta_1 BDZ_{it} + \beta_2 IND_{it} + \beta_3 ACE_{it} + \beta_4 DUL_{it} + \beta_5 REMU - COM_{it} + +\beta_6 NOMINI - COM_{it} + \beta_7 INST\_BLK_{it} + \beta_8 IND\_BLK_{it} + \beta_9 BRDOWN_{it} + \beta_{10} ASSTS_{it} + \beta_{11} lnadjROA_{it} + \beta_{12} adjDBT_{it} + \beta_{13} adjQ_{it} + \beta_{14} adjDIVD_{it} + \varepsilon_{it}$$

In this model the researcher splits the block holding variable into institutional block holding and block holding by individual investors.

Sub model (2)

$$Agency\ costs_{it} = \beta_0 + \beta_1 BRD_{it} + \beta_2 IND_{it} + \beta_3 ACE_{it} + \beta_4 DUL_{it} + \beta_5 REMUCOM_{it} + +\beta_6 NOMINICOM_{it} + \beta_7 BLK_{it} + \beta_8 CEOOWN_{it} + \beta_9 EXECOWN_{it} + \beta_{10} NEDOWN_{it} + \beta_{11} ASSTS_{it} + \beta_{12} adjROA_{it} + \beta_{13} adjDBT_{it} + \beta_{14} adjQ_{it} + \beta_{15} adjDIVD_{it} + \varepsilon_{it}$$

In this model the researcher splits the board ownership ratio into CEO ownership, non-executive board members ownership and executive board members ownership ratios.

Sub model (3)

$$Agency\ costs_{it} = \beta_0 + \beta_1 BRD_{it} + \beta_2 IND_{it} + \beta_3 ACE_{it} + \beta_4 DUL_{it} + \beta_5 REMU - COM_{it} + +\beta_6 NOMINI - COM_{it} + \beta_5 INST\_BLK_{it} + \beta_7 IND\_BLK_{it} + \beta_7 CEOOWN_{it} + \beta_8 EXECOWN_{it} + \beta_9 NEDOWN_{it} + \beta_{11} ASSTS_{it} + \beta_{12} adjROA_{it} + \beta_{13} adjDBT_{it} + \beta_{14} adjQ_{it} + \beta_{15} adjDIVD_{it} + \varepsilon_{it}$$

In this model the researcher splits the block holding variable into institutional block holding and block holding by individual investors; moreover, the researcher splits the

board ownership ratio into CEO ownership, non-executive board members' ownership and executive board members ownership ratios.

Table 3 Variables employed in this study

Agency costs	
lnadjTRN	Natural log of the industry adjusted asset utilisation ratio.
QFCF	The interaction of free cash flow with growth prospects.
Board Characteristics	
BRD	Total number of board members.
IND	Percentage of the independent board members (excluding the chairman) to total board size.
ACE	Audit Committee Effectiveness according to Smith Report (2003) recommendations
DUL	A dummy variable that takes the value of 0 if there is a separation between the CEO and chairman posts 1 otherwise.
ACE	Comprehensive measure for audit committee effectiveness. A dummy variable that takes the value of 1 if the audit committee fully complies with the requirements mentioned in Smith Report (2003), 0 otherwise.
REMU-COM	A dummy variable that takes the value of 1 if the remuneration committee comprises of 3 members at least with a majority of independent members.
NOMINI-COM	A dummy variable that take the value of 1 if the nomination committee comprises of 3 members at least with a majority of independent members.
Ownership Structure	
BLK	Total ownership percentage of blockholders owning 5% or more.
N_BLK	The number of blockholders owning 5% or more.
INST_BLK	Total ownership percentage of institutions owning 5% or more.
N_INST	The number of institutions owning 5% or more.
INDV_BLK	The total ownership percentage of individuals holding 5% or more.
N_INDV_BLK	The number of individuals owning 5% or more.
BRDOWN	The percentage of the board directors' shares to the total outstanding shares.
CEOOWN	The percentage of CEO's shares to the total outstanding shares.
EXECOWN	The percentage of the executive directors' shares to the total outstanding shares.
NEDOWN	The percentage of the non-executive directors' shares to the total outstanding shares.
Control Variables	
adjDBT	Industry adjusted total debt to total assets.
adjROA	Industry adjusted return on assets ratio.
adjQ	Industry adjusted Tobin's Q.
adjDIVD	Industry adjusted dividend pay-out ratio.
ASSTS	Total assets.

5.9 SAMPLE SELECTION AND DATA SOURCES

5.9.1 Sample

The initial sample for this study is The Financial Times Stock Exchange (FTSE) All-Share Index for each year of the study period. This starting point was chosen for two reasons; first, FTSE All-Share Index is an assembly of the FTSE 100, FTSE 250 and FTSE Small Cap Indices. Thus, this index represents 98%-99% of the UK market capitalization (FTSE, 2012). The All-Share Index can be considered as a comprehensive index that includes all industries in the UK market, and it fully reflects the market performance. This index reflects the performance of all companies that are eligible to be listed on the London Stock Exchange's (LSE) main market (FTSE, 2012). Second, the UK system requires all listed firms to either comply with the UK corporate governance code, or to explain the reasons behind their noncompliance. Thus, it is expected to find that all firms are complying with the code recommendations, and this compliance could be reflected in lower agency conflict and lower agency costs.

Two samples are utilised in this study; a full sample and pre and post the financial crisis analysis samples. The full sample of this study covers the fiscal years for the period 2005–2011 inclusive. This sample has been used for the primary investigation of the effect of corporate governance mechanisms on agency cost. However, given that one of the aims of this study is to provide the corporate governance literature with a recent investigation of the impact of corporate governance mechanisms on the different proxies of agency costs before and after the financial crisis, and examine whether the impact of the investigated mechanisms changes across the two period, the researcher has excluded year 2008 because of the financial crisis, and split the primary sample into two independent samples representing the pre–crisis period before 2008 and post crisis recession period after 2008; that have been utilised in the comparative analysis before and after the crisis. Hence, the pre–crisis data set covers the period 2005–2007 inclusive and the post-crisis data set covers the period 2009–2011 inclusive. Another methodology could be used which is creating dummy variables to reflect the pre, during and post periods; however, this methodology helps in controlling for the impact of the financial crisis rather than investigating the effect of the financial crisis on the corporate governance mechanisms on reducing the

agency costs. The methodology of constituting two samples representing two different periods with the exclusion of a specific year has been utilised by prior studies; e.g., Holderness, Kroszner and Sheehan (1999) examined the association between managerial ownership and performance during two different period 1935 and 1995 using two different sample of the U.S. firms to capture the changes in this association for these two different periods. DeFond *et al.* (2011) investigate the impact of applying the 2005 mandatory International Financial Reporting Standards (IFRS) on mutual funds ownership structure by constituting two samples to represent the pre–IFRS period (2003-2004) and post-IFRS (2006-2007); likewise, Jiao *et al.* (2012) examine the impact of the 2005 IFRS on the financial analysts' ability to transform accounting information into forward looking information using data of the period 2004-2006 after excluding 2005, both studies used this method to avoid the any potential confounding effects.

The employed samples in this study include only those companies that were listed in the FTSE-All Share index during the study period. The researcher has excluded all delisted firms from the FTSE-ALL Share Index during the study period 2005–2011 inclusive. This exclusion relates to data availability; annual reports for most of the delisted firms were not available during the data collection period. Moreover, All firms that belong to the financial industry like, banks, insurance companies (life and nonlife insurance companies), real estate investments companies (Real Estate Investment & Services and Real Estate Investment Trusts) and financial services companies (Financial Services, Equity Investment Instruments and Non-equity Investment Instruments) have been excluded from the sample because of their special characteristics as they have their own regulations, corporate governance practices. Above this, companies belong to this sector are subject to external inspections from supervisory bodies like the Financial Services Authority (FSA). Furthermore, firms with missing data, either missing on DataStream or missing annual reports were also excluded. Moreover, as a result of using industry adjusted variables, all industry groups with less than two observations per group have been excluded. And finally, to fit with the requirements of panel data regression models; firms with less than two years of data observations were excluded (Stock and Waston, 2011).

These selection criteria result in a full sample of 1431 non-financial firm–year observations that conform to the sampling criteria and have all the required data for the study period 2005–2011 inclusive; spilt into 562 for the pre–crisis period and 684 for the post–crisis period after excluding year 2008. Hence, 2 years is the minimum observations number of each firm and the maximum is 7 years with average 6 years; this denotes that the full sample data set is an unbalanced panel data set. Similarly, the pre–crisis and post crisis samples, minimum 2 years observations per firm, the maximum 3 and average 2.9 observations, which means that the data sets for the pre and post crisis analysis are unbalanced as well.

5.9.2 Data (sources and collection procedures)

The data required for this study were gathered from a number of sources. A list of the companies that were incorporated in the FTSE ALL-Share index for each year of the study period was downloaded from the DataStream. Corporate governance variables, which include board characteristics represented in board size, number of independent non-executive directors, leadership structure, the composition of board subcommittees, and the characteristics of audit committee effectiveness as recommended by Smith Report (2003), all these variables were collected from annual reports for each company for the fiscal years 2005, 2006, 2007, 2008, 2009, 2010 and 2011, as well as, the board ownership variables. Electronic versions of the required annual reports were downloaded from the companies' website; missing reports on the company website were downloaded from either Northcote Internet Ltd website or AnnualReportsforplcs.co.uk.

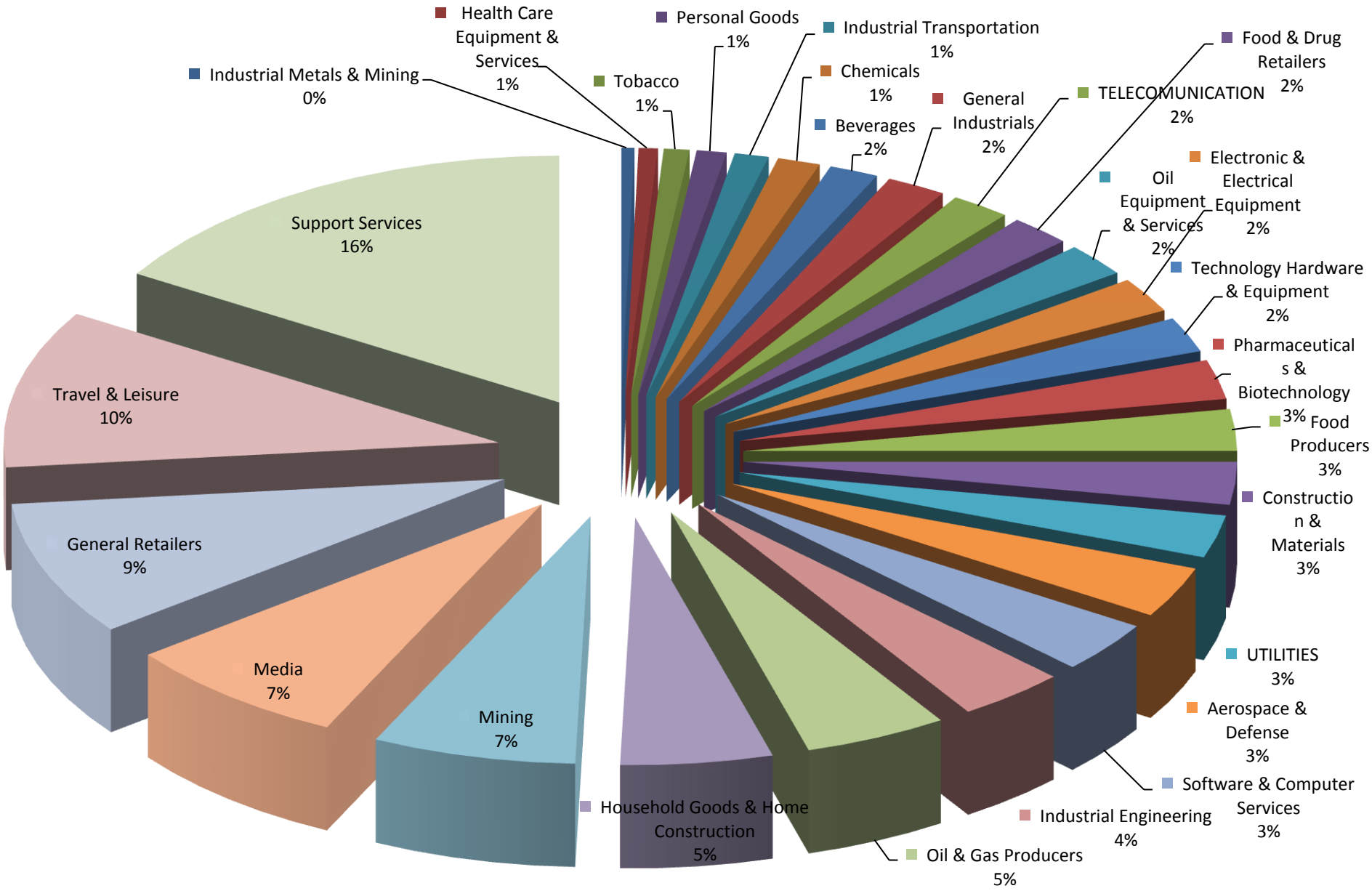
The data collection process involves examining the board structure, identify the number of directors, check the directors' profiles at the appointment dates, the compliance with the independence criteria as described by the UK corporate governance code, the number of board subcommittees and their composition, and checking either the CEO and chairman posts are separated or not. In regard to audit committee effectiveness criteria, the data collection process involved a number of procedures, first, check that the firm has audited committee, then check the number of members to ensure that the committee met the minimum number, after that, check the identity of the committee members to ensure they all independent directors,

afterward, check that at least one of the members has recent financial experience, and finally, check the number of meetings during the fiscal year.

Ownership structure data was manually collected as well. With regard to board ownership variables, these variables were manually picked up from the annual reports. This process involves categorising the board members into three different groups CEO, executive members group and non-executive member group; then finding the total number of ordinary shares held by each member and the total number of firms' ordinary shares. In relation to the total percentage of block holding and other ownership variables, this data was manually picked up from Thomson One Banker database, and likewise, the board ownership variables, block holding variables were categorised into institutional block holding, individual block holding and total block holding variables. As a final point, financial figures of the total assets, total debt, short and long term debt, performance ratios, and variables needed for computing Tobin's Q and free cash flow variables, all were downloaded from DataStream.

It worth mentioning that the employed sample in this study represents the following industries: Aerospace & Defence, Beverages, Chemicals, Construction & Materials, Electricity, Electronic & Electrical Equipment, Telecommunications, Food & Drug Retailers, Food Producers, Gas, Water & Multi-utilities, General Industrials, General Retailers, Health Care Equipment & Services, Household Goods & Home Construction, Industrial Engineering, Industrial Metals & Mining, Industrial Transportation, Media, Oil & Gas Producers, Oil Equipment & Services, Personal Goods, Pharmaceuticals & Biotechnology, Software & Computer Services, Support Services, Technology Hardware & Equipment, Tobacco, Travel & Leisure. This indicates that the study sample is a comprehensive sample as it incorporates most of the industries in the UK market. Figure 4 represents a pie chart of the industrial representation over the full sample.

Figure 4 Industrial representation over the full sample.



5.10 SUMMARY

This chapter presents the methodology applied in this study based on the study aims and objectives. This study follows the positivism philosophy, and applies the deductive approach using an archival research strategy. Throughout this chapter, the researcher explored the study hypotheses, the measurement of the agency costs proxies, the measurement of the independent as well as the control variables; the analytical procedures of this study and finally, the sampling and data collection processes.

To avoid the limitations of the prior studies, as mentions in the previous chapter, a comprehensive set of corporate governance mechanisms was employed, data required for board characteristics variables were collected manually from firms' annual reports, ownership variables were manually collected from Thomson One Banker, and control variables data were downloaded from DataStream.

These variables were utilised to construct a baseline line model and three different sub models. Furthermore, to avoid the limitations of the OLS, panel data regression models were utilised using the data collected for 1431 firm-year observations over the period 2005-2011. This first empirical analysis utilises the full sample to identify the overall impact of corporate governance on agency costs. Given that this study aims at investigating the role of corporate governance mechanisms before and after the financial crisis, the researcher constructed two sub samples, the pre–crisis sample covers the period 2005-2007 and the post crisis sample covers the period 2009-2011. The following chapter presents the results of the empirical analysis of the full sample analysis as well as the comparative analysis of the pre and post the financial crisis, in addition to the robustness checks and the further analyses employed.

CHAPTER 6
EMPIRICAL ANALYSIS, RESULTS AND DISCUSSION

6.1 INTRODUCTION

In this chapter, the researcher reports the results of the empirical analyses conducted in this study. In section 6.2, the researcher shows the descriptive statistics of the study sample; then report the correlation matrices and the results of the variance inflation factor (VIF) as checks of multicollinearity in section 6.3. Section 6.4 reports the results of the regression analyses for the full sample, then the comparative analysis of the pre and post the financial crisis. In section 6.5, the results of the endogeneity check as well as the results of the further analyses are reported.

6.2 DESCRIPTIVE STATISTICS

Descriptive statistics provide information about the study's data in a form that helps the researcher to understand the characteristics of the sample, and the variables utilised in this study and choosing the appropriate analyses methods. The represented tables in this section present the descriptive statistics, particularly mean, median, standard deviation, minimum, maximum, skewness and kurtosis for both the dependent and independent variables employed in this study. Table 4 reports the descriptive statistics of the full sample period 2005 – 2011 inclusive. Table 5 shows the movements and the changes happened in both dependent and independent variables during the study period and finally, Tables (5 and 6) present the descriptive statistics for the pre–crisis period (2005 – 2007) and post-crisis period (2009 – 2011).

6.2.1 Descriptive statistics of the full sample

As shown in Table 4, the net observations for the overall period are 1431 firm–year observations; the researcher has noticed the following:

It was found that the average (median) assets turnover rate (TRN) was 1.054 (0.92) turn(s), this average is lower than the average of 1.24 reported by Florackis (2008) for UK sample over the period 1999–2003. 45.6% of firms in the study sample have free cash flows, but don't have the proper growth opportunities to invest these cash amounts based on the interaction between the free cash flow and growth

opportunity (QFCF) variable; this implies that almost half of the study sample has the potential to be subject to agency problems and costs of the free cash flow and the investment decisions.

Table 4 Descriptive statistics of the dependent and independent variables for the FTSE All-Share Index companies over the period 2005-2011 inclusive

	N	Mean	Median	SD	Min	Max	Skewness	Kurtosis
BRD	1431	9.12	9	2.3785	5	19	0.98	3.99
IND	1431	0.498	0.5	0.1066	0	0.917	-0.15	3.91
ACE	1431	0.827	1	0.3786	0	1	-1.73	3.98
REMU-IND	1431	0.897	1	0.1522	0	1	-1.83	8.61
NOMINI-IND	1431	0.684	0.667	0.1318	0	1	-1.30	8.16
REMU-COM	1431	0.955	1	0.2068	0	1	-4.41	20.41
NOMINI-COM	1431	0.901	1	0.2981	0	1	-2.69	8.26
DUL	1431	0.036	0	0.1872	0	1	4.96	25.56
BLK	1431	0.311	0.28	0.2053	0	0.999	0.62	2.82
N_BLK	1431	3.23	3	1.9809	0	10	0.59	2.87
INST_BLK	1431	0.267	0.237	0.1870	0	0.999	0.75	3.19
N_INST	1431	3	3	1.9534	0	10	0.70	3.08
INDV_BLK	1431	0.043	0	0.1198	0	0.771	3.45	15.62
N_INDV	1431	.262	0	0.617	0	4	2.57	9.6
BRDOWN	1431	0.042	0.0026	0.1137	0	0.934	3.87	19.07
CEOOWN	1431	0.016	0.0008	0.0673	0	0.712	6.74	55.46
EXECOWN	1431	0.014	0.0005	0.0642	0	0.593	6.61	49.98
NEDOWN	1431	0.011	0.0003	0.0538	0	0.771	7.94	82.30
DBT	1431	0.240	0.217	0.1841	0	1.331	1.04	5.17
ROA	1431	0.092	0.077	0.1106	-0.544	1.341	3.23	34.20
DIVD	1431	0.414	0.347	2.2203	-53.8	31.5	-8.74	293.73
TRN	1431	1.054	0.92	0.6647	0.0039	4.22	1.26	4.96
Q	1431	1.579	1.198	1.8035	0.2196	31.470	8.83	114.08
ASSTS*	1431	7360	1400	23000	20.811	220000	6.13	44.69

BRD number of board members. **IND** is the percentage of the independent board members to total board size. **ACE** audit committee effectiveness. **DULT** is a dummy variable that takes the value of 0 if there is a separation between the CEO and chairman posts 1 otherwise. **REMU-IND** The percentage of independent non-executive members to the total number of the remuneration committee. **NOMINI-IND** The percentage of independent non-executive members to the total number of the nomination committee. **REMU-COM** A dummy variable that take the value of 1 if remuneration committee comprise of 3 members at least with majority of independent members. **NOMINI-COM** A dummy variable that take the value of 1 if nomination committee comprise of 3 members at least with majority of independent members. **BLK** is the total ownership percentage of blockholders owning 5% or more. **N_BLK** is the number of blockholders owning 5% or more. **INSTBLK** is the total ownership percentage of institutions owning 5% or more. **N_INST** is the number of institutions owning more than 5%. **INDVBLK** is the total ownership percentage of individuals holding 5% or more. **N_INDVBLK** is the number of individuals owning more than 5%. **CEOOWN** is percentage of CEO's shares to the total outstanding shares. **EXECOWN** is percentage of the executive directors' shares to the total outstanding shares. **NEDOWN** is percentage of the non-executive directors' shares to the total outstanding shares. **BRDOWN** is percentage of the board directors' shares to the total outstanding shares. ASSTS total assets. **DBT** is the total debt to total assets ratio. **ROA** is the Return on assets ratio, **DIVD** dividend pay-out ratio. **Q** Tobin's

In regard to the board characteristics across the overall analysis period: the average (median) board size is 9.12 (9), the smallest board was 5 board members and the largest was 19 members. This reported average is consistent with the effective board size proposed by Lipton and Lorsch (1992) as they suggest that the board size should not exceed ten members, however, a board of 8 or 9 members would be preferred.

* Numbers in millions

The average (median) percentage of independent non-executive directors is 49.8% (50%) this indicates that, for this sample, almost half of the board members are independent non-executive directors; this percentage reflects firms' compliance with the UK Corporate Governance code that recommends firms to have at least half of the board member excluding the chairman to be independent members. The descriptive statistics also reveal that the degree of board independence for this sample varies from totally non-independent board (no independent members) to an almost totally independent board (91.7% independent members).

Around 82.7% of the audit committees of this sample can be classified as an effective committee according to Smith Report (2003) recommendations. On average, 89.7% of the remuneration committee members are independent non-executive, while the average percentage of the independent non-executive members of the nomination committee is about 68.4%. However, the statistics show that on average 95.5% and 90% of the study sample have remuneration and nomination committees, respectively, that are in compliance with the corporate governance code recommendation which requires firms to have remuneration and nomination committees constituted of at least three members with a majority of independent members. Finally, the incidence of duality is only 3.6%. Given that, McKnight and Weir (2009) reported an average of 6% of CEOs having a dual role in UK sample for the year 2000; Florackis (2008) reported an average of 8.1% for UK sample over the period 1999–2002. This gives an indication that firms tend to comply more with the recommendation of separating between the CEO and chairman roles.

In regard to the Ownership characteristics across the overall analysis period: The average (median) percentage of block holding (shareholders holding more than 5%) is 31.1% (28%) with an average (median) 3.23 (3) main blockholders, the average (median) percentage of institutional block holding (institutions holding more than 5%) is 26.7% (23.7%) with an average (median) 3 (3) institutions, the mean percentage of individual block holding is 4.3%. The average board ownership was 4.2%, split into average CEO ownership of 1.6%, average executive board members' ownership ratio was 1.4 % and average non-executive ownership was 1.1%.

In terms of the control variables: the average (median) debt to assets ratio was 24% (21.7%); the average (median) of ROA was 9.21% (7.7%), and the average (median) of the dividend pay-out ratio was 41.4% (34.7%), the average (median) Q ratio is 1.579 (1.198) and the average (median) firm size measured by assets book value is 7360 (1400) million pounds.

Table 5 provides descriptive statistics of the movements in the dependent and independent variables for the FTSE All-Share Index companies over the period 2005-2011; movements related to board characteristics and the ownership structure are presented graphically in Figures (5-9). The researcher has noticed the following:

In regard to board characteristics: it was found that the average board size was taking an overall decreasing trend, the average board size was 9.38 members in 2005 and went down to touch its lowest point in 2010 with 8.82 board members before it starts to increase. However, the board median remained stable at 9 members across the study period. Such observation is consistent with arguments that firms tend to decrease their board size after crises (Yermack, 1996; Dalton *et al.*, 1999; Lehn, Patro and Zhao, 2009). The average percentage of independent non-executive directors shows a gradual increase; it increased from 46.8% (50%) 2005 to 51.5% (50%) 2011; likewise, the median of the board size, the median of independent non-executive directors percentage remained constant at 50%.

By combining the decrease in board size with the increase of board independence ratio, this combination can suggest that firms tend to keep the number of independent board members constant and decrease the board size by reducing the number of executive members. This could affect the board performance because independent board members might lack the required firm specific knowledge. Moreover, this could facilitate the CEO domination over the board, given that with the limited number of insiders on the board, the CEO is the main source of inside information for the board. In addition, this limited number of executive members limits the CEO succession alternatives in front of the independent directors.

Starting with a mean of 2.9% of firms having one person acts as CEO and board chairman in 2005, the statistics show that duality has fluctuated between a peak of 4.9% in 2008 and a low of 2.6% in 2010 before ending at 3.46% in 2011.

Table 5 Yearly descriptive statistics of the dependent and independent variables for the FTSE All-Share Index companies over the period 2005-2011 inclusive

	2005			2006			2007			2008			2009			2010			2011		
	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median
BRD	175	9.377	9	193	9.394	9	194	9.294	9	185	9.266	9	223	8.874	9	230	8.822	9	231	8.939	9
IND	175	0.468	0.5	193	0.477	0.5	194	0.493	0.5	185	0.512	0.5	223	0.506	0.5	230	0.507	0.5	231	0.515	0.5
ACE	175	0.703	1	193	0.798	1	194	0.851	1	185	0.838	1	223	0.839	1	230	0.852	1	231	0.879	1
REMU-IND	175	0.928	1	193	0.924	1	194	0.903	1	185	0.892	1	223	0.881	1	230	0.881	1	231	0.879	1
NOMINI-IND	175	0.666	0.667	193	0.673	0.667	194	0.658	0.667	185	0.686	0.667	223	0.692	0.667	230	0.697	0.667	231	0.70	0.714
REMU-COM	175	0.931	1	193	0.948	1	194	0.954	1	185	0.968	1	223	0.955	1	230	0.957	1	231	0.97	1
NOMINI-COM	175	0.857	1	193	0.891	1	194	0.897	1	185	0.919	1	223	0.906	1	230	0.913	1	231	0.918	1
DUL	175	0.029	0	193	0.041	0	194	0.036	0	185	0.049	0	223	0.040	0	230	0.026	0	231	0.035	0
BLK	175	0.281	0.24	193	0.276	0.23	194	0.297	0.27	185	0.296	0.27	223	0.331	0.32	230	0.335	0.31	231	0.342	0.32
N_BLK	175	2.9	3	193	2.8	3	194	3.3	3	185	3.1	3	223	3.4	3	230	3.5	3	231	3.489	3
INST_BLK	175	0.242	0.203	193	0.240	0.206	194	0.263	0.234	185	0.258	0.219	223	0.276	0.252	230	0.285	0.259	231	0.295	0.265
N_INST	175	2.63	2	193	2.52	2	194	3.06	3	185	2.88	3	223	3.13	3	230	3.18	3	231	3.24	3
INDV_BLK	175	0.039	0	193	0.036	0	194	0.033	0	185	0.039	0	223	0.055	0	230	0.050	0	231	0.047	0
N_ INDV	175	0.268	0	193	0.248	0	194	0.247	0	185	0.254	0	223	0.286	0	230	0.273	0	231	0.251	0
BRDOWN	175	0.039	0.003	193	0.030	0.0023	194	0.035	0.002	185	0.035	0	223	0.049	0.003	230	0.051	0.003	231	0.048	0.003
CEOOWN	175	0.011	0.001	193	0.014	0.001	194	0.013	0.001	185	0.013	0.001	223	0.019	0.001	230	0.021	0.001	231	0.019	0.001
EXECOWN	175	0.015	0	193	0.009	0.001	194	0.012	0	185	0.010	0.001	223	0.020	0.001	230	0.016	0.001	231	0.017	0.001
NEDOWN	175	0.013	0	193	0.008	0	194	0.009	0	185	0.012	0	223	0.010	0	230	0.014	0	231	0.013	0
DBT	175	0.237	0.219	193	0.250	0.213	194	0.261	0.233	185	0.273	0.260	223	0.240	0.225	230	0.217	0.187	231	0.213	0.192
ROA	175	0.098	0.081	193	0.106	0.088	194	0.122	0.093	185	0.084	0.076	223	0.063	0.052	230	0.088	0.068	231	0.089	0.076
DIVD	175	0.371	0.362	193	0.449	0.341	194	0.279	0.346	185	0.595	0.388	223	0.458	0.332	230	0.384	0.329	231	0.372	0.340
TRN	175	1.104	0.96	193	1.130	0.97	194	1.059	0.93	185	1.018	0.92	223	1.021	0.91	230	1.022	0.895	231	1.043	0.88
Q	175	1.773	1.321	193	1.955	1.462	194	1.817	1.463	185	1.268	0.920	223	1.307	0.997	230	1.514	1.128	231	1.494	1.042
ASSTS*	175	6282	1300	193	5931	1300	194	6504	1550	185	8442	1700	223	7445	1300	230	7939	1400	231	8562	1500

BRD number of board members. **IND** is the percentage of the independent board members to total board size. **ACE** audit committee effectiveness. **DULT** is a dummy variable that takes the value of 0 if there is a separation between the CEO and chairman posts 1 otherwise. **REMU-IND** The percentage of independent non-executive members to the total number of the remuneration committee. **NOMINI-IND** The percentage of independent non-executive members to the total number of the nomination committee. **REMU-COM** A dummy variable that take the value of 1 if remuneration committee comprise of 3 members at least with majority of independent members. **NOMINI-COM** A dummy variable that take the value of 1 if nomination committee comprise of 3 members at least with majority of independent members. **BLK** is the total ownership percentage of blockholders owning 5% or more. **N_BLK** is the number of blockholders owning 5% or more. **INSTBLK** is the total ownership percentage of institutions owning 5% or more. **N_INST** is the number of institutions owning more than 5%. **INDVBLK** is the total ownership percentage of individuals holding 5% or more. **N_INDVBLK** is the number of individuals owning more than 5%. **CEOOWN** is percentage of CEO's shares to the total outstanding shares. **EXECOWN** is percentage of the executive directors' shares to the total outstanding shares. **NEDOWN** is percentage of the non-executive directors' shares to the total outstanding shares. **BRDOWN** is percentage of the board directors' shares to the total outstanding shares. ASSTS total assets. **DBT** is the total debt to total assets ratio. **ROA** is the Return on assets ratio, **DIVD** dividend pay-out ratio. **Q** Tobin's

* Numbers in millions

Figure 5 Variation in board size during the study period 2005-2011 inclusive

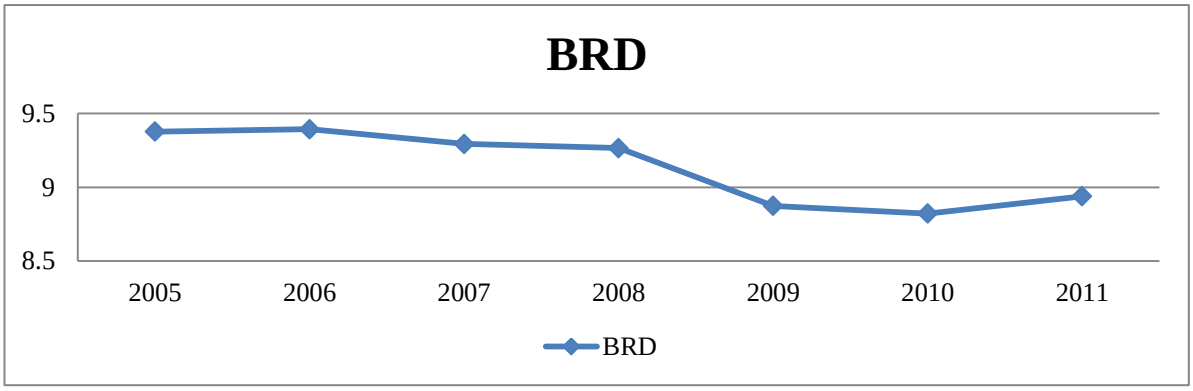
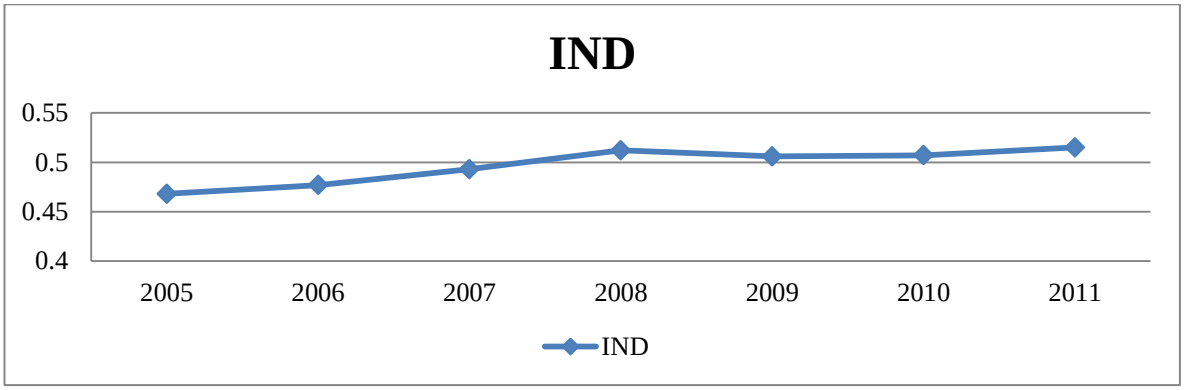


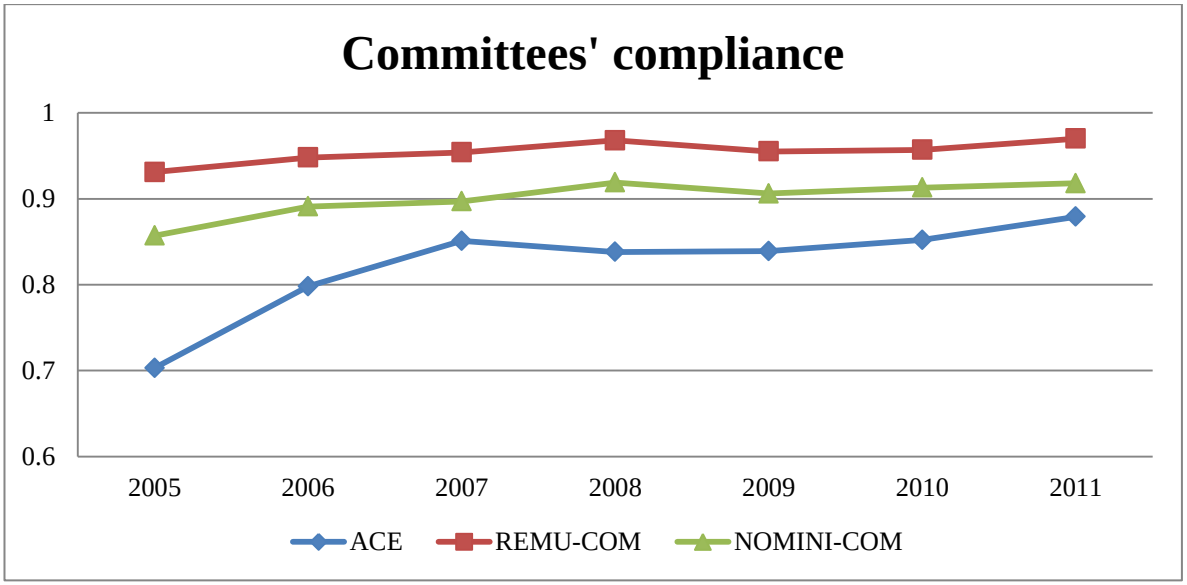
Figure 6 Variation in board composition during the study period 2005-2011 inclusive



The descriptive statistics show a gradual increase in the number of firms complying with Smith Report (2003) recommendations of the effective audit committee. On average, 70.3 percent of firms had effective audit committees according to Smith Report (2003) recommendations in 2005; this figure increased to reach 87.9 percent in 2011. This implies that more firms tend to have effective audit committees complying with Smith Report (2003) recommendations. Likewise, the statistics of the study sample show an overall increase in the percentage of firms complying with the recommendations of the corporate governance code in regard to the composition of the nomination and remuneration committees. The average percentage of firms having nomination and remuneration committees complying with the code recommendations increased from 85.7%, 93.1% in 2005 to reach 91.8% and 97% in 2011 respectively.

