CORPORATE GOVERNANCE AND STOCK RETURNS VARIABILITY: A STUDY OF GHANAIAN LISTED FIRMS

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DECLARATION

I hereby declare that this research is my own work towards MPhil Finance degree and that, to the best of my knowledge, this work has no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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ABSTRACT

This research bridges the gap in the literature in Ghana by finding out the effect of corporate governance on stock returns variability of companies listed on the Ghana stock exchange. The literature on corporate governance research in Ghana dwells on aspects like corporate governance and firms‟ performance; corporate governance and financing decisions and others. However, a research is yet to be done to find out the influence and its extent of corporate governance on stock returns variability. Investors are not only interested in the accounting and market-based performance measures such as return -on assets, return-on-equity and Tobin‟s q but investors are also concerned about the unpredictable variations in returns they face for holding equity shares. The research thus focuses on the unsystematic risk or idiosyncratic risk listed companies on the Ghana stock exchange face as a result of corporate governance. The research uses 28 companies listed on the Ghana stock exchange over the period 2004-2013 using panel data regression. The research reveals that corporate governance variables such as board size, presence of outside directors on boards, concentration of shareholding increase companies‟ unsystematic risk. Interestingly, firms audited by the big four audit firms experience more variability in stock returns than companies audited by small audit firms. Most companies listed on the Ghana stock exchange have the CEO and board chairman positions separated but this step does not have any significant influence on stock returns variability. Management ownership is not prevalent among companies on the Ghana stock exchange and the research reveals that management ownership has no significant influence on stock returns variability.

Key words: *Corporate governance, stock returns variability*, *Ghana*

DEDICATION

This thesis is dedicated to my parents and my grandmother for their enormous support towards my education.

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LIST OF ACRONYMNS

GSE Ghana Stock Exchange

GSE-CI GSE Composite Index

ICT Information and Communication Technology

OLS Ordinary least squares

GLS Generalised least squares

OECD Organisation for Economic Co-operation and Development

CEO Chief Executive Officer

CACG Common wealth Association for Corporate Governance

NED Non-Executive Directors

AR Auto Regressive

CHAPTER ONE

INTRODUCTION

1.1 Background of study

Corporations are characterized by separation of ownership from management and this distinctive feature in relation to other businesses like sole proprietorship and partnership creates the agency problem. The agency problem results in managers operating companies in fulfilment of their interest rather than pursuing shareholders‟ wealth maximization.

To avert this phenomenon where managers pursue their interest at the expense of shareholders, there is a need for mechanism within which corporations would be governed and this is known as corporate governance. To the proponents of agency theory, corporate governance is a way that debt holders and equity holders assure themselves of getting returns on their investment (Shleifer and Vishny, 1997, p.737). In other words, corporate governance may be defined as set of mechanisms that ensure that controlling shareholders of companies maximize their value (Denis and McConnell 2003, p.1-2). Separation of ownership and control creates agency problems within the firms. (Jensen and Meckling, 1976; Fama and Jensen, 1983)

A research by Mohanty (2014) on selected Indian firms corroborates the fact that corporate governance has effect on the value of a firm whiles the performance of microfinance institutions (MFIs) in southern part of Ghana did not have any relationship with corporate governance giving their prevailing environment (Anthony and Otieku,

2010).Firms increasingly have adopted risk management. A company with structured corporate governance has risk management at its core for successful operation of this process (Chong, 2004).

Stock returns variability is an issue that plaques shareholders of firms. Shareholders are not only affected by profitability of companies but the variability in the returns derived from investee companies poses risk also to them. Does corporate governance have a link with stock returns variability investors face in holding equity shares? Variability of returns refers to the degree to which returns of investors vary unpredictably. Asset pricing models such as the capital asset pricing model postulates that returns shareholders receive from their investment comprises the risk-free rate and a risk premium which serves as compensation for investing in non-government securities deemed to be risky (Mayo, 2014). The import of capital asset pricing model is shareholders are compensated for by only systematic risk since there is a fundamental assumption that investors hold diversified portfolio. However, entity-specific factors like corporate governance exert influence on returns on investment which in turn causes variability in stock returns.

Koerniadi et al (2014) in a research based on 385 firms in New Zealand showed that the aggregate measure of corporate governance has a negative impact on the risk of firms. The empirical results showed that a one standard deviation increase in the corporate governance index reduces standard deviation of returns by 1.3 percent. Furthermore, subindices based on board composition, shareholder rights, and disclosure policy have a significant and negative influence on risk.

Corporate governance in Ghana also continues to receive attention as most companies endeavour to adopt best corporate governance practices and conduct of corporate governance continues to be deepened especially for listed companies. Accordingly companies in Ghana have adopted some of the best practices in corporate governance such as separating Chief Executive role (CEO) and the board chairman position, and the existence of sub-board committees like audit committee. The growing importance of corporate governance in the country means that investors‟ decisions are likely to be affected by companies‟ corporate governance. The issue of risk therefore becomes focal as investors in order to mitigate risk are likely to gravitate towards companies having best corporate governance practices.

In a research by Fu (2009), Goyal and Santa-Clara (2003), it was found that firm specific risk has positive value on firms suggesting that companies that want to grow in value have to empower managers to take risky decisions. This is because managers usually shy away from risky investment as their interest of job security when decisions fail contradict shareholders‟ long-term view of maximising value. Incentivising managers through share options and other packages is able to induce managers to take risk.

The literature (Jensen and Meckling, 1976; Dechow and Sloan, 1991) find that managerial behaviour when not checked well produces negative effect on a firm‟s value. The two strands of the literature on „effect of corporate governance on firm value‟ show whether risk taking arises from management to pursue shareholders‟ wealth or personal interest. The quality of corporate governance can elicit firm-specific risk from management that increases a company‟s value through risky investments undertaking. On the other hand if agency costs dominate because corporate governance is not of quality, a firm will reduce

in its value. Good corporate governance through institutional factors encourage risk-taking behaviour from management and reduces agency cost which in the final analysis increases corporate value. The positive relationship between institutional factors of corporate governance and managerial risk-taking is similar to the positive effect of cholesterol in human body even though excess is also harmful (Koerniadi et al, 2014).It stands to reason that the quality of corporate governance of companies has a bearing on stock returns variability of companies and this is important to find.

1.2 Problem statement

The nature or quality of corporate governance in a company has influence on the risk shareholders face for holding investments there. The price of stock in an efficient market reflects information pertaining to companies. Thus, the quality of corporate governance of companies has effect on the returns shareholders experience on their stocks.

An extension of the literature was made by Koerniadi et al (2014) by researching on the effect of corporate governance on risk reduction in New Zealand. The research focused on effect of corporate governance on stock return variability as a measure of risk-taking where corporate stock returns variability measured by standard deviation of stock returns was regressed on corporate governance to determine the impact of corporate governance on stock returns variability (unsystematic risk).

This research extends the literature by examining the association between corporate governance and risk taking in Ghana. Ghana has major institutional differences with the USA and other advanced countries where most current studies have so far been conducted

in respect of corporate governance and stock returns variability. The Ghana capital market is less developed and characterised with concentrated ownership.

Corporate control and executive compensation and ownership is not popular compared to countries like the USA and the UK. These specific institutional and corporate structures in Ghana would have considerable bearing on managerial risk-taking incentives. In other words, firms with good corporate governance will have lower risk, ceteris paribus.

Ghanaian companies increasingly have adopted corporate governance and some of the listed companies on the Ghana stock exchange even disclose corporate governance practices in their annual reports. Also the country has regulatory framework for corporate governance especially for listed companies on the Ghana stock exchange.

Some researches in Ghana have been on relationship between firm‟s performance and corporate governance and others. Abor (2007) researched into the relationship between firm‟s performance and corporate governance. Anthony and Otieku (2010) researched into the relationship between performance of microfinance institutions (MFIs) and corporate governance.

However, a research is yet to be carried out to ascertain the effect of corporate governance on the variability of stock returns for listed firms in Ghana. This research is intended therefore to bring out the effect of corporate governance on stock returns variability using listed companies on the Ghana stock exchange to bridge this gap.

1.3 Research objectives

The objectives of the study is broken down into „***General objective'*** and ***'Specific objective'***

1.3.1General objective

To assess the effect of corporate governance on variability of companies‟ stock returns.

1.3.2 Specific objectives:

1) To assess the relationship between corporate governance and stock returns variability among listed companies on the Ghana Stock Exchange.
2) To identify the impact of corporate governance on variability in stock returns of listed companies in Ghana.

1.4 Research questions

In researching on corporate governance and stock returns variability in Ghana, the following research questions guided the study:

1) Is there any relationship between corporate governance practices of listed firms on the Ghana stock exchange and variability in their stock returns?
2) To what extent do corporate governance practices affect stock returns variability of listed firms on the Ghana stock exchange?

1.5 Scope

The research covers companies listed on the Ghana stock exchange. Companies from different industries ranging from banking, manufacturing sectors and others were used in the research. The research is focused only on Ghanaian companies with no regard to corporate governance practices by companies elsewhere.

1.6 Limitations of study

The study looks at corporate governance and its association with variability in a company‟s stock returns. In assessing the impact of corporate governance on stock returns variability, the researcher used indices crafted taking into consideration best corporate governance practices. As a result of data availability, the researcher resorted to only few indices in measuring corporate governance and neglected indices like institutional ownership, government ownership and others.

The author limited the work to companies listed on the Ghana stock exchange and excluded non-listed companies because of time and data availability on the unquoted companies. The obvious effect is the research cannot be pulled out and generalization made on it as it is focused on only listed companies in Ghana.

1.7 Significance of the study

First, the results imply that well-governed firms have lower idiosyncratic risk and that this reduction is most likely due to the reduction in agency costs and information risk. This means that board formulation and other events affecting corporate governance would be rationally carried out for companies that want to have less variable shares.

The research also brings out to light the effect of large shareholders on stock returns variability of companies. Controlling shareholders are therefore made aware of the

negative impact that attends on stock returns when boards are not allowed to freely operate in their monitoring role.

The research alerts shareholders the risk they tend to face through entity-specific factors such as corporate governance. This is therefore expected to guide investors‟ decisions once the nature of corporate governance of investee companies can be assessed.

1.8 Organization of study

The research work is organized into five chapters.

The chapter one covers the background, research objectives, research questions, problem statement, significance of study and limitations of the research.

The chapter two covers the literature review

The chapter three covers methodology of the research

The chapter four covers analysis and discussion of findings

The chapter five covers summary of findings, recommendations and conclusion.

1.9 Chapter summary

The mechanisms in which corporations operate have effect on corporate value. There is a “good cholesterol effect” when these mechanisms induce risk-taking behaviour from management which increases corporate value. The “bad cholesterol effect” comes when management risk-taking behaviour arising from agency problem reduces corporate value. This research provides the effect of corporate governance on stock returns variability as a

measure of risk-taking arising from agency cost on listed Ghanaian companies. Most researches have been conducted on listed companies in terms of their corporate governance but a research is yet to be carried on stock returns variability through corporate governance in Ghana and this research fills the gap. The study is expected to alert businesses on how the quality of corporate governance affects shareholders‟ wealth maximization through variability in stock returns. The research is limited by having its scope on only listed companies in Ghana.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature on corporate governance and risk. The conceptual framework of corporate governance, the best practices regarding corporate governance mainly on board constitution are presented. The chapter also reviews the relationship corporate governance has with cost of capital and the empirical literature is also reviewed. The literature also presents information on stock returns variability. The hypotheses underlying the study are made after reviewing the literature.

2.2 Corporate governance

Corporate governance has been described as a multifaceted concept. This is because the definition of corporate governance depends on the orientation or perspective one is looking at. Corporate governance is seen as a tool used to protect investors‟ interest. Shleifer and Vishny (1997) see corporate governance as a system laid in place to ensure that return on investment is derived. Similarly, La Porta et al. (2000) view corporate governance as mechanisms used by investors outside companies to guard against the risk of expropriation

of assets. These definitions given have the shareholder focal and thus looks at how agency cost is mitigated to secure the goals of investors. In companies there is thus conflict of interest (Eisenhardt, 1989). Restricting the definition of corporate governance to how shareholders interest is protected means that the interest of other stakeholders like customers, employees, suppliers of the economy and others are ignored. Others are therefore of opinion that corporate governance cannot be complete by emphasizing on the interest of only shareholders (Nwabueze and Mileski, 2008). According to Gillan and Starks‟s (1998) corporate governance is a system of laws, rules, and factors used by companies to control operations. The stakeholder theory perspective of corporate governance however espouses an integrative approach in which the interest of not only shareholders but important stakeholders like customers, suppliers, employees and others are considered. Corporate governance in the literature has thus been defined from perspectives like the agency theory, stakeholder theory, managerial hegemony and resource dependency theory.

2.2.1 Agency theory

The key idea of agency theory stems from the fact that owners of the business known as shareholders (principal) are in agency relationship with managers (agents).This was identified by Jensen and Meckling (1976). Agency theory sees human beings or specifically agents as opportunistic personalities who use every opportunity to increase their external rewards (Hogan, 1997).Separation of ownership from management creates divergence of interest. In terms of board composition, agency view of corporate governance therefore sees many people on boards as a means of expropriating company‟s assets because of the opportunistic tendencies in human beings. Similarly, combining more than one role for one person is a recipe for the individual to unleash his opportunistic

tendencies on companies (Bonazzi, and Sardar, 2007; Donaldson and Davis, 1991; Jensen and Meckling, 1976; Monsen and Downs, 1965). Both agent and principal seek to have the maximum gains for expenditure incurred (Davis *et al.*,1997; Donaldson and Davis, 1994; Muth and Donaldson, 1998; Short *et al.*, 1999).

2.2.2 Stewardship theory

Stakeholders‟ theory provides a different opinion to the agency theory and this can be seen as an alternative to the agency theory (Luu and Tuan, 2014). The orientation of the two views of corporate governance differ. Stewardship theory gravitates towards stakeholder model whiles agency is more biased to shareholders value. Stewardship theory views managers as trustworthy individuals who collaborate with shareholders to ensure the profitability of companies (Donaldson and Davis, 1994). The import is, in this perspective managers are not seen as individuals with opportunistic tendencies to maximize their self-interest, but rather there is an alignment of goals between managers and shareholders (Davis et al.,1997). Stewardship dates back to the human relations school of management (Hung, 1998), the disciplines of sociology and psychology (Muth and Donaldson, 1998) and organisation theory (Clarke, 1998). Unlike agency theory, stewardship theory focuses on other non-economic factors that influence managers‟ behaviour. Managers are honest and operate to achieve success of companies rather than exploiting company in their capacity as managers (Mason *et al.*, 2007). Stewardship theory allows for other motivations of managers including self-motivation that are not financially motivated that induce high performance from management.

2.2.3 Managerial hegemony

Managerial hegemony looks at corporate governance as a mechanism in which

corporations have board that in actual sense is not effective in their monitory role but is a conduit used by managers to go through with decisions they would be taking in executing their roles (Hung, 1998).

The import of managerial hegemony view of corporate governance is in modern companies, managers actually run the company not the board because the boards expected to monitor managers have actually been planted by managers. Others thus describe the role of the board of directors as an artificial or façade one as they only exist to approve managers decisions (Baker, 2010; Hung, 1998; Mahadeo *et al.*, 2012; Thomson and Bebbington, 2005).

Shareholders elect board of directors as a result of their legal right to control the company. However managers are able to work to ensure that individuals who in the past did not interfere with their decisions have their way on the board in order to have cohorts on the board (Mahadeo *et al.*, 2012; Mangel and Singh, 1993).

2.2.4 Resource dependency

Resource dependence theory sees boards as a means companies can use to connect to other companies to gain resources. Companies thrive on the link with one another and hence governing boards should have great links to the external environment (Hung, 1998). Companies therefore seek links in an attempt to establish their interdependence. Because companies have at its core getting resources from other companies, they usually have interlocking directors on the board. Companies do not choose board of directors just like that because governing boards are carefully chosen to respond to the external environment (Pfeffer, 1972, p. 226). Useem (1980, p.66) found that the presence of

interlocking directors helps companies carry out corporate strategy in improving their sales, purchases, and reputations.

The varying perspectives of corporate governance means that corporations that look at corporate governance from the agency point of view will be disregarding the pivotal role of customers, employees and other stakeholders of the company. Corporate governance codes in most countries are therefore not biased and endeavour to provide an integrative orientation or conceptual definition of corporate governance. The OECD‟s definition for corporate governance for instance provides focus not only on shareholders but includes management, the board, and other stakeholders. The Cadbury report on corporate governance also gives a definition for corporate governance. In Cadbury Report‟s (1992) corporate governance is seen as the mechanism in which companies are controlled and directed. The import of this report suggests that corporate governance is not biased towards shareholders and includes stakeholders like employees and customers since control and direction does not affect only shareholders.

There are other forms of stakeholder theories. One of them is the deontic stakeholder theory and this looks at the ethical duties expected of companies beyond what is demanded by the law (Heath and Norman, 2004).

2.3 Internal attributes of corporate governance

Best corporate governance practices recommended and practised across the globe border on separation of the Chief Executive Officer (CEO) and the board chairman role, inclusion of external or independent members on the board, existence of audit committee and others. Internal attributes mentioned above characterize good corporate governance.

2.3.1 Board size

The size of the board of a company has effect on its performance. It is argued that larger boards will have some members free riding which rather increases the cost of the business. Mashayekhi and Bazaz (2008) found that board size is negatively associated with firm performance which indicates that larger board size generally reflects weaker control. The resource dependency theory is also of the view that boards with large size are likely to have members with external link to the environment which can influence resource acquisition. Van den Berghe and Levrau (2004) argued that increasing the number of directors provides an increased pool of expertise because large boards are likely to have more knowledge and skills than small boards. Anderson et al. (2004) found a negative relationship between board size and the cost of debt financing. Ehikioya (2009), using the data of Nigerian firms, found a positive relationship between board size and return on assets. Kiel and Nicholson (2003) analyzed the data of 348 publicly listed firms in Australia and they observed that board size is positively correlated with firm value

2.3.2 Non-executive directors

Non-executive directors are the board members who are not attached to the company. Corporate governance practices usually recommend the existence of these independent members who bring neutrality of judgment and expertise on the board. The key distinction between executive or inside directors and the non-executive or outsiders is the independence with which judgment and decisions are made. Monitoring or supervision by the Board thus becomes easy when members do not have attachment with the company. Anderson et al. (2004) found a negative relationship between board independence and the cost of debt. Moreover, they showed that debt cost is 17.5 basis points lower for firms with

boards dominated by independent directors relative to the firms with insider-stacked boards suggesting that bondholders view board independence as an important element in the pricing of a firm‟s debt. Mashayekhi and Bazaz (2008) found a positive relationship between outside directors on boards and firm performance. Jackling and Johl (2009) found a positive and significant relationship between outside directors and financial performance, as measured by Tobin‟s Q. On the contrary, Coles et al. (2001) observed that greater representation of outside directors on a board has a negative influence on firm performance, as measured by the market value added.

Similarly, Ehikioya (2009) found that outside directors on a board has a negative influence on firm performance, as measured by return on assets and price-earnings ratio.

2.3.3 CEO Duality

The issue of independence with which a board of a company can carry out its mandate becomes affected adversely when the CEO of the company doubles as the chairman of the board. Monitoring of the company becomes affected as the head of the board has to closely monitor another team called management which is led by the same board chairman. This therefore affects the performance of the company. The agency issue which plagues corporations cannot be solved in the presence of duality of the board chairman and the CEO position (Jensen, 1993). Alternatively, stewardship theory suggests that CEO duality could promote a unified and strong leadership rather than weakening a board‟s independence from management and its monitoring role. In addition, resource dependence theory sees corporate boards as a mechanism to manage external links and reduce environmental uncertainties. Thus, when the two roles are handled by one person, an optimal decision is expected to occur. Leadership structure deemed as the best cannot be specified and this differs from the propositions of the agency theory. In the words of

Brickley et al. (1987), the type of leadership is entityspecific as separation of the two roles can be favourable to others but to some it can also be disastrous.

Researches have confirmed the works of Brickley et al (1987) pointing out that there is no single optimal leadership structure. In the work of Abor and Biekpe (2007), they found a positive relationship between CEO duality and performance using the data of small and medium enterprises in Ghana. In Nigeria, Ehikioya (2009) found that CEO duality adversely affects firm performance and this means that the roles have to be separated for companies to achieve high performance. The two contrasting results indicate that there is no one best leadership style and it depends on entities involved. Some work also found that decoupling or merging the two positions has no influence on performance. Mashayekhi and Bazaz (2008) found no significant relationship between CEO duality and performance of Iranian firms. Jackling and Johl (2009) found no significant relationship between CEO duality and performance of top listed firms in India. Elsayed (2007) also using data of Egyptian listed firms found that board leadership structure does not have direct effect on corporate performance.