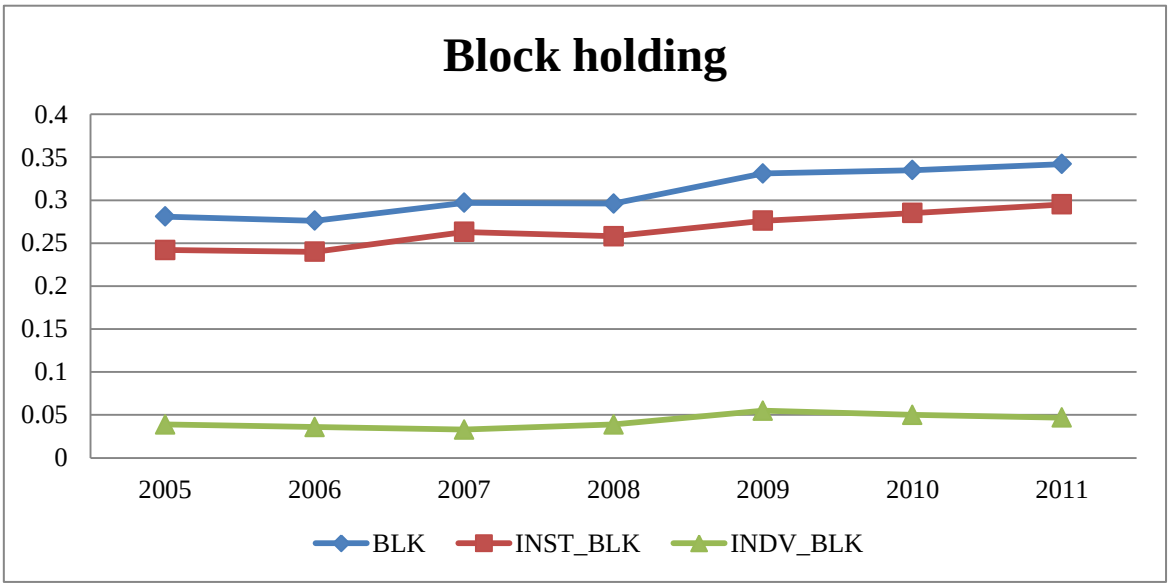
The above-mentioned statistics show an overall compliance with the UK corporate governance recommendations with respect to the nomination and remuneration committees; however, the statistics also show that, on the one hand, the percentage of independent members of the remuneration committee decreased from 93% in 2005 to be 88% in 2011; but on the other hand, the percentage of the independent members of the nomination committee increased from 66.6% in 2005 to be 70% in 2011.

Figure 7 Variation in compliance with the board's committees during the study period 2005-2011 inclusive



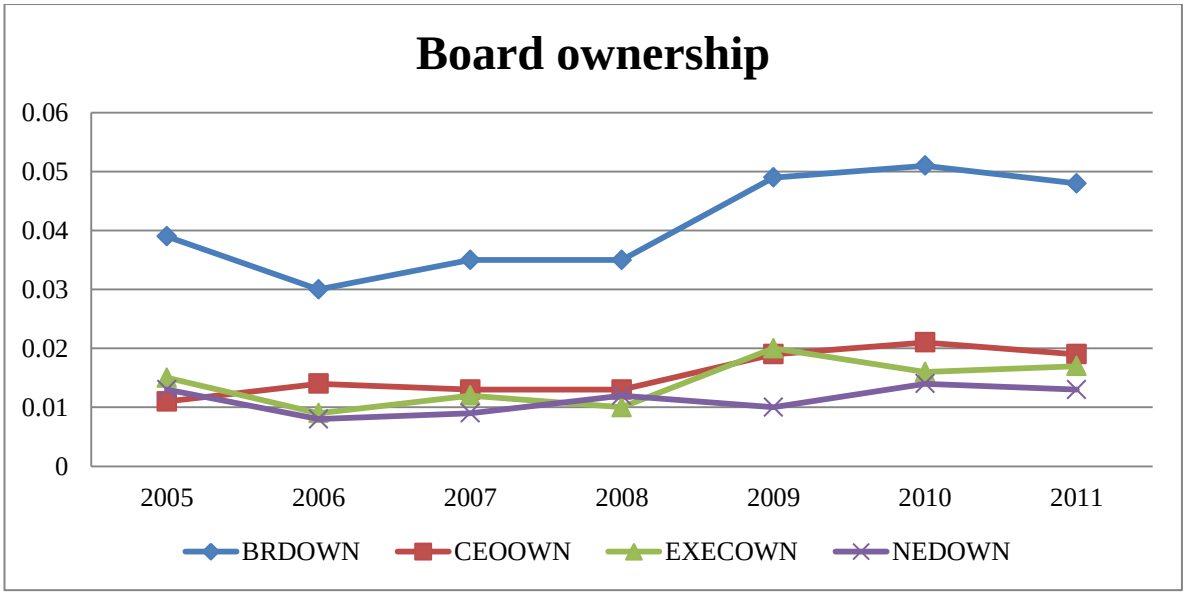
With respect to ownership characteristics: The average (median) percentage of block holding was constantly increasing from 28.1% (24%) in 2005 to reach 34.2% (32.2%) in 2011, whereas, the average number of blockholders slightly increased from 2.9 blockholder in 2005 to be 3.5 blockholders in 2011; while the median number of blockholders remained constant at 3 blockholders. Similarly, the average percentage of institutional block holding increased gradually during the study period, it increased from 24.2% (20.3%) in 2005 to 29.5% (26.5%) in 2011; the average (median) number on institutional blockholders slightly increased from 2.63 (2) in 2005 to 3.24 (3) in 2011. The average percentage of individual blockholders was fluctuating during the study period; it recorded 3.9% in 2005, then it fell down to 3.3% in 2007, then it started to increase gradually till it reached its highest point in 2009 with an average of 5.5% before it started to fall down again steadily till it reached 4.7% in 2011.

Figure 8 Variation in block holding ratio during the study period 2005-2011 inclusive



The statistics show an overall increasing trend for the board ownership percentage; it started with an average of 3.9% in 2005 and ended with an average board ownership percentage of 4.8% in 2011; this increasing trend was reflected on the other board ownership variables.

Figure 9 Variation in board ownership ratio during the study period 2005-2011 inclusive



With respect to agency cost variables: the average (median) turnover ratio started to decline from 1.1 (0.96) in 2005 till it reached its lowest point in 2008 with 1.01 (0.92) turn, then it starts to recover till reach 1.04 (0.88) in 2011. Besides, the

statistics show that around 45% of the study sample in 2005 have free cash flow without appropriate investment prospects, then it drops to be 40% in 2007 before it starts to increase and remains constant around almost 47% for the period 2008:2011.

With respect to the control variables, the average (median) debt to assets ratio was taking an increasing trend and peaked in 2008 with 27.3% (22%) before it started to fall down to reach 21.3% (19.16%) in 2011; such decrease on the average debt ratio is consistent with Spiegel (2011)'s conclusion that after the financial crisis, getting loans becomes costly and harder. ROA was taking an increasing trend for the period 2005 - 2007; it was 9.8% in 2005 and increased to 12.2% in 2007, then it starts to decline in 2008 and fell down to 6.3% in 2009 before it started to recover and stay stable at an average of 8.85% for the years 2010 and 2011. The average dividend pay-out was also fluctuating during the study period; it started with 37% in 2005, then increased to 45% in 2006 before it suddenly falls down to its lowest point of 27.9% in 2007, then it peaked again at 59.5% in 2009 before it falls and ends at 37.2% in 2011. Tobin's Q increased from 1.77 in 2005 to an approx. of 1.96 in 2006 before it started to fall down to hit its lowest level of approx. of 1.27 in 2008, then it starts to increase dramatically and reach approx. of 1.5 in 2011.

6.2.2 Descriptive statistics of the pre and post crisis samples

Table 6 and Table 7 demonstrate the descriptive statistics for both the dependent and independent variables for the FTSE All-Share Index companies over the pre–crisis period 2005 - 2007 and the post crisis recession period 2009 – 2011 respectively. The net observations are 562 and 684 firm–year observations for the pre–crisis period and the post crisis period respectively. The researcher has noticed the following:

With respect to the board characteristics: the average (median) board size decreased from 9.35 (9) for the pre–crisis period to be 8.88 (9) for the post crisis period. The smallest board was 5 board members for both periods, whereas, the largest board decreased from 19 members during the pre–crisis period to be 18 members for the post crisis sample. Alagla (2012) reported an average board size of 9.17 members for a sample of UK firms during the period 2004 – 2008 and Habbash

(2010) reported an average of 9 members for a UK sample covering the period 2003–2006 which is almost the same as the reported averages.

Table 6 Descriptive statistics of the dependent and independent variables for the FTSE All-Share Index companies over the period 2005-2007 inclusive

	N	Mean	Median	SD	Min	Max	Skewness	Kurtosis
BRD	562	9.354	9	2.4930	5	19	0.92	3.69
IND	562	0.480	0.5	0.1066	0	0.800	-0.40	4.01
ACE	562	0.786	1	0.4102	0	1	-1.40	2.95
REMU-IND	562	0.918	1	0.1556	0	1	-2.52	11.82
NOMINI-IND	562	0.669	0.667	0.1383	0	1	-1.42	8.16
REMU-COM	562	0.945	1	0.2285	0	1	-3.90	16.19
NOMINI-COM	562	0.883	1	0.3222	0	1	-2.38	6.65
DUL	562	0.036	0	0.1854	0	1	5.01	26.14
BLK	562	0.285	0.24	0.2056	0	0.999	0.75	3.13
N_BLK	562	2.97	3	2.0155	0	9	0.67	3.09
INST_BLK	562	0.249	0.214	0.1925	0	0.999	0.89	3.57
N_INST	562	2.74	2	1.9960	0	9	0.80	3.35
INDV_BLK	562	0.036	0	0.1095	0	0.717	3.98	20.11
N_INDV	562	0.254	0	0.666	0	4	2.93	11.62
BRDOWN	562	0.034	0.0022	0.0995	0	0.677	4.35	22.96
CEOOWN	562	0.013	0.0006	0.0554	0	0.646	7.31	66.25
EXECOWN	562	0.012	0.0004	0.0551	0	0.548	7.45	63.83
NEDOWN	562	0.010	0.0003	0.0427	0	0.490	7.05	63.13
DBT	562	0.250	0.226	0.1907	0	1.331	1.34	6.86
ROA	562	0.109	0.087	0.0969	-0.32	0.905	2.47	17.55
DIVD	562	0.366	0.348	2.8692	-53.8	31.5	-10.02	253.69
TRN	562	1.097	0.955	0.6808	0.12	4.21	1.22	4.83
Q	562	1.851	1.430	1.8592	0.2915	25.259	7.81	87.14
ASSTS*	562	6238	1400	18400	20.811	130000	5.65	36.15

BRD number of board members. **IND** is the percentage of the independent board members to total board size. **ACE** audit committee effectiveness. **DULT** is a dummy variable that takes the value of 0 if there is a separation between the CEO and chairman posts 1 otherwise. **REMU-IND** The percentage of independent non-executive members to the total number of the remuneration committee. **NOMINI-IND** The percentage of independent non-executive members to the total number of the nomination committee. **REMU-COM** A dummy variable that take the value of 1 if remuneration committee comprise of 3 members at least with a majority of independent members. **NOMINI-COM** A dummy variable that take the value of 1 if nomination committee comprise of 3 members at least with majority of independent members. **BLK** is the total ownership percentage of blockholders owning 5% or more. **N_BLK** is the number of blockholders owning 5% or more. **INSTBLK** is the total ownership percentage of institutions owning 5% or more. **N_INST** is the number of institutions owning more than 5%. **INDVBLK** is the total ownership percentage of individuals holding 5% or more. **N_INDVBLK** is the number of individuals owning more than 5%. **CEOOWN** is percentage of CEO's shares to the total outstanding shares. **EXECOWN** is percentage of the executive directors' shares to the total outstanding shares. **NEDOWN** is percentage of the non-executive directors' shares to the total outstanding shares. **BRDOWN** is percentage of the board directors' shares to the total outstanding shares. ASSTS total assets. **DBT** is the total debt to total assets ratio. **ROA** is the Return on assets ratio, **DIVD** dividend pay-out ratio. **Q** Tobin's

The statistics show an indication of increasing the board independence after the crisis. The average percentage of independent non-executive directors increased from 48% in the pre–crisis period to be 51% for the post crisis period, while, the median remained constant at 50%. Consistent with pre–crisis average, Aburaya (2012) reported an average of 46.7% for a sample of UK firms during the period 2004–2007. There are two possible explanations for the increase of the average

* Numbers in millions

percentage of independent non-executive directors after the crisis; the first is that, after the crisis, more firms tend to comply with the corporate governance recommendations; the second explanation is that firm tend to increase the number of independent directors to enhance the board's ability in performing their monitoring role, and to build more connections with the external environment to secure their resources.

The proportion of firms that can be classified as having an audit committee reflecting total compliance with Smith Report (2003) effectiveness recommendations increased from only 78.6% during the pre–crisis period to be 85.7% for the post crisis period. This implies that more firms tend to comply with Smith Report (2003) recommendations for the post crisis period compared to the pre–crisis period. The statistics reveal that the average percentage of remuneration committee independence decreased from an approx. of 92% to 88%; whereas, the average percentage of nomination committee independence increased from 67% to 70%. Nonetheless, The average percentage of firms having nomination and remuneration committees in compliance with the UK governance code increased from 88.3% and 94.5% in the pre–crisis period to be 91.2% and 96.1% respectively for the post–crisis period.

Finally, the instance of duality slightly decreased from 3.6% of the study sample during the period 2005–2007 to 3.4% for the period 2009 – 2011; This implies that approximately 96.5% of the firms incorporated in FTSE ALL-Share index comply with the UK corporate governance code and separate between the CEO and chairman roles for the study periods. In her study, Aburaya (2012) reported that the instance of duality in the UK firms during the period 2004 – 2007 was around 4%.

In regard to the ownership characteristics: The average (median) block holding percentage increased from 28.5% (24.3%) for the pre–crisis period to be 33.6% (31.6%) for the post crisis period, this increase was reflected in the increase of the average number of blockholders from 2.97 main blockholders to be 3.45 blockholders for the post crisis period. Likewise, the average (median) percentage of institutional block holding increased from is 24.9% (21.4%) for the pre–crisis period to be 28.5% (26%) for the post crisis period. In the same way the average (median) number of block holding institutions was 2.74 (2) institutions for the pre–crisis

period became 3.18 (3) institutions for the post crisis period. The average percentage of block holding by individual investors for the study periods jumped from 3.6% for the pre–crisis period to be 5.1% for the period 2009 – 2011.

Table 7 Descriptive statistics of the dependent and independent variables for the FTSE All-Share Index companies over the period 2009-2011 inclusive

	N	Mean	Median	SD	Min	Max	Skewness	Kurtosis
BRD	684	8.879	9	2.2504	5	18	0.99	4.14
IND	684	0.51	0.5	0.1047	0.111	0.846	0.00	3.50
ACE	684	0.857	1	0.3506	0	1	-2.04	5.15
REMU-IND	684	0.88	1	0.1483	0	1	-1.32	6.42
NOMINI-IND	684	0.696	0.667	0.1269	0	1	-1.13	7.74
REMU-COM	684	0.961	1	0.1949	0	1	-4.73	23.37
NOMINI-COM	684	0.912	1	0.2831	0	1	-2.91	9.50
DUL	684	0.034	0	0.1804	0	1	5.17	27.77
BLK	684	0.336	0.31	0.2051	0	0.941	0.54	2.67
N_BLK	684	3.452	3	1.9244	0	9	0.52	2.55
INST_BLK	684	0.285	0.260	0.1820	0	0.941	0.68	3.00
N_INST	684	3.18	3	1.8891	0	9	0.60	2.70
INDV_BLK	684	0.051	0	0.1302	0	0.771	3.09	12.87
N_INDV	684	0.270	0	0.5865	0	3	2.17	6.97
BRDOWN	684	0.050	0.0030	0.1270	0	0.934	3.51	16.23
CEOOWN	684	0.020	0.0010	0.0777	0	0.712	6.14	45.60
EXECOWN	684	0.018	0.0007	0.0741	0	0.593	5.80	38.24
NEDOWN	684	0.012	0.0004	0.0619	0	0.771	8.01	80.50
DBT	684	0.223	0.200	0.1750	0	0.854	0.74	3.17
ROA	684	0.080	0.067	0.1201	-0.519	1.341	4.37	44.23
DIVD	684	0.404	0.332	1.7251	-22.96	16.2222	-1.86	85.27
TRN	684	1.029	0.9	0.6547	0.0039	4.22	1.27	5.07
Q	684	1.440	1.047	1.7338	0.2196	31.470	10.01	150.62
ASSTS*	684	7988	1400	25400	40.865	220000	6.06	42.89

BRD number of board members. **IND** is the percentage of the independent board members to total board size. **ACE** audit committee effectiveness. **DULT** is a dummy variable that takes the value of 0 if there is a separation between the CEO and chairman posts 1 otherwise. **REMU-IND** The percentage of independent non-executive members to the total number of the remuneration committee. **NOMINI-IND** The percentage of independent non-executive members to the total number of the nomination committee. **REMU-COM** A dummy variable that take the value of 1 if remuneration committee comprise of 3 members at least with majority of independent members. **NOMINI-COM** A dummy variable that take the value of 1 if nomination committee comprise of 3 members at least with majority of independent members. **BLK** is the total ownership percentage of blockholders owning 5% or more. **N_BLK** is the number of blockholders owning 5% or more. **INSTBLK** is the total ownership percentage of institutions owning 5% or more. **N_INST** is the number of institutions owning more than 5%. **INDVBLK** is the total ownership percentage of individuals holding 5% or more. **N_INDVBLK** is the number of individuals owning more than 5%. **CEOOWN** is percentage of CEO's shares to the total outstanding shares. **EXECOWN** is percentage of the executive directors' shares to the total outstanding shares. **NEDOWN** is percentage of the non-executive directors' shares to the total outstanding shares. **BRDOWN** is percentage of the board directors' shares to the total outstanding shares. ASSTS total assets. **DBT** is the total debt to total assets ratio. **ROA** is the Return on assets ratio, **DIVD** dividend pay-out ratio. **Q** Tobin's

The statistics show that the average of board ownership percentage roughly increased by 45%, the board ownership percentage jumped from 3.4% for the pre–crisis period to be 5% for the period 2009- 2011. An equivalent average for the pre–crisis period for was reported by Habbash (2010) for a UK sample, he reported an average of 3.3% for the period 2003–2006. This increase was obviously reflected on

* Numbers in millions

the other board ownership variables. The average CEO ownership increased from 1.3% to 2%; Alagla (2012) reported an average of 1.8% in his study. The average executive board members ownership ratio was 1.2% during the pre–crisis period turns to be 1.8% for the post crisis period; likewise, the average ownership percentage of non-executive members increased from 1% to be 1.2% for the post crisis period.

With respect to agency costs proxy: the reported statistics reveal that the average assets turnover rate decreased from 1.097 turn(s) for the period (2005:2007) to 1.029 turn(s) for the post crisis period. In terms of the of interaction between the free cash flow and growth opportunity (QFCF) as an agency costs proxy; the statistics show that the number of firms that have free cash flows, but don't have the proper growth opportunities to invest these cash amounts based increased from 44.3% pre–crisis to be 46.8% for the post crisis period.

In regard to the control variables: by comparing the post crisis averages with the pre–crisis ones; it was found that the average debt to assets ratio decreased from 25% to 22.3%; likewise, the average ROA decreased from 10.9% to 8%. Habbash (2010) reported an average debt to assets ratio of 24.8% in his study. However, the dividend pay-out ratio increased from 36.6% to 40.4%; and the average growth opportunities measured by Tobin's Q decreased from 1.85 to 1.44; This implies that firms tend to become less dependent on debt or banks start to be more conservative in providing loans after the crisis; firms paid more dividends to the shareholders after the crisis compared to the post crisis period. The consequences of the financial crisis are unambiguously reflected on both the ROA and the Q ratio; firms attained less returns standardized by their assets after the crisis; above this, the growth opportunities measured by Q ratio became limited after the crisis.

After stating the descriptive statistics many comments can be drawn from these statistics: first, the descriptive statistics show that there is a trend to decrease the board size, increase the percentage of the independent board members and to comply with the recommendations described in corporate governance code, Smith Report (2003) and the other reports published by the Financial Reporting Council for an effective audit committee. Second, Regarding the duality variable, by checking the dataset, the researcher found that the number of firms that do not separate between

the CEO and Chairman positions is almost constant during the study period, so the decrease in the incidence of duality in the post crisis period could be attributed to the change in the sample size as the post crisis sample is larger than the pre–crisis one. Third, there is a trend to increase the board ownership ratio. Fourth, the impact of the financial crisis clearly reflected in the financial figures like ROA, Tobin's Q ratio and less loans.

The descriptive statistics - shown in the previous Tables (3 to 6) – show that some of the employed variables are skewed and with high kurtosis values. According to Cameron and Trivedi (2009), Wooldridge (2010), Gujarati (2011), Stock and Waston (2011), Greene (2012) and Wooldridge (2013) to describe any variable as normally distributed, it should have skewness equal to 0 and kurtosis ± 3. However, other studies in the accounting literature (e.g., Haniffa and Hudaib (2006)) relaxed this criterion, as they mention variables could be considered to be normally distributed if their skewness value is within the range ± 1.96 and kurtosis value is between ± 3. However, it worth mentioning that it is difficult for some variables because of their nature to be normally distributed. For example, ACE, REMU-COM, NOMNI-COM and DUL are dummy variables; with values of either 0 or 1, therefore, it is normal to find the values of skweness and kurtosis for these variables out of the mentioned range.

Given that the violation of the normality assumptions might affect the regression results, a special treatment for non-normal distributed variables should be employed as an attempt to normalise these variables. Data transformation is a common practice to deal with non-normally distributed variables with the purpose of improving their normality (Osborne, 2002; Hair *et al.*, 2014). Osborne (2010b) demonstrates that square root, natural logarithm and inverse are the most common transformations applied in the social science studies. It is worth mention that researchers should consider the direction of the skewness (positively skewed or negatively skewed) before transforming the variable. Osborne (2010b) states that for a positive skewed variable, all transformations can work effectively as long as the lowest value is equal to or greater than 1, if not, a constant should be added to bring the minimum value to 1; for negative skewed variables, the variable distribution must be reflected before transformation. Given that there are many transformation forms that can be used,

Hair *et al.* (2014) suggest that researchers should try all possible transformations and choose the transformation form that best adjusts the variable distribution to normality.

Based on the above discussion and following the previous literature, e.g., Farinha (2003b), Singh and Davidson III (2003), Fleming, Heaney and McCosker (2005), Haniffa and Hudaib (2006), Zaman, Hudaib and Haniffa (2011) and Andreou, Louca and Panayides (2014), among others, variables that are not normally distributed were transformed in an attempt of making them normally distributed. Different transformation methods could be employed to transform non-normally distributed variables in a trail to improve their normality. The researcher has applied different transformation techniques (i.e., like natural logarithmic, square root and the inverse) and chosen the transformed form that improves the variables' normality, in this study natural logarithmic and square root transformations were the most appropriate transformation forms for the variables utilised in this study[7].

The descriptive statistics also show that some variables have extreme values that might affect the regression estimates. These extreme values are very common when dealing with financial and market performance data collected over long time horizons for a diverse range of companies affiliated to different industries. However, the presence of extreme values (outliers) could have a significant impact over the estimated coefficients (Anderson, 2011; Hair *et al.*, 2014) and hence, the validity and the possibility of generalizing the conclusions drawn from the analysis are questionable (Osborne, 2010a).

The problem with the presence of outliers that it causes many statistical problems; first, outliers increase the standard error of the estimation, and decrease the statistical test power (Osborne, 2010a; Hair *et al.*, 2014); second, non-random outliers could lead to overestimation or underestimation errors and finally, yield biased estimations (Osborne, 2010a).

In the literature, there are many ways to deal with outlying observations. The first is to retain and consider them as normal data points, the second way is to exclude the outlying observations, and finally to winsorize them. Gujarati (2004) states that the

[7] Starting from the next section and so forth, variables donated with the prefix *ln* indicate that natural log transformation was applied to this variable, whereas the prefix *sq* refers to square root transformation.

decision about keeping or removing the outlying observation could change the regression results. Anderson (2011) suggests that before deciding on which way to deal with outliers; outliers should be examined to check either they are valid or invalid observations. In other words, to check either these outliers occurred because of a data entry error, or they are abnormal observations. For data entry error, simply, these erroneous entries will be corrected; whereas, for valid and correct observations, Anderson (2011) and Hair *et al.* (2014) recommend retaining them because of their contribution for better estimation and deep understanding of the examined phenomena as they represent a segment of the population that should not be excluded. Hair *et al.* (2014) state that by excluding outlying observations, researchers could improve their empirical results, however; they face the risk of limiting the generalizability of their results. Conversely, Osborne (2002) and Judd, MacClelland and Ryan (2009) argue that outlier should be eliminated from the analysis because of their negative impacts on the analysis results, and hence the inferences drawn from these influenced results could be misleading.

The third option to deal with an outlier is to winsorize it instead of removing it. By winsorizing, the highest and the lowest values are replaced with certain values from the dataset itself (Osborne, 2010a). Garson (2012) mentions that winsorizing drags the values of the extreme points towards the mean by resetting extreme values to certain limits; which helps in improving the statistical power without leading to overestimation error; however, in some circumstances it could bring in biased estimations. In the accounting literature, prior studies cope with outliers by either exclusion or winsorization. For example, Fleming, Heaney and McCosker (2005) truncated the 5^{th} and the 95^{th} percentiles of their data set; likewise, Florackis (2008) excluded the 1^{st} and the 99^{th} percentiles for each variable in their study. Other studies in the prior literature (e.g., Larcker, Richardson and Tuna (2007); Ertugrul and Hegde (2008); Guest (2008); Ravina and Sapienza (2010)) used the other opinion and winsorized the employed variables in their studies. Leone, Minutti-Meza and Wasley (2013) mention that among the different methods utilised in the accounting literature, winsorizing has the modest impact on the estimated parameters compared to excluding or keeping the outlying observations and don not deal with them. In this study, in favour of keeping all data points and to ensure that these extreme values

had no impact on the regression results, and following the prior literature ownership variables and control variables are winsorized at the 1st and 99th percentiles values.

6.3 CORRELATION ANALYSIS

Correlation analysis helps researchers to identify simple and primary associations between the utilised variables. Moreover, building on the assumptions of the OLS regression –mentioned in the previous chapter– the correlation between the independent variables should be investigated to ensure that there is no perfect multicollienarity among the utilised independent variables, which could affect the regression results. To do so, many tools can be utilised viz. correlation matrices and the Variance Inflation Factor (VIF) test.

Examining the correlation matrix is the first and easiest way to detect multicollinearity among independent variables. Correlation matrix shows the direction, strength and the significance of the relations between variables (Sekaran, 2003). Gujarati (2004, p.359) states that if the correlation coefficient between two independent variables exceeds 0.8, this indicates that the problem of multicollinearity is present. Likewise, Hair *et al.* (2014) mention that the presence of a high correlation coefficient (0.9 or more) between the independent variables gives a strong indication for the presence of collinearity between the correlated variables. However, Hair *et al.* (2014) also mention that the absence of any high correlation coefficients does not imply that there is no perfect multicollinearity between independent variables.

To avoid any possibility of multicollinearity that might be present and not detected by the correlation matrix, additional investigation of the multicollinearity using the Variance Inflation Factor (VIF) was applied. According to Gujarati (2004, p.362), Hair *et al.* (2014, p.200) the VIF (Tolerance 1/VIF) cut-off value is equal to 10 (0.1), variables exceed this cut-off value are considered highly collinear and should not be included in the same model.

6.3.1 Correlation analysis of the full sample

As observed from the descriptive statistics section (previous section), some of the employed variables in the full sample analysis are not normally distributed. This

implies that parametric tests are not appropriate for analysing relationships between the study variables. Dewhurst (2006) and Brooks (2014) mention that utilising non-parametric tests could be one of the possible solutions to deal with non-normally distributed variables and small samples; such tests are robust for non-normal distributed data, even though these tests are not with the same power of their equivalent parametric tests; as they do not require any distributional assumptions (Brooks, 2014), as they are known as distribution-free methods (Anderson, 2011); thus, to assess the association between the study's variables, non-parametric test should be used. Pfeffer (1972) and Sekaran (2003) mention that Spearman's rank correlation is one of the non-parametric tests that could be used for data that do not fulfil the parametric assumptions for Pearson's correlation.

Building on that, Spearman (non-parametric) correlation coefficient measure is employed as the primary tool to ensure that there is no perfect multicollienarity among the utilised independent variables. Besides, the Pearson's (parametric) correlation coefficient measure is also employed as a robustness check.

Table 8 presents the correlation matrices for the variables employed in the full sample analysis. Coefficients which are significant at the 1 % level are reported in bold, whereas, significant coefficients at the 5% level are shown in italic. None of the reported coefficients exceed the maximum accepted value of 0.8 with exception of the coefficient of correlation between the total percentage of block holding and the total percentage of institutional block holding (**ρ** = 0.833). This high correlation is logical and expected; considering that, normally the major blockholders are expected to be institutions not individuals, so any increase in the block holding ratio should be related to an increase in the institutional block holding and vice versa. However, this correlation is not expected to affect the study analysis as these correlated variables are employed in different models. Similarly, the correlation coefficients show high significant correlations between the total board ownership percentage and the ownership percentage of CEO (**ρ** = 0.746); between the total board ownership percentage and total ownership of executive board members (**ρ** = 0.685) and finally, between the total board ownership percentage and total ownership of non-executive board members (**ρ** = 0.681); such correlations are expected and normal between a variable presents the total percentage of board ownership and the

total board ownership percentage components (CEO, executive and non-executive ownership percentages); also, it implies that firms that adopt the orientation of increasing managerial ownership apply it to all board members without differentiating between being affiliated or non-affiliated to the firm. Nonetheless, these correlations do not affect the study analysis, because these correlated variables are utilised in different models.

The reported coefficients show that the assets turnover is negatively correlated with the debt ratio, whereas, it is positively correlated with the ROA ratio; suggesting that leverage lessens the management ability in utilising firm's assets base; whereas, the more returns achieved, the more resources that become available to reinvest and utilise the firm's assets base; such relationship is expected and logical. The reported correlation coefficients show that there is a positive significant correlation between board size and each of audit committee effectiveness, and firm size; indicating that large firms tend to be managed by large boards because of the need of more efforts, more expertise and more connections to secure the required resources. Board size is negatively correlated with the different variables of block holding; this gives rise to more than one interpretation; the first is that blockholders tend to reduce the board size; or large board is a negative sign which alienates investors from investing large amounts in such firms with large boards.

Board composition is positively correlated with board size, suggesting that as the board size increases, firms tend to recruit more independent directors to enhance board independence; another possible interpretation is that large boards are more independent compared to small boards. Moreover, board composition is positively correlated with firm compliance with different subcommittees recommendations, hinting that independent board members enhance firm's compliance with the code recommendations; also, board composition is positively correlated with firm size which could imply that large firms need more independent directors to control over the board. Conversely, board composition is negatively correlated with the different board ownership variables and different block holding variables as well; such correlations suggest that block holding and board ownership tend to be low with the increase of the number of independent board members; another possible interpretation is that blockholders and managers entrench themselves by controlling

board composition. Such correlations are consistent with Bhagat and Black (1996) and Lasfer (2006) predictions that the more managerial ownership, the less independent board memebers the firm will have; Bathala and Rao (1995) argue the negative association between insiders ownership and board independence results from the less need for the monitoring role of outside directors for firms with high managerial ownership.

The correlation matrix also reveals a positive correlation between duality on one side and the total block holding percentage, the total individual block holding ratio, board ownership variables (CEO and non-executives ownership) and growth prospects on the other side. These correlations suggest that the duality increases in the firms with dominating blockholders, also, suggest that the board ownership increases with the duality which can imply that dual CEOs use board ownership as a tool to entrench themselves. Also, there is a significant positive correlation between the CEO ownership ratio and each of the executive and non-executive board members' ownership ratios. The correlation matrix shows a significant negative association between board ownership variables and board size, such correlations could indicate that with the increase of board ownership, owner managers tend to decrease the board size in an attempt of controlling over the board; such relationship could be consistent with the managerial entrenchment assumptions.

As a final comment, firm size is negatively correlated with each of duality, return on assets, different ownership variables (block holding as well as board ownership variables) and firm's growth opportunities. These correlations indicate that as the firm size increases the block holding decreases; with the increase in firm size, the ability of profit generation becomes limited; and the increase in firm size dilutes the board ownership ratio, Lehn, Patro and Zhao (2009) report that management ownership is expected to be negatively associated with firm size; and that duality is most probably present in small firms rather than large firms. The coefficients show that large firms tend to have large boards with more independent directors and subcommittees in compliance with the code recommendations and to be highly leveraged. However, the matrix shows that leverage is negatively associated with the return on assets, implying that debt diminishes the profitability of the study sample;

another interpretation could be drawn from that negative correlation is that profitable firms tend to decrease their leverage ratio.

It is worth mentioning that Pearson correlation coefficients do not report any correlations that are above the accepted critical value of 0.8 apart from the previously mentioned correlations; which endorse the results of spearman's coefficients of the absence of multicollinearity between the independent variables utilised in this study. However, in this study, VIF test was utilised as a robustness check of multicollinearity. As a final point, the correlation coefficient represents either there is a linear association between two variables or not. It indicates the strength and the type of that relation (positive or negative relationship) as well; however, it neither shows the direction of causality, nor confirms a causal relationship between the related variables; consequently, more than one interpretation can be drawn from the same coefficient.

Table 9 reports the VIF and the tolerance values of the employed variables in the four models of the full sample analyses. The mean VIF values for the employed models (the baseline and sub models) are 1.32, 1.5, 1.3 and 1.43 respectively. None of the reported VIF coefficients exceeded the critical value of 10 as suggested by Gujarati (2004) and Hair *et al.* (2014). This indicates that there is no perfect multicollinearity between the models' variables. Together these results with the reported correlation coefficients, the researcher can claim that there is no perfect multicollinearity between the utilised independent variables.

Table 8 Correlation coefficients for the employed variables over the period 2005-2011 inclusive

	lnadj TRN	***QFCF***	***ln*BRD**	***ln*IND**	**ACE**	**REMU -COM**	**NOMINI -COM**	**DUL**	**BLK**	***ln*INST_ BLK**	***ln*INDV_ BLK**	***ln*BRDO WN**	***ln*CEO OWN**	***ln*EXE COW N**	***ln*NED OWN**	***lnadj* DBT**	***sqadj*D IVD**	***lnadj* ROA**	***lnadj*Q**	***ln* ASSTS**
lnadjTRN	1		0.049	-0.003	-0.011	-0.041	0.028	-0.021	0.025	-0.011	*0.056*	0.018	-0.020	0.034	0.030	**-0.311**	-0.023	**0.190**	**0.094**	*-0.060*
QFCF		1	0.013	**-0.004**	**0.027**	0.027	**0.049**	0.065	**0.032**	**0.054**	**0.024**	**0.024**	**0.038**	0.001	-0.008	0.055	0.033	**-0.136**	**-0.362**	**0.125**
***ln*BRD**	0.037	0.017	1	**0.172**	**0.163**	0.043	**0.079**	0.041	**-0.259**	**-0.237**	**-0.101**	**-0.083**	**-0.105**	0.003	-0.051	-0.003	0.013	-0.020	-0.052	**0.475**
***ln*IND**	0.002	-0.038	**0.184**	1	**0.353**	**0.298**	**0.217**	-0.026	**-0.164**	**-0.098**	**-0.139**	**-0.172**	**-0.086**	**-0.142**	**-0.098**	0.004	0.011	*-0.054*	**-0.078**	**0.376**
ACE	-0.035	0.033	**0.175**	**0.342**	1	**0.401**	**0.363**	-0.049	**-0.164**	**-0.075**	**-0.167**	**-0.140**	**-0.082**	**-0.118**	-0.049	0.037	-0.007	-0.044	*-0.066*	**0.204**
REMU-COM	*-0.060*	0.041	*0.063*	**0.242**	**0.401**	1	**0.405**	-0.048	-0.034	-0.017	-0.043	-0.036	0.001	-0.044	-0.043	-0.026	-0.018	-0.031	-0.042	**0.084**
NOMINI-COM	0.010	0.043	**0.088**	**0.180**	**0.363**	**0.405**	1	-0.036	-0.047	-0.024	-0.051	-0.026	-0.028	0.000	-0.038	-0.007	-0.042	-0.006	-0.038	**0.111**
DUL	-0.026	**-0.097**	0.024	-0.013	-0.049	-0.048	-0.036	1	**0.123**	0.015	**0.182**	**0.224**	**0.351**	**0.084**	0.010	0.001	-0.028	0.024	**0.079**	**-0.114**
BLK	0.010	0.023	**-0.297**	**-0.151**	**-0.157**	-0.034	-0.038	**0.126**	1	**0.811**	**0.436**	**0.375**	**0.258**	**0.241**	**0.176**	-0.044	-0.033	0.048	*0.060*	**-0.329**
***ln*INST_BLK**	-0.025	**0.071**	**-0.268**	**-0.074**	**-0.072**	-0.010	-0.019	0.010	**0.833**	1	**-0.160**	**-0.088**	**-0.077**	*-0.059*	-0.014	0.011	0.015	-0.007	-0.019	**-0.290**
***ln*INDV_BLK**	*0.057*	*-0.056*	**-0.081**	**-0.166**	**-0.159**	**-0.114**	**-0.085**	**0.137**	**0.366**	**-0.105**	1	**0.775**	**0.552**	**0.516**	**0.338**	**-0.080**	**-0.073**	**0.076**	**0.111**	**-0.135**
***ln*BRDOWN**	-0.048	*-0.065*	**-0.183**	**-0.395**	**-0.219**	**-0.135**	**-0.076**	**0.140**	**0.315**	**0.093**	**0.446**	1	**0.683**	**0.664**	**0.500**	-0.041	**-0.080**	**0.083**	**0.069**	**-0.136**
***ln*CEOOWN**	*-0.063*	**-0.076**	**-0.225**	**-0.273**	**-0.097**	**-0.080**	-0.021	**0.138**	**0.214**	**0.126**	**0.213**	**0.746**	1	**0.193**	**0.092**	**-0.086**	**-0.069**	*0.055*	**0.069**	**-0.111**
***ln*EXECOWN**	-0.001	**-0.081**	*-0.058*	**-0.443**	**-0.172**	**-0.071**	-0.037	**0.162**	**0.134**	0.024	**0.230**	**0.685**	**0.530**	1	-0.015	-0.021	*-0.066*	0.043	0.035	**-0.104**
***ln*NEDOWN**	-0.040	0.002	**-0.197**	**-0.237**	**-0.182**	**-0.138**	**-0.126**	0.010	**0.255**	*0.172*	**0.250**	**0.681**	**0.403**	**0.336**	1	0.034	0.016	*0.065*	0.009	*-0.054*
***lnadj*DBT**	**-0.275**	*0.058*	0.000	-0.001	0.042	-0.019	0.002	0.003	*-0.059*	-0.005	*-0.055*	-0.043	*-0.066*	-0.012	*0.053*	1	-0.020	**-0.112**	**-0.075**	**0.081**
***sqadj*DIVD**	**0.087**	**0.119**	0.018	-0.008	0.033	0.005	0.051	0.044	*-0.061*	**-0.086**	0.008	-0.019	-0.037	-0.001	*-0.061*	0.040	1	0.031	0.041	-0.019
***lnadj*ROA**	**0.181**	**-0.359**	-0.025	*-0.059*	*-0.055*	*-0.065*	-0.025	0.049	0.000	-0.048	*0.057*	*0.053*	*0.061*	**0.083**	-0.019	**-0.127**	**-0.079**	1	**0.527**	**-0.153**
***lnadj*Q**	**0.070**	**-0.739**	-0.042	**-0.084**	*-0.065*	*-0.055*	-0.051	**0.109**	0.018	-0.047	**0.095**	**0.105**	**0.104**	**0.087**	0.025	-0.049	**-0.097**	**0.563**	1	**-0.318**
***ln*ASSTS**	**-0.095**	**0.199**	**0.437**	**0.364**	**0.217**	**0.085**	**0.100**	**-0.125**	**-0.354**	**-0.289**	**-0.176**	**-0.359**	**-0.293**	**-0.324**	*-0.315*	**0.134**	-0.004	**-0.165**	**-0.316**	1

Spearman (Pearson) correlations are below (above) the diagonal

Correlations in bold and italic are significant at the 1% and 5% levels respectively, using a two-tailed test.

BRD number of board members. **IND** is the percentage of the independent board members to total board size. **ACE** audit committee effectiveness. **DULT** is a dummy variable that takes the value of 0 if there is a separation between the CEO and chairman posts 1 otherwise. **REMU-COM** A dummy variable that take the value of 1 if remuneration committee comprise of 3 members at least with majority of independent members. **NOMINI-COM** A dummy variable that take the value of 1 if nomination committee comprise of 3 members at least with majority of independent members. **BLK** is the total ownership percentage of blockholders owning 5% or more. **N_BLK** is the number of blockholders owning 5% or more. **INSTBLK** is the total ownership percentage of institutions owning 5% or more. **INDVBLK** is the total ownership percentage of individuals holding 5% or more. **CEOOWN** is percentage of CEO's shares to the total outstanding shares. **EXECOWN** is percentage of the executive directors' shares to the total outstanding shares. **NEDOWN** is percentage of the non-executive directors' shares to the total outstanding shares. **BRDOWN** is percentage of the board directors' shares to the total outstanding shares. ASSTS total assets. **DBT** is the total debt to total assets ratio. **ROA** is the Return on assets ratio, **DIVD** dividend pay-out ratio. **Q** Tobin's. ***ln*** is the natural logarithm transformation ***sq*** is the square root **transformation**

Table 9 Variance Inflation Factor test results for the full sample 2005-2011 inclusive

Baseline model			**Sub model 1**			**Sub model 2**			**Sub model 3**		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
***ln*ASSTS**	1.76	0.569	***ln*INDV_BLK**	2.65	0.377	***ln*ASSTS**	1.8	0.554	***ln*INDV_BLK**	2.46	0.406
***lnadj*Q**	1.53	0.652	***ln*BRDOWN**	2.61	0.383	***ln*adjQ**	1.53	0.652	***ln*ASSTS**	1.78	0.561
***lnadj*ROA**	1.4	0.713	***ln*ASSTS**	1.78	0.563	***ln*adjROA**	1.41	0.711	***ln*CEOOWN**	1.67	0.598
ACE	1.39	0.720	***lnadj*Q**	1.55	0.644	***ln*BRD**	1.4	0.715	***lnadj*Q**	1.56	0.641
***ln*IND**	1.36	0.733	***lnadj*ROA**	1.4	0.712	**ACE**	1.39	0.721	***ln*EXECOWN**	1.53	0.655
REMU-COM	1.36	0.734	**ACE**	1.39	0.718	**REMU-COM**	1.37	0.731	***lnadj*ROA**	1.41	0.710
***ln*BRD**	1.36	0.735	***ln*IND**	1.37	0.732	***ln*IND**	1.37	0.732	**ACE**	1.4	0.716
BLK	1.31	0.762	***ln*BRD**	1.36	0.733	**BLK**	1.29	0.776	***ln*BRD**	1.39	0.721
NOMINI-COM	1.28	0.783	**REMU-COM**	1.36	0.734	**NOMINI-COM**	1.28	0.781	***ln*IND**	1.37	0.733
***ln*BRDOWN**	1.25	0.801	**NOMINI-COM**	1.28	0.782	***ln*CEOOWN**	1.26	0.792	**REMU-COM**	1.36	0.733
DUL	1.08	0.922	***ln*INST_BLK**	1.18	0.849	**DUL**	1.19	0.844	**NOMINI-COM**	1.28	0.781
***lnadj*DBT**	1.02	0.976	**DUL**	1.08	0.922	***ln*EXECOWN**	1.12	0.895	***ln*NEDOWN**	1.26	0.797
***sqadj*DIVD**	1.01	0.989	***lnadj*DBT**	1.03	0.971	***ln*NEDOWN**	1.06	0.947	**DUL**	1.18	0.845
			***sqadj*DIVD**	1.01	0.989	***lnadj*DBT**	1.03	0.967	***ln*INST_BLK**	1.18	0.847
						***sqadj*DIVD**	1.01	0.987	***lnadj*DBT**	1.04	0.963
									***sqadj*DIVD**	1.01	0.987
Mean VIF	1.32		Mean VIF	1.5		Mean VIF	1.3		Mean VIF	1.43	

6.3.2 Correlation analysis of the pre and post crisis periods

In this section the correlation analyses of the employed variables in the pre and post crisis analyses are reported, given that the direction and the strength of the correlation coefficients for the pre and post crisis samples are different and opposite for some variables, suggesting that the associations between the variables could change in response to the change in the surrounding economic conditions; thus, the researcher will provide a brief summary about the reported coefficients for each sample independently.

Table 10 and Table 11 present the correlation matrices for the variables employed in the pre and post crisis analysis. As reported in the descriptive section, some of the employed variables are not normally distributed, thus, Spearman (non-parametric) correlation coefficients are reported below the diagonal as the primary investigative tool for multicollinearity, whereas, Pearson's (parametric) correlation coefficients are reported above the diagonal as a robustness check. Coefficients which are significant at 1% level are reported in bold, while, significant coefficients at the 5% level are shown in italic.

Along the lines of the full sample coefficients; none of the reported coefficients for both samples exceed the maximum accepted value of 0.8 with exception to the correlation coefficient of the total percentage of block holding and the total percentage of institutional block holding. This high correlation is logical and expected as mentioned in the previous section. Also, the correlation matrices show high significant correlations between the total board ownership percentage on the one side and the ownership percentage of CEO, total ownership of executive board members, and total ownership of non-executive board members on the other; however, as these correlated variables are employed in different models, thus these high correlations do not affect the regression results.

With respect to the pre–crisis sample, the reported coefficients –shown in Table 10– show that the asset utilisation as a proxy of agency costs is negatively correlated with the debt ratio, whereas, it is positively correlated with each of the ROA ratio and the Q ratio; suggesting that leverage increases agency costs, while the increase of returns enhances the utilisation of the assets base; besides, the more growth prospects the firm has the lower agency costs. The reported correlation coefficients show that,

consistent with the full sample coefficients, board size is negative and significantly correlated with the different variables of block holding as well as the different measures of board ownership with exception to the executive ownership variable.

Consistent with the full sample coefficients, board composition is positively correlated with board size; moreover, board composition is positively correlated with firm compliance with different subcommittees recommendations, hinting that independent board members can be an influential factor of the compliance with the code recommendations; likewise, board composition is positively correlated with firm size which could imply that firm size could be a determinant of the board composition. Conversely, board composition is negatively correlated with all board ownership variables and different block holding variables.

The correlation matrix also reveals a positive correlation between duality on the one side and the total block holding percentage, total individual block holding ratio, board ownership variables (CEO and non-executives ownership) and growth prospects on the other side. The correlation matrix shows a significant negative association between board ownership and board size, and a positive and significant association between the CEO ownership ratio and each of ownership ratios of other board members. The coefficients also disclose a negative correlation between firm size and each of duality, return on assets, different ownership variables (block holding as well as board ownership variables) and firm's growth opportunities.

The coefficients show that large firms tend to have large boards with more independent members and board subcommittees in compliance with the governance code recommendations; also, large firms tend to rely more in debt. Such correlations are in line with the full sample correlations, and hence same interpretations could apply. There is also a positive association between individual block holding and each of ROA and Q ratios, this can imply that individual blockholders are good monitors, and their presence enhances firm performance.

Table 11 presents the correlation coefficients between the study variables for the post crisis analysis. Assets turnover is negatively correlated with the debt ratio and positively correlated with each of the ROA ratio and dividend pay-out ratio, which can suggest that the increase in dividends paid to shareholders enhances the utilisation of the assets base and hence reduces agency costs; or the more utilisation

of firm's asset base the more dividends paid to the shareholders. Consistent with the full and pre–crisis samples, the reported correlation coefficients show that there is a positive significant correlation between board size and each of board composition, audit committee effectiveness. Moreover, board size is negatively correlated with the different ownership variables (block holding as well as board ownership).

In line with the full and pre–crisis samples, board composition is positively associated with having board subcommittees that are compliant with governance code recommendations; suggesting that for the post crisis period, board composition enhances firm's compliance with the governance code. Also, board composition is negatively correlated with different board ownership variables as well as the different block holding variables.

The correlation matrix also shows that duality, from the one side, is positively and significantly correlated with total block holding percentage, total individual block holding ratio, various board ownership variables and growth prospects from the other side. The correlation matrix displays a significant negative association between board ownership and board size, which is consistent with the coefficients of the full and pre–crisis samples. Compared to the pre–crisis sample, the correlation matrix shows that after the crisis individual block holding ratio becomes weakly correlated with ROA and Q ratios, moreover, the matrix also shows that institutional block holding becomes negatively correlated with ROA and Q. This negative association could imply that institutional block holding has a negative impact on firm performance, or poor performance influences institutional blockholders to change their investment portfolio.

Table 10 Correlation coefficients for the employed variables over the period 2005:2007 inclusive

	lnadj TRN	***QFCF***	***ln*BRD**	**IND**	**ACE**	**REMU -COM**	**NOMIN I-COM**	**DUL**	**BLK**	***ln*INST_ BLK**	***ln*INDV_ BLK**	***ln*BRD OWN**	***ln*CEO OWN**	***ln*EXEC OWN**	***ln*NED OWN**	***lnadj* DBT**	***sqadj* DIVD**	***lnadj* ROA**	***lnadj*Q**	***ln* ASSTS**
lnadjTRN	1		0.054	-0.018	-0.069	-0.047	0.042	-0.05	0.052	0.024	0.046	-0.035	-0.013	0.021	-0.013	**-0.334**	0.031	**0.257**	**0.199**	-0.058
QFCF		1	-0.005	-0.024	-0.014	-0.013	-0.015	-0.07	0.015	0.068	*-0.097*	-0.061	*-0.089*	-0.058	0.024	0.06	-0.05	**-0.215**	**-0.424**	**0.146**
***ln*BRD**	0.041	0.016	1	**0.164**	**0.186**	0.051	0.082	-0.01	**-0.246**	**-0.2**	**-0.114**	*-0.091*	-0.082	-0.031	-0.05	-0.012	-0.03	-0.038	*-0.102*	**0.579**
***ln*IND**	-0.02	**0.06**	**0.185**	1	**0.379**	**0.297**	**0.231**	0.02	**-0.165**	**-0.118**	*-0.105*	**-0.15**	-0.062	**-0.156**	*-0.085*	-0.001	0.036	-0.077	**-0.178**	**0.47**
ACE	*-0.09*	0.003	**0.195**	**0.373**	1	**0.35**	**0.322**	-0.04	**-0.126**	-0.077	*-0.101*	*-0.089*	-0.061	**-0.141**	0.018	*0.09*	-0.008	-0.067	**-0.13**	**0.261**
REMU-COM	-0.08	0.037	0.074	**0.23**	**0.35**	1	**0.323**	0.00	-0.011	0.006	-0.034	-0.052	-0.024	-0.06	-0.055	-0.015	0.031	-0.033	-0.059	*0.104*
NOMINI-COM	0.011	*0.007*	*0.093*	**0.191**	**0.322**	**0.323**	1	-0.02	0.022	0.03	-0.009	-0.011	0.011	-0.004	-0.068	-0.043	0.022	0.017	-0.054	**0.145**
DUL	-0.06	*-0.097*	-0.016	0.019	-0.041	0.004	-0.019	1	**0.152**	-0.014	**0.305**	**0.347**	**0.518**	**0.162**	-0.045	0.003	0.003	0.04	*0.104*	**-0.138**
BLK	0.01	0.05	**-0.279**	**-0.152**	**-0.128**	-0.01	0.016	**0.15**	1	**0.854**	**0.366**	**0.297**	**0.198**	**0.218**	**0.137**	*-0.087*	0.044	**0.172**	**0.154**	**-0.395**
***ln*INST_BLK**	-0.03	0.022	**-0.241**	*-0.099*	-0.082	0.013	0.028	-0.01	**0.858**	1	**-0.167**	-0.075	*-0.092*	-0.066	-0.007	0.006	0.037	*0.089*	0.05	**-0.299**
***ln*INDV_BLK**	0.059	**-0.156**	*-0.099*	**-0.146**	-0.069	*-0.103*	-0.012	**0.22**	**0.305**	**-0.127**	1	**0.708**	**0.536**	**0.53**	**0.304**	**-0.167**	0.014	**0.16**	**0.195**	**-0.213**
***ln*BRDOWN**	-0.01	**-0.122**	**-0.123**	**-0.381**	**-0.2**	**-0.142**	-0.053	**0.20**	**0.192**	0.006	**0.414**	1	**0.731**	**0.713**	**0.512**	*-0.098*	-0.016	**0.119**	*0.098*	**-0.186**
***ln*CEOOWN**	-0.05	**-0.146**	**-0.181**	**-0.251**	-0.038	-0.064	0.008	**0.22**	**0.115**	0.029	**0.175**	**0.709**	1	**0.347**	**0.166**	**-0.138**	-0.009	*0.104*	**0.127**	**-0.172**
***ln*EXECOWN**	0.017	**-0.178**	0.001	**-0.402**	**-0.207**	-0.057	-0.023	**0.22**	*0.088*	-0.023	**0.202**	**0.686**	**0.54**	1	0.005	-0.081	-0.017	**0.15**	*0.087*	**-0.125**
***ln*NEDOWN**	-0.03	-0.016	*-0.105*	**-0.21**	**-0.124**	**-0.122**	-0.067	0.00	**0.109**	0.06	**0.199**	**0.68**	**0.347**	**0.323**	1	-0.013	-0.046	-0.008	-0.036	-0.064
***lnadj*DBT**	**-0.3**	0.068	-0.024	0.008	*0.095*	-0.014	-0.032	0.00	*-0.1*	-0.007	**-0.111**	-0.059	*-0.091*	0.004	0.068	1	0.069	-0.001	-0.031	*0.093*
***sqadj*DIVD**	0.065	*0.108*	0.013	*0.092*	0.042	0.049	0.053	0.08	-0.017	-0.049	0.041	-0.063	-0.062	-0.012	-0.067	0.065	1	0.009	0.042	-0.043
***lnadj*ROA**	**0.196**	**-0.434**	-0.054	-0.077	-0.06	-0.07	0.004	0.04	*0.097*	0.021	**0.122**	*0.088*	0.081	**0.114**	0.041	-0.035	-0.02	1	**0.62**	**-0.23**
***lnadj*Q**	**0.116**	**-0.723**	*-0.092*	**-0.169**	*-0.106*	*-0.088*	-0.073	**0.14**	**0.118**	0.028	**0.204**	**0.177**	**0.171**	**0.184**	0.08	-0.038	0.063	**0.64**	1	**-0.439**
***ln*ASSTS**	*-0.09*	**0.221**	**0.54**	**0.462**	**0.263**	*0.101*	**0.132**	**-0.15**	**-0.393**	**-0.292**	**-0.252**	**-0.407**	**-0.327**	**-0.343**	**-0.313**	**0.144**	0.002	**-0.21**	**-0.406**	1

Spearman (Pearson) correlations are below (above) the diagonal

Correlations in bold and italic are significant at the 1% and 5% levels respectively, using a two-tailed test.

BRD number of board members. **IND** is the percentage of the independent board members to total board size. **ACE** audit committee effectiveness. **DULT** is a dummy variable that takes the value of 0 if there is a separation between the CEO and chairman posts 1 otherwise. **REMU-COM** A dummy variable that take the value of 1 if remuneration committee comprise of 3 members at least with majority of independent members. **NOMINI-COM** A dummy variable that take the value of 1 if nomination committee comprise of 3 members at least with majority of independent members. **BLK** is the total ownership percentage of blockholders owning 5% or more. **N_BLK** is the number of blockholders owning 5% or more. **INSTBLK** is the total ownership percentage of institutions owning 5% or more. **INDVBLK** is the total ownership percentage of individuals holding 5% or more. **CEOOWN** is percentage of CEO's shares to the total outstanding shares. **EXECOWN** is percentage of the executive directors' shares to the total outstanding shares. **NEDOWN** is percentage of the non-executive directors' shares to the total outstanding shares. **BRDOWN** is percentage of the board directors' shares to the total outstanding shares. ASSTS total assets. **DBT** is the total debt to total assets ratio. **ROA** is the Return on assets ratio, **DIVD** dividend pay-out ratio. **Q** Tobin's. ***ln*** is the natural logarithm transformation ***sq*** is the square root transformation

Table 11 Correlation coefficients for the employed variables over the period 2009:2011 inclusive

	lnadj TRN	***QFCF***	***ln*BRD**	**IND**	**ACE**	**REMU-COM**	**NOMINI-COM**	**DUL**	**BLK**	***ln*INST_BLK**	***ln*INDV_BLK**	***ln*BRD OWN**	***ln*CEO OWN**	***ln*EXEC OWN**	***ln*NED OWN**	***lnadj* DBT**	***adj* DIVD**	***lnadj* ROA**	***Lnadj* Q**	***ln* ASSTS**
lnadjTRN	1		0.064	-0.022	0.040	-0.023	0.029	-0.001	-0.001	-0.045	0.070	0.063	-0.022	0.057	*0.081*	**-0.292**	0.005	**0.146**	-0.013	-0.052
QFCF		1	0.021	0.006	0.036	0.051	*0.094*	-0.55	0.016	0.033	-0.005	-0.021	-0.016	0.018	-0.035	0.054	-0.030	*-0.082*	**-0.351**	**0.115**
***ln*BRD**	0.061	0.014	1	**0.152**	**0.190**	*0.078*	**0.106**	0.052	**-0.291**	**-0.282**	*-0.083*	-0.064	**-0.109**	0.026	-0.033	-0.010	0.004	-0.003	-0.015	**0.368**
***ln*IND**	0.003	0.016	**0.232**	1	**0.378**	**0.407**	**0.249**	**-0.154**	**-0.200**	**-0.102**	**-0.179**	**-0.214**	**-0.118**	**-0.147**	**-0.116**	0.002	-0.036	-0.053	-0.027	**0.255**
ACE	0.011	0.015	**0.202**	**0.310**	1	**0.453**	**0.434**	*-0.086*	**-0.273**	**-0.130**	**-0.252**	**-0.225**	**-0.153**	**-0.143**	*-0.096*	-0.007	0.021	0.004	0.026	**0.160**
REMU-COM	-0.041	0.037	*0.092*	**0.264**	**0.453**	1	**0.521**	*-0.087*	*-0.080*	-0.062	-0.058	-0.032	0.008	-0.029	-0.045	-0.051	0.015	-0.008	-0.016	*0.077*
NOMINI-COM	0.021	0.075	**0.099**	**0.156**	**0.434**	**0.521**	1	-0.057	**-0.145**	*-0.097*	**-0.104**	-0.053	*-0.078*	0.006	-0.023	-0.003	0.059	0.002	-0.009	*0.075*
DUL	-0.011	-0.081	0.024	-0.049	*-0.086*	*-0.087*	-0.057	1	**0.115**	0.039	**0.127**	**0.143**	**0.198**	0.050	0.021	0.003	0.061	-0.015	0.036	*-0.096*
BLK	0.008	0.050	**-0.318**	**-0.187**	**-0.262**	*-0.083*	**-0.124**	**0.120**	1	**0.773**	**0.486**	**0.414**	**0.284**	**0.262**	**0.171**	-0.007	0.023	-0.032	-0.007	**-0.293**
***ln*INST_BLK**	-0.034	*0.097*	**-0.302**	*-0.082*	**-0.122**	-0.061	*-0.086*	0.033	**0.803**	1	**-0.165**	**-0.132**	*-0.086*	*-0.087*	-0.050	0.020	-0.058	-0.072	-0.074	**-0.287**
***ln*INDV_BLK**	0.064	-0.021	-0.069	**-0.196**	**-0.266**	**-0.141**	**-0.170**	**0.101**	**0.423**	*-0.094*	1	**0.828**	**0.554**	**0.556**	**0.331**	-0.029	**0.107**	0.037	0.063	*-0.081*
***ln*BRDOWN**	-0.052	-0.048	**-0.219**	**-0.432**	**-0.298**	**-0.157**	**-0.122**	**0.113**	**0.406**	**0.142**	**0.491**	1	**0.648**	**0.652**	**0.469**	-0.027	**0.132**	0.067	0.065	*-0.086*
***ln*CEOOWN**	-0.056	-0.036	**-0.255**	**-0.341**	**-0.217**	**-0.120**	*-0.086*	*0.092*	**0.265**	**0.179**	**0.245**	**0.752**	1	**0.106**	0.023	-0.058	**0.110**	0.026	0.018	-0.042
***ln*EXECOWN**	-0.004	-0.030	*-0.096*	**-0.483**	**-0.209**	**-0.107**	-0.061	**0.118**	**0.171**	0.060	**0.253**	**0.687**	**0.502**	1	-0.024	-0.011	**0.104**	-0.009	0.019	*-0.094*
***ln*NEDOWN**	-0.039	0.021	**-0.251**	**-0.262**	**-0.266**	**-0.179**	**-0.210**	0.034	*0.370*	**0.258**	**0.304**	**0.672**	**0.442**	**0.332**	1	0.042	-0.005	**0.110**	0.057	-0.028
***lnadj*DBT**	**-0.237**	0.062	0.002	0.008	-0.005	-0.038	0.004	0.000	-0.026	0.006	-0.020	-0.043	-0.065	-0.044	0.037	1	-0.002	**-0.185**	**-0.132**	0.069
***adj*DIVD**	**0.100**	**-0.133**	0.019	-0.054	0.039	-0.030	0.062	0.017	*-0.082*	**-0.111**	-0.001	0.026	-0.018	0.022	-0.055	0.017	1	0.018	0.039	-0.012
***lnadj*ROA**	**0.181**	**-0.290**	0.003	-0.054	-0.018	-0.048	-0.018	0.028	-0.073	**-0.105**	0.017	0.013	0.011	0.063	-0.065	**-0.174**	**0.168**	1	**0.418**	-0.073
***lnadj*Q**	0.008	**-0.763**	0.001	-0.037	0.005	-0.022	-0.030	0.066	-0.058	**-0.110**	0.026	0.054	0.037	0.025	-0.019	-0.073	**0.140**	**0.486**	1	**-0.213**
***ln*ASSTS**	*-0.087*	**0.183**	**0.331**	**0.272**	**0.188**	*0.076*	0.061	**-0.111**	**-0.327**	**-0.290**	**-0.129**	**-0.295**	**-0.254**	**-0.294**	**-0.287**	**0.127**	-0.006	**-0.109**	**-0.240**	1

Spearman (Pearson) correlations are below (above) the diagonal

Correlations in bold and italic are significant at the 1% and 5% levels respectively, using a two-tailed test.

BRD number of board members. IND is the percentage of the independent board members to total board size. ACE audit committee effectiveness. DULT is a dummy variable that takes the value of 0 if there is a separation between the CEO and chairman posts 1 otherwise. REMU-COM A dummy variable that take the value of 1 if remuneration committee comprise of 3 members at least with majority of independent members. NOMINI-COM A dummy variable that take the value of 1 if nomination committee comprise of 3 members at least with majority of independent members. BLK is the total ownership percentage of blockholders owning 5% or more. N_BLK is the number of blockholders owning 5% or more. INSTBLK is the total ownership percentage of institutions owning 5% or more. INDVBLK is the total ownership percentage of individuals holding 5% or more. CEOOWN is percentage of CEO's shares to the total outstanding shares. EXECOWN is percentage of the executive directors' shares to the total outstanding shares. NEDOWN is percentage of the non-executive directors' shares to the total outstanding shares. BRDOWN is percentage of the board directors' shares to the total outstanding shares. ASSTS total assets. DBT is the total debt to total assets ratio. ROA is the Return on assets ratio, DIVD dividend pay-out ratio. Q Tobin's. *ln* is the natural logarithm transformation *sq* is the square root transformation

Table 12 Variance Inflation Factor test results for the pre–crisis period 2005 – 2007 inclusive

Baseline model			**Sub model 1**			**Sub model 2**			**Sub model 3**		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
***ln*ASSTS**	2.72	0.367	***ln*ASSTS**	2.73	0.367	***ln*ASSTS**	2.81	0.356	***ln*ASSTS**	2.73	0.367
***lnadj*Q**	2	0.500	***ln*INDV_BLK**	2.23	0.448	***lnadj*Q**	2.01	0.498	***ln*INDV_BLK**	2.14	0.468
***lnadj*ROA**	1.68	0.596	***ln*BRDOWN**	2.15	0.465	***ln*BRD**	1.71	0.586	***lnadj*Q**	2.06	0.486
***ln*BRD**	1.67	0.599	***lnadj*Q**	2.04	0.490	***lnadj*ROA**	1.69	0.591	***ln*CEOOWN**	1.81	0.552
***ln*IND**	1.59	0.627	***lnadj*ROA**	1.68	0.597	***ln*CEOOWN**	1.66	0.603	***lnadj*ROA**	1.69	0.591
ACE	1.37	0.732	***ln*BRD**	1.67	0.597	***ln*IND**	1.6	0.624	***ln*BRD**	1.68	0.595
***ln*BLK**	1.3	0.771	***ln*IND**	1.6	0.627	**DUL**	1.48	0.678	***ln*IND**	1.6	0.627
***ln*BRDOWN**	1.26	0.792	**ACE**	1.37	0.731	**ACE**	1.38	0.726	***ln*EXECOWN**	1.53	0.652
REMU-COM	1.25	0.798	**REMU-COM**	1.25	0.798	***ln*BLK**	1.29	0.774	**DUL**	1.49	0.673
NOMINI-COM	1.21	0.825	**NOMINI-COM**	1.21	0.825	**REMU-COM**	1.26	0.796	**ACE**	1.38	0.722
DUL	1.19	0.839	***ln*INST_BLK**	1.21	0.830	***ln*EXECOWN**	1.22	0.818	**REMU-COM**	1.25	0.797
***lnadj*DBT**	1.06	0.945	**DUL**	1.2	0.834	**NOMINI-COM**	1.22	0.819	***ln*NEDOWN**	1.24	0.810
***sqadj*DIVD**	1.02	0.984	***lnadj*DBT**	1.08	0.928	***ln*NEDOWN**	1.1	0.907	**NOMINI-COM**	1.22	0.818
			***sqadj*DIVD**	1.02	0.983	***lnadj*DBT**	1.08	0.929	***ln*INST_BLK**	1.21	0.825
						***sqadj*DIVD**	1.02	0.982	***lnadj*DBT**	1.09	0.916
									***sqadj*DIVD**	1.02	0.981
Mean VIF	1.49		Mean VIF	1.6		Mean VIF	1.5		Mean VIF	1.57	

Table 13 Variance Inflation Factor test results for the post-crisis period 2009 – 2011 inclusive

Baseline model			**Sub model 1**			**Sub model 2**			**Sub model 3**		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
REMU-COM	1.66	0.602	***ln*INDV_BLK**	3.32	0.301	**REMU-COM**	1.67	0.599	***ln*NDV_BLK**	3.15	0.317
ACE	1.54	0.650	***ln*BRDOWN**	3.29	0.304	**ACE**	1.53	0.653	***ln*EXECOWN**	1.87	0.536
NOMINI-COM	1.49	0.673	**REMU-COM**	1.66	0.603	**NOMINI-COM**	1.5	0.668	***ln*CEOOWN**	1.82	0.549
BLK	1.43	0.700	**ACE**	1.54	0.649	**BLK**	1.4	0.713	**REMU-COM**	1.67	0.600
***ln*IND**	1.39	0.719	**NOMINI-COM**	1.49	0.671	***ln*IND**	1.39	0.720	**ACE**	1.54	0.649
***ln*ASSTS**	1.35	0.742	***ln*IND**	1.39	0.718	***ln*ASSTS**	1.38	0.726	**NOMINI-COM**	1.5	0.666
***ln*BRDOWN**	1.32	0.759	***ln*ASSTS**	1.36	0.733	***lnadj*Q**	1.28	0.778	***ln*IND**	1.39	0.719
***lnadj*Q**	1.29	0.777	***lnadj*Q**	1.3	0.772	***ln*BRD**	1.27	0.790	***ln*ASSTS**	1.37	0.727
***lnadj*ROA**	1.25	0.800	***ln*BRD**	1.25	0.799	***lnadj*ROA**	1.26	0.793	***ln*NEDOWN**	1.37	0.731
***ln*BRD**	1.25	0.802	***lnadj*ROA**	1.25	0.800	***ln*CEOOWN**	1.17	0.852	***lnadj*Q**	1.3	0.771
DUL	1.06	0.942	***ln*INST_BLK**	1.23	0.811	***ln*EXECOWN**	1.13	0.885	***ln*BRD**	1.28	0.783
***lnadj*DBT**	1.05	0.955	**DUL**	1.06	0.941	**DUL**	1.09	0.918	***lnadj*ROA**	1.26	0.793
***adj*DIVD**	1.03	0.973	***lnadj*DBT**	1.05	0.955	***ln*NEDOWN**	1.07	0.934	***ln*INST_BLK**	1.23	0.810
			***adj*DIVD**	1.03	0.972	***lnadj*DBT**	1.05	0.949	**DUL**	1.09	0.918
						***adj*DIVD**	1.03	0.970	***lnadj*DBT**	1.05	0.948
									***adj*DIVD**	1.03	0.969
Mean VIF	1.31		Mean VIF	1.59		Mean VIF	1.28		Mean VIF	1.5	

As a final point, firm size is negatively correlated with each of duality, return on assets, different ownership variables (block holding as well as board ownership variables) and firm's growth opportunities. These correlations indicate that as the firm size increases the block holding decreases; with the increase in firm size, the ability of profit generation becomes limited; and the increase in firm size dilutes board ownership. The coefficients show that large firms have large independent boards with subcommittees that are in compliance with the code recommendations and to be more debt reliant. However, the matrix shows that leverage is negatively associated with the return on assets, implying that debt diminishes the profitability of this sample; another interpretation could be drawn from that negative correlation is that profitable firms tend to decrease their leverage ratio.

Likewise the full sample matrix, the Pearson's correlation coefficients for the pre and post crisis samples are consistent with Spearman's coefficients, in terms of not exceeding the maximum accepted value of 0.8. However, VIF test is employed as a robustness test for checking multicollinearity.

Table 12 and Table 13 report the results of VIF tests for the pre and post crisis analyses. The reported results endorse the inferred results from the correlation matrices that there is no multicollinearity between the independent variables. The mean VIF values of the models employed in the pre–crisis samples are 1.49, 1.6, 1.5, and 1.57 respectively, with a maximum value of 2.81, and 1.31, 1.59, 1.28 and 1.5 respectively for the post crisis sample with a maximum value of 3.32. The reported VIF values are very far from the maximum accepted value of 10 as suggested by Gujarati (2004) and Hair *et al.* (2014), and hence, the researcher can argue that there is no multicollinearity between the employed variables. Taken together, the correlation matrices and the VIF results confirm that the employed models in this study do not suffer from a harmful collinearity between the independent variables.

6.4 EMPIRICAL EVIDENCE

In this section, the researcher reports and discusses the results of the regression analysis of the impact of a comprehensive set of corporate governance mechanisms on agency costs measured by asset utilisation and the interaction of free cash flows and growth prospects.

6.4.1 Asset utilisation as an agency costs measure

As mentioned in the previous chapter, grounded in both the research objectives and the characteristics of the employed data set, the researcher is applying the panel data regression methods instead of the pooled OLS. The study sample has several years for a large number of cross sectional observation units. Moreover, the pooled OLS regression analysis treats every firm-year observation as an independent observation neglecting the fact that each firm is repeated for a number of years, thus they are related, such treatment, causes a loss of valuable information about the firm specific characteristics which could change the results of the analysis (Di Pietra *et al.*, 2008). Two regression models can be employed using panel data, which are fixed effects model and random effects model, in order to choose between these two models; Hausman (1978) specification test should be applied, and based on the test's result; the researcher has to apply the appropriate method that fits with data set characteristics. Briefly, Hausman (1978) specification test, tests a null hypothesis that there is no correlation between the subject effects and the utilised independent variables. Therefore, the failure to reject this null hypothesis implies that the random effects model is better than the fixed effects, whereas, the rejection of the null hypothesis indicates that there is a correlation between subject effects and the independent variables, and hence fixed effect is appropriate that the random effects model.

Table 14 Results of Hausman specification test to decide between fixed and random effects regression models for the whole sample

	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**
χ^2	19.73	21.23	22.52	18.44
***p*-value**	0.1021	0.1697	0.0948	0.1873

Table 14 shows the results of the Hausman specification test for the full sample 2005:2011 inclusive; the reported results indicate that the null hypotheses cannot be rejected as there is no correlation between the independent variables and the subject effects; therefore, random effects regression model is appropriate for the whole sample data set.

6.4.1.1 Full sample results

Table 15 reports the results of the random effects panel data regression model for the study full sample covering the period 2005-2011 inclusive. The reported χ^2 values of the four models are significant (*p-value* < 1 percent) for the different combinations of corporate governance mechanisms and employed control variables indicating that random effects models regression model is appropriate for both the study data set and employed variables. As mentioned earlier in this chapter, asset utilisation is an inverse measure of agency costs, which means that high asset utilisation ratio reflects efficient management practices and hence lower agency conflicts and costs by assuming that efficient management works for the best interest of shareholders.

For the baseline model, the coefficient of board size is positive (0.044) and significant (*p-value* < 10 percent), indicating that large boards enhance firm performance by increasing the asset utilisation ratio and reducing agency costs for this study sample; whereas, Duality was found to be negatively and significantly associated with asset utilisation, (coefficient -0.06, *p-value* < 10 percent) implying assigning the roles of CEO and the chairman to the same person increases agency costs in terms of lower asset utilisation ratio; which is consistent with the agency theory perspective. The results also reveal that blockholders can act as good monitors. The coefficient of the block holding variable (shareholders owning 5% of the firm's outstanding shares) is positive (0.073) and significant at the 0.05 significance level, indicating that there is a significant association between the percentage of block holding and lower agency costs.

In sub model 1, the researcher investigates either the identity of blockholders has an impact on agency costs or not. In doing so, the researcher splits the block holding ratio, based on the identity of the blockholder, into institutional block holding and individual block holding. In the governance literature, it is argued that institutional blockholders could be efficient mechanism to monitor and control the self-interested behaviour of the management; however, there is limited research that investigates whether individual block holding can be an effective monitoring mechanism or not.

Table 15 Results of the random effects panel data regression model with robust standard error for the study sample covering the period 2005-2011 inclusive

	Baseline model	Sub model 1	Sub model 2	Sub model 3
Intercept	1.45	1.44	1.45	1.45
	(3.34)***	(3.33)***	(3.34)***	(3.33)***
***ln*BRD**	0.044	0.045	0.041	0.041
	(1.74)†	(1.77)†	(1.59)	(1.63)
***ln*IND**	-0.031	-0.031	-0.026	-0.025
	(-0.42)	(-0.42)	(-0.35)	(-0.34)
ACE	0.0094	0.0099	0.0097	0.01
	(0.69)	(0.73)	(0.71)	(0.73)
REMU-COM	-0.0087	-0.0082	-0.0098	-0.0093
	(-0.44)	(-0.41)	(-0.50)	(-0.47)
NOMINI-COM	0.0096	0.01	0.0092	0.01
	(0.52)	(0.56)	(0.50)	(0.54)
DUL	-0.06	-0.061	-0.05	-0.05
	(-1.74)†	(-1.76)†	(-1.44)	(-1.45)
BLK	0.073		0.074	
	(2.34)*		(2.39)*	
***ln*INST_BLK**		0.074		0.075
		(1.73)†		(1.74)†
***ln*INDV_BLK**		0.18		0.18
		(2.04)*		(1.98)*
***ln*BRDOWN**	-0.035	-0.082		
	(-0.44)	(-0.98)		
***ln*CEOOWN**			-0.23	-0.28
			(-2.22)*	(-2.50)*
***ln*EXECOWN**			0.1	0.051
			(0.95)	(0.45)
***ln*NEDOWN**			-0.039	-0.069
			(-0.20)	(-0.37)
***lnadj*DBT**	-0.53	-0.53	-0.53	-0.53
	(-5.93)***	(-5.95)***	(-5.90)***	(-5.91)***
***sqadj*DIVD**	0.097	0.096	0.095	0.094
	(1.35)	(1.34)	(1.32)	(1.30)
***lnadj*ROA**	0.42	0.42	0.41	0.41
	(3.07)**	(3.07)**	(3.06)**	(3.05)**
***lnadj*Q**	-0.0027	-0.0045	-0.0033	-0.0053
	(-0.089)	(-0.15)	(-0.11)	(-0.17)
***ln*ASSTS**	-0.012	-0.012	-0.012	-0.012
	(-1.79)†	(-1.81)†	(-1.79)†	(-1.82)†
N	1431	1431	1431	1431
groups	239	239	239	239
wald χ^2	70.47***	71.6***	78.04***	80.16***

z-statistics in parentheses

†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

All variables are winsorized at the 1st and 99th percentile values

Dependent variable: Industry adjusted asset utilisation ratio

The results reported in Table 15 for sub model 1 show consistent results with the baseline model in both the significance level and the direction of the association. The results show that large boards reduce agency costs. The coefficient is positive (0.045) and significant at the 10% significance level. The results also show that duality has a negative impact on agency costs; the coefficient is negative and significant at the 10% significance level. With respect to the identity of blockholders, the results reveal that institutional block holding has a positive and significant role in mitigating agency problems and reducing agency costs. The coefficient is positive (0.074) and significant (*p-value<10 percent)*. Likewise, individual blockholders are significantly associated with high asset utilisation and lower agency costs. Both results endorse the argument that blockholders are key players in monitoring and controlling management's behaviour, such control was positively reflected in less conflicts and lower agency costs. However, the coefficients and the significance levels reveal that individual blockholders are more efficient in performing their monitoring role; such results show that, regardless of the identity of the blockholder; large ownership stake can influence the monitoring role of the blockholder.