2.3.4 Managerial ownership

The agency issue is fuelled by the fact that the management of the company is different from the owners. The interests of these two are thus divergent. Conflicts between management and shareholders exist because management holds less percentage or none in the shareholding of the company. McConnell and Servaes (1990) found out percentage of shareholding of management that helps increase performance and the percentage that reduces performance. At maximum insider shareholder ownership of 40-50, when performance has been increasing causes decline in performance. Sarkar and Sarkar (2000),

found out that Indian firms experience drop in market-to-book ratio by 0.8 percent by every 1 percent increase in directors‟ holdings up to 25 percent and thereafter it increases by 1.3 percent for every 1 percent increase in directors‟ holdings. In the conclusion of the research it was found that managerial ownership has a non-linear relationship with performance. In a research based in UK however Florackis et al. (2009) found not strong influence of managerial ownership on performance. The literature confirms the findings of McConnel and Servaes (1990) that managerial ownership influences performance in non-linear manner. The point at which performance begins to drop is however 50% which represents the upper limit of the interval specified by McConnel and Servaes (1990). Ehikioya (2009) has shown that managerial ownership is negatively related to the return on assets and the Tobin‟s Q.

2.3.5 Ownership concentration

Ownership concentration deals with whether the shareholding of a company is dispersed or held in few hands. In literature it is recognized that ownership structure is of two types. There is dispersed and the concentrated structures. The dispersed structure in most developed countries is the popular ownership structure whereas in most developing countries ownership is concentrated in more hands. The literature with regard to ownership structure has not presented a conclusive direction in terms of effect of ownership structure and performance. Wiwattanakantang (2001) using 270 non-financial listed firms in Thailand found that ownership concentration is positively associated with performance measured by return on assets and sales to assets ratio. In addition he found that firms with foreign owners and family control and one controlling shareholder have high performance. Ehikioya (2009) used 107 Nigerian firms and found that ownership concentration is positively related to performance measured using return on assets and the price-earnings

ratio, whereas it is negatively related to the Tobin‟s Q. on the contrary, Lehmann and Weigand (2000) used 361 firms from German mining and manufacturing industries and found that ownership concentration adversely affects performance measured using return on assets.

2.3.6 Existence of audit and nomination/remuneration committees

According to Beasley (1996), audit committees help to provide reliable information to stakeholders. The literature records that companies that form audit committees experience improvement in their earnings measurements. The improvement most likely could be customers expecting reliable financial reporting upon establishment of audit committees. McMullen (1996) finds that in the presence of audit committees, companies experience reliable financial reporting devoid of errors and irregularities. Not only do audit committees ensure financial reporting that can be seen reliable but also the tendencies of managers that represent the agency problem is checked (Dechow,1996). Companies that are well governed thus must have audit committees since previous researches assign most weight to audit committee. The importance of audit committees is mostly seen in relation to internal control systems. The Board executes its role concerning the internal control of the company through the audit committee. As a result of this critical role some propose that the audit committee should comprise of independent executives. The presence of audit committee is believed to even ward off fraud. Uzun et al. (2004) found that US firms culpable of financial reporting fraud are less likely to have an audit committee. This was confirmed by Beasley et al. (2000) in a research using companies in the technology and financial-services industries that companies that commit fraud are significantly less likely to have an audit committee. On the other hand Beasley (1996) found that the existence of

audit committee does not affect the chances of fraud occurring in a company. Also in the UK a research by Peasnell et al.

(2005) reported that UK companies sanctioned for misleading financial statements are less likely to have an audit committee and this agrees with the findings in USA. The composition of audit committee members have also been researched in the literature to find out whether it has any significant influence on the possibility of fraud occurring.

Beasley (1996) found that audit committee composition does not have a significant impact on the chances that fraud will occur. On composition, extant research reveals that non-executive directors on a board make a firm less likely to commit fraud or be sanctioned for misleading financial reporting (Beasley et al., 2000; Abbott et al., 2000,; Uzun et al., 2004; Persons, 2005; Smaili and Labelle, 2007). In UK however the research by Peasnell et al. (2005) revealed findings contrary to expectations. They found that firms sanctioned for making misleading financial statements and fraudulent financial reports have greater proportion of outside directors on their audit committees. Other committees important for board monitory role is nomination and remuneration committee. Vance (1983) identifies that the compensation and nomination can be counted as part of board committees influential in corporate activities. In the case of nomination committees some research have identified that they have no influence on performance. Uzun et al. (2004) found that nomination committee has no effect on corporate fraud. Remuneration committee was however identified as having positive movement on company‟s fraud.

2.3.7 Big audit firm presence

In line with the perspective of agency theory on corporate governance, managers have opportunistic tendencies and this results in management having divergent interests. Auditing is seen as a means to check the behaviour of management to cut down on agency

costs. Audit quality looks at the possibility of finding and reporting material financial misstatements. In extant research this has been measured using firm audit size and prestige (DeAngelo, 1981).

2.3.8 Governmental Ownership

Property rights theory postulates that private firms operating with pubic firms in a competitive environment will outperform public companies so far as public companies do not get other benefits elsewhere which are not internal (Alchian and Demsetz, 1972).

The literature provides mixed results on government ownership. Some researchers such as Boardman and Vining (1989) found that private-owned firms perform better than state-owned companies. Sun et al. (2002) also extends the literature by providing results in favour of positive relationship between government ownership and firms‟ performance. They found that even part ownership by government has positive movement on performance of firms. On the contrary in recent times, extant research using data of privatized firms present mixed results (Dyck, 2001). Researchers despite the mixed results include governmental ownership in their studies because whether positive or negative effect on performance, government ownership is expected to influence performance. Companies having government ownership can have governance systems usually different from that of private firms. It has also been identified that governmental investors can pursue goals that are non-profitable and deviate from maximizing value (Mak and Li, 2001).

2.4 Corporate governance and firm's performance

The relationship between firm‟s performance and corporate governance has also been looked at. Arguments and empirical findings have gone both ways. Some researchers argue

that internal governance mechanisms such as board size, outside directors, CEO duality, managerial ownership, and ownership concentration have a positive effect on firm performance, whereas other researchers oppose such claims by arguing that these mechanisms have a negative effect on firm performance. For instance, Mashayekhi and Bazaz (2008) reported a negative relationship between board size and firm performance whiles Jackling and Johl (2009), Abor and Biekpe (2007), and Kiel and Nicholson (2003) found a positive relationship between board size and corporate performance. Mohd Ghazali (2010) using Malaysian firms found no relationship between board size and corporate performance. On outside directors, Jackling and Johl (2009), Mashayekhi and Bazaz (2008), and Rosentein and Wyatt (1990) have shown that outside directors on the boards are positively related to firm performance.

Abor and Biekpe (2007) in a research conducted on companies in Ghana found a positive relationship between CEO duality and profitability but Ehikioya (2009) found that CEO duality adversely affect firm performance in a research conducted on Nigerian companies. Jackling and Johl (2009) and Mashayekhi and Bazaz (2008) found that leadership structure and firm performance have no relationship meaning that the separation or merging of the two positions has no influence on performance. Managerial ownership has also been assessed in the literature to see whether it has influence on performance or otherwise. In Ghana, Abor and Biekpe (2007) found that managerial ownership increases profitability of companies. Sarkar and Sarkar (2000), McConnell and Servaes (1990), and Morck et al. (1988) on ownership structure found a non-linear relationship between management ownership and performance. In the case of Florackis et al. (2009) it was found that managerial ownership has no influence on performance but there is initial percentage of 15% which aligns the interest of managers to that of shareholders. Ownership

concentration in the literature has also been looked at on its effect on performance. Lehmann and Weigand (2000) found that ownership concentration reduces profitability of companies. On the contrary, Wiwattanakantang (2001) found that ownership concentration improves corporate performance measured by return on assets and sales to assets ratio. Nadeem et al (2013) in a research focused on Pakistan firms found out that a board with high levels of links to external environment would improve a firm‟s access to various resources, hence, positively affecting firm‟s performance.

2.5 Legal and regulatory framework of corporate governance in Ghana

The regulatory framework for an effective corporate governance practice in Ghana is contained in the following documents: Companies code 1963 (Act 179), Securities Industry Law 1993 (PNDCL 333) as revised by the Securities Industry (Amendment) Act, 2000 (Act 590) and the listing regulations, 1990 (L.I. 1509) of the Ghana Stock Exchange. Agyemang et al (2013) used six major categories in describing corporate governance in Ghana. These are: the mission, responsibilities and accountability of the board; board committees; relationship to shareholders and stakeholders, and the rights of shareholders; auditing and financial affairs; financial disclosures and code of ethics.

The various sections of the regulatory framework of Ghana are discussed below:

2.5.1 The mission, responsibilities and accountability of the board of directors Board of directors look at managing the company and ensuring that shareholders value is maximised. The board has responsibility towards the stockholders, the industry in which it operates and the law. Interests of other stakeholders are expected to be looked at aside shareholders‟. An integrative view is thus taken by corporate governance expectations on boards in Ghana. The regulatory framework lays on the board the primary responsibility

of ensuring that good corporate governance operates within companies. In accordance with the regulatory framework, the board is expected to carry the following functions. Firstly the board is in charge of the strategic direction of the corporate entity in ensuring that its goals are achieved, secondly, the management of the corporation also falls in the hands of the board. Thirdly risk management represents a critical role to be carried out by the board through identification of risk and systems to manage it. Fourthly, appointments, training, remuneration and finding right replacement of senior management is done by the board. Furthermore, oversight and supervision of internal control systems is to be done by the board. Lastly, the board has to ensure that communication and information dissemination policy of the corporation is maintained.

The principle also reflects the sovereign rights of shareholders, since the boards of directors, who are to ensure that effective corporate governance prevails, are accountable to shareholders. The board size is stated in these legal framework even though no specific number is stated. However board size of between 8-16 members is recommended (Agyemang et al, 2013).

Appointment of board of directors is expected to be transparent and free of corrupt practices. Shareholders are to be provided with adequate information on all persons to be appointed. These information ranges from name, age and country of residence. The appointment should specify whether the new director is executive and if so the job description, working experience and other information including anything that can cause conflict of interest in is roles.

The leadership structure of the corporate organisation is clearly stated in this section of the principle. It thus touches on the issue of CEO and board chairmanship duality role. The

regulatory framework states in clear terms that there should be a separation of the roles of the chairperson and the CEO. In addition, in the event of this separation, the relationship between the CEO and the Chairperson with their respective responsibilities should be formally defined or stated.

The regulatory framework touches on the composition of the board. It states that the board should have a balance of executive directors and NEDs with a complement of independent NEDs being at least one third of the total membership of the board. The appointments of the NEDs is to be done by the board and the selection procedure ought to be based on merit. Independence of a director is defined by regulatory framework based on some parameters. Specifically the director should not be a substantial stockholder of the corporate entity; is not an employee of the corporate business, is not a professional advisor or consultant to the corporate entity; is not a supplier or customer; no contractual connections with the corporate business; and free from any other relationships with the corporate entity, which may interfere with his or her ability to carry out his/her responsibilities independently. The regulatory framework emphasises that all directors both Executives and NED should be given unrestricted access to corporate information.

The board in discharging its duties is expected to meet regularly and in the case of listed companies at least six times in a year. Board committees are expected to meet frequently to ensure that their duties are carried out effectively and efficiently. NEDs in particular are expected to be consistent in attending meetings to guarantee their continued stay on the board.

2.5.2 Board committees

The board is allowed to constitute committees as it may deem appropriate to help it in carrying out its duties. The membership on the committees formed can extend to outsiders or those who are not on the board but the caveat is decisions made lay responsibility on only those on the board. It is also expected that a board‟s committees and their members are to be published in the company‟s annual report.

The regulatory framework specifies sub-committees the board can constitute. These are: the audit committee and remuneration committee. The audit committee should compose of at least three directors, of whom the majority should be NEDs. The membership of the committee should have adequate knowledge on finance, accounts and the fundamental elements of the laws under which the company operates. There is an explicit provision that the chairperson of the audit committee should be a NED. The primary functions of the audit committee are listed also in Ghana‟s legal framework for corporate governance.

2.5.3 Relationship to shareholders and stakeholders

The corporate governance framework in Ghana also emphasises other stakeholders aside the shareholders. The rights of shareholders are also enumerated under this section of regulatory framework. The rights include: secure methods of ownership registration; transfer shares; obtain information on the firm; vote; elect board members; participate in the profits of the corporate business. Shareholders have the right to partake in, and to be made aware of the changes that occur in the company such as amendments to statutes and laws regarding the company‟s operations and the regulations of the company. Other important documents such as these are not to be concealed from shareholders. The principle of equitable treatment of all shareholders is also highlighted in this section.

2.5.4 Auditing and financial affairs

The role of the board with regard to corporate financial reporting and auditing is also enumerated in the regulatory framework of the country for corporate governance. Matters concerning audit reports, possible deviations from standards are mentioned in the company. There is mentioning of rotation of audit personnel and removal or resignation of an auditor. The board of directors as part of the internal control system management protects company‟s assets. The board also ensures that statutory payments are made on time. Other functions in this respect of the board are there (Agyemang et al, 2013).

The tremendous role of external auditor of a company is also explicitly stated in the regulatory framework. Auditors are expected as a legal obligation to give an objective, independent and effective opinion on financial statements of the company. The auditor is advised to use diligence, objectiveness and independence in the execution of his or her duties (Agyemang et al, 2013).Also, the auditor ensures that the audit is done in accordance with the standards set by Institute of Chartered Accountants, Ghana (ICAG). Not only is the auditor expected to conduct the audit in accordance with the standards set by the regulatory accounting body ICAG, but he is also expected to make a disclosure in audit report rendered that the audit has been conducted in accordance with the standards set by ICAG.

In executing his role as the auditor if he lights on any material departure from the standards, the external auditor is to bring it out to see if it is intentional or otherwise and the right thing done accordingly. To ensure effective and fair audit which a third party outside the relationship between the management and the auditor can say that audit report reflects the real events on the ground, it is recommended that auditors should be rotated. Finally, the

section provides in a situation where there is withdrawal, resignation or refusal by a company‟s auditor to stand for re-election, an acceptable explanation should be given so that the explanation can be delivered to shareholders.

2.5.5 Financial report disclosures

There is a responsibility laid on the board of a company to furnish shareholders with financial information on the company and other stakeholders. Specifically the financial and operating outcomes of the corporate business; the objectives of the corporate business; major share ownership and voting rights; material issues concerning employees and other stakeholders and board members and key executives, and their remuneration (Agyemang et al, 2013).

The code also agrees with the establishment of remuneration committee with NEDs as majority of its members. It is also stated that executive directors who find themselves in the remuneration committee should not partake in decision making process regarding decisions on the remuneration packages. The primary responsibilities of the remuneration committee are disclosed by the regulatory framework. To start with, the committee is responsible for laying down clear procedures on executive compensation. Secondly, the structures required by the organisation to be instituted to compensate managers for performance improvement has to be done by the committee. (Agyemang et al, 2013). The committee is also responsible for contracts supervision to satisfying themselves that contracts of executives are bereft of provisions that possibly will make the company suffer loss when there is early termination of contracts. In the annual reports of companies a disclosure is expected to be made in respect of the number of members in the audit

committee and their working policies. The fees and other entitlements of the members are also expected to be disclosed in the annual report.

2.5.6 Code of ethics

In ensuring proper implementation of corporate governance in the country, companies are advised to have code of ethics in place and a statement of business practices as part of their corporate governance practices. Boards of directors are responsible for the formulation of such document. However, its content is applicable to the board and all employees. The board has to lay also in place mechanisms to see to the compliance of the code of ethics (Agyemang et al, 2013).

The summary or key points summed up in the principles of corporate governance in Ghana gravitates more towards the shareholder model (Agyemang et al, 2013).This is because the principles are reflection of the sovereign rights of shareholders because the board of directors in charge of ensuring effective corporate governance in companies also account to shareholders. Again it can also be said that the principles focus more on the traditional view of corporate governance where the board is regarded as representatives of shareholders. The principles make clear mention of the elements that see to proper corporate governance in companies. These elements are the composition of the board, independence of the board, the leadership structure (CEO duality or otherwise), board committees such as the audit committee and remuneration committee, and access to timely and regular information by directors.

2.6 Practical issues of corporate governance in Ghana

Agyemang et al (2013) conducted a research on corporate governance practices in four large publicly-held corporate organisations in Ghana. The researchers employed a qualitative case study methodology in their study.

The shareholders‟ perspective of corporate governance puts forth that, the objective task of an organisation ought to focus only on those who have monetary share of the organisation. It considers organisations as devices for shareholders to maximize their investment returns, on the basis that shareholders theoretically are seen as residual claimants (Jensen & Meckling, 1976). In their study looking at corporate governance as a mechanism in which the agency problem is checked, they looked at the practical issues regarding corporate governance in Ghana. Specifically the ownership structure and control and board independence were looked at in finding out how those structures are able to check agency problem.

2.6.1 Ownership Structure and control

In the four publicly-listed corporations used in the research in Ghana, the researchers found out that controlling shareholders act as monitors and controllers of the managerial behaviour. Controlling shareholders in corporations through the powers they have are able to manage the behaviour of management by having the capacity to even sack personnels. This helps reduce the agency problem. In almost all organisations, controlling shareholders possess the final say because of their control. This gives these shareholders the power to influence the behaviour of management. The authors argued that this feature of ownership concentration found using the four listed companies characterise all companies on the Ghana stock exchange. Denise and McConnell (2003) believe that large or controlling shareholders have the capacity to use resources to control managers in order to have their

interests met. In conclusion it is observed that the presence of large shareholders are essential in the success of corporate governance in developing countries (Berglof & Claessens, 2004).

2.6.2 Board Effectiveness

On the board, the authors study focused on elements in connection with the board established to mitigate agency cost. The elements examined in their study were: board composition, leadership structure of the board, director independence, meetings of board, board audit committee and board remuneration committee.

Composition

The study revealed that independent directors dominate board composition in listed companies in Ghana. It was however detected that the extent to which board composition has effect on board effectiveness in mitigating the agency cost is low in three organisations studied. In the three organisations it was found that boards are not able to exert control since controlling shareholders handle that. The results on the three companies confirms the literature that the existence of large shareholders weakens other corporate governance mechanisms (Berglof & Claessens, 2004). Only one of the companies studied showed board control effectiveness in the midst of controlling shareholders. In the one case detected to have board control as effective, the board‟s nonexecutive directors do carry out all the crucial elements pertaining to board control in the organisation. This therefore adds to the debate in the literature on boards‟ effectiveness as a control mechanism (Berglof & Claessens, 2004; Denise & McConnell, 2003). However, their study emphasises that boards can executive their role effectively if large shareholders allow them to executive their role freely.

The finding in relation to the non-executive directors on companies‟ board in all organisations studied meets the recommendations of the principles of corporate governance of Ghana, which states that at least one-third of board members should be non-executive directors.

Director Independence

The influence of the independence of directors on board control was also assessed to be high among the companies. Independence of director is able to translate into effective board control. It was also observed that though directors are independent, in the presence of controlling shareholders boards face difficulties. Shareholders are given the right to select shareholders and this phenomenon still creates an issue. This fact adds to the literature that large shareholders have authoritative way of selecting boards and this affects board independence (Berglof & Claessens, 2004). It was concluded by the researchers that the aspect of director independence in all four organisations met the recommended guidelines by the principles of corporate governance of Ghana.

Board leadership Structure

Separation or merging of the two roles namely CEO position and the board chairman position in all the companies studied did not have influence on board control. The research however confirmed that the division of the two positions confirms the provisions of the regulatory framework of Ghana‟s company‟s code. However, the separation does not still break the link between controlling shareholders and the board chairman positions.

2.7 Corporate governance and risk

Goyal and Santa Clara in their research in 2003 identified that firm specific risk known as idiosyncratic risk is a good predictor of future stock returns. Some researchers have also established an association between growth and firm-specific risk (Campbell et al., 2001; Xu and Malkiel, 2003). Optimal allocation of resources is also attributed to firm specific risk. Durnev et al. (2004) show that firm-specific risk gives efficient allocation of resources within the firm. In a research using US data, John et al. (2008) find a positive association between good corporate governance and risk taking.

In the literature it has been established that two firm-specific characteristics influence risk taking behaviour. Firms with fewer anti-takeover provisions show higher levels of idiosyncratic risk Ferreira and Laux (2007).Merger and arbitrage issues have also been linked with risk taking behaviour. The market for corporate control encourages information to reflect in stock prices of companies which encourage risk taking behaviour of companies. Extant research also establishes that executive share options and incentives induce risk-taking behaviour of management (Coles et al., 2006; Guay,
1999). Coles et al. (2006) confirmed that CEOs, that have compensation sensitive to stock price volatility exhibit high risk taking behaviour. Low (2009) found the relationship between compensation based on equity and the risk-taking behaviour of management using Delaware takeover regime that occurred during the mid-1990s. It was found that managerial risk aversion is an agency problem and this reduces firm risk at the expense of shareholder wealth. She finds that managers responded to the greater takeover protection provided by the regime shift by decreasing firm risk. The reduction is greater in firms with fewer option-based managerial compensation (low CEO vega).

Ferreira and Laux (2007) and John et al. (2008) used anti-takeover provisions as their measure of firm-level corporate governance and the possible existence of an efficient market for corporate control serves as a prerequisite for incentivizing managers to take risk. Marshall and Anderson (2009) indicates that a regulatory increase in protection from takeovers has occurred in New Zealand following the introduction of the 2001 Takeovers Code. In New Zealand Boyle et al. (2006) report that very few New Zealand firms use stock options to compensate their top managers.

2.8 Corporate governance and cost of equity capital

Cost of capital has great influence on corporate value because of the inverse relationship postulated to exist between cost of capital and present value of operating cash flows. As established by Abor (2007) that capital structure decision is affected by corporate governance, it means a company‟s cost of capital is also a function of its corporate governance. The risk return relationship postulated in finance theory serves as the fundamental determinant for returns. Thus the quality of corporate governance as shown by financial literature to reduce risk through reduction in agency cost, can help a company‟s cost of capital to reduce because of low perceived risk by investors.

Recent theoretical literature in accounting and finance has been concerned with the relationship between corporate governance and the cost of equity capital. In looking at the relationship between corporate governance and cost of capital Lambert et al.(2006) used a framework that links accounting information system quality to the cost of equity capital in the application of the CAPM. Accounting information system quality is not confined to only the reporting to outsiders but also the internal control mechanisms within which companies operate are also important (Lambert et al, 2006). Accounting information system has influence on cost of capital directly and indirectly. With high quality

accounting information system a company is able to reduce the sensitivity of its cash flows in relation to others. The indirect effect occurs because the quality of corporate governance affects a firm‟s real decisions, and this comprises the cash flows that managers take for themselves. When this happens strong corporate governance curtails management‟s behaviour of expropriating assets for themselves. This increases the ratio of a firm‟s expected future cash flows available in relation to the sensitivity of its cash flows leading to reduction in cost of capital.

The literature also establishes opposing strand of results. Garmaise and Liu (2005) show that when management decision is transferred to managers, companies or shareholders experience high operating leverage because of the penchant of managers to increase profit to receive perks accompanying profitability. Their findings suggest that individual investment decisions increases a firm‟s systematic risk measured by beta. Garmaise and Liu (2005), Albuquerque and Wang (2006) through the asset pricing model implications of imperfect investor protection found that weaker investor protection increases volatility of stock returns.

Reverte (2009) investigates whether higher quality governance is associated with a lower cost of equity capital. The research focuses on five board characteristics that have received widespread attention in corporate governance literature (board independence, board size, existence of both audit and nomination/remuneration committees, CEO duality, and independence of board committees). The results for a sample of listed Spanish firms whose data on governance attributes are available on Spencer & Stuart surveys on board characteristics document that the set of governance attributes has a significant incremental explanatory power for firms‟ cost of equity after controlling for well-known Fama and French (1992)‟s risk factors (i.e. beta, size and market-to-book). Specifically, the results

indicate that stronger governance firms enjoy a statistically significant reduction in the cost of equity capital with respect to firms with weaker governance, after controlling for beta, size and market-to-book ratio.

Lombardo and Pagano (2002) used the CAPM model to find out the agency relationship between inside and outside shareholders on the cost of capital. In the model used for the research, the monitoring cost is dictated by the quality of firm‟s governance. It is concluded in their research that investors require a lower rate of return for firms with high corporate governance because of low monitoring costs on managers.

2.9 The Ghana Stock Exchange

The GSE serves as the platform for equity capital to be raised in Ghana and the exchange has its legal empowerment of operation stemming from the PNDC Law 333 as amended. The GSE is seen as self-regulatory body with members on and off the exchange. The exchange exists to protect the interest of investors using the powers vested in it by the Securities and Exchange Commission (SEC). The exchange is regulated by two regulations. Specifically Regulations, (1990) L.I. 1509 and the Ghana Stock Exchange Membership Regulations, (1991) L.I. 1510 regulate the operations of the exchange.

There are membership regulations regarding what companies wanting to be listed have to achieve in order to get listed. The listing regulations see to it that companies desiring to be listed comply with certain requirements. There are requirements to be satisfied by companies before and after listing on the exchange. The GSE Listing promulgated in 2006 guides the conduct of listing firms in Ghana.

The exchange has two classes of members; associate and licensed dealing members. The associate members on the exchange are businesses and individuals who contribute towards the achievement of objectives of the exchange. The exchange currently has thirty tree (33) associate members of which one is an individual.

There are also licensed dealing members who are licensed to deal with the floor of the exchange in listed securities. The Ghana stock exchange currently has twenty one (21) License Dealing Members (LDMs) and thirty six (36) securities trading on the floor. Aside the dealing members, there are currently ten (10) custodians, seventeen (17) government security dealers and four (4) registrars participating in the securities market licensed by security and exchange commission (SEC).

2.10 Stock returns

Shareholders are investors of companies who have invested in the equity shares. These investors invest into the perpetual life of the companies. The returns that accrue to shareholders for such investment arise from dividend and appreciation in prices of stock (Ross et al, 2010). The dividend income is the income in cash received or to be received by the shareholder in respect of the year. Changes in prices of the stock give the capital gains or loss. Stock returns can be calculated in cedi/dollar amount and also in percentage (Ross et al, 2010). The returns in percentage is made up of dividend yield and capital gains yield. The dividend yield is the dividend income expressed as a percentage of the investment amount whiles the capital gains yield is the difference between price at the end of the period and the investment cost expressed as a percentage of the investment amount (Graham and Smart, 2012). Stock returns in the literature is calculated therefore as:

$$\frac{D_t}{} + \frac{P_1 - P_0}{}$$

P_0 P_0

Where D_t= dividend for the year; P_0 = Price at the beginning of the year; P_1= Price at the end of the period. The first part of the formula is dividend yield and the second part is the capital gains yield.

2.11 Stock returns variability

The traditional finance looks at risk and return relationship in making effective decisions rather than dissociating risk from returns. There is no universally accepted definition of risk. One way to look at risk is in terms of how spread out the distribution of returns is (Ross et al, 2010). Standard deviation and variance are used to measure dispersion of returns around the average returns. Historical standard deviation is often used as an estimate of future variability. Past variability helps to predict future variability (Brigham and Ehrhardt,2010). Stock returns variability is calculated usually for a month or daily and annualized for analysis purpose (Brigham and Ehrhardt, 2010).

Mathematical definitions of stock returns variability

Stock returns in the literature is noted not to have a normal distribution. Movement of stock returns follows different distributions such as a Gaussian random walk, or Wiener process. The implication of this distribution is the width increases as there is effluxion of time. The increase in the distribution is not linear in nature. The literature records that changes in the price of stocks move farther away from the initial price as time increases but instead of increasing linearly, the variability increases with the square root of time (Brooks et al., 2003).

The annualized variability denoted by σ is the standard deviation of stock‟s yearly returns. The generalized variability σ_T for time horizon T in years is expressed as σ x square root of T (Brooks et al, 2003, Graham and Smart, 2012, Ross et al, 2010)

2.12 Empirical literature

Koerniadi et al (2014) researched on „corporate governance and stock variability‟ in New Zealand. The researchers in measuring corporate governance used board composition, shareholders right, disclosure policy and compensation policy. The results of their research shows that corporate governance negatively affects stock returns variability. This means that the aggregate corporate government index they constructed reduces stock returns variability when there is improvement in it. Specifically, the research records that a one standard deviation in corporate governance index leads to1.3 percent decrease in stock returns variability. The researchers disaggregated the aggregate corporate governance index and the sub-indices were also found to have influence on corporate governance.

2.13 Chapter summary

Corporate governance is a multi-faceted concept which means that the concept has not a definite meaning unless a particular perspective is chosen. Based on the varying perspectives on corporate governance, the concept can be defined from agency (shareholders‟ view point), stakeholders, managerial hegemony and resource dependency. Best corporate governance practices demand but not restricted to separation of board chairman and CEO position; inclusion of non-executive members on the board; existence of audit and nomination committees. The literature on corporate governance and risk provides two strands of viewpoints. There is one strand that shows that corporate governance induces high risk-taking behaviour from management to increase corporate value (Goyal and santa-clara, 2003). This removal of risk-aversion through corporate

governance occurs when institutional factors such as managerial compensation and corporate control are developed in a country. On the other strand of literature, managers as agents have inclination to do things divergent to the interest of shareholders (agency problems) and thus good corporate governance reduces this risk which is seen as "bad". In summary, corporate governance has been shown to reduce bad risk from agency problem. The literature also shows the relationship between corporate governance and performance but has inconclusive results. Abor and Biekpe (2007), and Kiel and Nicholson (2003) observed a positive relationship between board size and corporate performance whiles other researchers found negative or no relationship between the two.

Corporate governance in the Ghanaian context has its source or guidelines from SEC regulations, the companies Act, 1963 (Act 179) and other legal documents. The empirical literature on Koerniadi et al., (2014) show that corporate governance indices consisting board composition, compensation policy, shareholders right and disclosure have a significant and negative influence on risk.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the methodology used by the researcher in answering the research objectives. The corporate governance indices used by the researcher have been adopted as used in Abor (2007), Bopkin and Arko (2009) and Nadeem et al., (2013) in researching on corporate governance and financing decisions of listed companies on the Ghana stock exchange and firm performance.In measuring corporate governance, therefore indices such as duality of CEO and board chairman position, existence of managerial shareholding, presence of the big four auditors, concentration of ownership, board size and independence of the board are considered.

3.2 Research design

Research design is considered as a blueprint for research, dealing with at least four problems: which questions to study, which data are relevant, what data to collect, and how to analyse the results. The research resorted to a research design that enabled corporate governance practices of companies listed on the Ghana stock exchange to be identified and also the impact on stock returns variability of companies listed on the Ghana stock exchange. A predictive/correlational research design was thus chosen. In order to identify the relationship and impact of corporate governance on stock returns variability, quantitative variables were resorted to and qualitative variables were coded in order to be analysed through regression and correlation analysis.

3.3 Study population

The population of a researcher refers to all possible cases or units the researcher can have data on. In this context, all companies listed on the Ghana stock exchange represent the research population. The current number of companies listed on the exchange is 35. The choice of listed companies on the Ghana stock exchange as the population was influenced by the ease and estimation convenience of variability in stock returns using listed companies. There is difficulty in ascertaining the values of unquoted companies and hence dividend yield and any capital gains yield computation becomes complex as this can only be done through business valuation techniques. This rigorous procedure was avoided since the listed companies have market capitalisation readily available which makes stock returns and their variability estimation relatively easier.

3.4 Study sample

The sample of a researcher represents actual cases or units used by the researcher out of the population. In this context, the sample of the researcher represents the actual companies used by the researcher out of the 35 companies (equities) currently listed. This decision was arrived at based on availability of data. As a result, 28 companies were actually sampled for this research.

3.5 Data sources

The researcher used secondary data mainly from annual reports of companies listed on the Ghana stock exchange over the period 2004-2013. Data on the corporate governance indices together with other accounting-based measures like return on assets, leverage and others were picked from the annual reports of the companies and the Ghana stock exchange fact books. Stock returns (price changes) were acquired from the Ghana stock exchange

(through databank brokerage services). The choice of the time span of 20042013 was informed by the unavailability of some data before the year 2004 and also financial statements for the 2014 year. Again, the time span fits well for the purpose of the research as most companies currently listed on the stock exchange were listed in this chosen time interval. This thus ensured that the research covered 80% (28/35) of listed companies on the Ghana stock exchange. Data on market returns of the companies was also picked using information on the Ghana stock exchange all share index (GSE-AI) and the Ghana stock exchange composite index (GSE-CI) which is the current measure of market returns since January 2011. The companies used are fairly scattered across manufacturing, banking, agriculture and other sectors in the country.

3.6 Model specification

The model used by the researcher follows the panel regression analysis. Panel regression is used because the research data combines time-series data comprising corporate governance variables for each company over the years 2004-2013 and cross-sectional data of a variable at a point in time for all the companies. The pure times series or crosssectional analysis has been rejected in this research because in regressing stock returns variability (standard deviation of stock returns) on corporate governance indices, irrespective of the controlling factors included in the model, the model cannot account for all factors that are likely to affect stock returns variability. Since there are 28 different companies brought together, the use of cross-sectional data which deals with just a year with the various variables used for regression to determine the causation between stock returns variability and corporate governance will be biased. Similarly, the use of pure time series where a company is chosen and used to represent the whole population over some number of years would not give efficient estimates. The use of panel models enables incorporation of

unobserved heterogeneity or individuality in the analysis (Gujarati and Porter, 2009) as there are inherent unique characteristics in the various companies used for the research which also affect variability in stock returns but cannot all be explicitly stated in the econometric model. Even if all can be specified (which is rare), the research is restricted by the principle of parsimony.

The general form of the panel data model is specified as:

$$y_{it} = \alpha + \beta X_{i,t} + \varepsilon_{i,t}$$

The „i" denominated in the panel regression relates to the cross-sectional aspect of the data and the„t" represents the time series aspect of the data. The left hand side of the model represents the dependent variable and the right hand side represents the independent variables. The „ε" represents the stochastic error term. The „a" represents the constant term or the y-intercept where the dependent variable attains a value even when the independent variable (x) has no value.

There are three ways of specifying the regression equation namely: pooled OLS, fixed effect model and random effect model. Under the pooled OLS, the companies are seen to be the same and the model is assumed to have been correctly specified without any omitted variable that could possibly affect the regressand.

However the fixed and random effect assume that an unobserved heterogeneity also affects the regressand which has not been explicitly stated in the econometric model. The difference is the fixed effect assumes that this unobserved heterogeneity relates to the intercept (i.e different entities in the analysis have different initial or start up values known as the intercept). This unobserved heterogeneity thus correlates with the regressors. On the

other hand, random effect model sees the unobserved heterogeneity in the stability of the model and hence fixed effects or individual-unique factors are not controlled for. The effect of the unobserved heterogeneity results in different error terms for the entities involved. Under this model therefore, the traditional error term is also further affected by the individual error terms of the entities as a result of not controlling for the fixed effect because of the assumption that the fixed effects do not correlate with the regressors. There is a mean intercept value and deviation of individual entities intercept from this mean value adds to the traditional error term.

3.7 Econometric model

The empirical model specifies the regression model set to find out the causation between stock returns variability (idiosyncratic risk) and corporate governance. Since it is an econometric model, it therefore specifies the systematic portion that have been denoted by the various regressors comprising of independent variables (corporate governance indices) and control variables. The stochastic portion of the model is represented as the stochastic error term or the residual error term.

Stock variability is not caused by only corporate governance indices and to know the exact influence of corporate governance on stock return variability, control variables have been introduced into the model. The control variables range from profitability, age of the firm, debt-to-total assets ratio, size of the firms and market risk. The model looks at the variability in the stock returns of listed companies measured by standard deviation of stock returns as the dependent variable and corporate governance together with other control variables as independent variables.

The empirical model is set as follows:

$$SDRAWR=\alpha + \beta_1 BS_{i,t} + \beta_2 OUTDIR_{i,t} + \beta_3 CEOD_{i,t} + \beta_4 MO_{i,t} + \beta_5 CONC_{i,t} + \beta_6 AUDTYP_{i,t} + \beta_7 ROA_{i,t} + \beta_8 LEV_{i,t} + \beta_9 LROA_{i,t} \beta_{10} MSD_{i,t} + B_{11} AGE_{i,t} + \beta_{12} SIZE_{i,t} + \acute{\varepsilon}_{i,t} \quad ....(1)$$

$$ADJSDR= \alpha + \beta_1 BS_{i,t} + \beta_2 OUTDIR_{i,t} + \beta_3 CEOD_{i,t} + \beta_4 MO_{i,t} + \beta_5 CONC_{i,t} + \beta_6 AUDTYP_{i,t} + \beta_7 ROA_{i,t} + \beta_8 LEV_{i,t} + \beta_9 LROA_{i,t} + B_{10} AGE_{i,t} + \beta_{11} SIZE_{i,t} + \acute{\varepsilon}_{i,t} \quad ..... \quad (2)$$

Table 3.1: measurement of independent variables

Variables	Measures	Symbols
Board size	The log of the number of directors on the board	$\beta_1 BSi,t$
Outside directors	Measures the proportion of outside directors on the board	$\beta_2 OUTDIRi,t$
CEO Duality	A binary variable and measures the presence of non-separation of CEO and board chairman roles or otherwise	$\beta_3 CEODi,t$
Management Ownership	Measures the inside directors shareholding in relation to total equity shares	$\beta_4 MO_{i,t}$
Concentration	Measures the proportion of the shareholding of the first five shareholders in the total equity shares.	$\beta_5 CONC_{i,t}$
Audit type	Measures audit quality which is determined by presence of the big four audit firms or otherwise	$B_6 AUDTYP_{i,t}$
Return on assets	Measures current year profitability of the companies	$B_7 ROA_{i,t}$
Leverage	Measures total debt to total assets of the companies	B_8 LEV $_{i,t}$
Lagged Return on assets	Measures previous year profitability of the companies	B_9 LROA$_{i,t}$
Market risk	Measures the standard deviation of stock market returns	B_{10} MSD i,t
Age	Measures the number of years companies have been listed up to reporting date over the period 2004-2013	B_{11} AGE$_{i,t}$
Size	The natural log of sales of the companies.	B_{12} SIZE$_{i,t}$

Error term	Represents the residual portion of the model and comprises individual entity error and the traditional stochastic error term.	$\acute{\varepsilon}_{i,t}$

3.7.1 Dependent variable

The dependent variable used by the researcher as proxy for stock variability or idiosyncratic risk is standard deviation of stock returns of the sampled companies. The monthly stock returns of the listed companies comprising of both the dividend yield and the capital gains yield were estimated using data from the annual reports of the companies together with price-changes information from the Ghana stock exchange through Data bank brokerage services. Monthly stock returns of the companies were estimated and these figures were used to estimate the annual standard deviation through time-aggregation approach. This follows a classic idea in finance that the standard deviation over a particular time, „t," is determined using the computed deviation multiplied by the square root of t (Graham and Smart, 2012). Hence annual standard deviation for each of the years 2004-2013 is computed from the monthly standard deviation (Adams et al, 2005; Koerniadi et al, 2014). The monthly variability is computed for the companies over their respective accounting years. Companies in Ghana predominantly have calendar year as the accounting period and as a result most of the stock returns variability for sampled companies were computed from January of a particular year to December of the same year. Some companies in some years had less than 12 month"s computations because of differences in listing time. The dependent

variable is thus estimated initially with the stock returns estimated from the stock returns formula. Stock returns is calculated as follows:

$$\frac{P_1 - P_0 + DPS}{P_0} \times 100$$

Where P_0 is the price at the end of the previous month and P_1 is the price at the end of the current month and DPS is the dividend per share for the period.

The choice of the raw standard deviation of stock returns as the dependent variable is consistent with the work of Koerniadi et al (2014). To check the robustness of results, a second dependent variable known as standard deviation of adjusted returns is also used. The stock returns of the respective companies under study are compared with the stock returns of the market. The adjusted stock return is thus the excess gain made or deficit suffered by the companies under study in comparison with the market. The standard deviation of the differential returns between individual security and the market is used in the second regression set in this research. This dependent variable is also used to check the consistency of causation between corporate governance and stock returns variability.

3.7.2 Independent variables

The variables on the right hand side of the empirical model are the independent variables or the regressors. The econometric model regresses standard deviation of stock returns on corporate governance indices. Best or recommended corporate governance indices in the literature were used to measure corporate governance. Specifically, the following indices have been used: CEO duality, presence of outside directors, managerial ownership, audit quality, concentration and board size. The choice of corporate governance indices was influenced by the works of Abor (2007) and Bokpin and Abor

(2009) on corporate governance and capital structure. Also the work of Koerniadi et al (2014) influenced the choice of corporate governance indices and the choice on management ownership was influenced by Zheka (2005) and Magdalena (2012).

Hypothesis development

The study examines the research questions using a multi-theoretical lens. It combines the agency, resource dependency, stewardship and managerial hegemony view of corporate governance in assessing corporate governance against stock returns variability. Six hypotheses are accordingly tested regarding the impact of the following on the probability of stock returns variability occurring: board size (H1), proportion of outside directors (H2), CEO duality (H3), Management ownership (H4), Concentration of shareholding (H5) and Audit quality (H6).