With respect to sub model 2, the researcher investigates the role of board ownership measured by the CEO ownership percentage, the non-executive directors' ownership ratio and the executive members' ownership ratio in mitigating agency problems and reducing agency costs. The results of baseline and sub model 1 indicate that the total board ownership ratio is negatively associated with asset utilisation; however, this negative association is not significant. After categorizing the total board ownership ratio according to the affiliation of the director, the results indicate that among the different board ownership ratios, only the CEO ownership ratio has a significant association with agency costs, the coefficient is negative and significant at the 5% significance level, indicating that the increase of the CEO ownership increases agency conflicts and reduces management efficiency. Consistent with baseline model's results, the reported results reveal that block holding is positively associated with lower agency costs at the significant level 5%.

In sub model 3, the researcher utilises a large and comprehensive set of governance variables to investigate the role of these governance mechanisms in reducing agency costs, and to control for the interactions among the different

governance mechanisms. In this model, the researcher investigates the impact of the blockholder identity (individual and institutional block holding) and board ownership after split it into three different categories which are CEO, executive and non-executive directors' ownership percentages in addition to other board and firm characteristics on asset utilisation as a proxy of agency costs. The reported results for blockholders identity variables in sub model 3 are consistent with the results reported in sub model 1. Institutional block holding is positively associated (coefficient 0.075) with asset utilisation at the 10% significance level; likewise, the individual block holding is positively (coefficient 0.18) and significantly (*p-value < 5 percent)* associated with lower agency costs. Additionally, the results are consistent with sub model 2 results, the CEO ownership percentage still negatively associated with agency costs (coefficient -0.28) at the 5% significance level.

Regarding the other board characteristics employed in the four models; the reported results show that effective audit committee, and effective nomination committee are positively associated with asset utilisation; whereas, independent board members and an effective remuneration committee are associated with high agency costs; however, all of these associations are insignificant.

With regard to control variables, the reported results, for all models, as shown in Table 15, are consistent. The results show that the industry adjusted debt ratio is negative and significantly associated with the asset turnover rate (*p-value <0.001).* Tobin's Q as a proxy for growth opportunities are negatively associated with asset utilisation, whereas, dividend pay-out ratio is positively associated with asset utilisation; however, these associations are insignificant. The industry adjusted ROA is positively associated with lower agency costs at the significant level 1%; while firm size measured by the asset value is negative and significantly associated with asset utilisation at the significance level 10%.

6.4.1.2 Results discussion

6.4.1.2.1 Board size

The reported results of the baseline and sub model 1 reveal that there is a positive association between board size and asset utilisation, this association is significant at the 10% level and supports the study hypothesis that large boards are associated with higher asset utilisation ratio. This result indicates that large boards help in reducing agency costs for the study sample. The reported result supports the stewardship theory, resource dependence theory as well as the agency theory. Bearing in mind that the asset utilisation is an efficiency measure as it is agency costs proxy, this significant positive association could imply that managers are good stewards for the firm's asset, and the diversity of experiences, knowledge and business background enhances the board's performance.

Furthermore, this result supports Cheng (2008)'s argument that, on the one hand, large boards are subject to communication and coordination problems, but on the other hand, that large size allows for more in-depth and critical discussions to reach consensus among the board members and hence less extreme and more compromised decisions, which reduces variability in firm performance. Moreover, this result could indicate that large boards increase the number of monitors over the CEO and the executive management; furthermore, it is difficult for the CEO to dominate over large boards, leading to more board independence from the CEO and management which is consistent with the monitoring role proposed by the agency theory. Another possible explanation for this positive association, which is based on resource dependence theory, is that large boards are boundary spanners, and they help in enhancing the firm's ability for securing the needed resources using their connections and networks, and hence, more opportunities for better utilisation for the firm's asset base.

By comparing the study results with the results of other studies; the researcher found that this result consistent with the results reported by Ibrahim and Samad (2011), they find that large boards are positively associated with asset utilisation ratio in the Malaysian context. However, the study findings contradict with the results of such prior studies, like Singh and Davidson III (2003) for the U.S. context,

and Florackis (2008) in the UK context; both studies find that small boards are significantly associated with high asset utilisation ratio implying that small boards are more efficient in reducing agency costs. Nonetheless, the use of different regression analyses, different sample sizes and different time period could explain this difference between the reported results and the results of other studies.

6.4.1.2.2 Board independence

6.4.1.2.2.1 Board composition

This study hypothesized a positive association between the percentage of independent directors and asset utilisation. The reported results in Table 15 for the ratio of independent directors to total board members indicate that board composition is negatively associated with asset utilisation, and thus higher agency costs, but this association is insignificant. The study results failed to support this hypothesis and any of the theoretical arguments around the role of independent board members in mitigating the consequences of agency problems; which can imply that balanced boards are more helpful in mitigating agency problems.

The reported results are consistent with the results of prior studies like Singh and Davidson III (2003), Florackis (2008) and McKnight and Weir (2009). Singh and Davidson III (2003) find that board composition does not appear to have a significant impact on agency costs for a sample of U.S. firms. Likewise, Florackis (2008) and McKnight and Weir (2009) find that non-executive directors have no significant impact on agency costs for the UK firms; McKnight and Weir (2009) conclude that non-executive directors neither increase nor reduce agency costs, and thus, calling for more independent boards does not benefit shareholders' wealth. However, the studies of Henry (2010) and Ibrahim and Samad (2011) provide opposite results; as they find a positive and significant association between board independence and asset utilisation suggesting that board independence enhances shareholders' wealth in the Australian and Malaysian contexts respectively.

6.4.1.2.2.2 Duality

With regard to the second component of board independence, the results of the baseline and sub model 1 reveal that there is a negative association between board size and asset utilisation, this association is significant at the 10% level; however, the results show a negative but insignificant association for the sub models 2 and 3; which provides a partial support to the third hypothesis of this study.

This reported results stand against the stewardship theory which claims that working under single leader and vision is advantageous for the firm performance. However, this positive association between duality and high agency costs is in line with the arguments grounded in agency theory that the separation between the roles of CEO and chairman is required for maintaining board independence. Otherwise, the CEO could be able to dominate and control over the board and hinder the board's ability to perform their monitoring role.

Prior literature provides mixed results with respect to the relationship between duality and agency costs. Henry (2010) report evidence that duality is not detrimental to the performance of Australian firms; interestingly, he finds that duality reduces agency costs. Similarly, Ibrahim and Samad (2011) find that duality is positively associated with asset utilisation of Malaysian companies. With respect to the UK context, Florackis (2008) and McKnight and Weir (2009) find that duality is not significantly associated with agency costs.

6.4.1.2.3 Board subcommittees

According to the agency theory, board of directors is responsible to monitor the performance of the CEO and the executive management and to set the compensation packages that correspond with their performance (Jensen, 1993); Daily *et al.* (1998) mention that, as a part of their monitoring role, the board is responsible to protecting the shareholders from the excessive CEO compensation. Besides, as a part of the board monitoring responsibility, they are responsible to reduce the information asymmetry between the management and the shareholders to the minimum by ensuring the correctness of the disclosed information through the financial reports. Moreover, the board is responsible for nominating the right directors to shareholders as potential directors considering the firm's need and the qualifications of the

nominated directors. Thus, the board should establish a number of subcommittees that assist in performing these specific tasks.

The reported results in Table 15 show that both audit committee effectiveness, and compliant nomination committees are positively associated with asset utilisation; conversely, an effective remuneration committee is negatively associated with asset utilisation. However, these associations are not significant; thus, none of the board subcommittees hypotheses are not supported. These reported results suggest that board subcommittees have no direct impact on shareholders' wealth, which is inconsistent with the agency theory predictions and the underscoring on the independence of the different committees. Consistent with the study's results, McKnight and Weir (2009) mention that nomination committee is not a critical control mechanism that helps in reducing agency costs; they find evidence that the presence and composition of the nomination committee increase agency costs of the UK firms.

6.4.1.2.4 Ownership structure

6.4.1.2.4.1 Board ownership

In this study, the researcher investigates the role of board ownership on agency costs by utilising different measures. The first measure is the board ownership percentage, a popular measure employed in the prior literature; this measure was utilised in baseline and sub model 1; the other measures are based on splitting the board ownership into three different measures based on the identity and affiliation of the director. In doing so, three measures were employed which are the CEO ownership percentage, executive ownership percentage and non-executive ownership percentage; these measures are employed in the sub models 2 and 3.

With regard to total board ownership percentage, the results of baseline and sub model 1, as reported in Table 15, indicate that board ownership has a negative impact on agency cost; however, these reported associations are not significant; and hence, don't support the fifth hypothesis that predicts a positive association between total board ownership and asset utilisation. For sub models 2 and 3, the reported results show that CEO ownership is significantly associated with high agency costs; the executive ownership ratio is associated with lower agency costs, whereas, non-

executive ownership is associated with high agency costs, nonetheless, both associations are not significant; thus, the hypotheses of the identity of owner directors are not supported.

These reported results lend the support to the entrenchment hypothesis against the convergence of interest hypothesis. For the study sample, The results also indicate that, unlike to agency theory predictions; CEO's ownership is detrimental to shareholders' wealth; it leads to more conflict of interests rather than aligning management's interests with those of shareholders; it was found that CEOs use their ownership stakes to entrench themselves and work for their own interests at the expense of other shareholders. Henry (2010) finds that managerial ownership has no role in reducing agency costs of Australian firms, while, Fleming, Heaney and McCosker (2005) find that managerial ownership reduces agency costs of Australian SMEs. Opposing to these results, Wellalage and Locke (2011) find evidence supports the entrenchment hypothesis and the non-monotonic relationship between managerial ownership and agency costs for the New Zealand firms. For the U.S. context, prior studies like Ang, Cole and Lin (2000), Doukas, Kim and Pantzalis (2000), Singh and Davidson III (2003) and Chen and Yur-Austin (2007) find evidence supports the convergence of interest hypothesis. In the UK context, the results are mixed; Florackis (2008) find that managerial ownership helps in aligning the interests of management with those of shareholders, and hence reduces agency cost. While, McKnight and Weir (2009) find that managerial ownership neither benefits nor harm shareholders' wealth; their results show that managerial ownership has no significant impact on agency costs.

6.4.1.2.4.2 Blockholders ownership

This study hypothesizes that the total block holding ratio is positively associated with asset utilisation. Consistent with this hypothesis, the results, shown in Table 15, show a positive association between the block holding ratio and asset utilisation ratio, suggesting that block holding, regardless of the identity of blockholders, leads to lower agency costs. These results are in support of the monitoring hypothesis rather than the expropriation hypothesis. The monitoring hypothesis suggests that blockholders have the incentive and the power to perform their monitoring role as shareholders (Shleifer and Vishny, 1997; Denis and McConnell, 2003; Romano,

Bhagat and Bolton, 2008). Florackis (2008) finds evidence that blockholders are good monitors of the UK firms; similar evidence was reported by Chen and Yur-Austin (2007) for the U.S. firms. However, some of the prior studies find no evidence that support either of the two hypotheses. Doukas, Kim and Pantzalis (2000) and Singh and Davidson III (2003) find that block holding has no significant impact on agency costs of the U.S. corporations, likewise, Doukas, McKnight and Pantzalis (2005) and McKnight and Weir (2009) report that blockholders have no impact in reducing the agency costs of the UK firms.

In sub model 1 and sub model 3, the researcher splits the block holding ratio into two subcategories based on the identity of the blockholders. Hypotheses (8, 8a, 8b) predict that the identity of the blockholder has an impact on agency costs and could influence the monitoring role of the blockholder. Consistent with these hypotheses, the results for both models are consistent and in support of the results of the block holding total ratio and the monitoring hypothesis. The reported results, for the study full sample, support the notion that regardless of the identity of the blockholder, block holding is an effective monitoring mechanism; both institutional and individual blockholders are effective monitors; they control management's behaviour and thus they help in reducing the agency costs. These results, also, support the argument that the presence of large shareholders influences board performance, large ownership stake provides the incentive for the blockholders to perform their monitoring role, lead to more alignment between the shareholders and management interests and hence lower agency costs (Morck, Shleifer and Vishny, 1988; Ozkan and Ozkan, 2004).

Numerous studies have investigated the role of institutional block holding on agency costs and various performance studies; however, the role of individual blockholders has not received that attention. McKnight and Weir (2009) find evidence that institutional block holding has no role in reducing agency costs of the UK firms, Doukas, McKnight and Pantzalis (2005) find that institutional ownership increase agency costs of the UK firms; however, in the Australian context, Henry (2010) finds that institutional block holding has a negative impact on asset utilisation, while individual block holding has no impact on agency costs.

6.4.1.2.5 Control variables (firm characteristics)

6.4.1.2.5.1 Debt ratio

The results, shown in Table 15, suggest that there is a negative association between the industry adjusted debt to assets ratio and agency costs. This implies that the more debt the firms get –beyond the industry median value- the more agency costs incurred by the shareholders; another possible explanation is that debt reduces and constrains firm's ability in utilising these assets. Crutchley and Hansen (1989) mention that leverage can help in reducing the conflicts between managers and shareholders, and hence, it is a relevant tool which can be used to reduce the costs of agency conflicts. Jensen (1986) argues that debt can be used as an effective replacement of dividends; which commits managers to pay-out the future cash flows to debt holders; as if they fail to do so, the firm will face the risk of bankruptcy; however, Crutchley and Hansen (1989) mention that both tools can be used to mitigate the agency conflicts, they do serve the same aim, and both can be used at the same time.

The study results contradict with the finding of some of the prior studies. Ang, Cole and Lin (2000) findings, as they find a positive association between debt ratio and asset utilisation ratio for a sample of 1708 U.S. small businesses; which implies that the increase in debt reduces agency costs. However, this contradiction in the results might result from the differences in sample. In the small business context, banks play an important role in providing the needed funds for small businesses. Given that the business scale for the small businesses compared to large corporations, banks can trace, monitor and control small businesses operations, while in large corporations this could be a very difficult if not impossible task for banks. Doukas, Kim and Pantzalis (2000) find evidence that debt has a significant role in reducing agency costs of the U.S. firms; and McKnight and Weir (2009) support that finding in the UK context.

Other studies like Doukas, McKnight and Pantzalis (2005) in the UK context and Henry (2010), in the Australian context, finds no significant association between debt ratio and agency costs. Similar to the study results, Singh and Davidson III (2003) find that debt increases agency costs for firms in the U.S. context; likewise,

Chen and Yur-Austin (2007) report a negative association between leverage and asset utilisation ratio for a sample of large U.S. companies; and Ibrahim and Samad (2011) report the same results for the Malaysian companies.

6.4.1.2.5.2 Dividend pay-out ratio

The reported results in Table 15 show that dividends pay-out ratio is positively associated with asset utilisation for the four models; however, these associations are not significant; suggesting that dividends have no observable impact on agency cost of the study sample. Eisenhardt (1989) argues that paying dividend is one of the tools that can reduce agency costs, and provide external monitoring by the external market with lower costs. Similarly, Jensen (1986) argues that paying dividends helps in reducing the agency costs of free cash flows; retaining the cash flows under the control of a manager put the firm on the risk that the manager may waste these resources in unprofitable projects. Likewise, Crutchley and Hansen (1989) find that dividends payment is an effective mechanism in mitigating the conflicts between managers and shareholders. While, Bathala and Rao (1995) find evidence that dividend pay-out has an impact on shaping board structure. Consistent with these arguments, Farinha (2003b) concludes that, for the UK firms, dividends help in reducing agency cost. Henry (2010) finds a positive significant association between dividends pay-out and asset utilisation, implying that for the Australian companies, dividends can help in reducing agency costs; however, the results for the full sample failed to support these arguments.

6.4.1.2.5.3 Growth prospects

The results, shown in Table 15, suggest that there is a negative association between growth opportunities measured by industry adjusted Tobin's Q ratio and agency costs. The coefficients are negative and not significant for all models; indicating that for the study sample, growth opportunities have no significant impact of agency costs. Fleming, Heaney and McCosker (2005) argue that firms with high growth opportunities generate lower utilisation of their asset as they are developing new products and developing new processes, such argument can explain the reported results of the negative association between asset utilisation and growth prospects.

Prior literature suggests that growth prospects has a significant role in shaping the governance structure of the firm. Florackis (2008) argues that the agency problem and its associated costs vary according to the firm's growth opportunities; this makes the role of governance mechanisms and the effectiveness of such mechanisms in reducing agency costs is subject to the firm's growth opportunities; they find evidence that the role of governance mechanisms varies with the firm's growth prospects. Easterbrook (1984) states that growth prospects are inversely related to the dividends pay-out ratio. Firms with high growth prospects tend to retain and reinvest their profits and take the advantage of available opportunities in the market. Jensen (1986) mentions that firm's growth prospects have a direct impact on the magnitude of agency problems, especially for firm that has high free cash flow and limited growth opportunities. In the same vein, Doukas, Kim and Pantzalis (2000) and Doukas, McKnight and Pantzalis (2005) argue that firms that have large free cash flow are expected to waste these cash flows in unprofitable projects leading to more agency costs. Other researches e.g., Lasfer (2004), Guest (2008) and Lehn, Patro and Zhao (2009), among others, argue that firm's growth opportunity has a direct impact on board structure. Lasfer (2004) reports that for high growth firms, boards tend to be more independent, while in low growth firms, boards are less independent. Boone *et al.* (2007) argue that board size and independence are shaped in the way that suits with the firm's growth. Guest (2008) finds that there is an inverse association between board size and growth prospects. Lehn, Patro and Zhao (2009) provide evidence that board structure (size and composition) is affected with firm's growth prospects. For high growth firm, boards tend to be smaller in size with more insiders while for low growth firms, the board tends to be larger with more outsiders. Interestingly, Klein (2002b) finds evidence that audit committee independence is negatively associated with firm's growth prospects.

6.4.1.2.5.4 Return on assets

The reported results in Table 15, show that the return on assets as a proxy of firm performance is significant and positively associated with asset utilisation for the baseline model as well as the sub models, suggesting that high financial performance is associated with higher asset utilisation. In the corporate governance literature, it is argued that firm performance has a direct impact on shaping the governance structure. Firms with high profits are susceptible for agency costs related to free cash

flow, and they are more attractive for institutional investors (Crutchley *et al.*, 1999). Boone *et al.* (2007) report evidence that board size and composition are affected by firm performance; they find that, usually, there is an increase in the proportion of outside directors following poor performance; similar results were reported by other studies like Hermalin and Weisbach (1988); Hermalin and Weisbach (1998) and Linck, Netter and Yang (2008). Wintoki, Linck and Netter (2012) report that board structure is shaped according to firm past performance. Hermalin and Weisbach (1988) mention that this change in board structure can be attributed to the need of new management perspectives to be added to the board or the need of more monitoring. Consistent with the above mentioned findings, Guest (2008) finds evidence that for well performing firms CEOs gain more negotiation power and they can negotiate for smaller and less independent boards. However, Ghosh and Sirmans (2003) report opposite results, they find that the ratio of outside directors increases with the improvements of firm performance. Whereas, Eisenberg, Sundgren and Wells (1998) find no evidence that changes in board size are related to poor past performance. These reported results are coherent with the argument that well performing firms have high asset utilisation. This result supports the findings of Fleming, Heaney and McCosker (2005), their findings reveal that profitable firms are more successful in utilising their assets.

6.4.1.2.5.5 Firm size

The results reported in Table 15, show that there is a negative association between firm size measured by total asset and asset utilisation ratio. These associations are significant at the 10% significance level for all of the study models. In the prior literature, it is argued that agency costs are affected by firm size. Large firms can benefit from their large scale to generate more sales using the available asset base in different business lines (Singh and Davidson III, 2003); thus, large firms are expected to utilise their asset base more efficiently compared to small firms.

However, other researchers, e.g., Doukas, Kim and Pantzalis (2000); McKnight and Weir (2009) and Henry (2010), among others, argue that large firms are more complex, and work in diversified business, thus, they are subject to more agency problems, and as a result incur more agency costs compared to small firms. The

reported results in this study lend the support to the argument that large firms are more subject to agency problems and incur higher agency costs.

The study results contradict with the findings of Singh and Davidson III (2003) and Chen and Yur-Austin (2007) for the U.S. firms; Fleming, Heaney and McCosker (2005) in the Australian context and McKnight and Weir (2009) for the UK firms, as they find that firm is positively associated with asset utilisation; nonetheless, the study findings are consistent with the findings of Florackis (2008) for a sample of UK firms and Ibrahim and Samad (2011) for a Malaysian sample, as they find that large firms are subject to more agency relations and conflicts and hence incur more agency costs. The researcher can refer the difference between results to the use of different measures to capture firm size, the studies of Singh and Davidson III (2003); Fleming, Heaney and McCosker (2005); Chen and Yur-Austin (2007) and McKnight and Weir (2009) employed sales amount as a measure of firm size, whereas, Florackis (2008) and Ibrahim and Samad (2011) use total assets as a proxy for firm size as this study does.

6.4.1.3 Comparative analysis of the pre and post crisis periods

In this section, the researcher reports and compares between the results of the regression analyses for the impact of different corporate governance mechanisms on asset utilisation as a proxy of agency costs before and after the 2008 financial crisis.

Table 16 Results of Hausman specification test to decide between fixed and random effects regression models for both pre and post crisis samples

		Baseline models	Sub model 1	Sub model 2	Sub model 3
Pre–crisis sample	χ^2	31.46	41.39	35.11	14.12
	***p*-value**	0.0029	0.0002	0.0024	0.59
Post-crisis sample	χ^2	19.06	17.95	22.03	20.28
	***p*-value**	0.1212	0.2091	0.1071	0.2079

Table 16 shows the results of Hausman (1978) specification test for the two samples; the results reported in this table are mixed, the results show that for the pre–crisis period, the null hypothesis is rejected for the baseline and sub models (1 and 2); thus, fixed effects model is appropriate for these models; whereas, random effects regression model is favoured over fixed effects regression model for sub model 3.

In regard to the post crisis period, Hausman specification test results indicate that random effects model is more appropriate for all models.

The results of the regression analysis of the pre–crisis period (2005–2007 inclusive) are reported in Table 17. The reported F-test values of the baseline and sub models (1 and 2) are significant at the 0.01 level, implying that the fixed effects regression model is appropriate for both the pre–crisis data set and the different combinations of corporate governance mechanisms and employed control variables; likewise, the reported value of χ^2 for sub model 3 indicates that the random effects regression model is more appropriate for such model. Table 18 reports the results of the random effects panel data regression model for the post crisis sample covering the period 2009–2011 inclusive. The reported χ^2 values of the baseline and sub models are significant (*p-value* < 1 percent) indicating that there is no statistical problem with the model variables and confirming the random effects model is appropriate for this sample.

With respect to the results of the baseline model, the reported coefficients of the board size are positive (pre 0.065; post 0.072), indicating that large boards are more efficient than small boards in utilising firm's assets, nevertheless, this association is significant for the post crisis period only (*p-value* < 10 percent). Moving to board composition, the results show that the significance of the board composition changes before and after the financial crisis, it changes from being negative (coefficient -0.16) and significant at the 10% level before the crisis to be insignificant (coefficient -0.019) after the crisis, such results could indicate that firm specific knowledge of insiders is more important than the independence of the board.

In terms of CEO duality, the results reveal negative but insignificant association between duality and asset utilisation. The results illustrate that an effective audit committee is an efficient monitoring tool that helps in enhancing the firm's asset utilisation. The coefficients are positive (pre 0.025; post 0.045) and significant at the 5% for the pre–crisis period while it is significant at the 10% for the post crisis period; however, the coefficients reveal that the impact of the effective audit committee is greater for the post crisis period. There is also a change in the impact of blockholders in mitigating the agency conflicts, the coefficients for both periods are positive (pre 0.1; post 0.0016), but it is only significant for the pre–crisis period.

For sub model 1 the researcher splits the block holding ratio, based on the identity of the blockholder, into institutional block holding and individual block holding. The results, as shown in Table 17 and Table 18, are consistent with the results of the baseline model. Board size is positive for the two periods of analysis (pre 0.065; post 0.073) and significant only for the post crisis period at the 10% level. Board composition still has a negative (coefficient -0.16) and significant (at the 10% level) role in increasing agency costs during the pre–crisis period; however, this role (coefficient -0.022) turns out to be insignificant for the post crisis period. An effective audit committee has a significant role in reducing agency costs for the study samples; however, consistent with the results of the baseline model, the results show that effective audit committees have more impact after the crisis. The coefficients are positive (0.025; 0.048) and significant at the 5% and 10% levels for the pre–crisis and post crisis periods respectively.

Consistent with the researcher's hypothesis (H8) that the identity of the blockholder could have an impact on agency costs; the reported results support this hypothesis. The results reveal that institutions as blockholders have a positive (coefficient 0.096) and significant (at the 10% level) role in reducing agency costs for the pre–crisis period, whereas, individuals as blockholders have a positive (coefficient 0.093) but insignificant role. For the post crisis period, institutional blockholders have a negative impact (coefficient -0.018); while, individual blockholders have a positive impact (coefficient 0.019) on agency costs, nonetheless, both impacts are insignificant.

In sub model 2 the researcher investigates the impact of board ownership as measured by the CEO ownership percentage, the non-executive directors' ownership ratio and the executive members' ownership ratio in mitigating agency problems and reducing agency costs. The reported results are consistent with baseline model and sub model 1 results with respect to board size, board composition and audit committee effectiveness. Board size is positive (coefficient 0.062) but not significantly associated with asset utilisation ratio for the pre–crisis sample, but for the post crisis period, large boards are positively (coefficient 0.066) and significantly (at the 10% significance level) associated with asset utilisation; whereas, board composition still negative (coefficient -0.15) and significant at the 10% significance level for the pre–crisis period; and negative (coefficient -0.017) but insignificant for

the post crisis period. Effective audit committees are positively (pre 0.025; post 0.044) associated with asset utilisation at the 10% significance level; consistent with the results of the baseline model and sub model 1, the coefficients reveal that effective audit committees have more impact on reducing agency costs for the post crisis period than the pre–crisis period.

With regards to board ownership ratios, the results of baseline and sub model 2 for both the pre and post crisis samples provide mixed results for the association between board ownership and asset utilisation. The results show that board ownership is positively but insignificantly associated with asset utilisation for baseline model of the pre and post crises samples. However, for sub model 2 after categorizing the total board ownership ratio according to board members affiliation, the results indicate that none of the board ownership variables are significantly associated with asset utilisation for the pre–crisis period, but provide different directions of these associations. While, for the post crisis sample, the results, also, reveal mixed associations but only the percentage of executive board ownership is positively (coefficient 0.2) associated with asset utilisation at the 5% significance level.

In terms of the block holding ownership, the results also reveal that blockholders play a significant role in mitigating the agency problem during the pre–crisis period, the coefficient is positive (0.11) and significant at the 10% level; nonetheless, for the post crisis period, the results show that blockholders have no significant role in reducing agency costs, the coefficient is positive (0.0043) but insignificant; such results are consistent with the results of the baseline model.

In sub model 3, the researcher integrates a comprehensive set of governance mechanisms, as earlier in this study, this model incorporates board characteristic variables, the block holding ratios based on the identity of the blockholder, the board ownership ratios after splitting it into three different categories based on the board member affiliation; and firm characteristics that have been identified in the prior literature as a potential stimulus of firm's governance structure and performance. The reported results reveal that board size is positively (pre 0.076; post 0.067) associated with asset utilisation at the 10% significant level for the pre and post crisis samples.

Table 17 Results of the fixed effect (for the baseline and sub models 1&2) and random effects (for sub model 3) panel data regression models with robust standard error for the study sample covering the pre–crisis period 2005 –2007 inclusive

	Baseline model	Sub model 1	Sub model 2	Sub model 3
Intercept	1.83	1.84	1.83	1.203
	(3.42)***	(3.43)***	(3.37)***	(2.79)***
***ln*BRD**	0.065	0.065	0.062	0.076
	(1.31)	(1.32)	(1.31)	(1.79)†
***ln*IND**	-0.16	-0.16	-0.15	-0.100
	(-1.77)†	(-1.75)†	(-1.73)†	(-1.18)
ACE	0.025	0.025	0.025	0.012
	(1.97)*	(1.97)*	(1.90)†	(0.90)
REMU-COM	-0.0062	-0.0065	-0.007	-0.008
	(-0.33)	(-0.35)	(-0.37)	(-0.41)
NOMINI-COM	0.015	0.015	0.015	0.014
	(0.81)	(0.80)	(0.82)	(0.75)
DUL	-0.02	-0.019	-0.018	-0.027
	(-0.81)	(-0.79)	(-0.76)	(-1.21)
***ln*BLK**	0.1		0.11	
	(1.93)†		(1.96)†	
***ln*INST_BLK**		0.096		0.070
		(1.83)†		(1.46)
***ln*INDV_BLK**		0.093		0.051
		(0.83)		(0.53)
***ln*BRDOWN**	0.046	0.046		
	(0.59)	(0.57)		
***ln*CEOOWN**			-0.054	-0.098
			(-0.23)	(-0.44)
***ln*EXECOWN**			0.087	0.018
			(0.45)	(0.10)
***ln*NEDOWN**			0.17	0.144
			(0.60)	(0.53)
***lnadj*DBT**	-0.24	-0.24	-0.24	-0.322
	(-1.65)	(-1.64)	(-1.64)	(-2.71)**
***sqadj*DIVD**	0.043	0.044	0.041	0.072
	(0.65)	(0.67)	(0.61)	(1.08)
***lnadj*ROA**	0.16	0.16	0.15	0.254
	(1.11)	(1.11)	(1.11)	(1.87)†
***lnadj*Q**	0.067	0.066	0.067	0.091
	(1.88)†	(1.84)†	(1.84)†	(2.75)†
***ln*ASSTS**	-0.08	-0.08	-0.08	-0.08
	(-2.96)**	(-2.95)**	(-2.96)**	(-2.00)*
N	562	562	562	562
groups	196	196	196	196
adj. R^2	18.7%	18.4%	18.6%	
F-test	4.81***	4.50***	4.55***	
wald χ^2				62.26***

t(z)-statistics in parentheses

†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

All variables are winsorized at the 1st and 99th percentile values

Dependent variable: Industry adjusted asset utilisation ratio

Table 18 Results of the random effects panel data regression model with robust standard error for the study sample covering the post crisis period 2009–2011 inclusive

	Baseline model	Sub model 1	Sub model 2	Sub model 3
Intercept	1.05	1.05	1.06	1.07
	(6.35)***	(6.20)***	(6.40)***	(6.24)***
***ln*BRD**	0.072	0.073	0.066	0.067
	(1.84)†	(1.86)†	(1.68)†	(1.70)†
***ln*IND**	-0.019	-0.022	-0.017	-0.02
	(-0.48)	(-0.57)	(-0.43)	(-0.51)
ACE	0.045	0.048	0.044	0.048
	(1.80)†	(1.90)†	(1.71)†	(1.84)†
REMU-COM	-0.03	-0.032	-0.024	-0.026
	(-0.57)	(-0.60)	(-0.45)	(-0.49)
NOMINI-COM	-0.011	-0.008	-0.014	-0.011
	(-0.36)	(-0.27)	(-0.47)	(-0.37)
DUL	-0.014	-0.015	-0.0042	-0.0046
	(-0.25)	(-0.28)	(-0.076)	(-0.085)
BLK	0.0016		0.0043	
	(0.034)		(0.10)	
***ln*INST_BLK**		-0.018		-0.02
		(-0.28)		(-0.31)
***ln*INDV_BLK**		0.19		0.22
		(1.48)		(1.89)†
***ln*BRDOWN**	0.11	-0.046		
	(0.98)	(-0.30)		
***ln*CEOOWN**			-0.12	-0.3
			(-0.87)	(-2.01)*
***ln*EXECOWN**			0.2	0.018
			(2.29)*	(0.14)
***ln*NEDOWN**			0.3	0.15
			(0.85)	(0.40)
***lnadj*DBT**	-0.57	-0.57	-0.57	-0.58
	(-5.67)***	(-5.73)***	(-5.70)***	(-5.76)***
***adj*DIVD**	0.004	0.004	0.0044	0.0043
	(0.49)	(0.48)	(0.54)	(0.53)
***lnadj*ROA**	0.39	0.4	0.38	0.39
	(2.15)*	(2.16)*	(2.07)*	(2.08)*
***lnadj*Q**	-0.087	-0.088	-0.088	-0.09
	(-2.52)*	(-2.52)*	(-2.53)*	(-2.55)*
***ln*ASSTS**	-0.012	-0.012	-0.012	-0.012
	(-2.05)*	(-2.06)*	(-1.95)†	(-2.00)*
N	684	684	684	684
groups	235	235	235	235
***wald* χ^2**	55.5***	57.5***	63***	65.7***

***z*-statistics in parentheses**

† p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

All variables are winsorized at the 1st and 99th percentile values

Dependent variable: Industry adjusted asset utilisation ratio

Board composition is negative (pre -0.1; post -0.02) and insignificantly associated with asset utilisation. Effective audit committee is positively (pre 0.076; post 0.067) associated with lower agency cost for both samples; however, this result is only significant for the post crisis sample at the 10% level. None of the ownership variables (block holding as well as board ownership) are significantly associated with asset utilisation for the pre–crisis period; however, for the post crisis period the results reveal that CEO ownership ratio is negatively (coefficient -0.3) associated with asset utilisation at the 5% significance level; while the individual block holding ratio is positively (coefficient 0.22) and significantly associated with asset utilisation at the 10% level.

Regarding the other board characteristics employed in the four models; the reported results show that compliant remuneration committee and CEO duality are negatively associated with asset utilisation for the pre and post samples; compliant nomination committee is associated with lower agency costs for the pre–crisis period; and associated with high agency costs for the post crisis period; nonetheless, all of these associations are statistically insignificant.

With respect to control variables, the reported results, as shown in Table 17 and Table 18, reveal that the industry adjusted debt ratio is negatively, but insignificantly associated with asset utilisation ratio for baseline and sub models 1 & 2 of the pre–crisis period; however, for sub model 3 this association still negative but turns out to be significant at the 1% level. With respect to the post crisis period the results show that debt is negatively and significantly associated with the asset turnover rate (*p-value <0.001).* The dividend pay-out ratio is negatively associated with asset utilisation for the pre–crisis sample and positively associated with asset utilisation for the post crisis sample; however, these associations are insignificant. Tobin's Q as a proxy for growth opportunities is significantly associated with lower agency costs at the 10% level for all models of the pre–crisis period; however, this association turns out to be negative and significant at the 5% level for the post crisis sample. The industry adjusted ROA is positively associated with asset utilisation ratio for all models of the pre and post crisis sample; however, these associations are insignificant for the baseline and the sub models 1 & 2 of the pre–crisis sample, whereas, this association is significant at the 10% level for sub model 3 and

significant at the 5% level for all models of the post crisis sample. Finally, firm size as measured by the value of total assets is negative and significantly associated with asset utilisation at the significance level 1% for the pre–crisis sample and the significance level 5% for the pre–crisis sample

6.4.1.4 Results Discussion

Just to remind the reader that, in this study, the researcher starts the analysis using a baseline model incorporates a comprehensive set of corporate governance mechanisms have been argued, in the prior literature, that they help in mitigating the consequences of the agency problem which are known as agency costs. Then, the researcher starts to expand this model by splitting this baseline model into three different sub models. In doing so, two ownership variables, namely the board ownership ratio, and the block holding ratio, were split into sub variables according to the identity of the owner (CEO, executive, and non-executive directors; and institutional or individual blockholder). In sub model 3, the researcher incorporates all the split variables with other governance and control variables to investigate the role of this comprehensive set of variables and control for the interaction between different governance mechanisms as it has been argued in the governance literature that different governance mechanism can act as complements and substitutes in some cases.

The reported results in Table 17 and Table 18 support the researcher's argument that the impact of the different corporate governance mechanisms is affected by the surrounding economic conditions of the environment surrounding the firm. Thus, as the researcher expected, splitting the full sample into two subsamples presenting the pre and the post crisis periods enabled the researcher to capture the changes in roles and identify which mechanisms were efficient (or inefficient) in enhancing managerial efficiency and reducing agency costs before the crisis, which mechanisms become efficient (or inefficient) after the crisis, and which mechanisms had the same role before and after the crisis.

6.4.1.4.1 Board size

The reported results reveal that large board is an effective governance mechanism for the UK firms. Board size was found to enhance management efficiency and reduce agency costs for the pre and post crisis periods. Such results are consistent with the results of the full sample which covers the period 2005–2011 inclusive. Nonetheless, this positive association is significant for the pre–crisis sub model three, and all the post crisis models. This finding supports the argument that large board are more beneficial to the firm. From an agency perspective, the reported results show that large boards can perform their monitoring role effectively; it becomes more difficult for the CEO to control over as it takes more time and effort to reach consensus and leads to less extreme decisions. From a resource dependence side, the reported results reveal that, large board enhance management effectiveness by recruiting more experts to the boards, building more connections with the external environment, securing the required resources, providing the firm with the essential information about the competition and external markets and that board size is affected by the external environment surrounding the firm.

Similar to the full sample results, the results reported in Table 17 and Table 18 contradict with the results of Singh and Davidson III (2003) for the U.S. context, and Florackis (2008) in the UK context, and consistent with the results reported by Ibrahim and Samad (2011) for the Malaysian context.

6.4.1.4.2 Board independence

6.4.1.4.2.1 Board composition

Based on the agency theory, the board of directors should be dominated by a majority of independent directors to ensure that the board will be independent from the CEO and the executive management, and hence, the board is able to perform their monitoring role. The reported results failed to support this argument. The coefficients are negative and significant at the 10% significance level for the pre–crisis period (insignificant for the sub model 3); also, the coefficients of the post crisis period remain negative but turn out to be insignificant for the post crisis sample; suggesting that for the pre–crisis period independent board members increase the agency costs of the UK firms; while for the post crisis period,

independent board member neither increase or reduce firm's agency costs. The negative association between independent board members and agency costs is supported after utilising different measure of board composition that reflects firm's compliance with the suggested board composition as suggested by the UK governance code (full results are reported in the robustness check section).

For the steady economic condition (pre–crisis period), the negative and significant association between board composition and agency costs contradicts with the benefits of the outside and independent directors proposed by the agency and resource dependence theories. According to the agency perspective, more independent directors are required to monitor and control management's decision, thus, the management's interests could be aligned with those of shareholders, resulting in efficient management practices, and lower conflicts. From the resource dependence theory, more outside directors are required for expanding and building more connections with the external environment to acquire the required resources, information about potential opportunities, providing the advice and counsel for the board and secure a steady flow of resources to the firm. However; these reported results could support the stewardship theory in terms of the importance of the role of the executive directors, and support the argument that directors can work as stewards rather than agents. The reported results contradict with the empirical evidence provided by Henry (2010) for the Australian context and Ibrahim and Samad (2011) for the Malaysian context as they find that board independence is positive and significantly associated with higher asset utilisation and lower agency costs.

For the unstable economic conditions (the post crisis recession period), the coefficients of the independent directors are negative but insignificant. These results could indicate the independent directors are not important mechanisms during and after unstable economic conditions; moreover, the negative coefficient indicates that independent directors could increase the agency costs of the post crisis period rather than reducing them. Also, these results could indicate that inside directors could be more important for the firm; the firm specific information they have in addition to the need for speed communication between the board and the management are critical for unstable conditions. This insignificant relationship between independent directors and asset utilisation is consistent with the results of prior studies like Singh

and Davidson III (2003) for the U.S. firms, Florackis (2008) and McKnight and Weir (2009) in the UK context.

6.4.1.4.2.2 Duality

It has been argued in the corporate governance literature that duality is the second element of board independence; advocates of the agency theory argue that duality is detrimental for board independence; the CEO can easily dominate over the board and it curtails insiders' ability to criticize the CEO and perform their monitoring role. Conversely, the advocates of the stewardship theory argue that duality brings some benefits to the firm among these benefits working under the same vision, linking the stage of the formulation of firm's strategy with the implementation stage, easy and fast communication and the firm specific knowledge; moreover, Van Essen, Engelen and Carney (2013) argue that duality is required during the crisis and unstable conditions. However, the reported results in Table 17 and Table 18 do not provide any evidence that support either view for the UK business context.

6.4.1.4.2.3 Board subcommittees

The UK corporate governance code recommends a number of committees under the board to help the board in performing their agency role effectively. Each committee has certain responsibilities that help in controlling the opportunistic behaviour of managers and ensure that managers are working for the best interests of shareholders. Among the different committees that are suggested with the UK corporate governance code and have been investigated in this study, only the audit committee seems to have a positive and significant impact on management efficiency and lower agency costs for the pre and post the financial crisis periods; which differ with the full sample results as the coefficients are positive but insignificant. The coefficients of the remuneration committee are negative and insignificant for both periods; whereas, the coefficients of the nomination committee are positive for the pre–crisis period and negative for the post crisis period, nonetheless, they are not significant at any level.

These reported results suggest that only the audit committee has a significant role in reducing agency costs and enhancing management effectiveness; while the insignificant relationship between the composition of the remuneration and nomination committees from one side -as suggested by the UK corporate governance

code and for both periods- and asset utilisation from the other side suggest that the recommended composition criteria are not effective in terms of reducing agency costs; suggesting the need for revising these recommendations. Consistent with this argument, McKnight and Weir (2009) find that the presence and the composition of the nomination committee increase agency costs of a sample of UK firms covering the period 1996–2000 inclusive; they conclude that it is not a critical control mechanism that helps in reducing agency costs; they find evidence that the presence and composition of the nomination committee increase agency costs rather than reducing it. Daily *et al.* (1998) find that composition of the remuneration committee is not related to the CEO's compensation; which contradicts with the agency theory assumptions about the necessity of the committee independence. Likewise, Adams, Almeida and Ferreira (2005) could not find empirical evidence that the CEO involvement in nominating and selecting new directors affect firm performance.

6.4.1.4.3 Ownership structure

6.4.1.4.3.1 Board ownership

In this study, the role of board ownership in reducing agency cost was investigated using different proxies. For the base model and sub model 1, the total board ownership variable was utilised, while for the sub models 2 and 3, the board ownership was split into three sub proxies according to the identity of the director. In regard to the pre–crisis period, the reported results do not show any significant impact of the different board ownership variables on asset utilisation. The coefficients of all variables are positive, except for the CEO ownership which is negative; however, these all coefficients are not significant.

With respect to the post crisis period, the results reveal that board ownership variable is positive but insignificant for the baseline model; then it turns to be negative but also insignificant for the sub model 1 after splitting the block holding variable into institutional and individual ownership. Such results support the results of Henry (2010) in Australian business context and McKnight and Weir (2009) in the UK context.

In sub model 2, only the executive ownership ratio is positive and significant at the 5 % significance level; this result lends the support for the convergence of interest hypothesis that argues that managerial ownership helps in aligning the

interest of managers with those of the shareholders. The empirical studies of the U.S. context, like Ang, Cole and Lin (2000), Doukas, Kim and Pantzalis (2000), Singh and Davidson III (2003) and Chen and Yur-Austin (2007) provide evidence that supports the convergence of interest hypothesis; similar evidence was found in the Australian SMEs context by Fleming, Heaney and McCosker (2005), and in the UK context, Florackis (2008) provide evidence that managerial ownership helps in reducing agency costs.

The results of sub model 3 reveal that CEO ownership ratio has a negative and significant association at the 5% significance level, suggesting that increase of the CEO ownership increases the agency costs, which is consistent with the entrenchment hypothesis which predicts a negative association between the management ownership and agency costs; Wellalage and Locke (2011) find evidence that supports the non-monotonic relationship between managerial ownership and agency costs for the New Zealand firms, suggesting that managers entrench themselves at low and high ownership levels. The possibility of the nonlinear association between managerial ownership and agency cost is investigated in the robustness check section.

6.4.1.4.3.2 Blockholders ownership

In the prior corporate governance literature, it has been argued that large shareholders have a significant role in controlling management's behaviour, and hence reducing the negative consequences of the agency relationship. In this study, the researcher investigates the role of blockholders in reducing agency costs, examine whether their role changes by the change of the economic conditions at which the firm operates, moreover, whether the identity of the blockholders has an impact on the blockholders role in monitoring the management. Similar to the full sample investigation, in the baseline model and sub model 2 the researcher investigates the role of total block holding ratio on agency costs, while in sub models (1 and 3), the researcher investigates the role of blockholders according to their identity on agency costs.

With respect to the pre–crisis period, the reported results show that blockholders have a significant role in enhancing management effectiveness, mitigating the agency problem and agency costs, the coefficients of the baseline and sub model 2

are positive and significant at the 10% significance level; indicating that blockholders are good monitors and hence they enhance the firm's ability in reducing agency costs. Similar results were reported by Florackis (2008) in the UK firms, and Chen and Yur-Austin (2007) for the U.S. firms.

After splitting the block holding ratio based on the identity of the blockholders, the results show that institutional and individual blockholders have a positive role in reducing the agency costs, nonetheless, only the institutional blockers are significant at the 10% significance level on the sub model 1 only. The prior literature provides mixed results in regard to the role of blockholders in mitigating the agency problem. For the U.S. context, Doukas, Kim and Pantzalis (2000) and Singh and Davidson III (2003) provide evidence shows that blockholders have no significant impact on agency costs, similar results were reported in the UK context by Doukas, McKnight and Pantzalis (2005) and McKnight and Weir (2009). Overall, consistent with the full sample results, these positive associations lend the support to the monitoring hypothesis, which argues that blockholders have the incentives and the abilities to monitor the management; they don't either free ride their monitoring role, or expropriate the minority of shareholders.

In regard to the post crisis period, the results show that the total block holding ratio still positive, but it turns to be insignificant, conversely, the institutional block holding turns from positive in sub models (1 and 3) and significant on sub model 1 to be negative in the post crisis sample; however, these negative associations are insignificant. A significant negative association between institutional block holding and agency costs was reported by Henry (2010) in the Australian context. Similar to the pre–crisis period, the individual block holding ratio coefficients still positive, and turn to be significant in sub model 3 after including the different governance mechanisms all together, contrary to this result in the Australian context, as Henry (2010) finds that individual blockholders have no impact on reducing agency costs. The results of the post crisis period provide mixed results; the positive associations could indicate that block holding in general and individual blockholders in particular, are good monitors, and these results can partially support the monitoring hypothesis; nonetheless, the negative association between the institutional blockholders and asset utilisation, could lend a partial support to the expropriation hypothesis which claims that blockholders expropriate the wealth of the minority of shareholders, and they

might use the firm's resources to extract private benefits. Thus, the reported results show that the identity of the blockholders matters and has a significant impact on firm's agency costs.

6.4.1.4.4 Control variables

In this study, the researcher considers a number of firm characteristics that the prior has argued they might affect the governance structure and firm's agency costs. These variables reflect firm's leverage level, the amount of dividends paid to shareholders, growth prospects, profitability and firm size.

6.4.1.4.4.1 Debt ratio

In the prior literature, debt was proposed as one of the tools that can be used as to mitigate the consequences of the agency conflicts and transfer part of the monitoring activities to the external market. The reported results for the pre–crisis period show a negative but insignificant association for the baseline and sub models 1 and 2; while for the sub model 3 the negative association is significant at the 1% level. In regard to the post crisis period, the results show a negative and significant association (*p-value < 0.001 percent)* between industry adjusted leverage ratio and asset utilisation; such results are consistent with the negative association reported for the full sample. These reported results show that as the firm increases its leverage level beyond the industry median, it starts to incur more agency cost represented in lower asset utilisation. These reported results support McConnell and Servaes (1995) that debt forces management to forego good investment opportunities with positive net present value; and consistent with the argument that leveraged firms are subject to lower performance as a result of the high interest rates (Van Essen, Engelen and Carney, 2013).

The evidence from the prior literature is mixed. Ang, Cole and Lin (2000) find evidence that debt helps in mitigating the agency conflict for small businesses in the U.S. context; similar results were reported for large U.S. companies by Doukas, Kim and Pantzalis (2000); and McKnight and Weir (2009) support that finding in the UK context. However, Doukas, McKnight and Pantzalis (2005) in the UK context and Henry (2010) in the Australian context find no evidence for the role of debt in mitigating the agency conflicts. Similar to this study results, Singh and Davidson III

(2003) and Chen and Yur-Austin (2007) in the U.S. context; and Ibrahim and Samad (2011) for the Malaysian context find negative association between debt and asset utilisation.

6.4.1.4.4.2 Dividend pay-out ratio

Similar to debt, dividend was proposed as a controlling mechanism over the management's opportunistic behaviour as it transfers part of the monitoring job to the external market; thus, dividend can reduce the agency conflicts and the agency costs. The reported results of the pre and post crisis are consistent, for the pre–crisis period the coefficients are positve but insignificant, similarly, for the post crisis period, the coefficients are positive and still insignificant. Such results indicate that dividend pay-out ratio has no impact on the agency cost for the study sample; or the dividend level for the pre and post crisis period is the optimal, thus, no significant impact was found. Contrary to this study results, Farinha (2003b) finds evidence that dividends help in reducing agency cost for the UK firms; similar results were reported for the Australian companies by Henry (2010).

6.4.1.4.4.3 Growth prospects

In the prior literature, it has been argued that firm's growth prospects is one of the factors that could affect the type of agency problems which the firm faces and the amount of costs related to such problems; besides it could influence the firm's governance structure. The reported results, as shown in Table 17 and Table 18, provide a mixed result, or in other words, show a transformation in the impact of growth opportunities on asset utilisation. In regard to the pre–crisis period, growth prospects has a positive and significant (at the 10% significance level) role on increasing the asset utilisation ratio, indicating that before the 2008 financial crisis, for this study sample, firms were able to reap the benefits of these growth opportunities, by increasing the utilisation of firm's assets base, to generate more sales, and hence, this could lead to a maximization of the shareholders' wealth.

With respect to the post crisis period, the reported results show a negative and significant, (at the 5% significance level), impact of the growth opportunities on the asset utilisation ratio. This reported result is consistent with results of Florackis (2008); he finds a negative association between firm prospects and asset utilisation ratio for a sample of UK firms. Many explanations could be proposed for this

transformed impact; after the financial crisis, although there might be growth opportunities which the firms can benefit from, but firms still have their assets base and by considering the drop on sales because of the global recession this could explain the drop on the asset utilisation ratio, another explanation is that, in order to get the benefits of the growth opportunities available in the market, firms need to expand their assets portfolio (the yearly descriptive statistics show that there an increase the average firm size after the financial crisis), thus, firms still need more time to develop new products and processes that match with the available opportunities in the market, and to gain the full benefits of the new added assets. Such argument is consistent with what was mentioned by Fleming, Heaney and McCosker (2005); they argue that, although firms could have high growth opportunities, but they might generate lower utilisation of their asset base as they customise their product and processes with these opportunities.

6.4.1.4.4.4 Return on assets

The reported results, as shown in Table 17 and Table 18, show that there is a positive association between firm profitability and asset utilisation. With respect to the pre–crisis period, the association is insignificant for the baseline and the sub models 1 and 2, whereas, it is significant for the sub model 3 at the 10% significance level. For the post crisis period, the results still positive and become significant at the 5% significance for all models. These results imply that profitable firms are more successful in utilising their assets base. The prior literature claims that profitable firms are more subject to agency problems related to the cash flows generated from their sales. Moreover, as mentioned before, profitability could have an impact on firm's governance structure. The reported results are consistent with the full sample results, and the findings of Fleming, Heaney and McCosker (2005), as they find that profitable firms are able to increase their asset utilisation ratio.

6.4.1.4.4.5 Firm size

The results reported in Table 17 and Table 18, show that there is a negative and significant association between firm size as measured by total asset and asset utilisation ratio. These associations are significant at the 1% and 5% significance level for the base line and sub models of the pre–crisis period and the post crisis period respectively. In the prior literature, it has been argued that firm size has a direct influence on agency costs. Prior literature provides two arguments in respect

to the expected relation between firm size and agency costs. The first perspective claims that the increase in firm size makes firms more complex and diversified; thus, large firms are subject to more agency problems and hence, incur more agency costs. The other perspective argues that large firms are more able to utilise their assets base in different business lines, and thus they can generate more sales without the need of new investments. The reported results of the pre and post crisis samples are consistent with the first perceptive that large firms are more vulnerable to agency problems and incur higher agency costs. Such results are consistent with the results of Florackis (2008) in the UK context and Ibrahim and Samad (2011) in the Malaysian context.

6.4.2 Using the interaction between the free cash flows and growth prospects as agency costs measure

In this section, the researcher utilises the interaction between free cash flow and growth prospects as a proxy of agency costs. Tobit regression is utilised in this section rather than the normal regression models as the dependent variable (QFCF) is a censored variable; with many observations having the value of zero; such characteristics should be considered while choosing the regression model. Similar to the asset utilisation analysis, the researcher employs a baseline model includes the main corporate governance mechanism along with firm characteristics variables. In the sub models 2 and 3, the researcher splits the board ownership into three variables based on the identity of the director into CEO ownership percentage, the non-executive directors' ownership ratio and the executive members' ownership ratio; likewise, the researcher splits the block holding ratio into institutional and individual block holding ratios in sub models 1 and 3. By doing so, the researcher considers the argument of the interaction between the different board and ownership variables in sub model 3.

6.4.2.1 Full sample results

Table 19 provides the results of the Tobit regression of the interaction between free cash flows and growth prospects as a proxy of agency costs and corporate governance mechanisms for the full sample. In terms of board characteristics, only duality was found to be negatively associated with agency costs at the 10%

significance level; suggesting that for a firm with high free cash flows and lower growth prospects, combining the CEO role with the chairman reduces agency costs, such result clearly contradicts with the agency perspective.

With regard to the ownership structure, the reported results show that block holding ratio is positively associated with agency costs at the 1% significance level, likewise, the institutional ownership block holding ratio is positively associated with agency costs at a significance level less than 1%; whereas, the CEO ownership ratio is negatively associated with agency costs at the 10% significance level for the sub model 2. These reported results suggest that for firms with high free cash flows, block holding in general, and institutional block holding in particular, are detrimental and lead to more agency costs related to the free cash flow and investment decisions; whereas, CEO ownership reduces these costs. These reported results add to the mixed results in the prior literature. McKnight and Weir (2009) report that institutional ownership increases the agency costs of the free cash flows in the UK context, similar results were reported by Doukas, Kim and Pantzalis (2000) in the U.S. context. Doukas, McKnight and Pantzalis (2005) and Henry (2010) find that institutional block holding has no impact on QFCF for the UK and Austrilian contexts respectively. In terms of board ownership, McKnight and Weir (2009) find that board ownership reduces FCF agency costs; whereas, Doukas, Kim and Pantzalis (2000), Doukas, McKnight and Pantzalis (2005) and Henry (2010) could not find significant association between QFCF and board ownership.

With regard to the control variables, the reported results lend the support to the asset utilisation results. Firm profitability is negatively associated with agency costs, and large firms incur more agency costs, both at a significance level less than 1%. Such results are consistent with the reported results for asset utilisation models.

Table 19 Results of the random effects panel based Tobit regression model for the study sample covering the period 2005-2011 inclusive

	Baseline model	Sub model 1	Sub model 2	Sub model 3
Intercept	-0.18	-0.17	-0.17	-0.17
	(-0.78)	(-0.76)	(-0.74)	(-0.73)
***ln*BRD**	-0.017	-0.017	-0.018	-0.018
	(-1.24)	(-1.24)	(-1.30)	(-1.28)
***ln*IND**	-0.024	-0.02	-0.021	-0.019
	(-0.520)	(-0.440)	(-0.460)	(-0.420)
ACE	-0.0037	-0.0046	-0.0038	-0.0047
	(-0.44)	(-0.55)	(-0.46)	(-0.56)
REMU-COM	0.00077	0.00059	0.0011	0.00098
	(0.050)	(0.039)	(0.072)	(0.064)
NOMINI-COM	0.0084	0.0077	0.0081	0.0076
	(0.840)	(0.770)	(0.810)	(0.760)
DUL	-0.031	-0.03	-0.028	-0.028
	(-1.76)†	(-1.71)†	(-1.56)	(-1.58)
BLK	0.051		0.051	
	(3.19)**		(3.18)**	
***ln*INST_BLK**		0.079		0.079
		(3.68)***		(3.66)***
***ln*INDV_BLK**		-0.025		-0.019
		(-0.50)		(-0.38)
***ln*BRDOWN**	-0.071	-0.0035		
	(-1.73)†	(-0.066)		
***ln*CEOOWN**			-0.13	-0.054
			(-1.72)†	(-0.62)
***ln*EXECOWN**			-0.061	-0.0025
			(-0.98)	(-0.035)
***ln*NEDOWN**			-0.018	0.034
			(-0.20)	(0.36)
***lnadj*DBT**	0.024	0.023	0.023	0.022
	(0.840)	(0.790)	(0.790)	(0.760)
***sqadj*DIVD**	-0.023	-0.021	-0.022	-0.021
	(-0.580)	(-0.550)	(-0.570)	(-0.540)
***lnadj*ROA**	-0.31	-0.31	-0.32	-0.31
	(-5.18)***	(-5.16)***	(-5.21)***	(-5.18)***
***ln*ASSTS**	0.013	0.013	0.013	0.013
	(5.91)***	(5.98)***	(5.89)***	(5.98)***
N	1431	1431	1431	1431
groups	239	239	239	239
wald χ^2	79.3***	83.5***	79.9***	83.8***

z statistics in parentheses

† ***p < 0.10,*** * ***p < 0.05,*** ** ***p < 0.01,*** *** ***p < 0.001***

All variables are winsorized at the 1st and 99th percentile values

Dependent variable: QFCF

6.4.2.2 Pre and post crisis analysis

Table 20 shows the results of the Tobit regression of the interaction between free cash flows and growth prospects as a proxy of agency costs and corporate governance mechanisms. Panel A reports the results for the pre–crisis sample, and panel B reports the post crisis results. In regard to board characteristics, the results show that large boards are negatively associated with agency costs at the 5% significance level for the baseline and sub models; implying that large boards are more effective in reducing agency costs for firms with high free cash flows and less growth prospects. Such results complements the reported results of the asset utilisation. Similar result was reported by Belghitar and Clark (2014) for the UK context. In terms of ownership structure, the results show that institutional block holding increases agency costs, while individual block holding reduces agency costs, both, at the 5% significance level. Consistent with the full sample results, CEO ownership helps in reducing agency costs at the 10% significance level. However, the results show that the non-executive directors' ownership ratio increases agency costs at the 10% significance level.

Panel B (Table 20) provides the results of the Tobit regression for the post crisis period. With regard to board characteristics, the results reveal that for the nomination committee, the compliance with the UK corporate governance code recommendations is associated with higher agency costs at the 10% significance level for the baseline and the sub models; which is consistent with the findings of McKnight and Weir (2009); they find that the presence and the composition of the nomination committee as suggested by the combined code increase rather than reducing the agency costs of the UK firms. Regarding the ownership structure, the results show that for the post crisis period, total block holding and institutional block holding ratio are associated with higher agency costs at the 1% significance level; similar results were reported by McKnight and Weir (2009) and Doukas, Kim and Pantzalis (2000). Total board ownership ratio is associated with lower agency costs at the 5% significance level for the baseline model only.

In terms of the control variables, the reported results of the pre and post crisis samples are consistent with full sample results. Firm profitability is negatively associated with agency costs at a significance level less than 1% for the pre–crisis

sample and the 5% significance level for the pre–crisis sample; and large firms incur more agency costs at a significance level less than 1%. Other firm's characteristics have no significant impact on agency costs.

Table 20 Results of the random effects panel based Tobit regression model for the association between QFCF and corporate governance mechanisms; panel A covers the pre–crisis period (2005-2007) and panel B covers the post crisis period (2009-2011)

	Panel A Pre–crisis sample				***Panel B post crisis sample***			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	-0.21	-0.2	-0.21	-0.2	-0.16	-0.17	-0.15	-0.17
	(-0.66)	(-0.64)	(-0.68)	(-0.64)	(-1.99)*	(-2.12)*	(-1.94)†	(-2.08)*
***ln*BRD**	-0.053	-0.054	-0.054	-0.054	-0.005	-0.004	-0.007	-0.005
	(-2.54)*	(-2.55)*	(-2.56)*	(-2.57)*	(-0.26)	(-0.19)	(-0.35)	(-0.27)
***ln*IND**	-0.094	-0.094	-0.087	-0.088	-0.013	-0.012	-0.012	-0.011
	(-1.49)	(-1.48)	(-1.37)	(-1.38)	(-0.57)	(-0.55)	(-0.52)	(-0.49)
ACE	-0.0055	-0.006	-0.0075	-0.0076	-0.012	-0.012	-0.011	-0.012
	(-0.50)	(-0.54)	(-0.68)	(-0.69)	(-0.86)	(-0.86)	(-0.79)	(-0.82)
REMU-COM	0.0045	0.0022	0.0046	0.0027	0.001	0.001	0.0001	0.0001
	(0.25)	(0.12)	(0.25)	(0.15)	(0.029)	(0.051)	(0.006)	(0.015)
NOMINI-	-0.0033	-0.0044	-0.0018	-0.0027	0.032	0.032	0.031	0.031
	(-0.26)	(-0.34)	(-0.14)	(-0.21)	(1.80)†	(1.80)†	(1.75)†	(1.73)†
DUL	-0.024	-0.017	-0.011	-0.0058	-0.039	-0.039	-0.037	-0.038
	(-0.87)	(-0.61)	(-0.37)	(-0.19)	(-1.44)	(-1.46)	(-1.39)	(-1.41)
***ln*BLK**	0.047		0.045		0.072		0.069	
	(1.59)		(1.53)		(2.82)**		(2.71)**	
***ln*INST_BLK**		0.06		0.058		0.11		0.11
		(2.03)*		(1.97)*		(3.01)**		(3.01)**
***ln*INDV_BLK**		-0.17		-0.17		0.076		0.044
		(-2.19)*		(-2.15)*		(0.98)		(0.59)
***ln*BRDOWN**	-0.058	0.063			-0.11	-0.099		
	(-0.92)	(0.83)			(-2.11)*	(-1.23)		
***ln*CEOOWN**			-0.31	-0.23			-0.11	-0.072
			(-1.67)†	(-1.16)			(-1.31)	(-0.70)
***ln*EXECOWN**			-0.091	0.06			-0.053	-0.018
			(-0.67)	-0.42			(-0.67)	(-0.18)
***ln*NEDOWN**			0.14	0.27			-0.17	-0.14
			(0.99)	(1.85)†			(-1.48)	(-1.11)
***lnadj*DBT**	0.022	0.013	0.016	0.0094	0.047	0.047	0.048	0.048
	(0.48)	(0.29)	(0.35)	(0.2)	(1.17)	(1.15)	(1.19)	(1.17)
***sqadj*DIVD**	-0.032	-0.03	-0.033	-0.031	-0.003	-0.003	-0.003	-0.003
	(-0.58)	(-0.55)	(-0.61)	(-0.57)	(-0.65)	(-0.62)	(-0.73)	(-0.69)
***lnadj*ROA**	-0.53	-0.51	-0.52	-0.5	-0.19	-0.19	-0.19	-0.19
	(-5.18)***	(-4.98)***	(-5.13)***	(-4.91)***	(-2.42)*	(-2.40)*	(-2.37)*	(-2.36)*
***ln*ASSTS**	0.02	0.02	0.019	0.019	0.013	0.013	0.013	0.013
	(4.57)***	(4.52)***	(4.52)***	(4.46)***	(4.49)***	(4.55)***	(4.49)***	(4.58)***
N	562	562	562	562	684	684	684	684
groups	196	196	196	196	235	235	235	235
wald χ^2	57***	62.4***	59.3***	63.1***	41.9***	43.2***	41.7***	43.4***

z statistics in parentheses

† ***p < 0.10,*** * ***p < 0.05,*** ** ***p < 0.01,*** *** ***p < 0.001***

All variables are winsorized at the 1st and 99th percentile values

Dependent variable: QFCF

6.5 ROBUSTNESS CHECK AND FURTHER ANALYSES

In this section, the researcher preforms some robustness checks to check the validity of the reported results in the previous sections. The researcher starts with testing a common problem in the econometric and governance literature which is the endogeneity problem. Then, the researcher utilises an alternative measure for board composition which reflects the recommended composition by the UK governance code; the researcher examines the proposed argument that the relationship between ownership variables and agency problem could be non-monotonic rather than linear relation, and the argument that the increase of the number of blockholders could be help in reducing the entrenchment effect of blockholders.

6.5.1 The endogeneity problem

In the main analyses, the researcher employed both fixed effects and random effects regression models. The fixed effects model control for the endogeneity issue by assuming that the effect of the omitted variables are fixed over time; in this section, the researcher applies a different method to control for the endogeneity by employing the Two Stage Least Square (2SLS) method using instrumental variables for the endogenous variables. In the following section, the researcher starts with addressing the endogeneity issue, detecting endogeneity and the possible solutions to deal with it.

Endogeneity means that one or more independent variable is correlated to the error term (Baltagi, 2008); and hence, this correlated variable(s) becomes interdependent with other variables. This correlation between the independent variables and the error term violates a fundamental assumption of the OLS regression and hence the OLS estimators could be consistent but still inefficient (Greene, 2012). The presence of this correlation between independent variable(s), or in other words, the presence of endogenous variable(s) makes the regression estimates capture the magnitude of the association rather than the magnitude and direction (Cameron and Trivedi, 2005). Endogeneity could arise because of different factors that could be sample sensitivity, simultaneous causality, unobserved

variables[8], error in measuring variables, omission of relevant variables or other reasons (Baltagi, 2008; Stock and Waston, 2011; Greene, 2012).

Taking into consideration that in this study, both fixed effects and random effects panel regression models were employed –based on the results of Hausman (1978) specification tests; and that, panel data regression models considering some of the endogeneity reasons (i.e., the unobserved specific characteristics of the sample units) but not all the causes of endogeneity; moreover, the fixed effects model can tolerate limited form of endogeneity while the random effects model does not, a further investigation of the endogeneity issue for the employed models should be considered.

The econometric literature, as well the accounting literature, provides many possible solutions for the endogeneity problem. One possible solution is to use the lagged value of the endogenous independent variables as instruments (Gujarati, 2004) and apply, for example, one of the instrumental variable (IV) methods (e.g., two-stage least squares (2SLS)) to estimate consistent and efficient estimators (Baltagi, 2008). These instruments should have the property to change with the changes of (in other words, highly correlated with) the endogenous independent variables without leading to any change in the dependent variable and without being correlated to the error term (Cameron and Trivedi, 2009; Brooks, 2014). Another solution is to use the system simultaneous equation modelling.

Such methods have been applied in the prior governance and accounting literature as possible alternatives to deal with the endogeneity problem. Prior studies, e.g., McKnight and Weir (2009), Henry (2010), among others, employed the instrumental variables estimation methods to deal with the endogeneity problem; whereas, Bhagat and Bolton (2008), Ferrero-Ferrero, Fernández-Izquierdo and Muñoz-Torres (2012), among others, utilised the simultaneous equations model in dealing with the endogeneity issue; other researcher for example, Coles, Daniel and Naveen (2008), Hermalin and Weisbach (1991) employed both methods and consistent results were reported; which can imply that these different approaches could be used as substitutes. However, Cameron and Trivedi (2009) describe the instrumental variable

[8] Endogenous treatment effects: unobserved factors (sample unit specific characteristics) that have strong impact on the independent variables, and do affect the estimated relationship, but it is impossible to be considered in estimation model.

estimation methods as the foremost approach that can be used to estimate models with endogenous variables.

Building on the previous discussion, investigating the endogeneity issue is a very important and critical step. Researchers should check for endogeneity and ensure that the employed model comprises endogenous variables before proceeding to use instrumental variables models. If the use of OLS regression with endogenous independent variables will provide inefficient estimations, the same will happen by utilising instrumental variables regression techniques with exogenous independent variables (Gujarati, 2004; Cameron and Trivedi, 2009; Brooks, 2014) as the estimators will be consistent but not efficient as the OLS estimator (Gujarati, 2004; Cameron and Trivedi, 2009).

Hausman (1978) specification error test is one of the specification tests that can be used to examine the exogeneity of the employed independent variables and to decide either OLS estimators are efficient or there is a need to utilise other OLS alternatives like simultaneous equations model or 2SLS and other instrumental variables models (Gujarati, 2004). It worth mentioning that Hausman (1978) specification test yields consistent results with the earlier work of Durbin (1954) and Wu (1973) for endogeneity testing (Greene, 2012).

The idea of this test is to compare the estimators of OLS and 2SLS, if the estimators are consistent and there is no substantial difference between the OLS and the IV estimations, this is an indication that there is no need to utilise OLS alternatives; whereas, if the difference is considerably big, so the variable can be deemed endogenous, and an instrument variable should be used (Cameron and Trivedi, 2009; Greene, 2012) or other OLS alternative. Baltagi (2008) mentions that Monte Carlo experiments were performed to test the goodness of Hausman (1978) test shows that this test is effective in detecting the endogeneity problem and the endogenous variables.

Durbin–Wu–Hausman endogeneity diagnostic test is another specification test that can be used to investigate the exogeneity of the independent variables. This test is based on examining a null hypothesis that the examined variables are exogenous. The failure to reject the null hypothesis implies that the examined variables are exogenous; and hence, the OLS provides efficient estimators; while, rejecting the

null hypothesis of the exogeneity of variables indicates that variables are endogenous, and this requires utilising different regression techniques (e.g., 2SLS method using instrumental variables for the endogenous variables) otherwise, the regression results will be inefficient.

Cameron and Trivedi (2009) argue that Durbin–Wu–Hausman test is equivalent to the Hausman (1978) test of endogeneity; however, it can be done in robust form to consider the heteroskedastic errors and auto correlation cases. For the case of having the multiple endogenous variables, Cameron and Trivedi (2009, p.190) suggest to test for the endogeneity for the suspected variables separately using robust Durbin–Wu–Hausman test, in order to correlate between each variable and the error term.

In this study, the endogeneity issue among the governance and other variables employed in this study is examined by using robust Durbin–Wu–Hausman (DWH) endogeneity diagnostic test; such test has be utilised in prior studies (e.g., Beiner *et al.* (2006); Park and Jang (2010); Ferrero-Ferrero, Fernández-Izquierdo and Muñoz-Torres (2012), among others). The reported results, as shown in Table 21, show that the researcher failed to reject the null hypothesis at the 5% significance level for the pre and post crisis samples, thus, none of the models' variables are endogenous. While for the full sample, the tests results are consistent for two models (baseline and sub model 3), and indicate that both models have endogenous variables, whereas, for the two other models (sub models 1 and 2) the results are mixed, one test supports the null hypothesis, and the other does not support it. Thus, 2SLS regression model using instrumental variables for the endogenous ones should be employed for all models.

In order to identify the endogenous variables in the full sample models, the researcher follows Cameron and Trivedi (2009)'s suggestion of examining the endogeneity of the independent variables separately. In doing so, the researcher separately applied the robust Durbin–Wu–Hausman test for the independent variables utilised variables in this study. The results of the DWH test show that, only, the nomination committee and return on assets are the endogenous independent variables in the employed models.

Table 21 Robust Durbin–Wu–Hausman endogeneity diagnostic test

	Baseline model	Sub model 1	Sub model 2	Sub model 3
Full sample				
H_o: variables are exogenous				
Durbin (score) χ^2	16.398*	16.249	19.453*	19.377
Wu-Hausman F	2.215*	1.929*	2.278*	2.022*
Pre–crisis				
H_o: variables are exogenous				
Durbin (score) χ^2	9.731	10.892	10.004	11.404
Wu-Hausman F	1.277	1.291	1.048	1.073
Post-crisis				
H_o: variables are exogenous				
Durbin (score) χ^2	11.248	10.690	10.387	10.128
Wu-Hausman F	1.734	1.449	1.247	1.086
***p < 0.05**				

Building on the results of the Durbin–Wu–Hausman endogeneity test, the researcher has to re-estimate the employed models by utilising instrumental variables for the endogenous variables. These instruments should be highly correlated with the endogenous variables, but not correlated to the error term. Cameron and Trivedi (2009) mentions that the choice of the instruments should be based on norms established in prior empirical literature. Thus, based on the corporate governance prior literature (e.g., Coles, Daniel and Naveen (2008); McKnight and Weir (2009); Henry (2010), among others) the lagged value of the endogenous variables was employed in the 2SLS regression model.

Table 22 reports the results of the 2SLS regression using the lagged values of nomination committee compliance and the industry adjusted ROA as instruments for the full sample. Overall, the reported results in this table are not only lending the support to the full sample results reported in the full sample analysis section (Table 15), but also bring new evidence. Large boards are positively associated with asset utilisation at the 5% significance level for the baseline and the sub models; supporting the argument that large boards are more efficient for the UK firms. The coefficients of the percentage of the independent board members turn out to be positive, but also insignificant compared to random effects regression results. Likewise, the modest evidence of the CEO duality reported earlier stays negative, but turns out to be insignificant. Unlike the results of the random effect regression model of the full sample, that do not provide any evidence that board subcommittees have any significant impact on agency costs; the 2SLS regression results provide

new evidence, for the baseline and sub models, that the compliance with the UK corporate governance code recommendations for the remuneration committee is associated with higher agency costs at the 5% significance level; while the compliance with the recommendations for the nomination committee is associated with low agency costs at the 1% significance level. The block holding percentage also, turns out to be insignificant compared to the significant evidence provided by the random effects regression. Moreover, the reported results provide modest evidence that individual block holding has a positive impact on asset utilisation at the 5% significance level and institutional block holding has no significant impact. The percentage of board ownership is negatively associated with the asset utilisation ratio at the 5% significance level. The CEO ownership percentage is associated with high agency costs at the 1% significance level, while the executive and non-executive directors ownership percentages remain insignificant, which is consistent with the earliest reported results in Table 15.

In terms of control variable, the reported results confirm the negative impact of debt on asset utilisation, the positive association between firm's profit and asset utilisation and that agency costs increase as firms become larger in size. This analysis adds that growth prospects are negatively associated with asset utilisation; and support the argument that high growth firms might have a lower asset utilisation ratio as it requires more time to customise their products and operations with these new opportunities.