Following the review of literature appropriate indices for measuring corporate governance have been chosen and the hypothesis based on these variables (corporate governance indices) are made in relation to stock returns variability (idiosyncratic risk) as below:

Board size

The monitoring role of the board of directors helps to reduce the agency cost (Cerbioni and Parbonetti, 2007; Haat et al., 2008; Khanchel, 2007; Li et al., 2008). The import of the agency theory suggests that board size has opposing effect on firms‟ performance. On the contrary board size can impede communication in the organisation (Cerbioni and Parbonetti, 2007; Bushman et al., 2004). Lipton and Lorsch (1992) found that when boards increase in size it becomes even difficult for board meetings to be arranged and for agreement to even prevail when decision has to be taken. As a result of disagreement characterized with large boards, these board needs more time in taking decisions and this does not make the board efficient (Bantel and Jackson, 1989). Other researches revealed that small boards decreases in performance as size goes down (Khanchel, 2007; Yermack, 1996). They argue that the monitoring capability of the board decreases with its size. Since there is no predominant theory suggesting a specific association between the board size

and the firm performance, it makes it difficult to make a decisive hypothesis on the positive or negative relationship between variability of stock returns and a company‟s board size by extension (in terms of performance). The research thus proposes a non-directional hypothesis as follows:

H1. There is an association between board size and firms' idiosyncratic risk

Outside directors

The presence of outside directors on the board introduces objectivity and expertise into the related company in terms of the monitoring role of the board. Admittedly, inside directors or the executive directors have valuable knowledge when it comes to the operations of the related company but the neutrality and professional knowledge introduced by outside directors helps improve a company‟s performance. Several empirical studies have substantiated the monitoring role played by outside directors. For instance, Brickley and James (1987) observed that the presence of outside directors reduces self-gratifying perks received by management. Some researchers also found that the likelihood of CEOs being fired after periods of poor performance is high in the presence of boards with independent executives. The regulatory framework in Ghana recognizes the critical role of independent directors on the board and hence advises businesses to have at least a third of their board members independent. Stock returns variability is thus expected to minimize in the presence of a company‟s board that has non-executive directors in accordance with the agency theory. It is therefore hypothesized as follows:

H2: There is a negative relationship between presence of outside directors on a company's board and firms' idiosyncratic risk.

Role duality

Corporate governance practices as discussed in the literature is grappled with the issue of CEO duality (Haat et al.,2008). Separating of the two roles improves performance (Cerbioni and Parbonetti, 2007; Haat et al., 2008; Li et al., 2008). Researches like Khanchel (2007) found that duality of the role of board chairman and CEO position reduces the independence required by the board to work and hence affecting the monitoring role required of them. In the presence of this attribute on a company‟s board, the likely phenomenon is, a company fails to manage well the agency problem and hence affecting its idiosyncratic risk or the variability of stock returns to its ordinary shareholders. This is a dummy variable and hence takes the value of 1 if there is existence of duality of the two roles and 0 if there is separation. It is therefore hypothesized that:

H3. Companies having CEO duality has more idiosyncratic risk than companies where the two roles are separated.

Managerial ownership

The literature on corporate governance supports the view that because managers do not partake in the residual claim of the business, they relent in their efforts that would have increased firm performance (Jensen, 1993). The presence of managerial ownership thus suggests that managers are also partakers in the sharing of residual claim of the business. As shareholders, mangers are also affected through dividend payment and appreciation in stock prices. Management ownership can be identified in most companies on the Ghana stock exchange though not in a greater proportion compared to other equity holders. This phenomenon is expected to affect stock returns variability of companies listed on the Ghana stock exchange. Thus managers would be cautious in their actions that are likely to be detrimental to returns on the company‟s shareholding. Interest of shareholders become

tied to that of the manager and this minimises agency cost. The following hypothesis is thus made:

H4: managerial ownership has negative relationship with firms' idiosyncratic risk

Ownership concentration

This measure of corporate governance looks at how the shareholding of companies are dispersed or concentrated in few hands. In developed countries for instance, it has been established in the literature that shareholding is dispersed in the hands of many people unlike developing economies like Ghana where ownership is concentrated in few hands. The literature on ownership concentration does not furnish conclusive results in terms of effects of corporate governance on performance. Ehikioya (2009) in a research on Nigerian firms found that ownership concentration increases performance using performance measures such as return on assets and the price-earnings ratio. In the context of this research, this is measured as the proportion of first five shareholders‟ shareholding to the total equity shareholding. In a research by Agyemang et al (2013), it was found that companies on the Ghana stock exchange are characterized with the presence of large shareholders and this affects board control and even board independence. It is expected therefore that the presence of these controlling shareholders will have influence on the idiosyncratic risk of companies. It is however difficult determining the exact direction of the effect of ownership concentration on stock return variability with certainty in Ghana. The research therefore makes a non-directional hypothesis that:

H5. Ownership concentration has a relationship with firms' idiosyncratic risk

Audit type

The literature has recorded that fraudulent accounting practices or practices that do not meet accounting standards are likely to be detected by audit which is of good quality (Becker et al, 1998). The financial report released by firms receive their credibility from quality audit (Davidson and Neu, 1993). As a result risk accompanying entities is expected to reduce. Aljifri and Moustafa (2007) argues that divergence of interest by management is expected to reduce when quality audit is in place to check management behaviour. The literature usually uses audit by the big four audit firms as a proxy for audit quality (Haat et al. 2008). Bulut et al. (2009) also identifies the use of the big four audit firms ensure deep examination of company‟s financial information and this pays of companies well for such investment. Davidson and Neu (1993) also identifies that earnings management is less prevalent in companies having big four audit firms as auditors. In light of the literature reviewed, it can be said that companies having big four audit firm should have less unsystematic risk. Risk specific to companies which can result from weaknesses in internal control and other operational activities can be mitigated through high quality audit. It is consequently expected that companies having big four audit firms (Price water house coopers, Deloitte & touche, KPMG Ghana, and Ernst and Young) as auditors should have less variability in stock returns. This variable has been measured as a binary one and thus takes the value of 1 if a company is audited by one of the big four auditors and 0 if the company is not audited by any of the big four auditors. Therefore, the research hypothesizes that:

H6. Firms audited by the big four auditors have less idiosyncratic risk than firms which are not audited by the big four.

3.7.3 Control variables

The variations in the returns of a company‟s stock are not caused by only the corporate governance structure but factors like profitability, growth, age of company and others also influence stock returns variability. Following the work of Black et al. (2006), Koerniadi et al (2014) and Klein et al. (2005), the researcher also included a number of control variables such as standard deviation of market returns, return on assets, leverage, size of the companies and age of the companies representing the number of years companies have been listed. The control variables capture the potential impact of profitability, leverage, and size on riskiness of the firm. The impact of corporate governance on risk is therefore measured after controlling for the effect of all these variables. The control variables are explained below:

Return on assets

Return on assets used as a control variable in this context measures profitability of the companies listed on the exchange. Profitability of companies is expected to feed into the stock returns of companies. Profitability even in a weak efficient market is expected to affect stock returns of companies. The inclusion of return on assets as control variable agrees with the work of Koerniadi et al (2014).It is computed as profit after tax divided by the total assets. Return on assets is expected to have negative relationship with idiosyncratic risk.

Leverage

The gearing of companies listed on the exchange is also expected to affect stock returns variability. This is because debt introduces financial risk into a company in addition to the business risk. This increases the risk of equity shareholders through the financial risk.

The reverse is also true. Thus debt in a company‟s financing options affects stock returns. Leverage is expected to have a positive relationship with idiosyncratic risk, all other things being equal. The work of Koerniadi et al (2014) also includes leverage as a control variable.

Age

Age used as a control variable represents the number of years the companies have been listed on the Ghana stock exchange. All other things being equal, companies that have spent considerable years on the stock exchange are expected to have less variability in stock returns than companies that have not spent much time on the exchange because of factors like economies of scale. Thus age is expected to have a negative relationship with risk.

Size

Size of the companies in the context of this research is taken as the sales value. The logarithmic values of the sales values are used to represent size in the regression equation. Sales refers to income from the core operations of the companies. The value of sales in a company shows the amount of revenue generated by companies listed on the exchange. The size of companies is expected to create differences in stock returns variability. Large firms are expected to have less variability than small firms all other things being equal.

Lagged return on assets

Another control variable set is the previous year‟s performance on the company‟s assets. There is sometimes a time lag between a company‟s profitability performance and its reflection in the stock returns of equity shareholders whether through dividend yield or

capital gains yield through appreciation in the share price. This is therefore controlled to know the exact influence of corporate governance on stock returns variability. A negative relationship is also expected to exist between this and stock returns variability.

Market risk

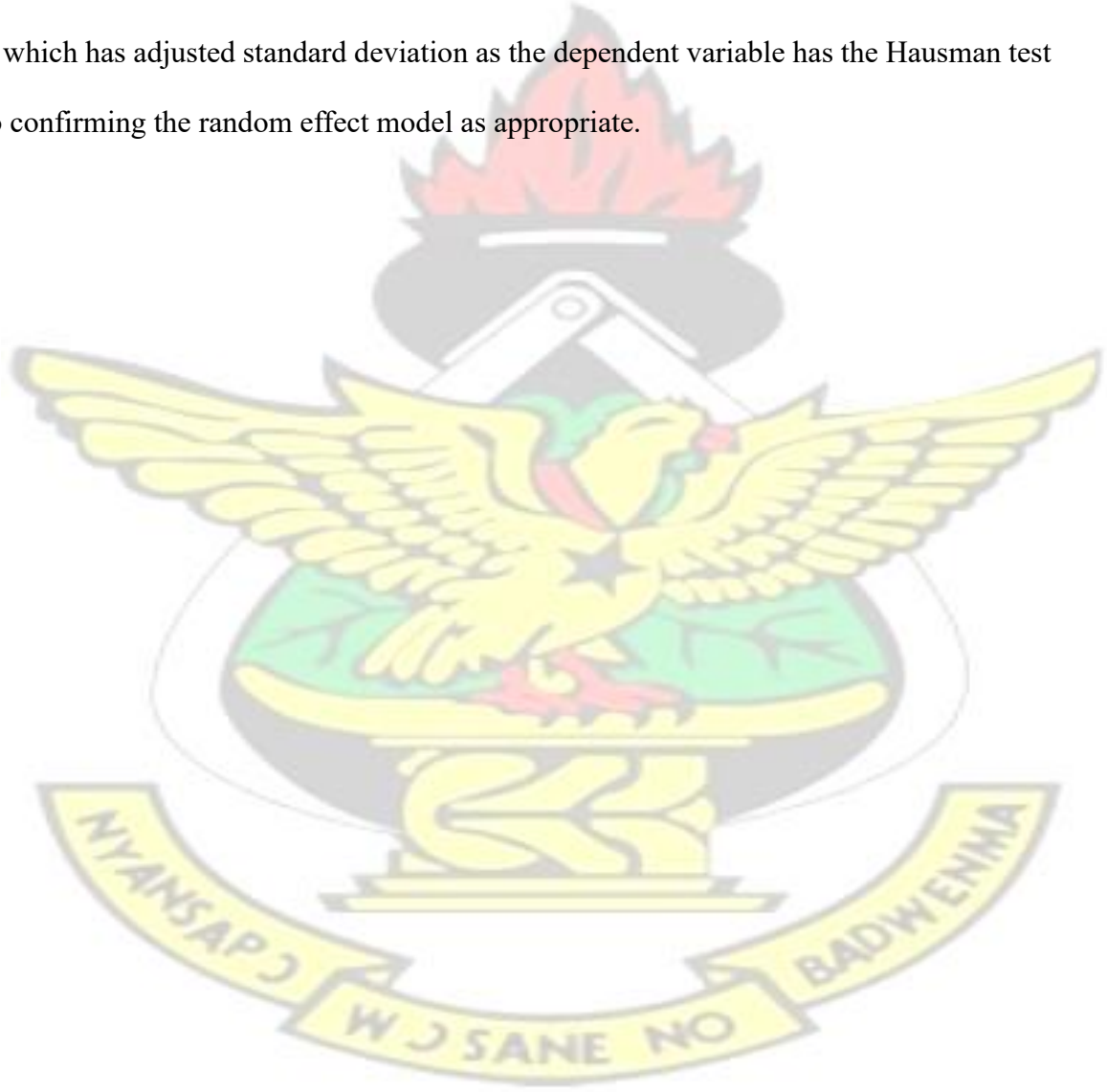
Finance theories postulate that variations in the returns of the overall market have effect on the returns of individual securities on the stock exchange. In this regard some firms can be seen as defensive and others as aggressive. In accordance with the works of Koerniadi et al (2014) and Black et al (2006), the variability in the market risk is controlled for also in this research. The annual market risk is estimated from the standard deviation of the monthly returns of the market over the respective years spanning 20042013. It is expected that variability in stock returns of individual companies should positively relate with variability in returns of the market.

3.8 Estimation technique

The use of the panel model was carried out in this research in a systematic manner in order to arrive at efficient estimates for the slopes attached to the regressors deemed to causally influence stock returns variability. The research uses an unbalanced panel as data for companies in some of the years could not be accessed. This is consistent with the works of Cheng (2008).The appropriateness of the fixed and random models as against the pooled OLS regression was tested.

A choice was made between the random and fixed effect models using the Hausman test. The Hausman test tests the appropriateness of the assumption that the unobserved heterogeneity correlates with the regressors (under the fixed model) or does not correlate

with the regressors (under the random). The null hypothesis of the test is that the random effect is appropriate. There was no enough evidence to reject the null. The BreuschPagan Lagrange multiplier test (LM test) was further used to confirm the appropriateness of the random effect model. The test was significant and the null hypothesis under the test that the pooled OLS model is appropriate was rejected. Hence the random effect model has been applied in this panel regression model research on the main model having dependent variable as standard deviation of stock returns. In the second regression used as robustness test which has adjusted standard deviation as the dependent variable has the Hausman test also confirming the random effect model as appropriate.



3.9 Conceptual Model

The diagram below shows a representation of the empirical investigation of this research into the influences of corporate governance and some control variables on stock returns variability

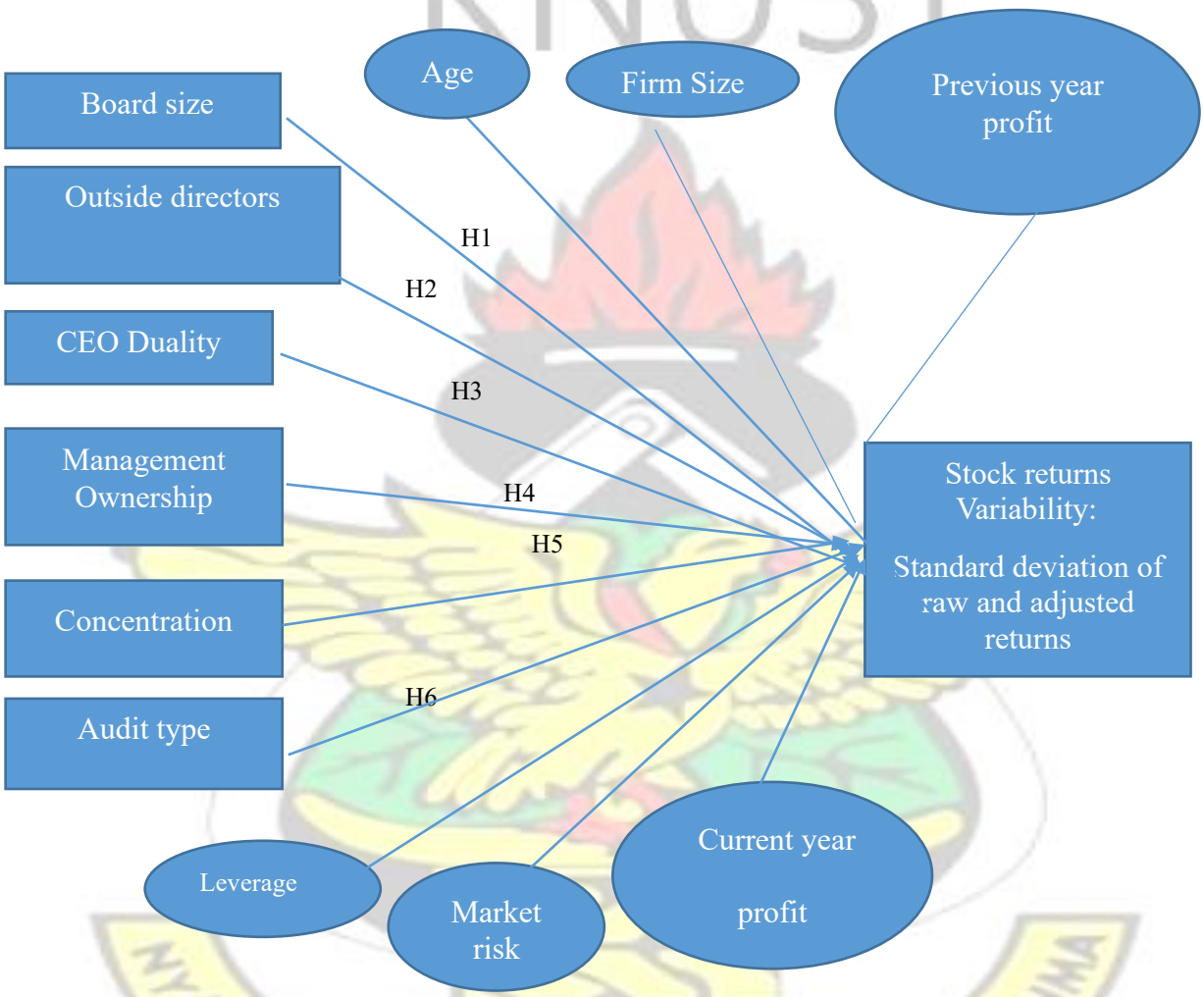


Figure 3.1: Conceptual Model for investigation

CHAPTER FOUR

ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter analyses and discusses the findings of the research. Regression estimation was done by the researcher using Stata 13. The section analyses and discusses the hypotheses set in this research as to whether the research supports them or otherwise. Probability of tests used for accepting or rejecting models is set at 5% whiles the significance level of individual regressors in influencing dependent variables is set at 1%, 5% and 10%.

Table 4.1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
BS	260	2.11	0.22	1.61	2.83
OUTDIR	260	77.83	12.55	33.33	91.67
CEOD	260	0.09	0.29	0	1.00
MO	260	4.36	13.43	0	61.10
CONC	260	74.42	15.87	33.69	98.36
AUDTYP	260	0.79	0.41	0	1.00
SDRAWR	260	29.34	30.92	0	182.55
ADJSDR	260	52.45	48.17	0	211.86
ROA	260	4.00	34.36	- 400.52	251.70
LEV	260	65.42	43.33	4.93	501.92
LROA	252	6.13	23.32	- 36.92	251.70
MSD	260	48.51	62.69	2.53	215.69
AGE	257	10.60	6.31	0	22.42
SIZE	260	16.55	3.54	7.18	22.64

Source: Author‟s work

Notes: The dependent variables SDRAWR and ADJSDR represent standard deviation of raw stock returns and market-adjusted stock returns respectively.BS represents board size, OUTDIR represents the number of outside directors on a board, CEOD represents CEO duality, MO represents management ownership; CONC represents concentration of ownership; AUDTYP represents audit quality; ROA denotes return on assets; LEV denotes leverage; LROA represents lag of return on assets; MSD represents the market risk; AGE represents the number of years a company has been listed up to respective reporting dates over the period 2004-2013; SIZE is the logarithmic value of sales. The difference in observation for some of the variables shows the unbalanced nature of the panel regression used.

The diagram above shows the mean, standard deviation, minimum and maximum values of the variables comprising of both the dependent and independent variables. The mean is a measure of central tendency and effectively gives values that typify the sampled data consisting of 28 companies for the purpose of this research. It is an average statistic despite the differences in strength of individual values in respect of the various companies. On the table it can be seen clearly that the log of board size is approximately 2. This means that on average companies used in this study have board size logarithmic value of 2.11. The antilog value gives the average board size of 8 used in this research. Though the average board size is 8, the minimum and maximum logarithmic value for board size are 1.61and 2.83. The antilog of these values gives the minimum board size and the maximum board size for companies used in the research as 5 and 16 respectively.

The minimum and maximum values of board sizes show the variations in the companies. Specifically, the standard deviation measures the deviation from the average statistic (mean). Since there are variations in the board size among the companies, individual board size values are dispersed around the average by 0.22 in a logarithmic value. Thus the antilog of this gives a deviation of 1 member from the average statistic. The statistics indicate that companies on the Ghana stock exchange have made compliance with the recommended corporate governance principle in respect of board size where board size is expected to be 8-16 members though a specific number is not given. The average statistic confirms the minimum board size recommended and the maximum value does not also violate the ceiling recommended in terms of board size. The minimum statistic shows that some companies however in some period had board size below the minimum recommended number of 8. This statistics agree with the findings of Agyemang et al (2013) where they found that companies listed on the Ghana stock exchange comply with recommended corporate governance practices in Ghana regarding board composition and

independence. Also the finding does not differ from Abor (2007) where it was found that the average board size is 8 (mean value) using companies spanning from 1998-2003. The minimum board size was 5 in the time period chosen for the research and this research confirms the minimum value. The maximum board size in that time period was however 14, a figure below the recommended.