Table 22 Results of the 2SLS instrumental regression with robust standard error for the study sample covering the period 2005-2011 inclusive

	Baseline model	Sub model 1	Sub model 2	Sub model 3
Intercept	-0.049	-0.076	-0.12	-0.12
	(-0.071)	(-0.11)	(-0.18)	(-0.17)
***ln*BRD**	0.064	0.067	0.057	0.06
	(2.24)*	(2.33)*	(1.96)*	(2.06)*
***ln*IND**	0.097	0.094	0.11	0.11
	(1.11)	(1.08)	(1.19)	(1.27)
ACE	-0.016	-0.014	-0.015	-0.011
	(-0.69)	(-0.60)	(-0.62)	(-0.48)
REMU-COM	-0.11	-0.11	-0.11	-0.11
	(-2.27)*	(-2.28)*	(-2.24)*	(-2.28)*
NOMINI-COM	0.14	0.14	0.14	0.14
	(2.89)**	(2.93)**	(2.84)**	(2.91)**
DUL	-0.018	-0.019	0.0042	0.0054
	(-0.61)	(-0.67)	(0.13)	(0.17)
BLK	0.015		0.011	
	(0.45)		(0.33)	
***ln*INST_BLK**		.00004		-0.012
		(0.001)		(-0.26)
***ln*INDV_BLK**		0.27		0.17
		(2.17)*		(1.34)
***ln*BRDOWN**	-0.12	-0.32		
	(-1.29)	(-2.22)*		
***ln*CEOOWN**			-0.41	-0.56
			(-2.76)**	(-3.02)**
***ln*EXECOWN**			0.082	-0.041
			(0.69)	(-0.27)
***ln*NEDOWN**			-0.065	0.068
			(-0.22)	(0.16)
***lnadj*DBT**	-0.51	-0.5	-0.52	-0.52
	(-7.04)***	(-6.88)***	(-7.10)***	(-7.07)***
***sqadj*DIVD**	-0.025	-0.031	-0.036	-0.038
	(-0.25)	(-0.3)	(-0.35)	(-0.38)
***lnadj*ROA**	2.77	2.78	2.87	2.86
	(3.16)**	(3.20)**	(3.21)**	(3.21)**
***lnadj*Q**	-0.25	-0.26	-0.26	-0.26
	(-2.76)**	(-2.82)**	(-2.79)**	(-2.81)**
***ln*ASSTS**	-0.013	-0.014	-0.013	-0.014
	(-2.36)*	(-2.47)*	(-2.33)*	(-2.46)*
N	1167	1167	1167	1167
wald χ^2	118.9***	123.8***	123.5***	129.2***

z-statistics in parentheses

$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

All variables are winsorized at the 1st and 99th percentile values

Dependent variable: Industry adjusted asset utilisation ratio

Instruments: one year lagged value fornomination committee and industry adjusted ROA

As mentioned earlier, considering the characteristics of the QFCF as a censored variable, Tobit regression was utilised. In this section the researcher aims at examining for the endogeneity issue for the QFCF models. For these models, the Smith-Blundell test for endogeneity will be utilised instead of the Durbin–Wu–Hausman (DWH) endogeneity diagnostic test. Similar to the (DHW) test, Smith-Blundell test is a specification test that examines a null hypothesis that the examined variables are exogenous (Baum, 1999). The results, shown in Table 23 show that for the full sample, sub models (1, 2 and 3) suffer from the endogeneity problem, with regard to the pre–crisis period, only submodules (1 and 3) have the endogeneity problem; and finally none of the post crisis period models have the problem of endogeneity. Thus, further analyses to identify the endogenous variables, should be done.

Table 23 Smith-Blundell endogeneity test for QFCF models

	Baseline model	Sub model 1	Sub model 2	Sub model 3
Full sample				
H_o: variables are exogenous				
P-value	1.883	2.258*	2.350*	1.912*
Pre–crisis				
H_o: variables are exogenous				
P-value	1.013	5.480*	1.202	6.441*
Post-crisis				
H_o: variables are exogenous				
P-value	0.581	1.051	0.597	0.99
***p < 0.05**				

Following Cameron and Trivedi (2009)'s suggestion, the researcher examines the endogeneity of the independent variables separately to identify the endogenous variables. The results of this examination reveal that remuneration committee compliance, institutional and individual block holding and firm profitability are the endogenous variables for the full sample models; whereas, individual and ROA are endogenous for the pre–crisis period.

Table 24 provides the results of the instrumental based Tobit regression. The reported results lend the support and add to the reported results in Table 18. With regards to sub models (1, 2 and 3) of the full sample, the results add a significant association at the 10% level between large boards and lower agency costs in terms of QFCF; moreover, there is a negative and significant association between board composition and QFCF, suggesting that independent board members reduce agency

costs of the free cash flows and investment decisions. A positive association was found between REMU_COM and QFCF, suggesting that the compliance with the UK governance code with regard to the remuneration committee increases agency costs. With regard to the pre–crisis, the reported results in Table 24 are consistent with the reported results in Table 19, with exception that individual block holding turns out to be positive and significantly associated with QFCF; and the non-executive ownership ratio turns out to be insignificant.

Table 24 Results of the instrumental Tobit regression

	full sample (2005-2011)			**pre–crisis (2005-2007)**	
	sub model 1	**sub model 2**	**sub model 3**	**sub model 1**	**sub model 3**
Intercept	0.298	0.311	0.343	-0.0803	-0.0895
	(0.910)	(0.950)	(1.040)	(-0.19)	(-0.21)
***ln*BRD**	-0.0262	-0.028	-0.0304	-0.0821	-0.0804
	(-1.81)†	(-1.91)†	(-2.05)*	(-3.05)**	(-2.98)**
***ln*IND**	-0.0876	-0.0879	-0.0839	-0.043	-0.0414
	(-1.83)†	(-1.84)†	(-1.75)†	(-0.540)	(-0.520)
ACE	-0.0011	-0.0012	-0.0017	0.0095	0.00728
	(-0.092)	(-0.11)	(-0.15)	(0.590)	(0.450)
REMU-COM	0.086	0.086	0.0887	0.00908	0.00939
	(2.20)*	(2.20)*	(2.25)*	(0.340)	(0.350)
NOMINI-COM	-0.0118	-0.012	-0.0124	-0.0149	-0.0147
	(-0.87)	(-0.89)	(-0.91)	(-0.81)	(-0.79)
DUL	-0.0482	-0.0463	-0.0452	-0.0501	-0.0559
	(-2.48)*	(-2.32)*	(-2.26)*	(-1.36)	(-1.43)
BLK		0.0403			
		(2.31)*			
***ln*INST_BLK**	0.0696		0.0235	0.123	0.123
	(2.93)**		(0.710)	(3.17)**	(3.12)**
***ln*INDV_BLK**	0.0562		0.0294	0.195	0.194
	(0.800)		(0.440)	(1.74)†	(1.69)†
***ln*BRDOWN**	-0.0148			-0.119	
	(-0.21)			(-1.10)	
***ln*CEOOWN**		-0.0477	-0.0393		-0.192
		(-0.57)	(-0.39)		(-0.76)
***ln*EXECOWN**		0.0085	0.0163		-0.172
		(0.130)	(0.190)		(-0.91)
***ln*NEDOWN**		0.0343	0.0489		-0.128
		(0.350)	(0.430)		(-0.63)
***lnadj*DBT**	-0.0002	-0.0016	-0.0028	0.0926	0.095
	(-0.0048)	(-0.048)	(-0.085)	(1.620)	(1.65)†
***sqadj*DIVD**	-0.0002	-0.0002	- 0.000	0.0451	0.0458
	(-0.0035)	(-0.0049)	(-0.000)	(0.610)	(0.620)
***lnadj*ROA**	-1.173	-1.169	-1.192	-1.19	-1.182
	(-5.61)***	(-5.55)***	(-5.61)***	(-5.32)***	(-5.22)***
***ln*ASSTS**	0.0126	0.0123	0.0115	0.0234	0.0234
	(4.46)***	(4.33)***	(3.93)***	(4.17)***	(4.17)***
N	1167	1167	1167	363	363
***wald* χ^2**	114.1	109.8	104.7	66.86	66.39
z-statistics in parentheses					
$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$					
All variables are winsorized at the 1st and 99th percentile values					
Dependent variable: Industry adjusted asset utilisation ratio					
Instruments: one year lagged value for:	***nomination committee, individual block holding and industry adjusted ROA***			***individual block holding, and industry adjusted ROA***	

6.5.2 Re-estimating the full sample analysis after controlling for the financial crisis period and using relatively balanced data set.

Table 25 reports the results of the regression analysis of the full sample after adding dummy variables to control for pre, during and post crisis periods and using a relatively balanced data set (the average number of observations for each firm is 6.8). First, the results show that pre–crisis and during variables are significant for the asset utilisation measure; and the pre–crisis is significant for the QFCF models; suggesting that there is a significant difference between the impact of the corporate governance mechanisms on agency costs before, during and after the financial crisis.

In terms of asset utilisation as an agency cost proxy; the reported results enhance and add to the reported results in Table 15. Large boards enhance firm's utilisation ratio; whereas, duality is negatively associated with asset utilisation for the baseline and all sub models. Confirming that large boards help in reducing the agency cost, and duality increases agency costs for the period 2005-2011 inclusive. The results of the block holding and CEO ownership are consistent with previously reported results in Table 15; blockholders help in reducing the agency costs, whereas, CEO ownership increases agency costs at the 10% significance level. However, the results show that after controlling for the periods before and during the financial crisis, institutional and individual block holding turn to be insignificant.

In terms of QFCF as an agency costs proxy, the reported results in Table 25 are consistent with the previously reported results in Table 19. Block holding and institutional blockholders are positively associated with QFCF, which implies that block holding and institutional blockholders increase the agency costs related to investment decisions; whereas, there is modest evidence that board ownership is negatively associated with QFCF; which means board ownership help in reducing agency costs of the free cash flow. Inconsistent with the previously mentioned results in Table 19, duality turns to have no significant impact on QFCF.

Table 25 Results of the random effects panel data regression model with robust standard error for the study sample covering the period 2005-2011 inclusive after adding financial crisis dummies

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	0.857	0.857	0.87	0.872	-0.0684	-0.06	-0.0691	-0.0609
	(5.41)***	(5.38)***	(5.53)***	(5.51)***	(-1.13)	(-0.99)	(-1.14)	(-1.01)
***ln*BRD**	0.0584	0.0601	0.0553	0.0564	-0.0131	-0.0142	-0.0126	-0.0139
	(2.09)*	(2.13)*	(1.99)*	(2.01)*	(-0.87)	(-0.94)	(-0.83)	(-0.92)
***ln*IND**	-0.0274	-0.0287	-0.0189	-0.0192	-0.0281	-0.0217	-0.0276	-0.0222
	(-0.38)	(-0.40)	(-0.26)	(-0.26)	(-0.59)	(-0.45)	(-0.58)	(-0.46)
ACE	0.00242	0.00275	0.003	0.00324	-0.0016	-0.002	-0.0016	-0.0019
	(0.16)	(0.18)	(0.20)	(0.21)	(-0.17)	(-0.22)	(-0.17)	(-0.21)
REMU-COM	-0.0056	-0.0049	-0.007	-0.0065	0.006	0.005	0.005	0.005
	(-0.27)	(-0.23)	(-0.35)	(-0.32)	(0.34)	(0.28)	(0.32)	(0.27)
NOMINI-	0.007	0.007	0.007	0.007	0.005	0.003	0.005	0.003
	(0.34)	(0.34)	(0.34)	(0.33)	(0.47)	(0.31)	(0.47)	(0.32)
DUL	-0.0749	-0.0759	-0.0671	-0.0682	-0.03	-0.0282	-0.029	-0.027
	(-2.68)**	(-2.69)**	(-2.34)*	(-2.36)*	(-1.55)	(-1.46)	(-1.47)	(-1.37)
BLK	0.0777		0.0764		0.053		0.053	
	(1.96)*		(1.92)†		(2.79)**		(2.79)**	
***ln*INST_BLK**		0.0779		0.0781		0.0697		0.0695
		(1.57)		(1.58)		(3.05)**		(3.04)**
***ln*INDV_BLK**		0.169		0.132		-0.0684		-0.062
		(1.39)		(1.02)		(-1.12)		(-1.05)
***ln*BRDOWN**	-0.049	-0.0887			-0.0991	-0.0198		
	(-0.59)	(-1.18)			(-1.91)†	(-0.31)		
***ln*CEOOWN**			-0.207	-0.222			-0.133	-0.0596
			(-1.81)†	(-1.87)†			(-1.24)	(-0.53)
***ln*EXECOWN**			0.114	0.0894			-0.125	-0.0499
			(0.93)	(0.71)			(-1.62)	(-0.59)
***ln*NEDOWN**			0.0655	0.0525			-0.0484	0.0254
			(0.46)	(0.35)			(-0.46)	(0.23)
***lnadj*DBT**	-0.537	-0.536	-0.534	-0.533	0.0109	0.00962	0.0096	0.00879
	(-5.48)***	(-5.49)***	(-5.44)***	(-5.44)***	(0.35)	(0.31)	(0.31)	(0.29)
***sqadj*DIVD**	-0.0073	-0.0074	-0.0067	-0.0068	-0.0017	-0.0016	-0.0017	-0.0016
	(-0.90)	(-0.92)	(-0.83)	(-0.84)	(-0.44)	(-0.41)	(-0.44)	(-0.41)
***lnadj*ROA**	0.483	0.478	0.474	0.47	-0.263	-0.264	-0.262	-0.262
	(3.32)***	(3.30)***	(3.32)***	(3.29)***	(-4.28)***	(-4.30)***	(-4.26)***	(-4.27)***
***lnadj*Q**	0.0133	0.0113	0.0138	0.0124				
	(0.42)	(0.36)	(0.44)	(0.40)				
***ln*ASSTS**	-0.0086	-0.0086	-0.0087	-0.0087	0.0124	0.0123	0.0124	0.0123
	(-1.16)	(-1.16)	(-1.17)	(-1.17)	(5.18)***	(5.16)***	(5.18)***	(5.15)***
Pre–crisis	-0.204	-0.209	-0.201	-0.205	-0.0464	-0.0477	-0.0467	-0.0478
	(-4.12)***	(-4.23)***	(-4.05)***	(-4.14)***	(-1.96)†	(-2.02)*	(-1.97)*	(-2.02)*
During	-0.117	-0.117	-0.113	-0.113	-0.023	-0.0214	-0.0235	-0.0218
	(-2.53)*	(-2.55)*	(-2.44)*	(-2.45)*	(-1.01)	(-0.94)	(-1.03)	(-0.96)
N	1298	1298	1298	1298	1298	1298	1298	1298
groups	192	192	192	192	192	192	192	192
***wald* χ^2**	524.9***	518***	656.5***	651.4***	69.93***	73.58***	70.68***	73.95***
***z* -statistics in parentheses**								
†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001								
All variables are winsorized at the 1st and 99th percentile values								
Dependent variable:	*Industry adjusted asset utilisation ratio*				*QFCF*			

6.5.3 The nonlinear impact of ownership structure

As mentioned earlier in chapter 3, there are two hypotheses that explain the relationship between managerial ownership and block holding ownership on the one side and agency costs and firm performance on the other side. In terms of managerial ownership, the convergence of interest hypothesis assumes that the increase on the managerial ownership will align the interests of managers with those of shareholders; whereas, the entrenchment hypothesis predicts that managers will use their ownership stake to entrench themselves. Likewise, prior literature provides the control and the expropriation hypotheses to explain the relationship between block holding and agency costs as well as firm performance. Prior literature (e.g., Morck, Shleifer and Vishny (1988); McConnell and Servaes (1990); (1995); Park and Jang (2010); Wellalage and Locke (2011), among others) provides empirical evidence that the relationship between the managerial ownership and the block holding on the one side, and the firm performance, value on the other side is not linear relationship. Thus, in this section the researcher investigates this proposed argument. In doing so, following the prior literature, the researcher adds the square of the ownership ratios to the regression models. Tables (25, 26 and 27) report the results of the regression models after adding the square of the ownership ratios. In terms of asset utilisation as an agency cost proxy, the results reported failed to provide any evidence that the relationship between the different ownership ratios and asset utilisation is nonlinear. However, in terms of QFCF as an agency proxy, for the pre–crisis period, the results provide modest evidence that the relationship between the CEO ownership ratio and QFCF is an inverted U shaped relationship, which implies that the increase in the CEO ownership increases agency costs till it reaches a certain point (5.4%) [9,] after that the increase in CEO ownership reduces agency costs. For the post crisis period, the results reveal an inverted U shaped relationship between the total percentage of individual block holding and QFCF; indicating that the increase in individual block holding increases agency costs of the free cash flow till it reaches a certain point (19.97%) [10;] after that point, the impact turns out to be positive as it starts to reduce investment agency costs.

[9] This optimal point is obtained by using the derivative of the QFCF with respect to CEO ownership ratio.

[10] This optimal point is obtained by using the derivative of the QFCF with respect to the total individual block holding ratio.

Table 26 Regression results of the nonlinear effects of ownership on agency costs over the preiod 2005-2011 inclusive

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.448	1.449	1.465	1.468	-0.177	-0.179	-0.167	-0.178
	(3.33)***	(3.34)***	(3.37)***	(3.38)***	(-0.78)	(-0.79)	(-0.73)	(-0.78)
***ln*BRD**	0.0432	0.043	0.0399	0.0396	-0.0185	-0.0181	-0.0194	-0.0188
	(1.70)†	(1.68)†	(1.57)	(1.55)	(-1.30)	(-1.28)	(-1.36)	(-1.32)
***ln*IND**	-0.03	-0.028	-0.026	-0.022	-0.021	-0.019	-0.019	-0.02
	(-0.41)	(-0.38)	(-0.35)	(-0.30)	(-0.460)	(-0.420)	(-0.420)	(-0.430)
ACE	0.01	0.01	0.01	0.01	-0.004	-0.005	-0.004	-0.005
	(0.70)	(0.75)	(0.71)	(0.75)	(-0.46)	(-0.60)	(-0.49)	(-0.62)
REMU-COM	-0.008	-0.009	-0.01	-0.011	0.002	0.002	0.002	0.003
	(-0.42)	(-0.43)	(-0.52)	(-0.53)	(0.110)	(0.150)	(0.130)	(0.190)
NOMINI-COM	0.01	0.01	0.009	0.01	0.009	0.009	0.008	0.009
	(0.53)	(0.54)	(0.51)	(0.52)	(0.890)	(0.870)	(0.850)	(0.860)
DUL	-0.06	-0.062	-0.052	-0.054	-0.031	-0.031	-0.028	-0.028
	(-1.74)†	(-1.81)†	(-1.51)	(-1.59)	(-1.76)†	(-1.72)†	(-1.58)	(-1.57)
BLK	0.062		0.055		0.05		0.053	
	(0.70)		(0.61)		(1.110)		(1.160)	
BLK^2	0.016		0.027		0.001		-0.002	
	(0.15)		(0.25)		(0.021)		(-0.034)	
***ln*INST_BLK**		-0.025		-0.034		0.078		0.076
		(-0.22)		(-0.29)		(1.230)		(1.190)
INST_BLK^2		0.202		0.217		0		0.005
		(1.01)		(1.07)		(-0.0022)		(0.043)
***ln*INDV_BLK**		0.102		0.104		0.079		0.098
		(0.35)		(0.36)		(0.660)		(0.830)
INDV_BLK^2		0.247		0.253		-0.31		-0.348
		(0.32)		(0.34)		(-0.93)		(-1.06)
***ln*BRDOWN**	0.066	0.051			0.058	0.041		
	(0.33)	(0.23)			(0.500)	(0.310)		
BRDOWN^2	-0.294	-0.396			-0.367	-0.112		
	(-0.61)	(-0.73)			(-1.16)	(-0.31)		
***ln*CEOOWN**			0.138	0.142			-0.11	-0.138
			(0.35)	(0.37)			(-0.45)	(-0.55)
CEOOWN^2			-1.472	-1.765			-0.147	0.348
			(-1.11)	(-1.35)			(-0.17)	(0.370)
***ln*EXECOWN**			0.168	0.163			0.074	0.04
			(0.44)	(0.39)			(0.360)	(0.190)
EXECOWN^2			-0.22	-0.378			-0.407	-0.098
			(-0.23)	(-0.36)			(-0.71)	(-0.16)
***ln*NEDOWN**			-0.268	-0.314			0.077	0.052
			(-0.51)	(-0.60)			(0.240)	(0.160)
NEDOWN^2			1.055	1.114			-0.488	-0.14
			(0.41)	(0.43)			(-0.31)	(-0.090)
***lnadj*DBT**	-0.534	-0.533	-0.533	-0.53	0.025	0.023	0.023	0.021
	(-5.93)***	(-5.88)***	(-5.89)***	(-5.83)***	(0.840)	(0.780)	(0.780)	(0.730)

***sqadj*DIVD**	0.097	0.095	0.097	0.095	-0.022	-0.022	-0.022	-0.022
	(1.35)	(1.33)	(1.34)	(1.32)	(-0.580)	(-0.560)	(-0.560)	(-0.570)
***lnadj*ROA**	0.42	0.416	0.411	0.406	-0.314	-0.311	-0.318	-0.312
	(3.07)**	(3.09)**	(3.04)**	(3.03)**	(-5.18)***	(-5.14)***	(-5.22)***	(-5.14)***
***lnadj*Q**	-0.002	-0.004	-0.003	-0.005				
	(-0.070)	(-0.13)	(-0.10)	(-0.17)				
***ln*ASSTS**	-0.011	-0.012	-0.012	-0.012	0.013	0.013	0.013	0.013
	(-1.78)†	(-1.78)†	(-1.79)†	(-1.80)†	(5.97)***	(6.02)***	(5.93)***	(5.99)***
N	1431	1431	1431	1431	1431	1431	1431	1431
groups	239	239	239	239	239	239	239	239
***wald* χ^2**	74.59***	78.324***	100.918***	114.569***	80.284***	84.526***	80.375***	84.934***
z statistics in parentheses								
$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$								
All variables are winsorized at the 1st and 99th percentile values								
Dependent variable:	*Industry adjusted asset utilisation ratio*				*QFCF*			

Table 27 Regression results of the nonlinear effects of ownership on agency costs over the preiod 2005-2007 inclusive

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.81	1.82	1.86	1.87	-0.208	-0.201	-0.206	-0.195
	(3.39)***	(3.41)***	(3.49)***	(3.51)***	(-0.65)	(-0.64)	(-0.65)	(-0.63)
***ln*BRD**	0.06	0.06	0.06	0.06	-0.0541	-0.0543	-0.0501	-0.0515
	(1.30)	(1.32)	(1.18)	(1.19)	(-2.54)*	(-2.54)*	(-2.36)*	(-2.43)*
***ln*IND**	-0.16	-0.15	-0.15	-0.14	-0.092	-0.094	-0.076	-0.081
	(-1.78)†	(-1.74)†	(-1.69)†	(-1.65)	(-1.450)	(-1.480)	(-1.190)	(-1.250)
ACE	0.02	0.02	0.03	0.03	-0.006	-0.006	-0.01	-0.01
	(1.91)†	(1.87)†	(1.95)†	(1.92)†	(-0.51)	(-0.57)	(-0.92)	(-0.90)
REMU-COM	-0.01	-0.01	-0.01	-0.01	0.005	0.003	0.003	0.002
	(-0.29)	(-0.36)	(-0.56)	(-0.65)	(0.270)	(0.160)	(0.190)	(0.100)
NOMINI-COM	0.02	0.01	0.02	0.01	-0.003	-0.004	-0.002	-0.003
	-0.86	-0.82	-0.86	-0.82	(-0.22)	(-0.32)	(-0.12)	(-0.24)
DUL	-0.02	-0.02	-0.02	-0.02	-0.024	-0.016	-0.011	-0.009
	(-0.85)	(-0.83)	(-0.72)	(-0.71)	(-0.85)	(-0.57)	(-0.37)	(-0.28)
***ln*BLK**	0.10		0.11		0.066		0.078	
	(1.00)		(1.06)		(0.780)		(0.930)	
BLK^2	0.01		0.00		-0.036		-0.061	
	(0.03)		(0.03)		(-0.24)		(-0.40)	
***ln*INST_BLK**		0.05		0.05		0.049		0.05
		(0.46)		(0.53)		(0.590)		(0.600)
INST_BLK^2		0.10		0.10		0.022		0.014
		(0.53)		(0.52)		(0.140)		(0.088)
***ln*INDV_BLK**		-0.23		-0.26		-0.093		-0.127
		(-0.84)		(-0.80)		(-0.53)		(-0.71)
INDV_BLK^2		0.77		0.81		-0.213		-0.066
		(1.10)		(1.09)		(-0.46)		(-0.14)
***ln*BRDOWN**	0.22	0.23			0.013	0.056		
	(0.99)	(1.00)			(0.072)	(0.300)		
BRDOWN^2	-0.50	-0.51			-0.193	0.015		
	(-0.99)	(-1.00)			(-0.42)	(0.030)		
***ln*CEOOWN**			0.13	0.15			1.094	0.955
			(0.26)	(0.30)			(1.65)†	(1.420)
CEOOWN^2			-0.96	-1.14			-10.399	-9.197
			(-0.35)	(-0.43)			(-1.90)†	(-1.64)
***ln*EXECOWN**			-0.22	-0.18			-0.563	-0.485
			(-0.32)	(-0.26)			(-1.31)	(-1.10)
EXECOWN^2			1.11	1.04			1.557	1.764
			(0.55)	(0.50)			(1.060)	(1.170)
***ln*NEDOWN**			0.65	0.66			0.167	0.326
			(1.01)	(1.04)			(0.390)	(0.750)
NEDOWN^2			-2.64	-2.66			-0.09	-0.347
			(-0.81)	(-0.81)			(-0.035)	(-0.14)
***lnadj*DBT**	-0.24	-0.24	-0.25	-0.25	0.022	0.013	0.02	0.013
	(-1.63)	(-1.62)	(-1.72)†	(-1.70)†	(0.480)	(0.280)	(0.430)	(0.280)

***sqadj*DIVD**	0.04	0.05	0.05	0.05	-0.03	-0.029	-0.031	-0.03
	(0.66)	(0.68)	(0.68)	(0.70)	(-0.550)	(-0.540)	(-0.560)	(-0.560)
***lnadj*ROA**	0.16	0.15	0.15	0.15	-0.529	-0.506	-0.535	-0.513
	(1.12)	(1.10)	(1.11)	(1.09)	(-5.15)***	(-4.92)***	(-5.20)***	(-4.98)***
***lnadj*Q**	0.07	0.07	0.07	0.07				
	(1.98)*	(1.91)†	(1.79)†	(1.74)†				
***ln*ASSTS**	-0.08	-0.08	-0.08	-0.08	0.02	0.02	0.02	0.019
	(-2.94)**	(-2.90)**	(-2.96)**	(-2.92)**	(4.59)***	(4.52)***	(4.52)***	(4.43)***
N	562	562	562	562	562	562	562	562
groups	196	196	196	196	196	196	196	196
adj. R^2	19%	19%	19%	18%				
F-test	4.26***	3.84***	3.92***	3.63***				
wald χ^2					57.172***	62.18***	58.014***	62.031***
z / t -statistics in parentheses								
†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001								
All variables are winsorized at the 1st and 99th percentile values								
Dependent variable:	*Industry adjusted asset utilisation ratio*				*QFCF*			

Table 28 Regression results of the nonlinear effects of ownership on agency costs over the preiod 2009-2011 inclusive

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.021	1.009	1.033	1.024	-0.158	-0.184	-0.151	-0.183
	(6.05)***	(5.85)***	(6.04)***	(5.83)***	(-1.95)†	(-2.27)*	(-1.85)†	(-2.25)*
***ln*BRD**	0.0779	0.0772	0.0733	0.0726	-0.0056	-0.0035	-0.0078	-0.0059
	(1.96)*	(1.96)†	(1.82)†	(1.83)†	(-0.28)	(-0.18)	(-0.39)	(-0.30)
***ln*IND**	-0.015	-0.021	-0.014	-0.02	-0.012	-0.014	-0.012	-0.015
	(-0.39)	(-0.56)	(-0.35)	(-0.52)	(-0.55)	(-0.61)	(-0.53)	(-0.66)
ACE	0.043	0.044	0.044	0.046	-0.013	-0.014	-0.013	-0.014
	(1.72)†	(1.75)†	(1.69)†	(1.76)†	(-0.86)	(-0.96)	(-0.90)	(-0.99)
REMU-COM	-0.029	-0.026	-0.025	-0.023	0.002	0.007	0.005	0.011
	(-0.54)	(-0.49)	(-0.45)	(-0.40)	(0.061)	(0.250)	(0.170)	(0.380)
NOMINI-COM	-0.015	-0.006	-0.019	-0.011	0.033	0.035	0.033	0.036
	(-0.51)	(-0.20)	(-0.64)	(-0.35)	(1.83)†	(1.95)†	(1.79)†	(1.98)*
DUL	-0.015	-0.012	-0.003	0.001	-0.039	-0.039	-0.037	-0.035
	(-0.27)	(-0.23)	(-0.063)	(0.02)	(-1.46)	(-1.48)	(-1.36)	(-1.32)
BLK	0.147		0.142		0.066		0.076	
	(1.04)		(0.99)		(0.840)		(0.960)	
BLK^2	-0.185		-0.176		0.006		-0.009	
	(-1.11)		(-1.04)		(0.067)		(-0.091)	
***ln*INST_BLK**		0.22		0.22		0.136		0.113
		(1.02)		(1.02)		(1.160)		(0.960)
INST_BLK^2		-0.441		-0.448		-0.06		-0.016
		(-1.18)		(-1.19)		(-0.29)		(-0.079)
***ln*INDV_BLK**		0.525		0.486		0.287		0.374
		(1.54)		(1.43)		(1.600)		(2.09)*
INDV_BLK^2		-1.005		-0.823		-0.667		-1.027
		(-1.08)		(-0.96)		(-1.32)		(-2.00)*
***ln*BRDOWN**	-0.017	-0.294			-0.017	-0.141		
	(-0.052)	(-0.82)			(-0.10)	(-0.74)		
BRDOWN^2	0.35	0.735			-0.262	0.181		
	(0.51)	(0.87)			(-0.63)	(0.360)		
***ln*CEOOWN**			-0.165	-0.43			-0.261	-0.331
			(-0.28)	(-0.75)			(-0.95)	(-1.16)
CEOOWN^2			0.226	0.569			0.408	0.905
			(0.15)	(0.40)			(0.540)	(1.150)
***ln*EXECOWN**			0.001	-0.175			0.024	-0.154
			(0.00)	(-0.37)			(0.086)	(-0.53)
EXECOWN^2			0.568	0.63			-0.212	0.52
			(0.51)	(0.53)			(-0.29)	(0.650)
***ln*NEDOWN**			-0.065	-0.26			0.179	-0.034
			(-0.077)	(-0.29)			(0.420)	(-0.080)
NEDOWN^2			1.404	1.588			-1.341	-0.471
			(0.35)	(0.37)			(-0.84)	(-0.29)
***lnadj*DBT**	-0.568	-0.577	-0.572	-0.581	0.047	0.044	0.044	0.042
	(-5.67)***	(-5.79)***	(-5.68)***	(-5.80)***	(1.150)	(1.100)	(1.080)	(1.040)

***adj*DIVD**	0.004	0.005	0.004	0.005	-0.003	-0.002	-0.003	-0.003
	(0.50)	(0.56)	(0.54)	(0.58)	(-0.66)	(-0.61)	(-0.71)	(-0.72)
***lnadj*ROA**	0.392	0.397	0.388	0.39	-0.193	-0.187	-0.197	-0.181
	(2.15)*	(2.18)*	(2.09)*	(2.08)*	(-2.44)*	(-2.37)*	(-2.45)*	(-2.27)*
***lnadj*Q**	-0.085	-0.084	-0.085	-0.085				
	(-2.41)*	(-2.38)*	(-2.40)*	(-2.38)*				
***ln*ASSTS**	-0.012	-0.012	-0.012	-0.012	0.013	0.013	0.013	0.013
	(-2.00)*	(-2.02)*	(-1.89)†	(-1.93)†	(4.51)***	(4.60)***	(4.48)***	(4.61)***
N	684	684	684	684	684	684	684	684
groups	235	235	235	235	235	235	235	235
***wald* χ^2**	60.548***	65.104***	66.401***	73.121***	42.154***	45.179***	42.473***	47.632***
***z* -statistics in parentheses**								
$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$								
All variables are winsorized at the 1st and 99th percentile values								
Dependent variable:	*Industry adjusted asset utilisation ratio*				*QFCF*			

6.5.4 Using alternative measure of board independence

As one of the research questions of this study is to examine the impact of the compliance with the UK corporate governance code on agency costs, the researcher in this section utilises a different measure to capture the degree of compliance with the recommended independent directors ratio. The UK corporate governance code recommends that at least half of the board directors excluding the chairman should be independent. To capture this recommendation a dummy variable that takes 1 if half of the board members excluding the chairman are independent, 0 otherwise.

Tables (29, 30 and 31) report the results of the regression models using the proposed independence measure. The results reveal that for the pre–crisis and whole sample, the compliance with the board independence recommendation has a negative but insignificant impact on agency costs; however, for the post crisis sample the reported results show that the compliance with recommended board composition is negatively associated with asset utilisation at the 10% significance level for the baseline and sub models (2 and 3). Such results provide more evidence that the compliance with the UK corporate governance recommendations could hinder the management's ability in utilising the firm's assets base; and hence, this could negatively reflect on shareholders' wealth. Another justification for the reported results is that for the post crisis period, as it is an abnormal economic period, there is more need for insider with firm specific knowledge to be present in the board to transfer more information to the board about the firm's current situation, future projects and strategies.

Table 29 Regression results of effect of corporate governance mechanisms (using alternative board independence measure) on agency costs over the period 2005-2011 inclusive

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.458	1.453	1.46	1.457	-0.162	-0.161	-0.154	-0.154
	(3.39)***	(3.38)***	(3.38)***	(3.38)***	(-0.72)	(-0.71)	(-0.68)	(-0.68)
***ln*BRD**	0.0434	0.0446	0.04	0.0412	-0.017	-0.0168	-0.0178	-0.0176
	(1.65)†	(1.69)†	(1.53)	(1.57)	(-1.19)	(-1.18)	(-1.24)	(-1.23)
IND COMP	-0.0037	-0.0036	-0.0024	-0.0022	0.001	0.00137	0.0017	0.00171
	(-0.31)	(-0.31)	(-0.20)	(-0.19)	(0.13)	(0.17)	(0.22)	(0.22)
ACE	0.00903	0.0095	0.00919	0.00954	-0.0048	-0.0057	-0.0051	-0.0058
	(0.64)	(0.67)	(0.65)	(0.67)	(-0.59)	(-0.69)	(-0.61)	(-0.70)
REMU-COM	-0.0091	-0.0087	-0.0104	-0.01	-0.001	-0.001	-0.0007	-0.0007
	(-0.46)	(-0.43)	(-0.53)	(-0.51)	(-0.065)	(-0.069)	(-0.044)	(-0.044)
NOMINI-	0.0095	0.0104	0.00907	0.0099	0.00801	0.0073	0.00771	0.00719
	(0.52)	(0.56)	(0.50)	(0.54)	(0.80)	(0.73)	(0.77)	(0.72)
DUL	-0.0603	-0.0608	-0.05	-0.0502	-0.0314	-0.0306	-0.0284	-0.0286
	(-1.75)†	(-1.77)†	(-1.45)	(-1.46)	(-1.77)†	(-1.73)†	(-1.57)	(-1.59)
BLK	0.0729		0.074		0.0507		0.0503	
	(2.34)*		(2.39)*		(3.16)**		(3.16)**	
***ln*INST_BLK**		0.0743		0.0744		0.079		0.0785
		(1.73)†		(1.74)†		(3.67)***		(3.64)***
***ln*INDV_BLK**		0.182		0.179		-0.0269		-0.0198
		(2.04)*		(1.98)*		(-0.53)		(-0.40)
***ln*BRDOWN**	-0.0337	-0.0806			-0.0675	0.00026		
	(-0.43)	(-0.96)			(-1.65)†	(0.00)		
***ln*CEOOWN**			-0.229	-0.282			-0.132	-0.0529
			(-2.22)*	(-2.50)*			(-1.70)†	(-0.61)
***ln*EXECOWN**			0.103	0.0525			-0.0577	0.0012
			(0.97)	(0.46)			(-0.92)	(0.02)
***ln*NEDOWN**			-0.037	-0.0664			-0.012	0.0393
			(-0.19)	(-0.36)			(-0.14)	(0.42)
***lnadj*DBT**	-0.533	-0.534	-0.533	-0.533	0.0247	0.0231	0.0232	0.0221
	(-5.93)***	(-5.94)***	(-5.90)***	(-5.91)***	(0.85)	(0.79)	(0.80)	(0.76)
***sqadj*DIVD**	0.096	0.095	0.0943	0.0932	-0.0222	-0.0209	-0.0216	-0.0202
	(1.33)	(1.32)	(1.30)	(1.29)	(-0.57)	(-0.54)	(-0.56)	(-0.52)
***lnadj*ROA**	0.419	0.419	0.413	0.413	-0.312	-0.311	-0.315	-0.313
	(3.07)**	(3.06)**	(3.06)**	(3.05)**	(-5.16)***	(-5.14)***	(-5.20)***	(-5.17)***
***lnadj*Q**	-0.0026	-0.0044	-0.0032	-0.0052				
	(-0.085)	(-0.14)	(-0.11)	(-0.17)				
***ln*ASSTS**	-0.0116	-0.0118	-0.0116	-0.0119	0.0128	0.013	0.0127	0.013
	(-1.79)†	(-1.81)†	(-1.79)†	(-1.82)†	(5.83)***	(5.92)***	(5.82)***	(5.92)***
N	1431	1431	1431	1431	1431	1431	1431	1431
groups	239	239	239	239	239	239	239	239
***wald* χ^2**	70.32***	71.35***	78.05***	80.09***	79.15***	83.4***	79.86***	83.79***
z -statistics in parentheses								
†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001								
All variables are winsorized at the 1st and 99th percentile values								
Dependent variable:	*Industry adjusted asset utilisation ratio*				*QFCF*			

Table 30 Regression results of effect of corporate governance mechanisms (using alternative board independence measure) on agency costs over the period 2005-2007 inclusive

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.916	1.923	1.909	1.259	-0.165	-0.152	-0.169	-0.154
	(3.63)***	(3.64)***	(3.57)***	(2.98)**	(-0.52)	(-0.49)	(-0.54)	(-0.50)
***ln*BRD**	0.0587	0.0589	0.0561	0.0721	-0.0484	-0.0485	-0.0484	-0.0489
	(1.19)	(1.20)	(1.18)	(1.68)†	(-2.27)*	(-2.28)*	(-2.28)*	(-2.30)*
IND COMP	-0.0179	-0.0179	-0.0172	-0.0131	0.00327	0.00402	0.00488	0.00515
	(-1.32)	(-1.31)	(-1.28)	(-0.94)	(0.31)	(0.38)	(0.46)	(0.49)
ACE	0.024	0.0242	0.0238	0.0116	-0.0105	-0.0113	-0.0127	-0.0131
	(1.82)†	(1.82)†	(1.77)†	(0.84)	(-0.96)	(-1.03)	(-1.15)	(-1.19)
REMU-COM	-0.0073	-0.0075	-0.008	-0.0084	-0.0006	-0.0028	-0.0005	-0.0023
	(-0.39)	(-0.40)	(-0.41)	(-0.43)	(-0.031)	(-0.16)	(-0.027)	(-0.13)
NOMINI-COM	0.0128	0.0127	0.013	0.013	-0.0054	-0.0065	-0.0038	-0.0047
	(0.72)	(0.71)	(0.74)	(0.71)	(-0.41)	(-0.50)	(-0.29)	(-0.37)
DUL	-0.0217	-0.0214	-0.0196	-0.0282	-0.0319	-0.0252	-0.0178	-0.013
	(-0.99)	(-0.96)	(-0.92)	(-1.35)	(-1.14)	(-0.89)	(-0.60)	(-0.43)
***ln*BLK**	0.1		0.101		0.0452		0.0435	
	(1.85)†		(1.89)†		(1.54)		(1.49)	
***ln*INST_BLK**		0.0907		0.0672		0.0586		0.0566
		(1.74)†		(1.41)		(1.99)*		(1.93)†
***ln*INDV_BLK**		0.104		0.0559		-0.168		-0.167
		(0.99)		(0.58)		(-2.22)*		(-2.16)*
***ln*BRDOWN**	0.046	0.0453			-0.0449	0.0784		
	(0.59)	(0.57)			(-0.71)	(1.04)		
***ln*CEOOWN**			-0.0591	-0.0987			-0.319	-0.241
			(-0.24)	(-0.45)			(-1.74)†	(-1.24)
***ln*EXECOWN**			0.0727	0.00689			-0.0679	0.085
			(0.39)	(0.04)			(-0.50)	(0.60)
***ln*NEDOWN**			0.195	0.154			0.158	0.296
			(0.66)	(0.56)			(1.16)	(2.01)*
***lnadj*DBT**	-0.241	-0.243	-0.24	-0.323	0.029	0.0198	0.0223	0.015
	(-1.64)	(-1.64)	(-1.63)	(-2.70)**	(0.63)	(0.43)	(0.48)	(0.32)
***sqadj*DIVD**	0.0437	0.0448	0.0411	0.0713	-0.0337	-0.0314	-0.0348	-0.032
	(0.67)	(0.69)	(0.62)	(1.08)	(-0.62)	(-0.58)	(-0.64)	(-0.59)
***lnadj*ROA**	0.151	0.153	0.147	0.25	-0.531	-0.509	-0.523	-0.498
	(1.08)	(1.09)	(1.08)	(1.85)†	(-5.21)***	(-5.01)***	(-5.15)***	(-4.93)***
***lnadj*Q**	0.0681	0.0673	0.0676	0.092				
	(1.87)†	(1.83)†	(1.84)†	(2.75)**				
***ln*ASSTS**	-0.0805	-0.0804	-0.0806	-0.0268	0.0171	0.017	0.0169	0.0167
	(-2.95)**	(-2.93)**	(-2.94)**	(-2.03)*	(4.14)***	(4.09)***	(4.10)***	(4.04)***
N	562	562	562	562	562	562	562	562
groups	196	196	196	196	196	196	196	196
adj. R^2	18.5%	18.2%	18.4%					
F-test	4.499***	4.211***	4.477***					
wald χ^2				64.49***	55.37***	60.95***	57.89***	61.85***

z / t -statistics in parentheses

†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

All variables are winsorized at the 1st and 99th percentile values

Dependent variable:	*Industry adjusted asset utilisation ratio*	*QFCF*

Table 31 Regression results of effect of corporate governance mechanisms (using alternative board independence measure) on agency costs over the period 2009-2011 inclusive

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.091	1.094	1.101	1.11	-0.141	-0.154	-0.139	-0.153
	(7.12)***	(6.97)***	(7.12)***	(6.95)***	(-1.93)†	(-2.09)*	(-1.90)†	(-2.07)*
***ln*BRD**	0.0642	0.0645	0.0592	0.0595	-0.0046	-0.0032	-0.0064	-0.0048
	(1.64)	(1.66)†	(1.51)	(1.53)	(-0.23)	(-0.16)	(-0.32)	(-0.24)
IND COMP	-0.0394	-0.041	-0.0375	-0.039	0.00492	0.00496	0.00576	0.00589
	(-1.67)†	(-1.74)†	(-1.60)	(-1.68)†	(0.38)	(0.38)	(0.44)	(0.45)
ACE	0.0493	0.0526	0.0483	0.052	-0.0147	-0.0147	-0.0137	-0.0142
	(2.01)*	(2.12)*	(1.92)†	(2.05)*	(-1.02)	(-1.02)	(-0.95)	(-0.99)
REMU-COM	-0.0243	-0.0265	-0.0187	-0.0213	-0.0049	-0.0041	-0.0056	-0.0048
	(-0.49)	(-0.53)	(-0.36)	(-0.41)	(-0.18)	(-0.15)	(-0.21)	(-0.18)
NOMINI-	-0.0096	-0.0069	-0.0126	-0.0096	0.0322	0.0322	0.0314	0.031
	(-0.34)	(-0.24)	(-0.44)	(-0.34)	(1.79)†	(1.79)†	(1.74)†	(1.72)†
DUL	-0.0143	-0.0156	-0.0052	-0.0055	-0.0369	-0.0372	-0.0356	-0.0362
	(-0.27)	(-0.30)	(-0.097)	(-0.10)	(-1.39)	(-1.40)	(-1.33)	(-1.36)
BLK	0.0111		0.0131		0.0711		0.0678	
	(0.24)		(0.28)		(2.78)**		(2.66)**	
***ln*INST_BLK**		-0.0057		-0.0089		0.105		0.105
		(-0.087)		(-0.14)		(2.99)**		(2.98)**
***ln*INDV_BLK**		0.21		0.233		0.071		0.0402
		(1.63)		(2.02)*		(0.92)		(0.53)
***ln*BRDOWN**	0.0914	-0.0662			-0.107	-0.0899		
	(0.86)	(-0.44)			(-1.99)*	(-1.11)		
***ln*CEOOWN**			-0.127	-0.307			-0.109	-0.0671
			(-0.91)	(-2.10)*			(-1.28)	(-0.65)
***ln*EXECOWN**			0.171	-0.0132			-0.0446	-0.0069
			(1.87)†	(-0.10)			(-0.56)	(-0.070)
***ln*NEDOWN**			0.28	0.131			-0.159	-0.126
			(0.84)	(0.37)			(-1.40)	(-1.03)
***lnadj*DBT**	-0.56	-0.563	-0.566	-0.568	0.0467	0.046	0.0474	0.0465
	(-5.66)***	(-5.72)***	(-5.69)***	(-5.76)***	(1.15)	(1.13)	(1.16)	(1.14)
***adj*DIVD**	0.0031	0.00299	0.00355	0.0034	-0.0025	-0.0024	-0.0028	-0.0027
	(0.37)	(0.36)	(0.43)	(0.41)	(-0.63)	(-0.60)	(-0.70)	(-0.66)
***lnadj*ROA**	0.383	0.388	0.374	0.377	-0.188	-0.187	-0.185	-0.184
	(2.09)*	(2.11)*	(2.02)*	(2.02)*	(-2.38)*	(-2.36)*	(-2.33)*	(-2.32)*
***lnadj*Q**	-0.0862	-0.087	-0.087	-0.0892				
	(-2.51)*	(-2.51)*	(-2.53)*	(-2.54)*				
***ln*ASSTS**	-0.0113	-0.0114	-0.011	-0.0114	0.0124	0.0126	0.0124	0.0127
	(-1.90)†	(-1.92)†	(-1.83)†	(-1.88)†	(4.36)***	(4.43)***	(4.37)***	(4.46)***
N	684	684	684	684	684	684	684	684
groups	235	235	235	235	235	235	235	235
***wald* χ^2**	57.76***	59.3***	63.82***	65.88***	41.69***	43.02***	41.59***	43.28***
***z* -statistics in parentheses**								
†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001								
All variables are winsorized at the 1st and 99th percentile values								
Dependent variable:	*Industry adjusted asset utilisation ratio*				*QFCF*			

6.5.5 The impact of the number of blockholders

In the prior literature, some researchers (e.g., Ashbaugh-Skaife, Collins and LaFond (2006); Andreou, Louca and Panayides (2014), among others) argue that the increase of the number of blockholders neutralises the entrenchment behaviour of the blockholders. In other words, as the number of blockholders increases, it becomes more difficult for a single block holder to expropriate minorities' wealth. Thus, in this section the researcher investigates this proposed argument by adding the number of the blockholders to the regression models.

Tables (32, 33 and 34) report the results of the results of the different regression analyses after adding the number of blockholders to the regression model. Before mentioning the regression results, it may be worth mentioning that the number of individual blockholders is not included in sub models (1 and 3), because of its high multicollinearity (VIF value exceeded the maximum accepted value of 10). The reported results for the full sample show that the increase in the number of blockholder increases agency costs at significance level 10% for the total number of blockholders. In regard to the pre and post crisis analysis, the reported results for the pre–crisis period provide no significant evidence for the impact of blockholders number, both the total number of blockholders and institutional blockholders; whereas, the reported results for the post crisis period show that only the increase of institutional blockholders significantly increases agency costs at the 10% significance level. In terms of the QFCF, the reported results provide no evidence that the number of blockholders has any significant impact on the blockholders' behaviour or help in reducing the agency costs.

Table 32 Regression results of the effect of the number of blockholders on agency costs over the period 2005-2011 inclusive

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.513	1.505	1.512	1.508	-0.171	-0.161	-0.163	-0.154
	(3.54)***	(3.53)***	(3.53)***	(3.53)***	(-0.75)	(-0.71)	(-0.72)	(-0.68)
***ln*BRD**	0.0205	0.0219	0.0188	0.02	-0.0191	-0.0204	-0.0201	-0.0214
	(0.67)	(0.70)	(0.61)	(0.64)	(-1.35)	(-1.44)	(-1.41)	(-1.50)
***ln*IND**	-0.077	-0.077	-0.074	-0.075	-0.024	-0.02	-0.021	-0.019
	(-0.90)	(-0.91)	(-0.87)	(-0.88)	(-0.54)	(-0.45)	(-0.47)	(-0.42)
ACE	0.013	0.013	0.013	0.013	-0.003	-0.004	-0.004	-0.004
	(0.83)	(0.86)	(0.84)	(0.85)	(-0.41)	(-0.49)	(-0.42)	(-0.50)
REMU-COM	0.004	0.005	0.003	0.003	0.001	0.001	0.001	0.002
	(0.19)	(0.21)	(0.12)	(0.15)	(0.06)	(0.07)	(0.08)	(0.10)
NOMINI-COM	0.004	0.005	0.005	0.006	0.008	0.008	0.008	0.008
	(0.21)	(0.27)	(0.23)	(0.28)	(0.85)	(0.79)	(0.82)	(0.77)
DUL	-0.072	-0.071	-0.063	-0.062	-0.032	-0.033	-0.029	-0.031
	(-1.95)†	(-1.92)†	(-1.73)†	(-1.70)†	(-1.82)†	(-1.84)†	(-1.62)	(-1.70)†
BLK	0.187		0.188		0.067		0.067	
	(2.71)**		(2.79)**		(2.74)**		(2.77)**	
***N*_BLK**	-0.009		-0.009		-0.002		-0.002	
	(-1.66)†		(-1.69)†		(-0.86)		(-0.90)	
***ln*INST_BLK**		0.214		0.215		0.12		0.121
		(2.57)*		(2.60)*		(3.43)***		(3.45)***
***N*_INST_BLK**		-0.009		-0.009		-0.004		-0.004
		(-1.65)		(-1.65)		(-1.48)		(-1.52)
***ln*INDV_BLK**		0.259		0.235		-0.021		-0.015
		(1.97)*		(1.82)†		(-0.42)		(-0.30)
***ln*BRDOWN**	-0.059	-0.068			-0.08	-0.008		
	(-0.54)	(-0.63)			(-1.89)†	(-0.15)		
***ln*CEOOWN**			-0.199	-0.187			-0.147	-0.064
			(-1.30)	(-1.21)			(-1.86)†	(-0.73)
***ln*EXECOWN**			0.126	0.107			-0.07	-0.006
			(0.94)	(0.80)			(-1.10)	(-0.089)
***ln*NEDOWN**			-0.232	-0.23			-0.023	0.032
			(-1.19)	(-1.18)			(-0.25)	(0.34)
***lnadj*DBT**	-0.513	-0.514	-0.511	-0.513	0.025	0.024	0.024	0.023
	(-5.30)***	(-5.32)***	(-5.27)***	(-5.29)***	(0.86)	(0.82)	(0.82)	(0.78)
***sqadj*DIVD**	0.1	0.1	0.098	0.098	-0.023	-0.021	-0.022	-0.02
	(1.42)	(1.42)	(1.39)	(1.39)	(-0.59)	(-0.54)	(-0.58)	(-0.53)
***lnadj*ROA**	0.387	0.384	0.378	0.377	-0.311	-0.308	-0.314	-0.31
	(2.80)**	(2.80)**	(2.78)**	(2.78)**	(-5.13)***	(-5.09)***	(-5.17)***	(-5.12)***
***lnadj*Q**	0.001	-0.002	-0.001	-0.003				
	(0.02)	(-0.048)	(-0.027)	(-0.082)				
***ln*ASSTS**	-0.013	-0.014	-0.013	-0.014	0.013	0.013	0.013	0.013
	(-1.89)†	(-1.91)†	(-1.90)†	(-1.92)†	(5.76)***	(5.83)***	(5.74)***	(5.82)***
N	1431	1431	1431	1431	1431	1431	1431	1431
groups	239	239	239	239	239	239	239	239
adj. R^2	11.1%	10.9%	11.3%	11%				
F-test	4.517***	4.187***	4.515***	4.227***				
wald χ^2					80.307***	86.147***	81.002***	86.613***
t / z -statistics in parentheses								
†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001								
All variables are winsorized at the 1st and 99th percentile values								
Dependent variable:	*Industry adjusted asset utilisation ratio*				*QFCF*			

Table 33 Regression results of the effect of the number of blockholders on agency costs over the period 2005-2007 inclusive

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.844	1.841	1.847	1.844	-0.189	-0.17	-0.191	-0.171
	(3.48)***	(3.46)***	(3.44)***	(3.41)***	(-0.60)	(-0.54)	(-0.60)	(-0.55)
***ln*BRD**	0.0661	0.0657	0.0632	0.0631	-0.057	-0.0586	-0.0573	-0.059
	(1.34)	(1.34)	(1.34)	(1.34)	(-2.73)**	(-2.79)**	(-2.75)**	(-2.81)**
***ln*IND**	-0.159	-0.157	-0.153	-0.152	-0.093	-0.093	-0.085	-0.087
	(-1.80)†	(-1.76)†	(-1.76)†	(-1.73)†	(-1.48)	(-1.47)	(-1.36)	(-1.38)
ACE	0.025	0.025	0.025	0.025	-0.005	-0.005	-0.007	-0.006
	(1.92)†	(1.95)†	(1.85)†	(1.88)†	(-0.43)	(-0.43)	(-0.61)	(-0.58)
REMU-COM	-0.006	-0.006	-0.006	-0.007	0.005	0.003	0.005	0.003
	(-0.30)	(-0.33)	(-0.34)	(-0.37)	(0.28)	(0.16)	(0.29)	(0.19)
NOMINI-COM	0.015	0.015	0.015	0.015	-0.003	-0.004	-0.001	-0.002
	(0.81)	(0.80)	(0.82)	(0.81)	(-0.21)	(-0.30)	(-0.091)	(-0.18)
DUL	-0.019	-0.019	-0.017	-0.017	-0.03	-0.022	-0.016	-0.01
	(-0.77)	(-0.79)	(-0.72)	(-0.74)	(-1.05)	(-0.77)	(-0.55)	(-0.35)
***ln*BLK**	0.066		0.066		0.094		0.093	
	(0.92)		(0.93)		(2.04)*		(2.04)*	
***N*_BLK**	0.003		0.003		-0.005		-0.005	
	(0.57)		(0.60)		(-1.31)		(-1.36)	
***ln*INST_BLK**		0.08		0.079		0.115		0.113
		(1.21)		(1.20)		(2.46)*		(2.42)*
***N*_INST_BLK**		0.001		0.001		-0.005		-0.005
		(0.26)		(0.30)		(-1.50)		(-1.50)
***ln*INDV_BLK**		0.083		0.072		-0.158		-0.158
		(0.73)		(0.64)		(-2.10)*		(-2.06)*
***ln*BRDOWN**	0.046	0.046			-0.069	0.056		
	(0.58)	(0.57)			(-1.08)	(0.75)		
***ln*CEOOWN**			-0.06	-0.054			-0.316	-0.226
			(-0.25)	(-0.23)			(-1.73)†	(-1.17)
***ln*EXECOWN**			0.089	0.092			-0.103	0.048
			(0.46)	(0.48)			(-0.76)	-0.34
***ln*NEDOWN**			0.173	0.166			0.126	0.263
			(0.60)	(0.57)			(0.92)	(1.80)†
***lnadj*DBT**	-0.241	-0.241	-0.239	-0.238	0.027	0.017	0.021	0.013
	(-1.66)†	(-1.64)	(-1.65)	(-1.63)	(0.59)	(0.37)	(0.46)	(0.28)
***sqadj*DIVD**	0.044	0.044	0.042	0.042	-0.031	-0.028	-0.033	-0.029
	(0.68)	(0.67)	(0.63)	(0.63)	(-0.57)	(-0.52)	(-0.60)	(-0.54)
***lnadj*ROA**	0.153	0.157	0.148	0.152	-0.532	-0.509	-0.524	-0.499
	(1.07)	(1.09)	(1.07)	(1.09)	(-5.22)***	(-5.02)***	(-5.16)***	(-4.95)***
***lnadj*Q**	0.068	0.067	0.067	0.067				
	(1.88)†	(1.84)†	(1.85)†	(1.82)†				
***ln*ASSTS**	-0.081	-0.08	-0.081	-0.081	0.019	0.019	0.019	0.019
	(-3.00)**	(-2.97)**	(-3.01)**	(-2.97)**	(4.39)***	(4.39)***	(4.33)***	(4.33)***
N	562	562	562	562	562	562	562	562
groups	196	196	196	196	196	196	196	196
adj. R^2	18.6%	18.2%	18.5%	18.1%				
F-test	4.48***	4.213***	4.28***	4.007***				
wald χ^2					59.376***	65.022***	61.803***	65.752***
z / t -statistics in parentheses								
†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001								
All variables are winsorized at the 1st and 99th percentile values								
Dependent variable:	*Industry adjusted asset utilisation ratio*				*QFCF*			

Table 34 Regression results of the effect of the number of blockholders on agency costs over the period 2009-2011 inclusive

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.07	1.01	1.05	1.03	-0.16	-0.16	-0.16	-0.16
	(4.08)***	(5.87)***	(3.99)***	(5.91)***	(-1.97)*	(-2.02)*	(-1.95)†	(-1.99)*
***ln*BRD**	0.04	0.09	0.04	0.08	0.00	0.00	-0.01	-0.01
	(0.51)	(2.15)*	(0.48)	(1.98)*	(-0.23)	(-0.25)	(-0.30)	(-0.32)
***ln*IND**	-0.09	-0.02	-0.07	-0.02	-0.01	-0.01	-0.01	-0.01
	(-1.18)	(-0.59)	(-0.94)	(-0.53)	(-0.57)	(-0.54)	(-0.53)	(-0.48)
ACE	0.05	0.05	0.05	0.05	-0.01	-0.01	-0.01	-0.01
	(1.51)	(1.91)†	(1.49)	(1.85)†	(-0.86)	(-0.87)	(-0.78)	(-0.83)
REMU-COM	0.10	-0.04	0.10	-0.03	0.00	0.00	0.00	0.00
	(1.11)	(-0.70)	(1.08)	(-0.58)	(0.03)	(0.07)	(-0.01)	(0.03)
NOMINI-COM	-0.06	-0.01	-0.06	-0.01	0.03	0.03	0.03	0.03
	(-1.33)	(-0.25)	(-1.32)	(-0.34)	(1.80)†	(1.80)†	(1.75)†	(1.74)†
DUL	-0.02	-0.01	-0.02	0.00	-0.04	-0.04	-0.04	-0.04
	(-0.18)	(-0.14)	(-0.20)	(0.04)	(-1.43)	(-1.48)	(-1.37)	(-1.44)
BLK	0.04		0.09		0.07		0.06	
	(0.26)		(0.52)		(1.97)*		(1.78)†	
***N*_BLK**	0.00		0.00		0.00		0.00	
	(-0.043)		(-0.13)		(0.12)		(0.29)	
***ln*INST_BLK**		-0.16		-0.15		0.12		0.12
		(-1.76)†		(-1.69)†		(2.33)*		(2.30)*
***N*_INST_BLK**		0.01		0.01		0.00		0.00
		(1.90)†		(1.77)†		(-0.36)		(-0.33)
***ln*INDV_BLK**		0.19		0.21		0.08		0.04
		(1.46)		(1.87)†		(0.98)		(0.59)
***ln*BRDOWN**	-0.14	-0.04			-0.11	-0.10		
	(-0.58)	(-0.22)			(-1.98)*	(-1.25)		
***ln*CEOOWN**			-0.21	-0.28			-0.11	-0.08
			(-0.68)	(-1.86)†			(-1.20)	(-0.72)
***ln*EXECOWN**			0.32	0.03			-0.05	-0.02
			(1.27)	(0.21)			(-0.60)	(-0.19)
***ln*NEDOWN**			-0.64	0.15			-0.17	-0.14
			(-1.96)†	(0.40)			(-1.46)	(-1.11)
***lnadj*DBT**	-0.62	-0.57	-0.62	-0.57	0.05	0.05	0.05	0.05
	(-4.64)***	(-5.74)***	(-4.72)***	(-5.77)***	(1.17)	(1.16)	(1.19)	(1.17)
***adj*DIVD**	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
	(1.13)	(0.47)	(1.06)	(0.52)	(-0.65)	(-0.62)	(-0.72)	(-0.69)
***lnadj*ROA**	0.25	0.38	0.26	0.37	-0.19	-0.19	-0.19	-0.19
	(1.18)	(2.09)*	(1.19)	(2.01)*	(-2.42)*	(-2.38)*	(-2.38)*	(-2.34)*
***lnadj*Q**	-0.08	-0.09	-0.08	-0.09				
	(-1.81)†	(-2.52)*	(-1.72)†	(-2.55)*				
***ln*ASSTS**	-0.01	-0.01	-0.01	-0.01	0.01	0.01	0.01	0.01
	(-1.87)†	(-1.86)†	(-1.62)	(-1.81)†	(4.43)***	(4.44)***	(4.46)***	(4.47)***
N	684	684	684	684	684	684	684	684
groups	235	235	235	235	235	235	235	235
adj. R^2	12%		12%					
F-test	2.63***		3.48***					
wald χ^2		62.28***		70.42***	41.94***	43.38***	41.79***	43.49***
z / t -statistics in parentheses								
†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001								
All variables are winsorized at the 1st and 99th percentile values								
Dependent variable:	*Industry adjusted asset utilisation ratio*				*QFCF*			

6.5.6 Re-estimating the associations between corporate governance mechanisms and agency costs after controlling for firms' risk level and audit fees.

It has been argued in the prior literature (e.g., Hay, Knechel and Ling (2008), among others) that corporate governance mechanisms and external audit service can complement each other; and external audit effectiveness could influence the managerial behaviour and reduce the agency costs. There is no direct proxy for audit quality (Brown, Beekesc and Verhoeven, 2011). However, a number of studies (e.g., Carcello *et al.* (2002); Krishnan and Visvanathan (2009); Zaman, Hudaib and Haniffa (2011), among others) utilised audit fees paid for external auditors as a proxy for audit services quality. Zaman, Hudaib and Haniffa (2011) argue that requiring high quality of audit services will require more audit activities, which mean more audit fees paid to the external auditors. Thus, high audit fees reflect more auditing services and high quality of the provided service. Such quality service could imply that there are external monitors watching the managerial activities, and hence, this should reduce the managerial opportunistic and fraudulent practices.

As mentioned before in chapter two, managers and shareholders have different preferences towards risk. Shareholders can diversify their investment portfolio; while managers cannot diversify their employment risks; and hence, managers can be risk averse. This misalliance of their risk preferences can create conflicts of interest regarding firm's investment policy (Denis, 2001; Ward, Brown and Rodriguez, 2009), leading to miss-utilisation of firms' resources or declining profitable opportunities because the risk associated with these opportunities does not match with managers' preferences (Belghitar and Clark, 2014). Thus, firms' risk level could affect the managerial behaviour. Belghitar and Clark (2014) mention that the increase in firm's risk level could influence managers to decline positive net present value projects because such project will increase their personal risk. Such action negatively affects shareholders' wealth. Firm's risk level can be captured by firm's beta value; such measure has been utilised in prior literature (e.g., Al-Najjar and Hussainey (2009); Al-Najjar and Hussainey (2011); Collins and Huang (2011); Harada and Nguyen (2011); Jizi *et al.* (2014), among others). Thus, the researcher re-estimates the associations between corporate governance mechanisms and agency costs proxies

after controlling for audit fees [11] and firms' risk level [12]. The data of audit fees and firm's beta were downloaded from DataStream.

Tables 35, 36, 37 represent the results of re-estimated associations. The reported results show that for full sample and pre-crisis period, both audit fees and risk level have no significant impact on asset utilisation; however, the results show a positive and significant association at the 5% significance level between beta and QFCF; suggesting that firms with high risk levels are more vulnerable to FCF and investment agency problems and could incur more agency costs.

Turning now to the post crisis recession period, the results show audit quality as measured by audit fees is positively and significantly associated with asset unitisation at the 10% significance level, suggesting that the more external monitoring by external auditors the higher asset utilisation. In terms of firm's risk level, the reported results in Table 37 show that firm's risk level is associated with higher agency costs as measured by asset utilisation and QFCF. Such results show that during the recession period, external auditors monitoring and risk levels significantly affect firm's agency costs.

[11] Audit fees variable is equal to the total amount of audit fees paid for the auditing services.
[12] Firms' risk level is measured by firm's beta value.

Table 35 Results of the panel data regression model with robust standard error for the study sample covering the period 2005-2011 inclusive after controlling for firm's risk level and audit fees

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.44 (3.35)***	1.43 (3.33)***	1.44 (3.32)***	1.43 (3.31)***	-0.18 (-0.80)	-0.18 (-0.78)	-0.18 (-0.78)	-0.17 (-0.77)
***ln*BRD**	0.035 (1.41)	0.036 (1.44)	0.033 (1.32)	0.034 (1.35)	-0.018 (-1.23)	-0.018 (-1.21)	-0.019 (-1.26)	-0.018 (-1.23)
***ln*IND**	-0.055 (-0.76)	-0.057 (-0.79)	-0.051 (-0.71)	-0.052 (-0.72)	-0.033 (-0.70)	-0.029 (-0.614)	-0.031 (-0.66)	-0.029 (-0.60)
ACE	0.008 (0.57)	0.009 (0.61)	0.008 (0.59)	0.009 (0.62)	-0.005 (-0.57)	-0.005 (-0.65)	-0.005 (-0.57)	-0.005 (-0.65)
REMU-COM	-0.006 (-0.29)	-0.005 (-0.22)	-0.007 (-0.33)	-0.006 (-0.27)	0.001 (0.05)	0.0003 (0.02)	0.001 (0.06)	0.0005 (0.03)
NOMINI-COM	0.0095 (0.51)	0.01 (0.55)	0.0095 (0.51)	0.01 (0.55)	0.0068 (0.68)	0.0061 (0.61)	0.0067 (0.67)	0.006 (0.61)
DUL	-0.052 (-1.45)	-0.052 (-1.48)	-0.045 (-1.26)	-0.045 (-1.27)	-0.037 (-2.02)*	-0.036 (-1.99)*	-0.035 (-1.89)†	-0.036 (-1.92)†
AUDFee	0.008 (1.22)	0.008 (1.26)	0.008 (1.23)	0.008 (1.27)	0.001 (0.17)	0.0004 (0.12)	0.001 (0.17)	0.0004 (0.13)
BLK	0.083 (2.56)*		0.083 (2.60)**		0.047 (2.91)**		0.047 (2.87)**	
***ln*INST_BLK**		0.088 (1.97)*		0.087 (1.97)*		0.073 (3.34)***		0.073 (3.33)***
***ln*INDV_BLK**		0.21 (2.26)*		0.2 (2.20)*		-0.022 (-0.44)		-0.021 (-0.43)
***ln*BRDOWN**	-0.055 (-0.74)	-0.11 (-1.33)			-0.062 (-1.53)	-0.0003 (-0.01)		
***ln*CEOOWN**			-0.2 (-1.79)†	-0.26 (-2.12)*			-0.096 (-1.22)	-0.018 (-0.20)
***ln*EXECOWN**			0.038 (0.44)	-0.023 (-0.24)			-0.054 (-0.87)	0.0022 (0.03)
***ln*NEDOWN**			-0.041 (-0.22)	-0.076 (-0.40)			-0.032 (-0.36)	0.019 (0.20)
***lnadj*DBT**	-0.54 (-5.92)***	-0.54 (-5.93)***	-0.54 (-5.89)***	-0.54 (-5.90)***	0.026 (0.90)	0.025 (0.86)	0.026 (0.88)	0.025 (0.84)
***sqadj*DIVD**	0.098 (1.37)	0.097 (1.36)	0.096 (1.33)	0.095 (1.32)	-0.02 (-0.52)	-0.019 (-0.50)	-0.02 (-0.52)	-0.019 (-0.49)
***lnadj*ROA**	0.42 (3.07)**	0.42 (3.08)**	0.42 (3.05)**	0.42 (3.06)**	-0.31 (-5.06)***	-0.31 (-5.05)***	-0.31 (-5.08)***	-0.31 (-5.06)***
***lnadj*Q**	-0.0045 (-0.15)	-0.0064 (-0.21)	-0.0051 (-0.17)	-0.0073 (-0.24)				
Beta	-0.0085 (-1.01)	-0.0079 (-0.94)	-0.0086 (-1.03)	-0.0081 (-0.96)	0.011 (2.46)*	0.01 (2.38)*	0.011 (2.45)*	0.01 (2.38)*
***ln*ASSTS**	-0.013 (-1.91)†	-0.013 (-1.94)†	-0.013 (-1.92)†	-0.013 (-1.95)†	0.013 (5.65)***	0.013 (5.72)***	0.013 (5.63)***	0.013 (5.72)***
N	1415	1415	1415	1415	1415	1415	1415	1415
groups	237	237	237	237	237	237	237	237
Hausman	24.7	24.43	26.46	25.63				
***wald* χ^2**	79.7***	82.2***	85***	90.5***	85.5***	89***	85.4***	89.1***

z-statistics in parentheses

†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

All variables are winsorized at the 1st and 99th percentile values

Dependent variable(s)	*Industry adjusted asset utilisation ratio*	*QFCF*

Table 36 Results of the panel data regression model with robust standard error for the study sample covering the period 2005-2007 inclusive after controlling for firm's risk level and audit fees

	Panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	2.09	2.1	1.34	2.08	-0.23	-0.24	-0.24	-0.24
	(3.84)***	(3.86)***	(3.12)**	(3.86)***	(-0.73)	(-0.75)	(-0.76)	(-0.768)
***ln*BRD**	0.052	0.052	0.066	0.05	-0.053	-0.051	-0.053	-0.052
	(1.18)	(1.18)	(1.63)	(1.13)	(-2.50)*	(-2.41)*	(-2.48)*	(-2.42)*
***ln*IND**	-0.12	-0.12	-0.076	-0.11	-0.085	-0.083	-0.083	-0.081
	(-1.36)	(-1.35)	(-0.91)	(-1.31)	(-1.3)	(-1.27)	(-1.28)	(-1.25)
ACE	0.024	0.024	0.01	0.024	-0.01	-0.01	-0.01	-0.01
	(1.64)	(1.66)†	(0.65	(1.63)	(-0.71)	(-0.75)	(-0.83)	(-0.85)
REMU-COM	-0.006	-0.006	-0.006	-0.006	0.004	0.0016	0.004	0.0019
	(-0.30)	(-0.31)	(-0.27)	(-0.28)	(0.22)	(0.09)	(0.22)	(0.11)
NOMINI-COM	0.012	0.012	0.013	0.011	-0.004	-0.0054	-0.0031	-0.0041
	(0.73)	(0.72)	(0.72)	(0.68)	(-0.31)	(-0.41)	(-0.23)	(-0.32)
DUL	-0.014	-0.014	-0.022	-0.014	-0.033	-0.028	-0.023	-0.019
	(-0.46)	(-0.45)	(-0.82)	(-0.44)	(-1.06)	(-0.88)	(-0.72)	(-0.57)
AUDFee	0.003	0.002	0.007	0.002	-0.003	-0.004	-0.003	-0.004
	(0.6)	(0.56)	(1.5)	(0.51)	(-0.60)	(-0.89)	(-0.59)	(-0.88)
***ln*BLK**	0.11		0.075		0.045		0.043	
	(1.83)†		(1.41)		(1.46)		(1.4)	
***ln*INST_BLK**		0.095		0.095		0.056		0.055
		(1.68)†		(1.70)†		(1.83)†		(1.78)†
***ln*INDV_BLK**		0.089		0.09		-0.15		-0.16
		(0.83)		(0.8)		(-1.97)*		(-2.02)*
***ln*BRDOWN**	-0.007	-0.01			-0.04	0.061		
	(-0.095)	(-0.12)			(-0.60)	(0.79)		
***ln*CEOOWN**			-0.04	-0.012			-0.23	-0.2
			(-0.17)	(-0.048)			(-1.18)	(-0.99)
***ln*EXECOWN**			-0.14	-0.1			-0.098	0.046
			(-0.80)	(-0.53)			(-0.71)	(0.32)
***ln*NEDOWN**			0.14	0.17			0.1	0.24
			(0.5)	(0.57)			(0.74)	(1.63)
***lnadj*DBT**	-0.28	-0.29	-0.36	-0.29	0.024	0.017	0.021	0.014
	(-1.74)†	(-1.73)†	(-3.01)**	(-1.77)†	(0.52)	(0.35)	(0.44)	(0.29)
***sqadj*DIVD**	0.058	0.06	0.088	0.057	-0.032	-0.031	-0.033	-0.032
	(0.88)	(0.89)	(1.33)	(0.86)	(-0.58)	(-0.58)	(-0.61)	(-0.6)
***lnadj*ROA**	0.091	0.093	0.2	0.09	-0.52	-0.49	-0.51	-0.48
	(0.69)	(0.7)	(1.53)	(0.68)	(-5.09)***	(-4.85)***	(-5.02)***	(-4.77)***
***lnadj*Q**	0.075	0.073	0.097	0.072				
	(2.10)*	(2.04)*	(2.97)**	(2.00)*				
Beta	0.017	0.016	0.014	0.017	0.0092	0.0084	0.0092	0.0085
	(0.9)	(0.89)	(0.83)	(0.91)	(1.48)	(1.34)	(1.48)	(1.35)
***ln*ASSTS**	-0.089	-0.089	-0.03	-0.088	0.022	0.022	0.022	0.022
	(-3.33)**	(-3.31)**	(-2.28)*	(-3.30)**	(4.43)***	(4.48)***	(4.39)***	(4.43)***
N	547	547	547	547	547	547	547	547
groups	192	192	192	192	192	192	192	192
Hausman	45.3*	98.99*	25.73	34.42*				
adj. R^2	20.7%	20.3%		20.2%				
F	4.49***	4.16***		3.96***				
***wald* χ^2**			65.9***		58.3***	61.9***	59.4***	62.4***

z / t -statistics in parentheses

†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

All variables are winsorized at the 1st and 99th percentile values

Dependent variable(s)	*Industry adjusted asset utilisation ratio*	*QFCF*

Table 37 Results of the panel data regression model with robust standard error for the study sample covering the period 2009-2011 inclusive after controlling for firm's risk level and audit fees

	panel A				Panel B			
	Baseline model	**Sub model 1**	**Sub model 2**	**Sub model 3**	**Baseline model**	**Sub model 1**	**Sub model 2**	**Sub model 3**
Intercept	1.11	1.09	1.11	1.1	-0.21	-0.22	-0.21	-0.22
	(6.29)***	(6.06)***	(6.28)***	(6.07)***	(-2.66)**	(-2.76)**	(-2.61)**	(-2.72)**
***ln*BRD**	0.034	0.035	0.027	0.027	-0.0063	-0.0058	-0.0079	-0.0069
	(0.76)	(0.78)	(0.6)	(0.61)	(-0.29)	(-0.26)	(-0.36)	(-0.31)
***ln*IND**	0.035	0.039	0.035	0.04	0.016	0.016	0.015	0.014
	(0.83)	(0.93)	(0.85)	(0.96)	(0.68)	(0.68)	(0.63)	(0.61)
ACE	0.047	0.049	0.046	0.049	-0.017	-0.017	-0.016	-0.016
	(1.78)†	(1.87)†	(1.72)†	(1.83)†	(-1.20)	(-1.19)	(-1.12)	(-1.15)
REMU-COM	-0.038	-0.036	-0.031	-0.029	0.0028	0.0032	0.0017	0.0017
	(-0.68)	(-0.64)	(-0.55)	(-0.50)	(0.1)	(0.11)	(0.06)	(0.06)
NOMINI-COM	-0.015	-0.013	-0.016	-0.013	0.032	0.032	0.031	0.031
	(-0.50)	(-0.42)	(-0.53)	(-0.44)	(1.80)†	(1.80)†	(1.75)†	(1.73)†
DUL	-0.019	-0.02	-0.0092	-0.009	-0.034	-0.034	-0.032	-0.033
	(-0.36)	(-0.38)	(-0.17)	(-0.17)	(-1.28)	(-1.29)	(-1.23)	(-1.26)
AUDFee	0.018	0.018	0.019	0.019	0.0002	0.0005	0.0005	0.0003
	(1.81)†	(1.85)†	(1.90)†	(1.95)†	(0.04)	(0.10)	(0.01)	(0.06)
BLK	0.03		0.034		0.055		0.052	
	(0.62)		(0.73)		(2.15)*		(2.04)*	
***ln*INST_BLK**		0.026		0.025		0.083		0.082
		(0.39)		(0.38)		(2.37)*		(2.36)*
***ln*INDV_BLK**		0.22		0.25		0.061		0.029
		(1.57)		(2.05)*		(0.81)		(0.38)
***ln*BRDOWN**	0.14	-0.0053			-0.11	-0.099		
	(1.28)	(-0.03)			(-2.06)*	(-1.24)		
***ln*CEOOWN**			-0.08	-0.26			-0.1	-0.066
			(-0.52)	(-1.54)			(-1.21)	(-0.63)
***ln*EXECOWN**			0.21	0.031			-0.05	-0.019
			(2.58)**	(0.25)			(-0.66)	(-0.20)
***ln*NEDOWN**			0.33	0.18			-0.17	-0.14
			(0.93)	(0.49)			(-1.51)	(-1.16)
***lnadj*DBT**	-0.58	-0.58	-0.58	-0.58	0.038	0.038	0.04	0.039
	(-5.61)***	(-5.65)***	(-5.66)***	(-5.71)***	(0.96)	(0.94)	(0.98)	(0.97)
***adj*DIVD**	0.002	0.002	0.003	0.003	-0.002	-0.002	-0.002	-0.002
	(0.29)	(0.3)	(0.36)	(0.36)	(-0.45)	(-0.43)	(-0.53)	(-0.51)
***lnadj*ROA**	0.43	0.44	0.42	0.42	-0.16	-0.16	-0.15	-0.15
	(2.17)*	(2.22)*	(2.09)*	(2.15)*	(-2.00)*	(-1.98)*	(-1.95)†	(-1.94)†
***lnadj*Q**	-0.097	-0.098	-0.097	-0.099				
	(-2.80)**	(-2.80)**	(-2.80)**	(-2.82)**				
Beta	-0.098	-0.098	-0.097	-0.096	0.069	0.068	0.069	0.068
	(-2.95)**	(-2.93)**	(-2.87)**	(-2.85)**	(4.08)***	(4.04)***	(4.09)***	(4.02)***
***ln*ASSTS**	-0.015	-0.015	-0.014	-0.015	0.013	0.013	0.013	0.013
	(-2.39)*	(-2.40)*	(-2.30)*	(-2.34)*	(4.30)***	(4.34)***	(4.31)***	(4.37)***
N	679	679	679	679	679	679	679	679
groups	233	233	233	233	233	233	233	233
Hausman	21.34	21.71	24.3	23.91				
***wald* χ^2**	71.3***	73.7***	81.2***	82.4***	57.4***	58.5***	57.3***	58.7***

***z* -statistics in parentheses**

†p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

All variables are winsorized at the 1st and 99th percentile values

Dependent variable(s)	*Industry adjusted asset utilisation ratio*	*QFCF*

6.6 SUMMARY

In this chapter, the researcher reports the empirical analyses utilised in this study; starting with the descriptive analyses to understand the sample characteristics in order to decide which regression analysis is suitable, identify whether there is a need to transform some variables or not, and check for multicollinearity between the study variables using the correlation matrix and the variance inflation factor (VIF) diagnostic test to ensure that there is no perfect and harmful correlation between the variables. Given that the study data set is a panel data set, the researcher started the multiple regression analyses with the Hausman (1978) specification test to decide between the fixed effect and random effects regression models; then, the researcher reports the results of each analysis. The researcher ends this chapter examining for the possibility of endogeneity and employing a number of further analyses to examine the robustness of the reported results as well as examining a number of issues raised in the prior literature, e.g., the nonlinear association between ownership structure and agency costs; applying an alternative measure for board independence and examining the impact of the number of blockholders on agency costs. Overall, the study findings show an association between corporate governance mechanisms and agency costs, but not all mechanisms contribute to lower agency costs. Thirteen different hypotheses were developed to examine the impact of a comprehensive set of corporate governance mechanisms and agency costs; the results are mixed and contingent to agency costs proxy as well as the economic conditions that surround the firm. For instance, large boards and effective audit committees are efficient in reducing agency costs; board composition as measured by the percentage of independent directors seem to increase agency costs; the results for duality, block holding and board ownership are mixed. For the full sample analysis, the same results were reported after controlling for the financial crisis period and using a relatively balanced panel data set. There is modest evidence that supports the nonlinear association between ownership variables and QFCF; using an alternative measure for board composition confirms the negative association between board composition and agency costs. The next chapter provides a comprehensive summary and conclusions that can be drawn from the study results.