The proportion of total debt used by the companies in their total assets as source of financing is denoted by the leverage. The table above shows that on average the companies used in the research finance their operations more using debt than equity capital. Specifically 65% of total assets are claims of creditors rather than the shareholders. The company that uses minimum debt in their operations has a marginal proportion of 4.9% in total assets. However the most geared company has total debt exceeding its equity capital coupled with continued erosion of the capital through consistent losses in the years used for the study. This accounts for the maximum debt-tototal assets ratio (leverage) indicated in the table. The individual leverage of the firms under study are dispersed around the mean (either above or below) by 43.33%.

The proportion of independent executives on the board size shows that on average the companies have independent board structure as the outside directors dominate the executive directors. Board size of the companies on average has 77.8% as non-executive directors and which can be inferred that only 22.2% on average are directors also in management. This figure differs from the findings by Abor (2007) that independent directors comprise 73.2% of company‟s board size. The increase in board independence since 2003 could be as a result of the recommended corporate governance practices in the country that at least one third of company‟s board should be independent. Companies on

the stock exchange have also complied with the recommended corporate governance practices in respect of independent directors on the board as the recommended corporate governance practices by the regulatory framework demands a balance of executive and non-executive directors. The statistic shows that none of the companies has all members being executive or independent directors. There is balance for both executive and independent directors. The maximum number of independent executives on a company‟s board confirms the findings of Abor (2007).The company with the highest non-executive directors has a representation of approximately 92% whiles the company with the least outside directors has 33% representation for the outside directors.

Individual non-executive directors‟ composition in the companies deviate from the average value by 12.5%.

It can also be discerned that companies listed on the exchange have concentrated ownership which means that greater proportion of their shareholding is in the hands of few people. Using first five shareholders‟ shareholding indicates that, on average listed companies have 74.4% of their shares in the hands of the first five shareholders. This confirms the literature that developing economies usually have concentrated ownership structure. The highest concentrated firm has shareholding of 98.4% attributable to first five shareholders whiles the least concentrated firm has shareholding of 33.7% owned by the first five shareholders. The dispersion around the mean is 15.9%. The average statistic figure confirms the literature that companies listed on the Ghana stock exchange have a commonality called the „presence of large shareholders‟. Research by Agyemang et al (2013) using four large public corporations identified that firms listed on the Ghana stock exchange have concentrated ownership.

CEO duality is a binary variable and as a result it takes the values 1 and 0. Companies allocated 1 means existence of duality of the role of board chairman and CEO position whiles companies coded 0 means the absence of this duality. The average value on a continuum of 0 to 1 is more biased towards 0. This suggests that most companies listed on the Ghana stock exchange have decoupled the role of board chairman and CEO position. The maximum and minimum values in this regard show that some companies in the years used for the study had duality issue and some did not. The quality of audit is also a binary or dummy variable. Companies that are audited by the big four audit firms are coded 1, otherwise 0. The mean value shown in the table is so close to 1. This suggests that most companies listed are audited by the big four audit firms. The maximum and minimum shows that some companies are audited by the big four and others are not. The findings in Abor (2007) show that few companies (26.2%) had the two roles merged. The improvement in corporate governance practice in Ghana and the regulatory framework stating clearly that the two roles of board chairman and CEO have to be separated has accounted for the low figure of 9% indicating companies having CEO duality.

Age as a variable in the descriptive table shows that on average the companies have been listed for 10.6 years from their years of listing up to the year 2013. Some companies have been listed for long spending 22.4 years. Some companies were listed exactly at the end of the starting year 2004.

The size of the companies on the stock exchange on average is 16.55 of revenue in its logarithmic form. The average sales values of the companies is thus GH₵15,401,877 (antilog). The biggest company under the study has size of about GH₵5.46 billion. The

standard deviation and the minimum size of the sample also gives information in terms of variations in the sample size.

The risk accompanying equity shares of the companies using standard deviation of respective stock returns shows that there is a variation in the risk faced by the listed company. Whereas some companies experience high variability in returns others encounter neither upward nor downward movement in stock returns to its shareholders. The average statistic shows that listed firms actually experience variability in stock returns. The statistic is far from zero. The standard deviation of market-adjusted returns gives similar information that listed firms experience variability in stock returns.

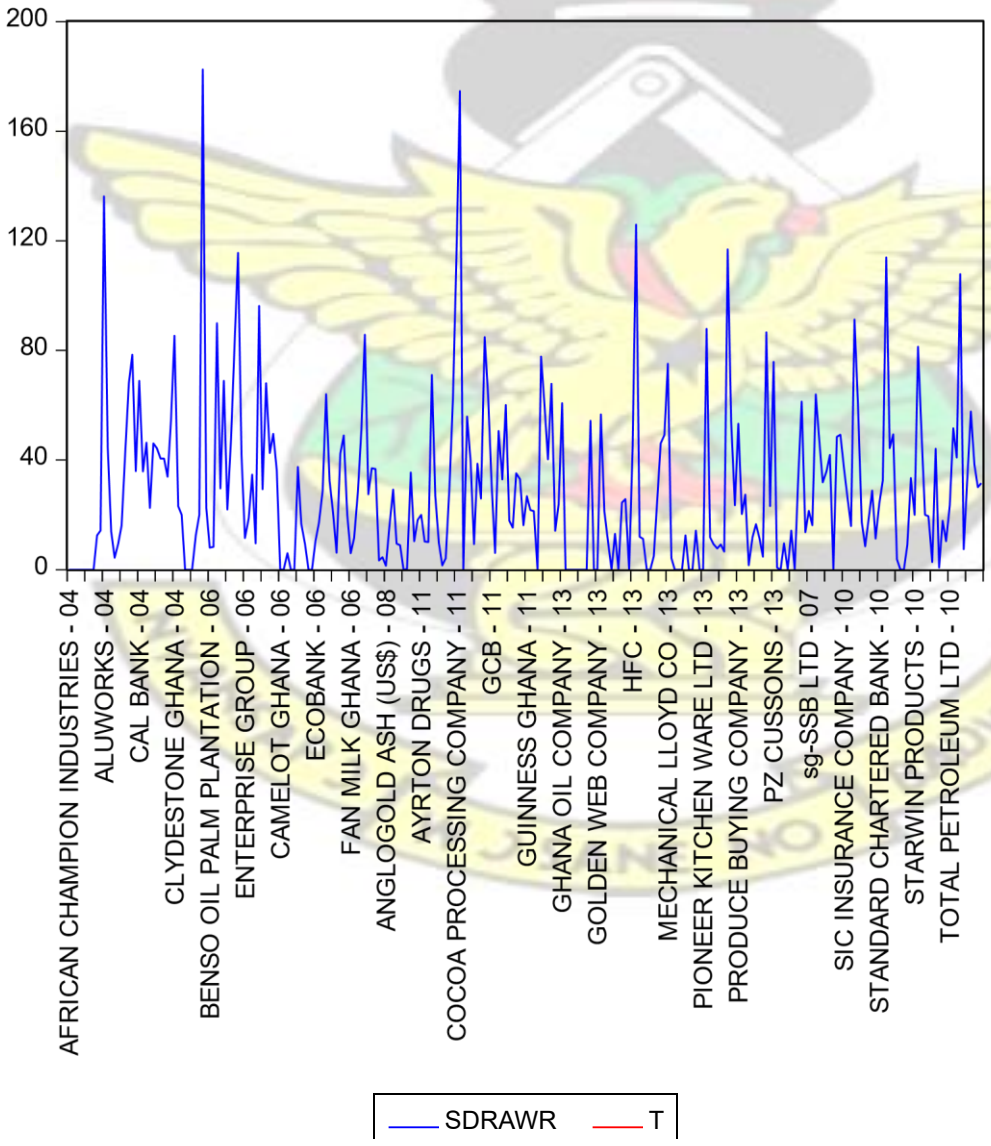


Figure 4.1: Stock returns variability for the study companies

Source: Researcher‟s work

The diagram above shows the variability of the various companies used in the research over selected years where the companies actually experienced variability. The diagram shows that the companies in the manufacturing sector experience more variability than firms in other sectors. Industry classification of companies is included in the appendices.

The table also shows the profitability of the companies which is measured by how much profit total assets is able to generate. On average the listed firms make profit of 4% on total assets employed. The highest profit made by a company in the period under review is GH₵252 whiles some firms made loss of GH₵400 at minimum on a cedi‟s investment in total assets. The dispersion around the average statistic shows that individual profitability of the firms deviate from the average statistic by 34%.

In terms of ownership structure there is management ownership. On average the shareholding of listed companies has 4.36% attributable to directors who are in management position. The highest management shareholding among the listed firms is 61.1% whiles some companies do not have any management shareholding. There is deviation however among the individual firms from the average shareholding. The dispersion around the average statistic is 13.43%.

The Ghana all-share-index and the composite index have been used to determine the variability in the returns to the market in general. It is clear from the above statistics that the market has also seen variability in its returns. The average variability of the market is more than that of the individual securities combined.

4.2 Model Diagnostics

4.2.1 Autocorrelation

Autocorrelation or serial correlation represents one of the violations of the classical linear regression model. The classical linear regression model requires the residual error terms to be uncorrelated. A situation where the error term of one period correlates with the error term of another period is known as autocorrelation or serial correlation. There is a need to check for autocorrelation since the data is a panel data and has time series dimension, the model could be suffering from autocorrelation. This problem needs to be addressed because when it occurs OLS estimators become less efficient compared to other estimators (Gujarati and Porter, 2009). The results of Wooldridge test for autocorrelation in panel data is shown below:

H_0: no first order autocorrelation

Models	F-value	Prob > F
Model 1	15.069	0.0006
Model 2	8.221	0.0079

The probability values under both models are below 5%. The null hypothesis stating that the models do not have auto-correlation is rejected in favour of the alternative. There is therefore autocorrelation in the models. This violation of the OLS assumption is rectified by running the models incorporating the influences of lag of residuals using the Generalised least square (GLS) regression with AR(1) disturbances and the results were qualitatively similar to those presented in table 4.5.

4.2.2 Heteroscedasticity

Heteroscedasticity refers to a situation where the variance of the stochastic error term is not constant. The traditional OLS assumes that the variance of the error term is constant in all samples. Where this is not fulfilled, there is heteroscedasticity. This violation also makes OLS estimates less efficient which thus calls for attention. There is a need to check for heteroscedasticity since the cross-sectional aspect of the panel data used could pose this violation to the model. Using Breusch-Pagan / Cook-Weisberg test for heteroskedasticity shows the following:

Ho: Constant variance

Models	F-value	Prob > F
Model (1)	0.95	0.3304
Model (2)	0.67	0.4143

Under both models the null cannot be rejected since the probability values are more than 5%. Therefore the two models are homoscedastic and this is good for regression analysis.

4.2.3 Multicollinearity: correlation matrix

The correlation matrix shows the relationship between independent variables. The matrix indicates weak relationship among the independent variables. The relationship among the corporate governance indices and the control variables is shown below. The research tests multicollinearity using the correlation matrix (Cerbioni and Parbonetti, 2007). Despite the fact that there is no agreement among researchers regarding the cut-off correlation percentage, Field (2000) suggests that correlation greater than 70 per cent may create the

multicollinearity problem. The table below shows that multicollinearity problem does not exist among the model‟s explanatory variables.

The weak relationship between the independent variables means that the problem of multicollinearity where there is strong relationship between independent variables hence violating the OLS assumption, is absent in the econometric model applied in this research.

	Logbs	outdir	ceod	mo	conc	audtyp	roa	lev	lroa	msd	age	size
Logbs	1.0000											
Outdir	-0.0242	1.0000										
Ceod	-0.2643	0.0741	1.0000									
Mo	-0.2424	-0.1228	0.1299	1.0000								
Conc	0.2760	0.2675	0.1625	-0.1615	1.0000							
Audtyp	0.0253	0.0013	-0.0382	-0.2034	-0.1569	1.0000						
Roa	-0.0317	-0.1733	0.0364	0.0013	0.1850	0.0409	1.0000					
Lev	0.2436-	0.0498	0.0073	-0.0109	0.0169 -	0.1398	-0.6194	1.0000				
Lroa	-0.1103-	0.2776	-0.0638	-0.0224	0.1444	0.0901	0.4139 -	0.2273	1.0000			
Msd	0.0004	0.0475	0.0699	-0.0432	0.0279	0.1348	0.0578	0.0312	0.1650	1.0000	Age	0.0753
0.1022	-0.0918	0.2219	0.1492	0.2636	0.0313	0.0726	0.1744	0.2122	1.0000	size	0.4838	0.2163
0.0267	0.0337	0.3574	0.0204	0.0614	0.2185	0.0514	0.0804	0.1312	1.0000			

Figure 4.2: Pairwise correlation matrix for independent variables

Notes:BS represents board size, OUTDIR represents the number of outside directors on a board, CEOD represents CEO duality, MO represents management ownership; CONC represents concentration of ownership; AUDTYP represents audit quality; ROA denotes return on assets; LEV denotes leverage; LROA represents lag of return on assets; MSD represents the market risk; AGE represents the number of years a company has been listed up to respective reporting dates over the period 2004-2013; SIZE is the logarithmic value of sales

Other information provided by the matrix is the nature of relationship among the corporate governance variables. There is a negative relationship between CEO duality and board size. This means that the less companies do not separate the two roles: CEO and board chairman positions, the larger the board size. Management ownership is also identified to have positive relationship with board size. This suggests that when management ownership is on the increase, companies also have large boards. It is also found that when management ownership is on the increase the number of independent directors on the board reduces. CEO duality however when it‟s on the increase, management ownership also goes up. Concentration increases when board size and CEO duality are on the increase. Also, concentration reduces when independent executives and management ownership are also on the increase. The quality of audit has a negative relationship with management ownership and concentration which means that when companies are being audited by the big four, management ownership and concentration reduce.

The absence of the multicollinearity problem is further supported by the variance inflation factor (VIF). This statistic explains how an independent variable is explained by the remaining independent variables. Regressing each independent variable on the remaining independent variables, the R^2 is estimated. This is done for all the independent variables. The difference between the estimated R^2 for each independent variable and 1 or 100% gives the tolerance level (1/VIF). The reciprocal of the tolerance level is known as the variance inflation factor (VIF)

Table 4.2: VIF values for independent variables

Variable	**VIF**	**1/VIF**
ROA	2.12	0.471399
LEV	2.11	0.473594
BS	1.74	0.57601

SIZE	1.56	0.642721
CONC	1.49	0.671413
LROA	1.37	0.729079
OUTDIR	1.37	0.731508
CEOD	1.33	0.752556
MO	1.3	0.767755
AGE	1.28	0.782215
AUDTYP	1.28	0.782959
MSD	1.09	0.918517

A conventional tolerance level of 10 and below is chosen (Gujarati and Porter, 2009). The VIFs for the variables shown above are all below 10.

4.2.4 Normality of residuals

Estimation of the slopes or co-efficient in multiple regression analysis such as the model applied in this research does not require the stochastic error term to be normally distributed. However for the purpose of hypothesis testing through t-test, F-test and other test statistics not to be biased (since critical values or probability of getting these values are derived on the assumption that the error term is normally distributed), the residual error term should be normally distributed (Gujarati and Porter, 2009). This is required by classical linear normal regression models (CLNRM). The histogram distribution of the residual error term is shown below.

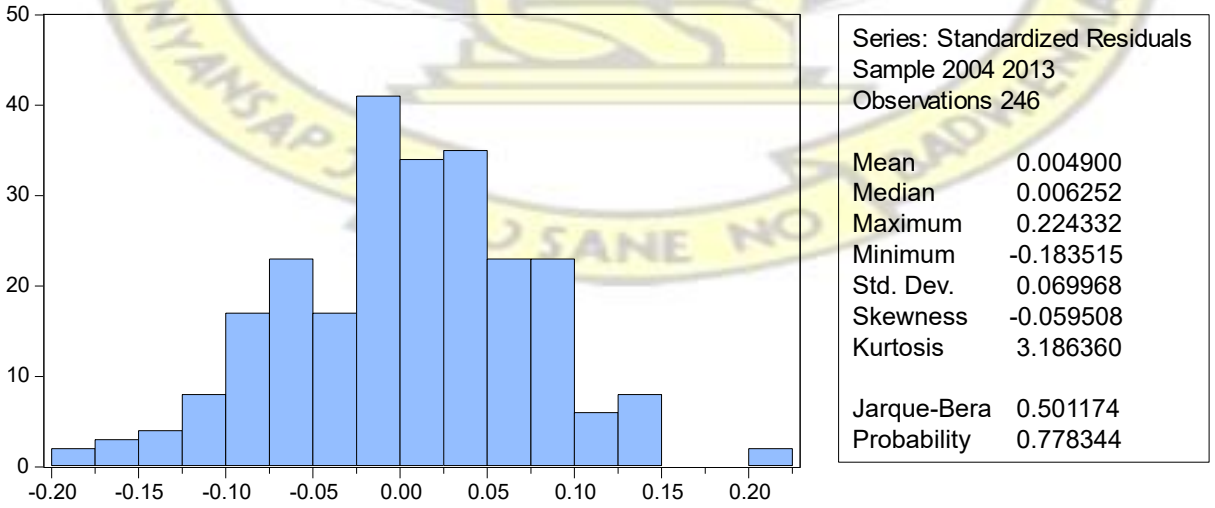


Figure 4.3: Normal distribution of the residual error term

Pictorially, the residuals assume normal distribution and this is supported by the statistics displayed on the skewness and kurtosis of the residuals. For a normal distribution, the skewness which measures the symmetry of the distribution is expected to be zero. The skewness is marginally away from zero and the kurtosis which shows how tall or squatty the distribution is, has to be 3. It can be seen that this figure is also marginally away from 3. The Jarque-Bera statistic is a function of the two statistics: Kurtosis and skewness. It is thus also expected to be zero for perfectly normally distributed data. The figure is not quite different from zero.The Jaque-Bera statistic concludes on the normality of the residual as the null hypothesis stating that that the data is normally distributed cannot be rejected since the p-value is approximately 78% which is above significance level of 5%. The residual error term is normally distributed. The significance of estimated coefficients under the regression results is therefore not biased.

4.2.5 The Hausman test

This test confirmed that the unobserved heterogeneity or individuality incorporated in the panel regression model is uncorrelated with the regressors. The stochastic error term in this regression thus comprises the traditional error component and a portion arising because of the individual heterogeneity of the 28 companies used having intercept values different from the mean intercept value. The Hausman test was used to decide between the fixed and random effect. The results of the Hausman test is below:

Test: Ho: difference in coefficients not systematic

Models	χ^2 value (chi2)	Prob>chi2

Model (1)	8.44	0.7495
Model (2)	13.51	0.2886

The test finds out the appropriateness of the assumption under the fixed and random effect whether the unobserved heterogeneity relates with the regressors or otherwise. The null hypothesis chooses the assumption under the random effect as appropriate (as denoted by difference in co-efficient not systematic (H_0). In other words, it assumes there is randomness in the co-efficients). The results of the test shows the χ^2 (chi-square) value as 8.44 and the probability of getting it at 74.95% for model (1). Since this is above the significance level of 5%, the null hypothesis cannot be rejected. The random effect model is thus more appropriate than the fixed effect model in explaining effect of corporate governance on stock returns variability using raw stock returns in model (1). Also in model (2), the probability of the Hausman test is not significant and hence the null cannot be rejected. The random effect model is thus used for both model (1) and model (2). The diagram below shows the results of the regression using both the random and fixed effects for model (1).