CHAPTER 7
STUDY SUMMARY AND CONCLUSIONS

7.1 INTRODUCTION

This thesis provides new evidence on the effectiveness of the corporate governance mechanisms in mitigating the consequences of the separation of ownership and control which is known as the agency problem, by empirically investigating the impact of a comprehensive set of corporate governance mechanisms on agency costs within the UK context. Contrary to prior literature that utilises firm value and performance as indirect proxies of lower agency costs; this study utilises two different proxies that reflect the agency costs in terms of the managerial effectiveness as measured by asset utilisation and investment decisions agency costs as measured by the interaction of firm's free cash flow with the growth prospects.

In this chapter, the researcher summarises the whole process of this study and concludes from the study findings. Section 7.2 recalls the study research problem and the research questions; section 7.3 explores the research methods utilised to investigate the research questions; section 7.4 provides a summary of the main findings of this study; the implications from this research are discussed in section 7.5; and the researcher ends up with section 7.6 which presents the limitations for this study in addition to future research avenues.

7.2 REVISITING THE RESEARCH QUESTIONS

Smith (1776) first points out that the managers of firms with dispersed ownership are not expected to deal with shareholders' money with the same vigilance as if they are managing with their own money. Many years later, in 1932, in a support of Smith's argument, Berle and Means mention that in modern corporations, there is almost complete separation between ownership and control. The majority of owners has no control over their investments, whereas, the people who control the firm have negligible or no ownership stake (Berle and Means, 1932). After this book, much research was directed towards studying how to shrink the gap between shareholders' and managers interests. Compensation structures and the problems that are associated with these structures were the main concerns to this research interest (Jensen and

Smith, 1984). In 1976, Jensen and Meckling were the first to introduce the definition and the conceptual framework of the agency problem, and the costs associated with this problem.

Based on this framework, the research on the agency theory has developed; as mentioned by Jensen (1983) and Eisenhardt (1989), two main research streams (the positive and the principal agent approaches) were progressing and shaped the research in the agency theory. The positive approach is concerned with the development of different governance mechanisms that could be used to control the managerial opportunistic behaviour and mitigate the consequences of the agency problem. Much research has been conducted in this area, leading to the development of many mechanisms and regulations to reduce the negative consequences of the separation of ownership and control. Parallel to this theoretical research, empirical research was progressing, as well, to examine and provide evidence of the effectiveness of the proposed mechanisms. Most of these studies used the firm value and financial performance as a proxy of agency costs, assuming the higher firm value or higher performance indicates lower agency conflicts and lower agency costs. This trend of research could be justified as it is difficult to find a figure that reflects the exact agency costs incurred by the firm. In 2000, Ang, Cole and Lin propose the asset utilisation and operating expenses to sales ratio; and Doukas, Kim and Pantzalis propose the interaction of free cash flow with growth prospects; these two papers provide the literature with three different proxies of agency costs.

Following these studies, the aim of this study is to empirically investigate the impact of corporate governance mechanisms, and the compliance with the UK corporate governance code on the agency costs of the UK firms, in addition to investigating this impact before and after the 2008 financial crisis. The following research question reflects these aims.

"To what extent, do corporate governance mechanisms help in reducing the agency costs of the UK firms?"

"To what extent, does the compliance with the UK corporate governance code help in reducing the agency costs of the UK firms?"

"To what extent, does the impact of the corporate governance mechanisms change during the recession period follow the 2008 financial crisis?"

"Does ownership identity affect the impact of ownership on agency costs?"

To answer the study research questions, the researcher has included a comprehensive set of governance mechanisms in a baseline and three sub models; the researcher considered the compliance in this study, in terms of following the proposed criteria of director independence, constructing composite measures for the audit committee, the remuneration and nomination committees based on the mentioned recommendations on the UK corporate governance code.

The empirical investigation of these questions contributes to the governance literature in many ways; first, this is the first study that investigates the impact of a comprehensive set of corporate governance mechanisms on the agency costs in the UK context; to identify which mechanisms help in reducing the agency costs and the other mechanisms that do not reduce or increase the agency costs of the UK firms. Second, this study provides evidence that following all the prescribed governance practices not always reduces agency costs. third, it captures the changes in the impact of the governance mechanisms on agency costs before and after the financial crisis; and finally, this study provides evidence that owners' identity affects the ownership impact on agency costs.

7.3 SUMMARY OF THE RESEARCH METHODOLOGY

This study is an archival study in terms of the nature and sources of data, following the deductive approach and the traditional positive philosophy; thus, answering the, previously mentioned, research questions required the researcher to set different models to include a large set of corporate governance mechanisms and examine the potential interactions among these governance mechanisms. In doing so, eight main hypotheses representing the main governance mechanisms and thirteen sub-hypotheses in total were examined. The examined hypotheses are as follows:

H1: There is a negative association between board size and agency costs.

H2: There is a negative association between the percentage of independent board members and agency costs.

H3: There is a positive association between duality and agency costs.

H4: Board subcommittees are negatively associated with agency costs.

> ***H4a:*** *An effective audit committee is positively associated with lower agency costs.*
>
> ***H4b:*** *An effective remuneration committee is positively associated with lower agency costs.*
>
> ***H4c:*** *An effective nomination committee is positively associated with lower agency costs.*

H5: There is a negative association between board ownership percentage and agency costs

H6: The identity of the owner director has a significant impact on agency costs

> ***H6a:*** *There is a negative association between CEO ownership percentage and agency costs.*
>
> ***H6b:*** *There is a negative association between executive directors' ownership percentage and agency costs.*
>
> ***H6c:*** *There is a negative association between non-executive directors' ownership percentage and agency costs***.**

H7: There is a negative association between block holding percentage and agency costs.

H8: The identity of the blockholders has a significant impact on agency costs.

> ***H8a:*** *There is a negative association between institutional block holding percentage and agency costs.*
>
> ***H8b:*** *There is a negative association between individual block holding percentage and agency costs.*

To examine these hypotheses empirically, the researcher utilised a sample of 1431 firm–year observations of UK firms incorporated in the FTSE All–Share index over the period 2005–2011 inclusive; and two subsamples representing the pre-crisis (2005-2007 inclusive) and post-crisis (2009-2011 inclusive) periods were utilised to for the pre and post the financial crisis analyses; it may be worth mentioning that the utilised samples in this study represent almost all industry sectors working in the UK market. The required data were collected from three main sources; annual reports, DataStream and Thomson One Banker database.

Descriptive statistics and univariate analysis were employed to check the data set, understand the characteristics of the data set and the appropriate analysis tests; before employing the panel data regression models. Panel data models were employed to take the advantage of the cross section and time series characteristics of the study data set. Based on the Hausman (1978) specification test results, fixed or random effects models were employed. Considering that the second proxy of the agency costs is censored variable, Tobit regression was utilised. Furthermore, a number of robustness check tests were employed to ensure the robustness of the reported results; for example, Durbin–Wu–Hausman endogeneity diagnostic test was utilised to ensure that none of the independent variables are endogenous and affect the analysis results; another board independence measure; re-estimating the full sample analysis after controlling for the financial crisis, as well as other tests that investigate a number of issues that have been raised in the prior literature, i.e., the nonlinear association between ownership variables and agency costs, the number of blockholders . The following section summarises the main findings of this study; and shows which of the examined hypotheses are supported, which are not supported and in what economic context.

7.4 SUMMARY AND INTERPRETATION OF THE STUDY RESULTS

Table 38 summarises the study's theoretical hypotheses and whether these hypotheses were empirically supported or not. The reported results for this study show that board size is positive and significantly associated with asset utilisation for the full sample and the post crisis sample as well. The coefficients of the pre–crisis sample are positive but are not significant. These reported results indicate that large board size is associated with lower agency conflicts reflected in better utilisation for firm's assets. Consistent results were reported using QFCF as an agency costs proxy; a negative association between large boards and QFCF, however, it was only significant in the pre–crisis period only; These results are consistent and complement each other, besides, they lend the support to the argument that large boards are more effective than small boards and more appropriate for the UK context.

Table 38 Hypotheses and Findings

Hypotheses	Results		
	Whole	**Pre–crisis**	**post crisis**
Asset utilisation as a proxy of agency costs			
H1: There is a positive association between board size and asset utilisation.	**Supported**†	Not supported	**Supported**†
H2: There is a positive association between the percentage of independent board members and asset utilisation.	Not supported	**Not supported**†	Not supported
H3: There is a negative association between duality and asset utilisation.	**Supported**†	Not supported	Not supported
H4: board subcommittees are positively associated with asset utilisation.			
H4a: An effective audit committee is positively associated with asset utilisation.	Not supported	**Supported***	**Supported**†
H4b: An effective remuneration committee is positively associated with asset utilisation	Not supported	Not supported	Not supported
H4c: An effective nomination committee is positively associated with asset utilisation.	Not supported	Not supported	Not supported
H5: There is a positive association between board ownership percentage and asset utilisation.	Not supported	Not supported	Not supported
H6: The identity of the owner director has a significant impact on asset utilisation			
H6a: There is a positive association between CEO ownership percentage and asset utilisation.	**Not supported***	Not supported	**Not supported***
H6b: There is a positive association between executive directors' ownership percentage and asset utilisation.	Not supported	Not supported	**Supported***
H6c: There is a positive association between non-executive directors' ownership percentage and asset utilisation.	Not supported	Not supported	Not supported
H7: There is a positive association between block holding percentage and asset utilisation.	**Supported***	**Supported**†	Not supported
H8: The identity of the blockholders has a significant impact on agency costs			
H8a: There is a positive association between institutional block holding percentage and asset utilisation.	**Supported**†	**Supported**†	Not supported
H8b: There is a positive association between individual block holding percentage and asset utilisation.	**Supported**†	Not supported	**Supported**†

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hypotheses	Results		
	Whole	**Pre–crisis**	**post crisis**
QFCF as a proxy of agency costs			
H1: There is a negative association between board size and QFCF.	Not supported	**Supported***	Not supported
H2: There is a negative association between the percentage of independent board members and QFCF.	Not supported	Not supported	Not supported
H3: There is a positive association between duality and QFCF.	**Not supported**†	Not supported	Not supported
H4: board subcommittees are negatively associated with QFCF.			
H4a: An effective audit committee is positively associated with lower *QFCF*.	Not supported	Not supported	Not supported
H4b: An effective remuneration committee is positively associated with lower *QFCF*.	Not supported	Not supported	Not supported
H4c: An effective nomination committee is positively associated with lower *QFCF*.	Not supported	Not supported	**Not supported†**
H5: There is a negative association between board ownership percentage and QFCF.	**Supported**†	Not supported	**Not supported***
H6: The identity of the owner director has a significant impact on QFCF			
H6a: There is a negative association between CEO ownership percentage and *QFCF*.	Not supported†	Supported*	Not supported
H6b: There is a negative association between executive directors' ownership percentage and *QFCF*.	Not supported	Not supported	Not supported
H6c: There is a negative association between non-executive directors' ownership percentage and *QFCF*.	Not supported	**Supported***	Not supported
H7: There is a negative association between block* holding *percentage and QFCF.	**Not supported****	Not supported	**Not supported****
H8: The identity of the blockholders has a significant impact on agency costs.			
H8a: There is a negative association between institutional block holding percentage and *QFCF*.	**Not supported*****	**Not supported***	**Not supported****
H8b: There is a negative association between individual block holding percentage and *QFCF*.	Not supported	**Supported***	Not supported

† p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

The reported results provide mixed results in regard to the role of the board composition in reducing agency costs as measured by asset utilisation. On the one hand, the coefficients are negative, but insignificant for the whole and post crisis samples; but on the other hand, the coefficients of the pre–crisis sample still negative but turn out to be significant. These results could suggest that having a board with a majority of independent board members neglects the importance of the executive directors and their firm specific knowledge about the firm, and show that this domination of independent non-executive directors reduces firm's ability in utilising firm's asset base, and thus, increases agency costs; such findings contradicts with the agency theory perspective. By considering that for the pre–crisis period, the average percentage of independent board members is 48% and the negative association reported for this period (although it was a steady period), this could indicate that the 50% threshold is not the efficient limit, and the assertion of a majority of independent directors excluding the chairman recommendation should be revised. In terms of QFCF as an agency costs measure, no significant relationship was reported.

The board structure reflected in size and outsider directors representation is affected by both the external environment and firm specific characteristics (Pearce and Zahra, 1992; Hillman, Withers and Collins, 2009), as the results show the uncertain economic conditions during the post crisis period require large boards to cope with these changes. The results of board composition compliance measure provide evidence that independent board as suggested by the UK corporate governance code is detrimental management effectiveness and increase agency costs for the post crisis period.

In this study, the researcher investigates the impact of the compliance with the recommendations of the UK corporate governance code for the three board subcommittees. The results reveal that only an effective audit committee has a significant role in enhancing managerial efficiency and reducing agency cost for the pre and post the financial crisis samples. However, after considering the endogeneity issue, the reported results reveal that complying with the recommendations of the UK corporate governance code for the remuneration committee is associated with higher agency costs, whereas, the compliance with the recommendations of the nomination committee is associated with lower agency costs. The reported results failed to provide any evidence that these board subcommittees help in reducing the

agency problems associated with the free cash flows conflicts except for the nomination committee, for the post crisis period, the results reveal positive and significant association between the compliance with the UK recommendations for the nomination committee and agency costs as measured by the QFCF. With respect to duality, the results provide modest evidence that duality is detrimental to the firm and leads to more agency costs (lower asset utilisation). The coefficients are negative for the baseline and the sub models as well; but significant only for the baseline model and sub model 1 of the full sample. Furthermore, the coefficients are negative and insignificant for the pre and post crisis samples. Likewise, the reported results provide modest evidence of the relationship between duality and QFCF, the results show a negative association between duality and QFCF for the baseline and sub model 1 suggesting that duality helps in reducing the agency conflicts related to the free cash flows.

The reported results show that blockholders help in controlling the opportunistic behaviour of the management, and help in mitigating the consequences of the agency costs. The coefficients are positively associated with the asset utilisation ratio for the study different samples; significant for the whole and the pre–crisis samples, but insignificant for the post crisis sample. This result provides evidence that the role of the governance mechanisms could change in accordance with the changes of the external environment. One possible reason behind the change from being significant to insignificant is that as shown in the descriptive statistics (Tables 3 and 4) the average percentage of the block holding increased from 28.5% for the pre–crisis period to 33.6% for the post crisis period; whereas, the asset utilisation ratio was decreasing; this could support the argument that, after a certain limit, the blockholders turn to become less efficient monitoring mechanism and the increase of the block holding could turn out to be detrimental to shareholders. Conversely, the results show that block holding increases the agency costs of the free cash flows for the full and the post crisis samples.

Related to the identity of the blockholders, the results reveal that institutional blockholders have a significant role in reducing the agency costs for the full sample and the pre–crisis sample, this role turn out to be negative but insignificant for the post crisis sample. Conversely, individual blockholders have an overall positive impact on asset utilisation ratio; the coefficients are positive and significant for the

full sample models and positive and significant for the comprehensive model (sub model 3) of the post crisis samples. These results could suggest that individual blockholders could be good monitors and can help in protecting the minority of shareholders from the opportunistic behaviour of other blockholders and management as well, and their role is much important for the post crisis period. Moreover, these results could lend a partial support to the previously mentioned argument that blockholders (namely institutional blockholders) could seek their own interests and extract private benefits from their control. In terms of QFCF, there is a significant positive association between institutional block holding and QFCF for the full sample and the pre and post crisis samples. Such results clearly demonstrate the negative impact of the increase of the institutional block holding ratio for firms with free cash flows and low growth opportunities, as this increase leads to more agency costs. Conversely, the results show a negative association between individual block holding and agency costs, but only significant for the pre–crisis sample. Such results endorse the argument that the identity of the blockholder does matter.

Turning now to board ownership, the results of this study failed to provide any evidence that board ownership has a significant role in aligning managerial interests with those of shareholders. However, after splitting this total board ownership percentage into three sub percentages based on the identity of the directors, the results show that CEO has a negative impact on asset utilisation. This negative association is significant for the whole sample models and comprehensive model (sub model 3) of the post crisis sample; suggesting that CEO ownership could help CEOs to entrench themselves and cause more divergence between their personal interests and shareholders' interests. No significant results were found in regard to non-executive directors' ownership, besides the results are mixed; negative coefficients for the whole sample and positive for the pre and post crisis samples. With respect to the executive directors' ownership, no significant impact was reported, with an exception to one model for the post crisis sample.

In terms of QFCF, the results show a negative association between QFCF and the total percentage board ownership; nonetheless, this association is significant only for the baseline model of the full and post crisis samples, indicating that board ownership helps in reducing the agency conflicts of free cash flows. After categorising the board ownership into three subcategories, the CEO ownership ratio

seems to have a negative impact on QFCF of the full and pre–crisis samples for the comprehensive model only (sub model 3), whereas, there is a modest evidence that non-executive ownership ratio leads to higher agency costs during the pre–crisis period.

In this study, the researcher controlled for some firm characteristics that have been argued in the prior literature that they could have a significant impact on shaping firm's corporate governance structure and affect firm's agency costs. Based on the reported results, the researcher can conclude that debt has a negative impact on asset utilisation as it hinders the managers' ability in utilising firm's assets and lead to more agency cost. Firm profitability enhances the firm's ability to in utilising their assets base, and generating more sales, which should lead to more shareholders' wealth. Likewise, profitability leads to lower agency costs in terms of QFCF. This study also provides empirical evidence that as the firm becomes more complex and larger in size, they incur more agency costs regardless of the utilised agency costs proxy. Other controlled variables don't seem to have any significant impact on agency costs.

Taken together, these results add to the mixed results provided by the prior studies regarding the impact of corporate governance mechanisms on reducing the agency costs and enhancing firm performance. Overall, the direction and the significance of the results, for most of the utilised mechanisms in this study, are consistent among the different models and the three utilised samples. However, there are slight differences on the significance level and some variables tend to turn from having positive impact to be negative and vice versa.

These reported results show that not all governance mechanisms have a significant impact on reducing the agency cost; moreover, the results provide evidence that governance mechanisms impact could change in accordance with the changes in the business environments. Mechanisms which are efficient in reducing the agency costs during the steady economic conditions could turn out to be detrimental after a crisis and during the recession periods. Considering the different forms of agency conflicts, the reported results provide some evidence that some corporate governance mechanisms could help in reducing the agency costs, regardless of type of the conflict that causes these costs, whereas, other mechanisms

could help in reducing the agency costs of a certain type of conflict but the same time increases the agency costs result from different agency conflicts.

Turning to the insignificant mechanisms, the lack of evidence does not mean that these mechanisms are not important or ineffective. Corporate governance mechanisms complement and can substitute each other. Besides, management assesses the cost and benefits of every mechanism while deciding which mechanisms should be utilised and to what extent, consequently, for the insignificant mechanisms, alternative mechanisms could be more utilised and hence, no direct association could be reported (Bathala and Rao, 1995). Finally, this study provides empirical evidence that supports the agency theory and resource dependence theory in terms of board characteristics, and failed to support the stewardship theory in the case of the CEO duality; however, this study does provide partial support for in terms of board composition.

7.5 IMPLICATIONS OF THIS STUDY

This study has a number of implications, which will be addressed in the following section. These implications contribute to the ongoing governance literature and provide some suggestions for other researchers, practitioners, regulators and policy makers as well. The UK governance system is a "comply or explain" system; the descriptive statistics of this study show that firms incorporated in the FTSE All–Share index tend to comply more with the different aspects of board characteristics mentioned in the UK corporate governance code. The official reports published by the FRC support these statistics. The reported results in this study can guide the policy makers in designing future reforms and regulations.

The UK corporate governance code (2010, p.12) states that each firm should establish a board with sufficient size that can incorporate are the firm's business requirement. This study provides evidence that large board is more efficient in performing its assigned responsibilities in the UK context; especially during the abnormal economic conditions.

The UK governance code over stresses on the importance of having independent directors sitting on the board, the code sets the criteria of director's independence and state that they should be the majority in order to ensure board independence and

enhance the board's ability in performing their monitoring role. However, the prior literature and the results of this study show that firm characteristics and the surrounding environment might have a significant impact on shaping the board composition. The coefficient of the percentage of independent board members to the total board mombers turns out from being negative and significant during the pre–crisis to be negative but insignificant for the post crisis as well as the full sample. Such case should be considered by regulators and, at the same time, firms should provide their shareholders with evidence that justifies their need to deviate from the stated recommendations and the necessity of having more insiders sitting on the board. The minimum independence level set by the UK corporate governance code is not the efficient level that reduces the agency conflicts between the management and shareholders, and the assertion of a majority of independent directors excluding the chairman recommendation should be revised by the policy makers in the UK.

In terms of the second component of board independence, CEO duality, this study provides evidence, although it is modest, that reveals that duality is detrimental for shareholders' wealth, what is interesting is that the incident of duality is very limited in the UK, however, the regression models show this negative impact on asset utilisation. Interestingly, for firms with free cash flows and limited growth opportunities, there is modest evidence as well that duality reduces agency costs result from the conflict towards the free cash flow. Such findings endorse the recommendations and calls of separating between the CEO and chairman responsibilities.

Similar to the board independence, the UK corporate governance code mentions that remuneration and nomination committees should have a majority of independent directors. Such recommendation is valid in the sense that insider dominated nomination committee could customise the board in the way that services the CEO and top management interests and they might choose directors who are not likely to be good monitors. Likewise, inside dominated remuneration committee could be biased towards extra paying the CEO and top management. However, these recommendations belittle the insiders' experience and knowledge about the firm's needs and special requirements that should be present on the new appointed directors, and also, neglect the executive directors' experience about the fair pay that the CEO

and top management should get. Before proceeding to other implications, this study supports the audit committee effectiveness criteria proposed by Smith Report (2003).

In terms of ownership structure, this study provides evidence that blockholders and CEOs could use their ownership stake to extract private benefits and expropriate minority's wealth; such results could call to the attention of regulators to enact laws and regulations that provide the sufficient protection for the minorities of shareholders.

This study lends the support to the arguments that call for more flexible governance regulations and don't force firms to follow a prescribed structure as one structure does not fit all. However, it is a dilemma; it is necessary to develop and provide a set of mechanisms that should protect the shareholders from the opportunistic behaviour of the management and other controlling shareholders, but at the same time, these developed mechanisms could curb the innovation and the benignant discretion of managers, besides, firm characteristics are key factors that could shape the governance structure in the way that enhance firm performance.

As a final point, this study also, supports the call of considering more than one theoretical framework rather than adopting the agency perspective (or the shareholder perspective) while enacting the regulations and governance codes. Furthermore, this study provides evidence for the interaction between the corporate governance mechanisms, such result should be considered by future researchers as neglecting this interaction could lead to misleading results, conclusions and directions for the researchers, policy makers and regulators.

7.6 LIMITATION OF THIS STUDY AND FUTURE RESEARCH AVENUES

7.6.1 Study limitations

Similar to every research done in the field of corporate governance, this study has a number of limitations that could affect the interpretation of the results. In this section, the researcher reports these potential limitations and suggests, based on these limitations, the future research avenues for other researchers. Research limitations are related to three main aspects. The first aspect is the sample size, time horizon and

the examined context, the second aspect relates to the utilised variables; and finally the regression technique employed in this study.

In regard to the sample size, time span and the context of this study, the researcher has utilised a sample of 1431 firm–observation for a time span of seven years from 2005 to 2011 inclusive. This sample includes only firms with all data required for this study. The researcher started with a sample including all firms incorporated in the FTSE All–Share index; and has excluded financial firms, delisted firms and firms with missing data. This implies that the study sample could suffer from survival bias, as only active firms during the study horizon were included. The reason behind excluding delisted firms is that to take the advantage of panel regression models; each firm should have a minimum of two observations; thus, any firm with less than this threshold should be excluded; moreover, for delisted firms the annual reports are not available for most cases. Finally, this study was applied to the UK market, thus the reported results in this study can be applied to the UK context only.

As mentioned earlier, this study was limited to the equity agency costs. Three proxies were utilised to capture agency costs as a dependent variable. These proxies cannot capture exactly the amount of agency costs incurred by the firm, but can give indications that managers have exerted the required effort and working efficiently in managing firm's assets; this was captured by the study first proxy. The second proxy reflects the agency costs of the free cash flow and the agency costs associated with investment decisions. The third proxy (SG&A) can capture the discretionary expenses by the management; however, the regression models of only two proxies (asset utilisation and interaction of free cash flow with growth prospects) were significant, and reported in this study.

In this study, the researcher utilised a comprehensive set of corporate governance mechanisms; these mechanisms capture wide range of board characteristics and other ownership structure variables. Although, it was difficult to include every single variable utilised in the prior literature; in the next section, the researcher proposes other measures for agency costs and other corporate governance mechanisms which could be utilised in future research.

In this study, the researcher employed panel data regression models, and tested for the endogeneity to check the robustness of the findings. A more advanced regression model could be used; this regression model is the System Generalised Method of Moments (GMM). This model considers and deals with the endogeneity problem, heteroscedasticity and autocorrelation within individuals (Roodman, 2009); however, utilising this method requires a larger data set in terms of more time observations.

7.6.2 Opportunities for Future research

The time span of this study can be expanded to include more years and expand the sample to include more firms; however, the expansion of the sample size in terms of the number of firms per each year could be constrained by the data availability problem.

This study was limited to the internal corporate governance mechanisms; thus, future researchers can control for the external governance mechanisms in their future research projects. Although this study has included a comprehensive set of corporate governance mechanisms; however, other mechanisms like the CEO and top management compensation structures, independent directors' fees as an indication of independent director's commitment, the different characteristics of board and the board subcommittees as well, the presence of the CEO as a committee member in the remuneration and nominations committees. And finally, the last financial crisis shows that the remuneration structure of top management needs attention, to be revised and to be more controlled, in order to understand the reasons behind the misalignment between the top management remuneration system and the firm's long term strategy and actions. Future research could be directed towards this important aspect.

In terms of agency costs (dependent variable); this study was limited to equity agency costs proxies, other proxies that capture different aspects of the agency problem like overinvestment which could be a possible research avenue. Overinvestment is a critical problem as managers have the incentive and the prospect to go beyond the optimal firm size and build empires to secure their position, get higher compensations and expropriate shareholders' wealth. Richardson (2006) proposes a proxy of the overinvestment problem which can be employed in future research. Furthermore, the future research could work in investigating the role of

corporate governance mechanisms in reducing the managerial entrenchment as one of the agency conflicts; and the underinvestment problem.

Finally, this study was conducted using UK data, thus conducting a comparative study representing different context, or a comparative study between emerging and developed countries will help in the development of the global theory of corporate governance. Also, this study was limited to UK non-financial firms, including the financial firms and conducting a comparative study between financial and non-financial firms could be a possible future research opportunity.

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APPENDIX

Table 39 Results of the fixed effects panel data regression model with robust standard error for the study sample covering the period 2005-2011 inclusive

	Baseline model	Sub model 1	Sub model 2	Sub model 3
Intercept	1.52	1.51	1.51	1.51
	(3.53)***	(3.52)***	(3.53)***	(3.53)***
***ln*BRD**	0.022	0.023	0.020	0.021
	(0.70)	(0.74)	(0.65)	(0.67)
***ln*IND**	0.081	0.081	0.079	0.078
	(0.97)	(0.96)	(0.93)	(0.92)
ACE	0.011	0.011	0.011	0.012
	(0.74)	(0.76)	(0.75)	(0.76)
***ln*REMU-COM**	0.006	0.007	0.005	0.005
	(0.28)	(0.29)	(0.21)	(0.23)
***ln*NOMINI-COM**	0.004	0.005	0.005	0.005
	(0.21)	(0.26)	(0.23)	(0.27)
DUL	-0.070	-0.070	-0.061	-0.062
	(-1.87)†	(-1.88)†	(-1.65)†	(-1.67)†
BLK	0.093		0.094	
	(2.62)**		(2.66)**	
***ln*INST_BLK**		0.098		0.100
		(2.10)*		(2.15)*
***ln*INDV_BLK**		0.210		0.190
		(1.65)†		(1.49)
***ln*BRDOWN**	-0.056	-0.066		
	(-0.50)	(-0.60)		
***ln*CEOOWN**			-0.190	-0.180
			(-1.23)	(-1.18)
***ln*EXECOWN**			0.130	0.110
			(0.91)	(0.80)
***ln*NEDOWN**			-0.230	-0.230
			(-1.21)	(-1.21)
***lnadj*DBT**	-0.520	-0.520	-0.510	-0.510
	(-5.34)***	(-5.34)***	(-5.31)***	(-5.31)***
***sqadj*DIVD**	-0.100	-0.100	-0.099	-0.099
	(-1.43)	(-1.42)	(-1.40)	(-1.39)
***lnadj*ROA**	0.380	0.370	0.370	0.370
	(2.74)**	(2.74)**	(2.72)**	(2.72)**
***lnadj*Q**	0.001	0.000	0.000	-0.001
	(0.04)	(-0.0084)	(0.00)	(-0.043)
***ln*ASSTS**	-0.013	-0.014	-0.013	-0.014
	(-1.89)†	(-1.91)†	(-1.90)†	(-1.92)†
N	1431	1431	1431	1431
adj. R^2	11%	11%	11%	11%
F-test	4.63***	4.27***	4.62***	4.34***
Dependent variable	*Industry adjusted asset utilisation ratio*			

Table 40 Results of the fixed effects panel data regression model with robust standard error for the study sample covering the period 2005-2007 inclusive

	Sub model 3
Intercept	1.84 (3.38)***
***ln*BRD**	0.063 (1.32)
***ln*IND**	0.150 (1.72)†
ACE	0.025 (1.90)†
***ln*REMU-COM**	-0.007 (-0.39)
***ln*NOMINI-COM**	0.015 (0.81)
DUL	-0.017 (-0.74)
***ln*INST_BLK**	0.097 (1.87)†
***ln*INDV_BLK**	0.083 (0.75)
***ln*CEOOWN**	-0.050 (-0.21)
***ln*EXECOWN**	0.091 (0.47)
***ln*NEDOWN**	0.170 (0.57)
***lnadj*DBT**	-0.240 (-1.62)
***sqadj*DIVD**	-0.042 (-0.62)
***lnadj*ROA**	0.150 (1.12)
***lnadj*Q**	0.066 (1.81)†
***ln*ASSTS**	-0.080 (-2.94)**
N	562
adj. R^2	18%
F-test	4.23***
Dependent variable	*Industry adjusted asset utilisation ratio*

Table 41 Results of the fixed effects panel data regression model with robust standard error for the study sample covering the period 2009-2011 inclusive

	Baseline model	Sub model 1	Sub model 2	Sub model 3
Intercept	1.07	1.05	1.05	1.04
	(4.07)***	(3.92)***	(3.98)***	(3.87)***
***ln*BRD**	0.044	0.052	0.041	0.047
	(0.51)	(0.60)	(0.47)	(0.54)
***ln*IND**	-0.087	-0.087	-0.069	-0.070
	(-1.17)	(-1.18)	(-0.93)	(-0.94)
ACE	0.047	0.049	0.046	0.048
	(1.52)	(1.59)	(1.51)	(1.55)
***ln*REMU-COM**	0.100	0.098	0.100	0.099
	(1.13)	(1.04)	(1.10)	(1.04)
***ln*NOMINI-COM**	-0.056	-0.054	-0.055	-0.054
	(-1.33)	(-1.28)	(-1.32)	(-1.28)
DUL	-0.017	-0.017	-0.018	-0.018
	(-0.18)	(-0.19)	(-0.20)	(-0.20)
BLK	0.038		0.068	
	(0.44)		(0.77)	
***ln*INST_BLK**		0.033		0.070
		(0.28)		(0.58)
***ln*INDV_BLK**		0.290		0.260
		(1.12)		(1.03)
***ln*BRDOWN**	-0.140	-0.160		
	(-0.59)	(-0.69)		
***ln*CEOOWN**			-0.210	-0.210
			(-0.69)	(-0.69)
***ln*EXECOWN**			0.310	0.260
			(1.28)	(1.06)
***ln*NEDOWN**			-0.640	-0.640
			(-1.97)†	(-1.92)†
***lnadj*DBT**	-0.620	-0.620	-0.620	-0.630
	(-4.64)***	(-4.68)***	(-4.71)***	(-4.74)***
***adj*DIVD**	0.009	0.009	0.009	0.009
	(1.13)	(1.12)	(1.07)	(1.07)
***lnadj*ROA**	0.250	0.250	0.260	0.250
	(1.18)	(1.15)	(1.18)	(1.16)
***lnadj*Q**	-0.084	-0.084	-0.080	-0.081
	(-1.82)†	(-1.82)†	(-1.74)†	(-1.74)†
***ln*ASSTS**	-0.013	-0.013	-0.012	-0.012
	(-1.88)†	(-1.88)†	(-1.63)	(-1.64)
N	684	684	684	684
adj. R^2	11.9%	11.9%	12.3%	12.2%
F-test	2.84***	2.65***	3.67***	3.46***

Dependent variable: Industry adjusted asset utilisation ratio