Table 4.3: Fixed and random effect results of model (1)

	Random effect SDRAWR		Fixed effect SDRAWR	
BS	27.47**	(0.013)	6.613	(0.713)
OUTDIR	0.462***	(0.007)	0.0941	(0.763)
CEOD	-10.94	(0.122)	22.81	(0.102)
MO	0.228	(0.139)	0.201	(0.603)
CONC	0.251*	(0.084)	-0.134	(0.707)
AUDTYP	15.60***	(0.003)	34.85**	(0.016)
ROA	0.116	(0.131)	0.0674	(0.482)
LEV	0.105	(0.177)	0.0662	(0.570)
LROA	0.186**	(0.045)	0.194*	(0.067)
MSD	0.0690**	(0.026)	0.0435	(0.226)

AGE	-0.340	(0.310)	0.171	(0.847)
SIZE	-1.960***	(0.003)	0.149	(0.941)
Constant	-70.52***	(0.007)	-24.20	(0.673)
r2	0.667		0.0462	
P	0.00000826		0.0969	

p-values in parentheses * p<0.1,

** p<0.05, *** p<0.01

Notes: The dependent variable SDRAWR represent standard deviation of raw stock returns.BS represents board size, OUTDIR represents the number of outside directors on a board, CEOD represents CEO duality, MO represents management ownership; CONC represents concentration of ownership; AUDTYP represents audit quality; ROA denotes return on assets; LEV denotes leverage; LROA represents lag of return on assets; MSD represents the market risk; AGE represents the number of years a company has been listed up to respective reporting dates over the period 2004-2013; SIZE is the logarithmic value of sales

The diagram shows that in finding the influence of corporate governance on stock returns variability, the random effect and the fixed effect can both be applied. The appropriate results suitable for knowing the impact of corporate governance on stock returns variability is given by the random effect as determined by the Hausman test. Though a glance does not give conclusive results, the random effect model shows more values to be significant and the joint influence of all variables used as regressors also being more significant under the random effect model. The slopes of the variables are almost the same for both models. The results of the second model under both assumptions using the fixed and random effects are also shown below:

Table 4.4: fixed and random effect results of model (2)

	Fixed effect ADJSDR		Random effect ADJSDR	
logBS	-1.691	(0.949)	8.226	(0.643)
OUTDIR	-0.0837	(0.855)	0.341	(0.213)
CEOD	11.73	(0.567)	-15.27	(0.176)
MO	-0.211	(0.711)	0.200	(0.415)
CONC	-0.248	(0.635)	0.138	(0.553)
AUDTYP	38.02*	(0.073)	16.66**	(0.043)
ROA	-0.0412	(0.770)	0.0737	(0.551)

LEV	-0.191	(0.265)	0.0462	(0.712)
LROA	0.357**	(0.021)	0.337**	(0.023)
AGE	8.517***	(0.000)	0.852	(0.105)
SIZE	0.203	(0.946)	-0.506	(0.628)
Constant	-33.14	(0.695)	-20.06	(0.629)
r2	0.00173		0.257	
P	1.71e-24		0.0176	

p-values in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The dependent variable ADJSDR represents standard deviation market-adjusted stock returns .BS represents board size, OUTDIR represents the number of outside directors on a board, CEOD represents CEO duality, MO represents management ownership; CONC represents concentration of ownership; AUDTYP represents audit quality; ROA denotes return on assets; LEV denotes leverage; LROA represents lag of return on assets; MSD represents the market risk; AGE represents the number of years a company has been listed up to respective reporting dates over the period 2004-2013; SIZE is the logarithmic value of sales

From the table the results of both the fixed and random effects look similar. The two assumptions have almost the same number of significant independent variables in influencing the dependent variable. The joint hypothesis also for both models are significant. The Hausman test chooses the random effect model as appropriate. The results also show that the use of random effects model does not bias the findings of this research because irrespective of the assumption deemed appropriate as determined by the Hausman test, the alternative (fixed effect) provides similar results. In this second model for instance the discernible differences between the two models can be seen with board size, outside director, concentration, management ownership, size, leverage and current year profit. The negative slopes under the fixed effect model contradict the positive slopes under the random effect model. However these negative signs are not even statistically significant in model (2) in explaining stock returns variability.

4.3 Relationship between corporate governance and stock returns variability. In finding out whether there is any relationship between corporate governance and stock returns variability, the Pearson correlation statistical tool was used. Corporate governance variables using board size, outside directors, CEO duality, management ownership, concentration of shareholding and audit quality were correlated against standard deviation of raw stock returns. The Pearson correlation co-efficients sought to find out whether there exists any (linear) relationship between corporate governance variables and standard deviation of raw stock returns.

Table 4.5 Correlation between corporate governance variables and standard deviation of stock returns

	SDRAWR	BS	OUTDIR	CEOD	MO	CONC	AUDTYP
SDRAWR	1.0000						
BS	0.1267**	1.0000					
	(0.0413)						
OUDIR	0.0799*	0.0193	1.0000				
	(0.0592)	(0.7568)					
CEOD	-0.1306	-0.2467	0.0757	1.0000			
	(0.3353)	(0.0001)	(0.2235)				
MO	-0.0370	-0.2250	-0.1278	0.1275	1.0000		
	(0.1925)	(0.0003)	(0.0394)	(0.0399)			
CONC	0.0068*	0.2519	-0.2758	0.1498	-0.1502	1.0000	
	(0.0934)	(0.0000)	(0.0000)	(0.0156)	(0.0154)		
AUDTYP	0.1729***	0.0380	0.0132	-0.0333	-0.1822	-0.1584	1.000
	(0.0052)	(0.5413)	(0.8323)	(0.5934)	(0.0032)	(0.0105)	

Notes: SDRAWR represents standard deviation of raw stock returns.BS represents board size, OUTDIR represents the number of outside directors on a board, CEOD represents CEO duality, MO represents management ownership; CONC represents concentration of ownership; AUDTYP represents audit quality

p-values in parentheses

*p< 0.1, **p<0.05, ***p<0.01

The table above shows the correlation between corporate governance variables and standard deviation of stock returns using a 2-tailed hypothesis testing. The first column of the table shows the correlation co-efficient between the corporate governance variables and the standard deviation of stock returns and this is the relationship of interest of the study.

The results indicate the correlation co-efficients and their probabilities (indicated in parentheses).The results show that board size, outside directors, concentration of shareholding and audit quality have significant relationship with standard deviation of stock returns whiles management ownership and CEO duality do not have any significant relationship with standard deviation of stock returns. The results mean that when companies have in place large boards at the same time these same companies would also be experiencing increase in the standard deviation of their stock returns. This relationship is significant at an alpha level of 5%. Audit quality measured as 1 for companies using a big four auditor and 0 if otherwise has a significant positive relationship with standard deviation of stock returns at alpha level of 1%. The import of this finding is when companies have a big four auditor at the same time these companies experience an increase in the unpredictable variations in the stock returns of shareholders. The relationship is however weak though significant.

4.4 Impact of corporate governance on stock returns variability

The regression results show the outcome of regressing standard deviation of raw stock returns on corporate governance and the control variables. Both the fixed and random effect were performed and the Hausman test was used to settle on the random effect after

both Wald test (F test) and Breusch-Pagan Lagarange multiplier test rejected the suitability of the pooled OLS against fixed and random effect models respectively. The implication is the regression has been performed on the appropriate assumption as determined by the Hausman effect.

Two regression results have been presented in the table below and each has been done being guided by the market model specification of returns in finance. Returns to firm is influenced by systematic risk because companies‟ securities are riskier compared to government securities. Investors thus expect premium return over the risk-free return government securities specify.

The model is shown below:

$$R_i = \alpha + \beta i R_m + \acute{\varepsilon}$$

The model above shows that companies receive risk-free returns when there is no systematic risk and in addition receives a premium as a result of risky nature of companies. This is determined by the product of company‟s beta and its excess returns over the risk-free rate.

The deviation in this return arising to shareholders does not only arise from systematic risk but there is a portion attributed to randomness in returns which is the stochastic error term ($\acute{\varepsilon}$) as a result of individual-specific risk of equities which asset pricing models do not incorporate. There is assumption that shareholders are not compensated for unsystematic risk because they hold diversified portfolio. Regression results (1) has been done using the risk relationship below by controlling for market risk (β) and other factors to know exactly how much risk securities suffer because of company specificfactors (corporate governance). Risk relationship for regression one is shown below:

$$SDRAW = Var(R_i)^{1/2} = [Var(\alpha + \beta_i R_m + \acute{\varepsilon})]\ ½$$

$$= [\beta i^2\ Var(R_m) + Var(\acute{\varepsilon})]^{1/2}$$

R_m represents market rate of return, R_i represents rate of return of firm i, β_i denotes systematic risk of firm i and $\acute{\varepsilon}_i$ denotes error term in a market model specification. The variable of interest is Var ($\acute{\varepsilon}_i$) and represents a measure of idiosyncratic (unsystematic) risk. Since the variance of raw return contains the extra term βi^2 Var (R_m), MSD is used as an additional independent variable to control for market risk.

In regression (2) the following risk relationship guides the model used.

$$ADJSDR = Var(R_i - R_m)^{1/2} = [\beta i^2\ Var(R_m) - Var(R_m) + Var(\acute{\varepsilon})]^{1/2}$$

When ADJSDR is used as a dependent variable, it is equivalent to $[Var(\acute{\varepsilon})]^{1/2}$ for a firm with β= 1.0. Therefore, market risk is not controlled in Equation (2). **Table 4.6:** Regression results

	Model(1) SDRAWR		Model (2) ADJSDR	
logBS	27.47**	(0.013)	8.226	(0.643)
OUTDIR	0.462***	(0.007)	0.341	(0.213)
CEOD	-10.94	(0.122)	-15.27	(0.176)
MO	0.228	(0.139)	0.200	(0.415)
CONC	0.251*	(0.084)	0.138	(0.553)
AUDTYP	15.60***	(0.003)	16.66**	(0.043)
ROA	0.116	(0.131)	0.0737	(0.551)
LEV	0.105	(0.177)	0.0462	(0.712)
LROA	0.186**	(0.045)	0.337**	(0.023)
MSD	0.0690**	(0.026)		
AGE	-0.340	(0.310)	0.852	(0.105)
SIZE	-1.960***	(0.003)	-0.506	(0.628)
Constant	-70.52***	(0.007)	-20.06	(0.629)
r2	0.667		0.257	

P	0.00000826	0.0176

p-values in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Notes: The dependent variables SDRAWR and ADJSDR represent standard deviation of raw stock returns and market-adjusted stock returns respectively.LOGBS represents log of board size, OUTDIR represents the number of outside directors on the board, CEOD represents CEO duality, MO represents management ownership; CONC represents concentration of ownership; AUDTYP represents audit quality; ROA denotes return on assets; LEV denotes leverage; LROA represents lag of return on assets; MSD represents the market risk; AGE represents the number of years a company has been listed up to respective reporting dates over the period 2004-2013; SIZE is the logarithmic value of sales.

Source: Stata 13 package

4.4.1 Regression results (1)

The diagram above represents the p-values and the coefficients of regressions made using the random effect model. The regression result for model (1) shows that the unsystematic risk of companies measured by the proxy standard deviation of stock returns is significantly influenced by the log of board size. This therefore rejects the null hypothesis that board size has no influence on unsystematic risk of companies ($\beta_1 = 0$).This represents the number of directors on a board which means that the number a company has on its board has a positive influence on unsystematic risk. That is smaller board all other things being equal has low unsystematic or idiosyncratic risk. The results indicate that as the number of a company‟s board increases by 1%, all other things being equal, unsystematic risk of the company also goes up by 0.2747 standard deviation in stock returns annually.

The presence of independent board members on the board has also significant influence on the unsystematic risk a company faces. The result thus rejects the null hypothesis that the presence of independent directors has no influence on unsystematic risk of companies

($\beta_2 = 0$). The result shows that as companies have non-executive directors on the board, the unsystematic risk faced by the companies increases all other things being equal. A percentage point increase in the number of independent directors on the board increases the unsystematic risk faced by companies by 0.46 standard deviation in stock returns all other things being equal and vice versa.

Concentration which refers to whether ownership is dispersed in the hands of few people or held by many as measured by the shareholding of the first five shareholders also has positive movement on unsystematic risk faced by companies. The null hypothesis is rejected as the slope of the regressor denoting concentration is not equal to zero.This means concentrated firms have high propensity of experiencing stock returns variations and hence unsystematic risk. The results indicate that a percentage point increase in the level of concentration of companies increases standard deviation in their stock returns by 0.25 and vice versa holding the effects of other regressors constant.

The quality of audit measured by the presence of the big four audit firms namely price water house coopers, Kpmg, Deloitte &touche and Ernst &Young also has a positive and significant influence on the variability in the stock returns of companies. The upshot of this is, the presence of the big four audit firms increases the unsystematic risk faced by companies. The results show that companies that are audited by the big four have more unsystematic risk than companies that are audited by the small audit firms by 15.60 standard deviation. Effectively, companies audited by the big four audited firms experience more variability in their stock returns than the reference category (firms not audited by small audit firms) specifically by 15.60%. The null hypothesis of $\beta 6 = 0$ is rejected with respect to audit quality.

The lagged variable known as previous year return on assets is a proxy for profitability; market standard deviation controls for market risk and the size of the companies is measured by natural logarithm of sales values. These together with age and current year return on assets are the control variables. The results show that previous year profitability also has positive relationship with unsystematic risk faced by companies.

The market risk likewise has positive and significant influence on a company‟s unsystematic risk so as size of companies. A standard deviation in market stock returns leads to 0.07 increase in the standard deviation of the stock returns of companies. The result on the control variable size however shows that as size increases unsystematic risk goes down. Profitability for previous year as a control variable also has positive and significant influence on unsystematic risk.

It can however be seen that the corporate governance measure, „CEO duality‟ representing a situation where the CEO also doubles as the board chairman has no significant influence on variability of stock returns of companies. This thus suggests that the null hypothesis stating that CEO duality has no significant influence on stock returns variability ($\beta_3=0$) could not be rejected.

Management ownership is also not significant in explaining stock returns variability. The null hypothesis that the slope of management ownership as a regressor is zero or has no influence on stock returns variability (that is $\beta_4=0$) could not be rejected.

The constant also known as the y-intercept value shows a negative value. This suggests that holding the effects of corporate governance and the control variables set constant,

unsystematic risk of companies reduces and this is caused by some unidentified factors. There are other exogenous factors whose influence reduces standard deviation of stock returns by 70.52% when there is a change in those unidentified factors.

The statistical significance of the individual regressors set for influencing unsystematic risk shows that board size, independent executives, concentration and audit type are statistically significant suggesting that the null hypotheses under each stating that $\beta_1=0$; $\beta_2=0$; $\beta_5=0$; $\beta_6=0$ have been rejected. The collective or joint statistical significance of the main independent variables which comprise the corporate governance variables and the control variables is determined by the F-statistic. The F-statistic is denoted as the overall p-value in the regression results shown above. The null hypothesis under this test statistic is that all the regressors in the model jointly do not have any influence on companies" unsystematic risk. That is $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = \beta_{12} = \mathbf{0.}$ The overall p-value shown is 0.00000826. The probability is not even up to 1% which is below the acceptance criterion of 5%. The corporate governance variables and control variables used are therefore highly significant jointly in explaining entities" unsystematic risk.

The R^2 value on econometric models is a measure of good-fit. It shows how well the model fits in this case in explaining stock returns variability. Specifically the R^2 value shows how much the systematic portion of the econometric model (portion represented by the regressors) is able to explain the variations in the dependent variable, standard deviation of stock returns. The unexplained portion is the residual or the stochastic error term.The results show that the model is able to explain variations in dependent variable by 66.7%. The overall R^2 shows that the model is able to explain stock returns variability (taking into consideration time and entities involved) by the quoted percentage. This figure is quite

respectable. This is because the unexplained portion of the model is less than the explained portion suggesting that reliance can be made on it coupled with the statistical significance of the overall p value. The corporate governance variables after controlling for the effect of other things explain stock returns variability by 66.7%.

The table below shows the results of the regression against their related hypothesis. **Table 4.7:** Signs of regression against their hypothesized signs

Hypothesis	Variables	Predicted signs	Regression results	Conclusion
H1	Board size (LogBS)	+/-	+	supported
H2	Board independence(OUTDIR)	-	+	Not supported
H3	CEO Duality (CEOD)	+	-	Not supported
H4	Management ownership (MO)	-	+	Not supported
H5	Concentration (CONC)	+/-	+	supported
H6	Audit quality (AUDTYP)	-	+	Not supported
	Return on assets (ROA)	-	+	Not supported
	Leverage (Lev)	+	+	Supported
	Market risk (MSD)	+	+	Supported
	Size	-	-	Supported
	Age	-	+	Not supported

The table above shows the expected sign of the co-efficients of the variables comprising corporate governance variables and the control variables in explaining stock returns variability. It can be seen that in the case of board size only an association hypothesis was set because of the inconclusive results the literature has recorded on board size and performance measures using return on assets, Tobin‟s q and others. Against this background, no definite expectation was made regarding the influence of board size on

unsystematic risk. The results specify therefore that there is a positive movement from board size on unsystematic risk.

The regression results under board independence deviated from the hypothesis. There is a positive relationship rather than a negative slope for board independence in influencing unsystematic risk.

CEO duality though not significant in explaining stock returns variability, its negative slope co-efficient deviates from the hypothesis set. Concentration of shareholding has a positive slope and this results point out the direction of concentrated ownership on firms‟ unsystematic risk which could not be specified with certainty in the hypothesis development.

Both management ownership and audit quality also have positive slopes and these deviate from the hypothesis made. The results on return on assets (current year profitability) and age have positive slopes and these are different from expectations. Previous year profitability also has a positive co-efficient and this result is contrary to the hypothesis under profitability of a negative relationship. Size however has a negative slope and this meets apriori assumptions.

4.4.2 Regression (2)

The results of the model (2) show only audit type as significant as against four corporate governance variables (including audit type) in model (1). The model (2) is used as a robustness check on the main model, model (1). Consistent with model (1) audit type and previous year profit have significant influence on stock returns variability. The F-value of model (2) shows a value far below criterion confidence interval of 5%. This confirms that

corporate governance variables including the control variables jointly influence stock returns variability. The slopes of the same regressors used in model (1) are repeated in model (2) with the exception of market risk excluded because returns used to compute variability here is market-adjusted. The results show consistent direction. In this model, it is confirmed that board size, outside directors, management ownership and concentrated ownership increases risk of shareholders in terms of variability. The merging of board chairman and CEO position is also confirmed to reduce unsystematic risk. Though these variables are not significant in model (2), their signs are consistent with the results of model (1).

4.5 Discussion of findings

The findings of corporate governance and stock returns variability reveals mixed results. This suggests that not all the regression results met the hypothesis underlying this research.

The number of directors on a company‟s board was expected to influence stock returns variability but a non-directional hypothesis was set. This means a definite specification in terms of whether large board have more unsystematic risk or small boards have more unsystematic risk and vice versa was not made. The regression results indicate a positive movement of board size on stock returns variability suggesting that large boards have more variability in their stock returns and vice versa. This seems to be consistent with the agency theory that espouses small board size as the existence of many people on the board in a way cripple the monitory role of the board. Agency costs therefore increases hence increasing risks specific to companies known as idiosyncratic risk or unsystematic risk. The findings thus agree with the agency view of corporate governance. Large boards in the view of agency theory could be linked to expropriation of organisation‟s resources

which would not happen when board size was small. Companies in Ghana in the regulations of the Securities Exchange Commission (SEC) have recommended board size of 8-16. Few companies had exactly 16 board members but the results of the regression indicate that the existence of large board adds to company‟s unsystematic risk. It is however in contradiction to the resource dependency theory that is of the view that large boards means companies can connect well to the external environment and access resources needed by companies to help in operational activities. The results in Ghana contradicts the findings of Cheng (2008) where he found that companies with large board size experience less variability in their monthly stock returns. A contradiction of results from the resource dependency theory could be that managers actually have their way through on members that get represented on boards of companies. Boards therefore exist in actuality to endorse decisions of management even though shareholders appoint them. When this happens agency cost is not reduced since there is no check on management behaviour. This is the view of managerial hegemony of corporate governance.

Board independence measured by the presence of outside directors on the board has positive relationship with stock returns variability. This suggests the more independent a board is, the more variability in returns the company experiences. The results contradict the findings of Koerniadi et al (2014) where it was found that board independence has negative relationship with stock returns variability thus conforming to the agency view of corporate governance (Jensen 1993). The findings in Ghana however can be explained in line with the stewardship theory as executive directors are actually in the company and are more knowledgeable in the operations of the company. Operational risks specific to the company can best be addressed when the board is dominated by them rather than having outsiders who possess professional and neutral position on issues but might not have

solutions addressing unsystematic risk faced by businesses. Independence of outside directors may not actually be so in reality and thus board independence is lost even in the presence of outside directors. The appointment process of outside directors probably is affected by management‟s influence and this goes a long way to affect outside directors‟ independence on the board. Thus the check on managerial opportunism claimed by agency view that managers pursue is not well checked. The negative relationship between outside directors and performance is consistent with the findings of

Ehikioya (2009), Kiel and Nicholson (2003), Coles et al. (2001), and Agrawal and Knoeber (1996) on their findings of negative relationship between outside directors and firm performance. It therefore stands to reason that the dominance of independent directors increases unsystematic risk of companies.

Financial statement audit is needed by businesses in giving credence to the reports on financial performance, financial position and cash flows of companies. The presence of the big four audit firms: Price water house coopers, Kpmg, Deloitte & touche, Ernst &Young is expected to give financial statements the needed credence. Again operational weaknesses in control detected by these audit firms with muscles are expected to be communicated to companies being audited. As a result the differential in resources of the big four and the small audit firms, it was expected that companies audited by the big four should have less variability in their stock returns than companies audited by the small audit firms. This deviation from the set hypothesis could be explained in the fact that „audit is not a panacea to all operational weaknesses‟. Operational weaknesses detected by audit firms are reported in a management letter for management to address them. This strange results could also be seen in firms audited by big four probably hiding behind the mere fact of having a big four auditor and failing to address fundamental operational issues

which affect shareholders‟ returns. Moustafa (2005) examined the level of financial disclosure using UAE listed companies in 2003 and found that there is no significant difference in the disclosure level between companies engaging with the big four audit firms and companies engaging with other audit firms. The import of this is since financial disclosure plays an important role in decisions of users of accounting information, given that the level of disclosure is the same for all companies, there are other things which companies being audited by the big four are not doing right which mere audit cannot help. Using data on the Dhaka stock exchange over 1995-99, Islam et al (2007) found that audit quality may not necessarily be identified with auditor size, since auditing by a big firm itself does not appear to make audited earnings more informative in explaining returns to company shares. Chen et al (2007) found that audited companies are associated with lower stock returns variability and lower volumes of trading volume than non-audited firms, subsequent to their announcement of semiannual financial statements. The import of the finding is once firms are audited they are expected to have lower variability in stock returns than non-audited firms irrespective of the size of auditors. Hence the difference in stock returns variability among audited firms could probably be because of operational factors which are not in the ambit of auditors.

CEO duality was not significant in explaining variability in stock returns of companies. This could be explained from the view point that almost all the companies used and over the time period chosen, the two positions: CEO and board chairman position were decoupled. The homogeneity in respect of this data did not make any difference on unsystematic risk among companies. The predominance of separation of the two roles could be seen as a consequence of categorical promulgation of corporate governance principles in the country that frown on CEO duality. The result of the negative slope was

however inconsistent with the agency theory as the merging of the two roles is expected to increase unsystematic risk even though not significant enough to explain stock returns variability. The sign of the slope is however congruent with the predictions of stewardship theory suggesting that authoritative decision making under the leadership of a single individual leads to higher performance. The results is congruent with the findings of Abor and Biekpe (2007) where it was found that CEO duality improves performance and it therefore stands to reason in Ghana when CEO duality reduces stock returns variability.

Concentration looks at how dispersed or concentrated the shareholding of companies is. As a result of the mixed result the literature has produced on concentration and performance measures, the relationship between concentration and unsystematic risk of companies listed on the Ghana stock exchange could not be specified. Thus a nondirectional hypothesis was set. An aspect of literature on performance measures has identified concentrated ownership to positively influence performance and by extension, unsystematic risk of these companies should accordingly reduce all other things being equal. A negative relationship indicates that block holders are the effective monitors and have more ability than dispersed shareholders to monitor management effectively and force them to take those actions that enhance the value of the firm hence reducing agency cost. This explains why positive relationship between ownership concentration and firm performance was found by Ehikioya (2009) and Wiwattanakantang (2001). This position is informed by the resource dependence theory that concentrated shareholding helps in facilitating decisions of shareholders and this helps in monitory role and other decisions regarding the company. The regression results show however that concentrated ownership increases unsystematic risk of companies in Ghana. This can be explained from the fact that when control falls in the hands of few people, there is a likelihood that decisions will

be made which the masses of shareholders do not like but because control is with few people, opinions of the masses are disregarded for the wrong decision. This phenomenon stifles operational success of companies. A positive relationship between ownership concentration and unsystematic risk of companies is congruent with the agency explanations suggesting that controlling shareholders expropriate corporate assets and hence negatively influence firms‟ performance which in turn increases unsystematic risk. The finding on ownership concentration further brings out to light conclusions of previous researches on corporate governance on the effect of large shareholders on board control on companies listed on the Ghana stock exchange. Agyemang et al (2013) found out that board control is highly affected by the presence of large shareholders which seem to be a characteristic of all firms on the Ghana stock exchange. The large shareholders seem to always make their way through to the extent that board independence recommended by regulatory framework in the country is not actually felt in reality. The negative impact concentrated ownership has on stock returns variability is telling of the virtual loss of board control when there are large shareholders around.

Management ownership which refers to the shareholding of executive directors on the board is not significant in explaining stock returns variability. The insignificance of this variable in explaining unsystematic risk in the country could be interpreted from the low level of management shareholding in relation to total equity shares. The descriptive statistics shows the low level of management shareholding as indicated by the mean of 4.36%. In accordance with the agency theory, a re-alignment of management interest with the shareholders‟ is expected to occur when there is executive shareholding (Jensen, 1993). Though not significant in explaining stock returns variability, it has a positive impact on unsystematic risk and this positive causation relationship could probably be discerned from

the inadequate motivation of management to cut down on gratification of personal interests through the executive shareholding. The significance of management shareholding in influencing unsystematic risk might be true in the context of developed countries where increases in managerial equity ownership may align the interests of managers with shareholders by constraining the consumption of perks The findings in Ghana is inconsistent with Koerniadi et al (2014) where it was found that directors stock holding option included in a broad category known as shareholding and compensation issues is significant and reduces unsystematic risk of companies. The differential in result can be explained from the differential in popularity of executive shareholding between the two countries: Ghana and New Zealand.

The control variables used to control for the effect of other factors influencing stock returns variability showed mixed results. In the case of profitability it was expected that improvement in the financial performance of companies should reduce unsystematic risk. Profit for current and previous years were included to see the impact of profitability on unsystematic risk. Current year profits is not significant in influencing company‟s unsystematic risk. Previous year profitability causes company to experience more stock return variability. This interesting finding can be explained in post-profit failure of mechanisms needed to be laid down by companies. Profitability alone does not trigger to shareholders returns but payment of dividends according to the dividend relevance theory creates wealth for shareholders. The failure of Ghanaian companies to pay dividend or to pay satisfactory dividend because dividend is not obligatory compared to interest creates dissatisfaction in shareholders leading to variations in stock prices and other effects. This finding is however contrary to Koerniadi et al (2014) where it was found that both previous

year and current year profits reduce a company‟s unsystematic risk when they increase and vice versa.

The size of the companies meets the expectation of this research. Companies that are large in size using the annual sales figures were expected to experience low variations in returns. These companies are established and resourced and hence are expected to have the wherewithal to keep a less variable share. Consistent with expectation, Ghanaian listed firms experience low variability in stock returns as they grow in size. This finding on the control variable is consistent with the work of Koerniadi et al (2014) which found that as firms increase in size in New Zealand, the unsystematic risk faced by these firms diminishes.

Leverage and number of years companies have been listed on the exchange are not significant in explaining stock returns variability in Ghana. This is consistent with the findings of Koerniadi et al (2014) that age and leverage are not influential enough in explaining stock returns variability in New Zealand. The market risk is however significant in explaining unsystematic risk faced by companies. As the overall returns of the market varies, individual firms‟ returns are also expected to change in the same direction as the market. The result is consistent with Koerniadi et al (2014).

The results on the intercept reflecting unidentified influences on the standard deviation of returns indicates a negative value. This finding contradicts the positive slope value found by Koerniadi et al (2014) when they discovered that intercept value represents unidentified factors that increase unsystematic risk for listed companies in New Zealand.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarises the findings of corporate governance and stock returns variability in Ghana using listed Ghanaian companies. The research identifies that corporate governance influences stock returns variability.

5.2 Summary of key findings

As part of finding out the influence of corporate governance on stock returns variability, it was found that companies listed on the Ghana stock exchange are characterised with large shareholders. On average 74% of the shareholding of companies on the stock exchange is in the hands of only five shareholders.

There is compliance of the recommended corporate governance principles by the regulatory framework in Ghana namely: the Companies Act 1963 (Act 179), Securities Industry Law 1993 (PNDCL 333) as revised by the Securities Industry (Amendment) Act, 2000 (Act 590) and the listing regulations, 1990 (L.I. 1509) of the Ghana Stock Exchange.

In relation to the above, companies comply with the balance of executive and nonexecutive proportion of directors recommended by the regulatory framework. None of the companies has all board members as executive or non-executives. There is a balance.

Also the recommended board size of 8-16 has been complied with by the companies. The average board size of the companies used is 8 which complies with the minimum board size and the maximum board size is also 16, a figure equal to the upper limit recommended. Some companies even had board size of 5 in some of the periods in the years 2004-2013.

There is separation of the roles of board chairman and the CEO position in listed companies on the Ghana stock exchange. Only 9% instances in the observations were detected to have CEO duality present.

The number of directors on a board has positive or upward movement on stock returns variability of listed companies in Ghana. Larger boards experience more variability in stock returns than smaller boards. The findings suggest that a 1% increase in board size leads to a corresponding increase of 0.2747 standard deviation in stock returns and vice versa all other things being equal.

Boards dominated by outside directors experience more variability in stock returns. The presence of more independent directors on most board following the promulgation of the regulatory framework that at least one-third of board members should be outside directors has seen most companies‟ board being dominated by independent directors but this phenomenon increases stock returns variability of companies. Specifically, a percentage point increase in independent directors on a company‟s board increases standard deviation in stock returns by 0.46 and vice versa, ceteris paribus.

The separation or merging of the role of board chairman and CEO has no significant influence on variability of stock returns in Ghana. Greater proportion of companies listed on the stock exchange have separated the two roles but this step does not have any significant influence on stock returns variability.

The extent of ownership of executive directors has no significant influence on corporate stock returns variability. The percentage of management ownership in all the listed companies is low with an average figure of 4.36% and this makes management shareholding inconsequential in influencing stock returns variability.

Concentration of ownership increases stock returns variability of companies compared to companies that have dispersed ownership. The findings suggest that a percentage point increase in concentrated ownership leads to 0.25 standard deviation increase in stock returns and vice versa.

Firms audited by the big four audit firms show more variability in stock returns than companies audited by the small audit firms. The research reveals that stock returns variability in companies audited by the big four audit firms experience 15.60% more stock returns variability than companies audited by the small audit firms.

Control variables were used in finding the exact influence of corporate governance on stock returns variability based on the literature (Koerniadi et al, 2014). It was found that in Ghana the number of years companies have been listed; total debt of companies in the financial structure have no significant influence on stock returns variability. Current year profit made by companies is also not significant in affecting stock returns variability.

However market risk and previous year profit increase stock return variability of individual securities of companies when they increase. It was found that when variability in the returns of the market goes up by one percentage point, individual securities in the company experience variability in returns on their stock by 0.07 percentage point and vice versa.

Companies therefore are more defensive as a variability in returns of the market leads to less than proportionate change in the returns of individual securities.

The findings also suggest that previous year profitability of companies listed on the Ghana stock exchange leads to more variability in the stock returns of companies. A percentage point increase in profitability of companies leads to 0.19 standard deviation in stock returns variability and vice versa.

The findings on size suggests that large firms have less variability in stock returns than small firms. A l% increase in the size of companies measured by their turnover (sales) leads to 1.96% decrease in stock return variability and vice versa.

Aside corporate governance factors used comprising board size, outside directors, CEO duality, management ownership, concentrated ownership and audit type including the control variables, companies experience reduction in stock returns variability when all these above factors are absent by 70.52% (but this is usually theoretically not meaningful). The increase in the unidentified factors leads to less variability in stock returns and vice versa.

Though CEO duality and management ownership are not significant in explaining stock returns variability alone in Ghana, all the corporate governance variables put together including the control variables jointly affect stock returns variability.

5.3 Conclusion

Stock returns variability signals to investors the risk attached to equities. Investors are affected by the variability in returns of equities they hold. The research used 28 companies listed on the Ghana stock exchange applying panel regression method. The random effect

model proved appropriate as determined by the Hausman test and this was accordingly used. Companies chosen for this research were carefully selected to represent each of the industries on the Ghana stock exchange. The research extends the literature in Ghana by assessing performance against corporate governance using risk, a statistic so important to shareholders. The conventional finance theories look at risk against return and not any of them in isolation. The research therefore has moved away from accounting-based measures like Return on assets (ROA) and market based measures like Tobin‟s q to assess companies by focussing on unsystematic risk, an issue of great concern to shareholders. The findings of this research point out that corporate governance affects stock return variability. In Ghana board size, outside directors, concentration of shareholding, and audit quality have significant influence on stock returns variability. There is upward movement on stock returns variability when these four corporate governance factors increase and vice versa. Larger boards have more stock returns variability than smaller boards. A 1% increase in board size exposes companies to 27.47% increase in stock returns variability. Companies on the Ghana stock exchange have concentrated ownership and this nature of ownership also exposes companies to stock returns variability. The issue of CEO duality and management ownership which are focal in most corporate governance codes are not significant in influencing stock returns variability in Ghana. Interestingly, companies audited by the big four audit firms: KPMG Ghana, Price waterhouse Coopers, Deloitte& touche and Ernst &Young experience more variability in stock returns than those audited by small audit firms.

5.4 Recommendations / Policy implications

In the light of the findings of corporate governance and stock returns variability, the research has the following practical implications:

The research found that larger boards cause stock returns variability to increase. This means that agency problem is created more with larger boards. Therefore corporate governance codes should be well enforced to ensure that companies have maximum board numbers feasible for them to operate with to forestall expropriation of companies‟ assets through large boards which in turn affects stock returns variability. The recommended board size of 8-16 in the regulatory framework should be well enforced so that companies comply with to protect shareholders against entity-specific risk.

Companies should have a rethink of the „concept of audit‟. Audit is not an end in itself but a means to get results or performance. Users of accounting information desire credibility of financial statements alright which all other things being equal, large audit firms are able to do it better than small audit firms. However auditors do not have control over operational decisions of clients. Companies therefore need to address operational weaknesses which pose threat to variability in returns of shareholders.

Corporate governance codes should have measures in place to check excessive influence of large shareholders on the board. The board is appointed by the shareholders and as a result board control which is needed to ensure effectiveness of its monitoring role is impaired in the presence of large shareholders. Measures should thus be in place to ensure that these controlling shareholders do not affect companies negatively because of their dominance. The equitable treatment provision made in the regulatory framework should be well enforced so that the interest of minority shareholders would also be looked at such that optimal decisions can be arrived. This would reduce instances where large

shareholders‟ behaviour because of their dominance creates risk on the entire shareholder group (though in terms of benefit, they benefit most).

The findings that independent executives on a board increases a firm‟s stock returns variability means that probably the professional knowledge and expertise of independent executives should be looked at again. It is not enough to have independent members on the board but rather those members should possess the requisite knowledge in the operations of the business so as to help in effective operational decisions and mitigate unsystematic risk. Also, the independence of the outside directors on the board is probably not felt in practise. It is recommended therefore that a different approach of recruiting outside directors should be established. Positions should be announced in the public so that people who have qualifications would submit their applications. Recruitment of outside directors would thus be made through the market using a transparent mechanism of soliciting for applications.

5.5 Future research direction

The research extends the literature in Ghana by bringing out the influence of corporate governance on stock returns variability. However the chosen time period 2004-2013 could have impact on the results of this research. Future research is thus encouraged to confirm the results since the use of ten years might not be representative in Ghana for companies listed on the Ghana stock exchange. The choice of the sample may be plagued with short comings and the regression tools used might also have limitations. It is therefore important that future research extends the literature by using other corporate governance variables and methods to see the influence of corporate governance on stock returns variability.

A research needs to be carried out to find out the real impact of audit quality on stock returns variability and whether performance or profitability actually translate into low stock returns variability or otherwise.

The research in looking at corporate governance and stock returns variability, focused on historical variability. Historical variability gives investors an idea of the future variability of stocks of companies. Since past information is usually not a good predictor of the future, another variability measure known as implied volatility (variability) is used in this respect. It is accordingly recommended that future research would look at corporate governance and risk by taking risk from a different angle which is not backward-looking or historic but rather future-oriented. Implied volatility of stocks needs to be checked against corporate governance in Ghana.

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APPENDICES APPENDIX I-

Regression results for fixed effect (model 1) xtreg sdrawr logbs indexec ceod mo conc audtyp roa lev lroa msd age size2, fe

Fixed-effects (within) regression Number of obs = 246

Group variable: id Number of groups 28 R-sq:

within = 0.0728 Obs per group: min = 6 between = 0.0462 avg = 8.8 overall = 0.0285 max = 10

F(12,206) = 1.35 corr(u_i, Xb) = -0.5884 Prob > F = 0.1943

sdrawr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logbs	6.612978	17.96907	0.37	0.713	-28.81389	42.03985
indexec	.0940549	.3112627	0.30	0.763	519614	.7077237
ceod	22.80901	13.87439	1.64	0.102	- 4.545005	50.16302
mo	.2007193	.3853528	0.52	0.603	- .5590217	. 9604603
conc	-.1336321	.3548345	-0.38	0.707	-.8332049	.5659407
audtyp	34.85186	14.35246	2.43	0.016	6.555312	63.14841
roa	.0673825	.0956733	0.70	0.482	- .1212419	.2560069
lev	.0662063	.1163749	0.57	0.570	-.1632324	.2956449
lroa	.1941014	.1052821	1.84	0.067	-.0134673	.40167
msd	.0435293	.0358532	1.21	0.226	-.027157	.1142155
age	.1709894	.8847015	0.19	0.847	- 1.573241	1.91522
size2	.1486353	2.017669	0.07	0.941	-3.829292	4.126563
_cons	-24.19632	57.30956	-0.42	0.673	-137.1848	88.79215

---

sigma_u | 20.470539 sigma_e | 28.258037 rho | .34416627

(fraction of variance due to u_i) ----------

---------- F test that all u_i=0: F(27, 206) = 1.45

Prob > F = 0.0785

. estimates store fixed

APPENDIX II- Regression results for random effects (model 1) xtreg sdrawr logbs indexec ceod mo conc audtyp roa lev lroa msd age size2, re

Random-effects GLS regression Number of obs = 246

Group variable: id Number of groups = 28

R-sq: within = 0.0321 Obs per group: min = 6

between = 0.6675 avg = 8.8

overall = 0.1679 max = 10

Wald chi2(12) = 45.56 corr(u_i, X) = 0 (assumed) Prob > chi2 = 0.0000

sdrawr	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
logbs	27.46607	11.08977	2.48	0.013	5.730525	49.20162
indexec	.4615486	.171495	2.69	0.007	.1254245	.7976727
ceod	-10.93573	7.067143	-1.55	0.122	-24.78707	2.915619
mo	.2280211	.154225	1.48	0.139	-.0742544	.5302966
conc	.251468	. 1453551	1.73	0.084	-.0334228	.5363588
audtyp	15.59733	5.178485	3.01	0.003	5.447689	25.74698
roa	.1160605	.0767763	1.51	0.131	-.0344183	.2665393
lev	.1052708	.078057	1.35	0.177	-.0477181	.2582597
lroa	.1859883	. 0925803	2.01	0.045	.0045342	.3674423
msd	.069009	. 0309257	2.23	0.026	.0083957	.1296224
age	-					

.3398721 .3345059 -1.02 0.310 -.9954916 . 3157475 size2 | -
1.959687 .6596213 -2.97 0.003 -3.252521 -.666853
_cons | -70.52465 26.09257 -2.70 0.007 -121.6652 -19.38415
-------------+--
sigma_u | 1.9551383 sigma_e | 28.258037 rho | .00476428
(fraction of variance due to u_i)

Appendix III-Hausman test for model (1)

. estimates store random
. estimates store fixed
. hausman fixed random

---- Coefficients ----
| (b) (B) (b-B) sqrt(diag(V_b-V_B))
| fixed random Difference S.E. -------------+------
---------- logbs | 6.612978
27.46607 -20.8531 14.13876 indexec | .0940549 .4615486
-.3674937 .2597574 ceod | 22.80901 -10.93573 33.74473
11.93961 mo | .2007193 .2280211 -.0273018 .353145
conc | -.1336321 .251468 -.3851 .3236965 audtyp |
34.85186 15.59733 19.25453 13.38568 roa | .0673825
.1160605 -.048678 .0570857 lev | .0662063
.1052708 -.0390645 .0863147 lroa | .1941014
.1859883 .0081131 .050132 msd | .0435293
.069009 -.0254798 .0181397 age | .1709894 -.3398721
.5108615 .8190254 size2 | .1486353 -1.959687
2.108322 1.9068 ----------
---------- b = consistent under Ho and Ha; obtained
from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 8.44

Prob>chi2 = 0.7495

(V_b-V_B is not positive definite)

APPENDIX IV-Regression results for fixed effects (model 2) xtreg adjsdr logbs indexec ceod mo conc audtyp roa lev lroa age size2, fe

Fixed-effects (within) regression Number of obs = 246

Group variable: id Number of groups = 28

R-sq: within = 0.3008 Obs per group: min = 6

between = 0.0017 avg = 8.8

overall = 0.0458 max = 10

F(11,207) = 8.10 corr(u_i, Xb) = -0.8863 Prob > F = 0.0000

adjsdr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logbs	1.690644	26.49405	-0.06	0.949	-53.92342	50.54213
indexec	-.0837024	.4590284	-0.18	0.855	-.9886724	.8212676
ceod	11.73453	20.46106	0.57	0.567	-28.60426	52.07331
mo	-.2106293	.5674322	-0.37	0.711	-1.329316	.9080579
conc	-.2484525	.5230536	-0.48	0.635	-1.279648	.7827427
audtyp	38.0241	21.12729	1.80	0.073	-3.62815	79.67635
roa	-.0411657	.140816	-0.29	0.770	-.318783	.2364517
lev	-.1906568	.1704651	-1.12	0.265	-.526727	.1454135
lroa	.3571275	.1536196	2.32	0.021	.054268	.6599869
age	8.516872	1.136717	7.49	0.000	6.275845	10.7579
size2	.2027482	2.974535	0.07	0.946	-5.661519	6.067016

_cons | -33.14444 84.358 -0.39 0.695 -199.4554 133.1666

---+---

sigma_u | 59.484712 sigma_e | 41.673155 rho | .67078207

(fraction of variance due to u_i) ---

--- F test that all u_i=0: F(27, 207) = 3.25

Prob > F = 0.0000 **APPENDIX V-Regression results for random effects (model 2)**

. xtreg adjsdr logbs indexec ceod mo conc audtyp roa lev lroa age size2, re

Random-effects GLS regression Number of obs = 246

Group variable: id Number of groups = 28

R-sq: within = 0.1091 Obs per group: min = 6

between = 0.2570 avg = 8.8

overall = 0.0895 max = 10

Wald chi2(11) = 23.01 corr(u_i,

X) = 0 (assumed) Prob > chi2 = 0.0176

---+--- adjsdr |

Coef. Std. Err. z P>|z| [95% Conf. Interval]

---+--- logbs |

8.22581 17.72114 0.46 0.643 -26.50699 42.95861 indexec |

.3407215 .2734354 1.25 0.213 -.1952021 .8766451 ceod | -15.26748

11.28042 -1.35 0.176 -37.3767 6.841741 mo | .2003333

.2456727 0.82 0.415 -.2811763 .6818429 conc | .1375755

.231616 0.59 0.553 -.3163835 .5915346 audtyp | 16.66399

8.216785 2.03 0.043 .5593891 32.76859 roa | .0737197

.1234875 0.60 0.551 -.1683113 .3157507 lev | .046195

.1250537 0.37 0.712 -.1989058 .2912957 lroa | .3372776

.1483548 2.27 0.023 .0465076 .6280476 age | .8517085

.5256747 1.62 0.105 -.1785949 1.882012 size2 | -.5056361
1.04499 -0.48 0.628 -2.553779 1.542507
_cons | -20.0593 41.57335 -0.48 0.629 -101.5416 61.42296
-------------+--
sigma_u | 0 sigma_e | 41.673155 rho | 0
(fraction of variance due to u_i)

Appendix VI-Hausman test for model (2)

. estimates store random

. hausman fixed random

---- Coefficients ----
| (b) (B) (b-B) sqrt(diag(V_b-V_B))
| fixed random Difference S.E.
-------------+--
logbs | 6.348148 27.30253 -20.95438 14.07087 indexec |
.0815772 .4607108 -.3791336 .2590114 ceod | 22.9133
-10.53866 33.45196 11.89415 mo | .03822
.2279409 -.1897208 .4003217 conc | -.1368309
.2473701 -.384201 .3231144 audtyp | 34.96425
15.70885 19.2554 13.36432 roa | .0687825
.1151741 -.0463915 .0566517 lev | .0650583
.1048007 -.0397424 .0858543 lroa | .1902675
.1854799 .0047876 .0499018 msd | .0414275
.0687901 -.0273626 .0182795 age | .2171533 -
.3286852 .5458385 .8187681 size2 | .2013107 -
1.942151 2.143462 1.905581 divpol | 10.97503
2.452856 8.52217 7.135923 ----------

---

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(13) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 15.31

Prob>chi2 = 0.2886

APPENDIX VII-Test for autocorrelation (model 1) xtserial sdrawr logbs indexec ceod mo conc audtyp roa lev lroa msd age size2 (model 1)

Wooldridge test for autocorrelation in panel data (model 1)

H0: no first order autocorrelation

F(1, 27) = 15.069

Prob > F = 0.0006

APPENDIX VIII-Test for autocorrelation (model 2) xtserial adjsdr logbs indexec ceod mo conc audtyp roa lev lroa age size2 (model 2)

Wooldridge test for autocorrelation in panel data (for model 2)

H0: no first order autocorrelation

F(1, 27) = 21.935

Prob > F = 0.0001

APPENDIX IX- Test for heteroskedasticity (model 1)

. reg adjsdr logbs indexec ceod mo conc audtyp roa lev lroa msd age size2

Source	SS	df	MS	Number of obs =	246
				F(12, 233) =	69.96
Model	440252.705	12	36687.7254	Prob > F =	0.0000
Residual	122190.163	233	524.421302	R-squared =	0.7828
				Adj R-squared =	0.7716
Total	562442.868	245	2295.68518	Root MSE =	22.9

adjsdr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logbs	18.55925	8.68329	2.14	0.034	1.451458	35.66705
indexec	.2554294	.1338912	1.91	0.058	-.0083626	.5192215
ceod	-5.960718	5.532634	- 1.08	0.282	-16.8611	4.939664
mo	.155644	.1202751	1.29	0.197	-.0813218	.3926097
conc	.1238582	.1133839	1.09	0.276	-.0995305	.3472469
audtyp	8.116901	4.034552	2.01	0.045	.1680368	16.06576
roa	.1020326	.0604596	1.69	0.093	-.0170848	.22115
lev	.0754392	.0612268	1.23	0.219	-.0451897	.1960682
lroa	.1153468	.0730787	1.58	0.116	-.0286326	.2593262
age	-.220841	.2603221	- 0.85	0.397	-.733727	.2920451
size2	-1.595362	.5131119	-3.11	0.002	-2.606294	-.5844305
_cons	-31.35683	20.35558	-1.54	0.125	-71.46135	8.747692

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity (model 2)

Ho: Constant variance

Variables: fitted values of adjsdr

chi2(1) = 0.67

Prob > chi2 = 0.4143 **APPENDIX X-Test for heteroskedasticity (model 2)**

. reg sdrawr logbs indexec ceod mo conc audtyp roa lev lroa msd age size2

Source	SS	df	MS	Number of obs =	236
				F(13, 222) =	61.21
Model	427275.305	13	32867.3312	Prob > F =	0.0000
Residual	119211.982	222	536.990908	R-squared =	0.7819
				Adj R-squared =	0.7691
Total	546487.287	235	2325.47782	Root MSE =	23.173

sdrawr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logbs	20.94791	9.23472	2.27	0.024	2.748982	39.14684
indexec	.2500517	.1381779	1.81	0.072	-.0222566	.52236
ceod	-5.528	5.660177	-0.98	0.330	-16.68255	5.626552
mo	.1544851	.1240258	1.25	0.214	-.0899336	.3989037
conc	.0714075	.1314722	0.54	0.588	-.1876857	.3305008
audtyp	8.281829	4.178513	1.98	0.049	.047202	16.51646
roa	.1012353	.0614369	1.65	0.101	-.0198388	.2223094
lev	.0713265	.0627025	1.14	0.257	-.0522417	.1948947
lroa	.1136275	.074468	1.53	0.128	-.0331271	.2603822
msd	.6688426	.0252171	26.52	0.000	.619147	.7185382
age	-.2340211	.2691659	-0.87	0.386	-.7644684	.2964261
size2	-1.499904	.540683	-2.77	0.006	-2.565432	-.4343761
_cons	-33.10865	21.59596	-1.53	0.127	-75.66796	9.450664

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity (model 1)

Ho: Constant variance

Variables: fitted values of sdrawr

chi2(1) = 0.95

Prob > chi2 = 0.3304 **APPENDIX X1-**

Regression with AR (1) disturbance for model

(1)

```
. xtregar sdrawr logbs indexec ceod mo conc audtyp roa lev lroa msd age size2, re
RE GLS regression with AR(1) disturbances        Number of obs     =        246
Group variable: id                               Number of groups  =         28

R-sq:  within =  0.0214                          Obs per group: min =          6
       between = 0.6443                                         avg =        8.8
       Overall = 0.1560                                         max =         10
Wald chi2(13)      =        25.58 corr(u_i, Xb)      = 0 (assumed)                Prob >
chi2        =          0.0194

------------------- theta --------------------   min
5%       median       95%      max 0.0000
0.0000   0.0000     0.0000   0.0000
------------------------------------------------------------------------------
      sdrawr |      Coef.   Std. Err.              z         P>|z|         [95% Conf. Interval]
-------------+----------------------------------------------------------------                 logbs   |
26.99632   13.44522      2.01          0.045      .6441756          53.34847      indexec |
.4404152   .2111163      2.09          0.037      .0266349          .8541955        ceod |  -
11.22707     8.821839     -1.27          0.203     -28.51756          6.063412          mo |
.2140454   .  1983593        1.08          0.281     -.1747317          .6028225        conc |
.2129933      .1876042        1.14          0.256     -. 1547041    .    5806907      audtyp |
14.78514     6.747799      2.19          0.028       1.559697          28.01058          roa |
.1032148        .0799959         1.29          0.197       -.0535743     . 2600038          lev |
.0889955       .0883579         1.01          0.314       .0841828       .2621738          lroa |
.2175279        .0979309         2.22          0.026       .0255868       .4094689          msd |
.0149577       .0308805       0.48       0.628       -.0455671       0754824        age |      -
.2976324       .4378963       -0.68       0.497      -1.155893       .5606285       size2 |      -
1.968309       .8457778       -2.33       0.020       -3.626003    - .3106146
       _cons |     -59.37389        32.53687     -1.82       0.068        -123.145      4.397195
-------------+----------------------------------------------------------------
rho_ar |  .32464156   (estimated autocorrelation coefficient)
sigma_u |          0      sigma_e |  28.037315
    rho_fov |          0   (fraction of variance due to u_i)
```

APPENDIX XII Regression with AR (1) disturbance for model (2)

. xtregar adjsdr logbs indexec ceod mo conc audtyp roa lev lroa age size2, re (model 2)

RE GLS regression with AR (1) disturbances Number of obs = 246

Group variable: id Number of groups = 28 R-

sq: within = 0.1036 Obs per group: min = 6

between = 0.2547 avg = 8.8

overall = 0.0881 max = 10

Wald chi2(12) = 18.71 corr(u_i, Xb) = 0 (assumed)

Prob > chi2 = 0.0957

---------- theta ---------- min

5% median 95% max 0.0000

0.0000 0.0000 0.0000 0.0000

---------- adjsdr |

Coef. Std. Err. z P>|z| [95% Conf. Interval] ----------+----------

---------- logbs | 9.102357 19.36519

0.47 0.638 - 28.85271 47.05743 indexec | .3311214 .301803

1.10 0.273 -.2604015 .9226444 ceod | -13.89721 12.5175 -

1.11 0.267 -38.43105 10.63664 mo | .174411 . 2775946

0.63 0.530 -.3696645 . 7184865 conc | .1375702 .2620892

0.52 0.600 -.3761153 .6512556 audtyp | 15.37729 9.353287

1.64 0.100 -2.954818 33.70939 roa | .0874009 .1225

0.71 0.476 -.1526946 .3274964 lev | .0100939 .1311535

0.08 0.939 -.2469623 .26715 lroa | .3323573 .1482583

2.24 0.025 .0417765 .6229382 age | .8399082 .6011601

1.40 0.162 -.3383439 2.01816 size2 | -.7282349 1.181135 -

0.62 0.538 -3.043217 1.586747

_cons | -13.86004 46.19491 -0.30 0.764 -104.4004 76.68033

----------+----------

rho_ar | .20845909 (estimated autocorrelation coefficient)

sigma_u | 0 sigma_e | 44.376361 rho_fov | 0

(fraction of variance due to u_i) **APPENDIX XIII-Industry**

classification of companies

-

INDUSTRY CLASSIFICATION OF COMPANIES	
COMPANY	**SECTOR**
1. Aluworks Ltd	Manufacturing
2. AngloGold Ashanti Ltd	Mining
3. Ayrton Drug	Manufacturing
4. Benso Oil Palm Plantation Ltd	Agro-processing
5. CAL Bank Ltd	Banking and Finance
6. Camelot Ghana Ltd	Printing
7. Clydestone Ltd	ICT
8. Cocoa Processing Company Ltd	Manufacturing
9. Ecobank Ghana Ltd	Banking and Finance
10. Enterprise Insurance Company Ltd	Insurance
11. Fan Milk Ltd	Food and Beverages
12. Ghana Commercial Bank	Banking and Finance
13. Ghana Oil Company	Distribution
14. Golden Web Company Limited	Agro-based manufacturing
15. Guinness Ghana Breweries Ltd	Food and Beverages
16. HFC Bank Ghana Ltd	Banking and Finance
17. Mechanical Lloyd Company Ltd	Distribution
18. Pioneer Kitchen ware Ltd	Manufacturing
19. Produce Buying Company Ltd	Distribution
20. PZ Cussons Ghana Ltd	Manufacturing
21. Sam Woode Ltd	Publishing
22. SG-SSB Limited	Banking and Finance
23. Standard Chartered Bank Ghana Ltd	Banking and Finance
24. Starwins products limited	Manufacturing
25. State Insurance Company	Insurance
26. African Champion Industries	Manufacturing
27. Total Ghana Ltd	Distribution
28. UTBank	Banking and Finance

APPENDIX XIV Summary of industry classification

Industry Classification (summary)	
Sector	**number of firms**
Banking and Finance	7
Food and Beverages	2
Manufacturing	8
Publishing	1
Insurance	2

Printing	1
Agro-processing	1
ICT	1
Distribution	1
Mining	4
	28
	1

-

APPENDIX XV-corporate governance measurement of some of the sampled companies

NAME	YEARS	BS	LOGBS	OUTDIR	INDEXEC	CEOD	MO	CONC	AUDTYP
ACI	2004	9	2.20	7	77.78	0	11.12	58.41	1
ACI	2005	8	2.08	6	75.00	0	11.12	58.41	1
ACI	2006	8	2.08	6	75.00	0	0	58.41	1
ACI	2007	7	1.95	5	71.43	0	0	56.57	1
ACI	2008	7	1.95	5	71.43	0	8.05	52.42	1
ACI	2009	7	1.95	6	85.71	0	0	52.42	1
ACI	2010	7	1.95	6	85.71	0	0	55.02	1
ACI	2011	6	1.79	5	83.33	0	0	48.65	1
ACI	2012	6	1.79	5	83.33	0	0	48.65	1
ACI	2013	7	1.95	6	85.71	0	0	38.33	1
ALW	2004	9	2.20	8	88.89	0	0	59.69	1
ALW	2005	9	2.20	8	88.89	0	0	56.36	1
ALW	2006	9	2.20	8	88.89	0	0	56.36	1
ALW	2007	9	2.20	8	88.89	0	0	53.94	1
ALW	2008	7	1.95	6	85.71	0	0	53.80	1
ALW	2009	7	1.95	6	85.71	0	0.07	55.08	1
ALW	2010	6	1.79	5	83.33	0	0.01	78.55	1
ALW	2011	6	1.79	5	83.33	0	0.01	78.21	1
ALW	2012	6	1.79	5	83.33	0	0.01	78.31	1
ALW	2013	7	1.95	6	85.71	0	0.05	90.03	1
CAL	2004	7	1.95	6	85.71	0	1.25	56.90	1
CAL	2005	8	2.08	7	87.50	0	1.77	54.25	1
CAL	2006	7	1.95	6	85.71	0	2.21	50.17	1
CAL	2007	8	2.08	7	87.50	0	2.65	54.23	1
CAL	2008	8	2.08	7	87.50	0	3.12	51.70	1
CAL	2009	8	2.08	7	87.50	0	3.47	55.28	1
CAL	2010	7	1.95	6	85.71	0	3.02	53.60	1
CAL	2011	8	2.08	7	87.50	0	2.99	56.90	1
CAL	2012	10	2.30	9	90.00	0	1.55	75.11	1
CAL	2013	10	2.30	8	80.00	0	1.64	74.01	1
CLYD	2004	6	1.79	5	83.33	0	61.03	66.13	0
CLYD	2005	7	1.95	5	71.43	0	60.27	66.30	0
CLYD	2006	7	1.95	6	85.71	0	59.969	66.72	0
CLYD	2007	7	1.95	6	85.71	0	59.969	66.36	0
CLYD	2008	7	1.95	4	57.14	0	59.969	66.36	0
CLYD	2009	7	1.95	4	57.14	0	59.969	65.67	0
CLYD	2010	7	1.95	4	57.14	0	59.969	66.13	0
CLYD	2011	7	1.95	4	57.14	0	59.969	66.13	0
BOP	2004	9	2.20	7	77.78	0	0	67.39	1
BOP	2005	9	2.20	7	77.78	0	0	67.55	1
BOP	2006	9	2.20	7	77.78	0	0	67.55	1
BOP	2007	8	2.08	6	75.00	0	0.02	67.55	1
BOP	2008	9	2.20	7	77.78	0	0.03	68.60	1
BOP	2009	9	2.20	7	77.78	0	0.03	71.68	1
BOP	2010	8	2.08	6	75.00	0	0.03	71.42	1

APPENDIX XVI measurement of dependent variables and other independent variables

NAME	YEARS	SDRAWR	ADJSDR	ROA	LEV	LROA	MSD	SIZE

ACI	2004	-	-	- 2.52	71.65	- 8.99	31.61	16.49
ACI	2005	-	-	- 11.60	36.43	- 2.52	14.57	17.00
ACI	2006	-	-	- 16.26	45.36	- 11.60	2.53	17.13
ACI	2007	-	-	1.81	46.15	- 16.26	8.65	14.95
ACI	2008	-	-	- 2.64	37.26	1.81	21.02	14.92
ACI	2009	-	-	- 6.10	29.87	- 2.64	37.16	15.19
ACI	2010	-	-	0.94	42.36	- 6.10	18.58	15.31
ACI	2011	-	101.84	- 6.93	36.09	0.94	108.24	15.14
ACI	2012	12.50	148.48	- 26.81	75.62	- 6.93	215.69	14.90
ACI	2013	14.29	25.60	- 400.52	404.37	- 26.81	22.84	13.03
ALW	2004	136.24	116.91	10.15	55.73	6.58	31.61	10.73
ALW	2005	44.55	47.63	8.13	58.59	10.15	14.57	10.77
ALW	2006	13.82	15.45	12.66	61.84	8.13	2.53	10.80
ALW	2007	4.36	8.66	- 2.25	85.54	12.66	8.65	10.88
ALW	2008	9.42	22.86	- 1.85	68.48	- 2.25	21.02	10.95
ALW	2009	16.11	41.60	- 5.53	74.85	- 1.85	37.16	10.97
ALW	2010	43.33	18.57	- 9.98	50.64	- 5.53	18.58	10.44
ALW	2011	68.03	103.92	- 1.85	55.87	- 9.98	108.24	10.13
ALW	2012	78.46	164.37	- 0.39	71.01	- 1.85	215.69	10.81
ALW	2013	35.90	47.82	1.53	48.30	- 0.39	22.84	10.97
CAL	2004	68.97	77.39	3.40	80.73	3.26	31.61	8.50
CAL	2005	35.89	24.53	3.19	81.51	3.40	14.57	9.00
CAL	2006	46.38	45.72	2.90	84.45	3.19	2.53	9.15
CAL	2007	22.52	19.85	2.58	87.58	2.90	8.65	9.40
CAL	2008	46.04	52.69	2.38	89.45	2.58	21.02	9.71
CAL	2009	44.30	37.79	1.97	87.34	2.38	37.16	10.03
CAL	2010	40.56	26.08	1.76	84.69	1.97	18.58	11.15
CAL	2011	40.56	126.40	2.33	88.18	1.76	108.24	11.23
CAL	2012	33.95	159.17	4.27	82.40	2.33	215.69	11.89
CAL	2013	54.59	53.73	5.90	81.90	4.27	22.84	12.49
CLYD	2004	85.39	78.53	5.54	17.31	8.01	31.61	14.07
CLYD	2005	23.07	27.95	39.40	45.13	5.54	14.57	14.43
CLYD	2006	19.99	20.37	9.92	48.20	39.40	2.53	14.56
CLYD	2007	-	8.66	- 19.59	57.04	9.92	8.65	14.19
CLYD	2008	-	21.03	- 15.10	80.55	- 19.59	21.02	14.55
CLYD	2009	-	37.17	0.61	86.06	- 15.10	37.16	14.19
CLYD	2010	12.51	25.81	3.85	83.51	0.61	18.58	13.76
CLYD	2011	20.02	105.62	1.36	82.97	3.85	108.24	13.79
BOP	2004	182.55	187.49	4.02	10.55	10.93	31.61	9.01
BOP	2005	22.49	24.89	0.13	7.32	4.02	14.57	8.90
BOP	2006	8.03	2.53	4.25	9.22	0.13	2.53	9.11
BOP	2007	8.33	11.98	4.19	6.13	4.25	8.65	7.18
BOP	2008	89.90	82.81	22.53	8.74	4.19	21.02	9.93
BOP	2009	29.62	44.82	7.45	8.39	22.53	37.16	9.66
BOP	2010	68.89	61.29	11.17	8.67	7.45	18.58	9.95

APPENDIX XVII-some of the daily prices of sampled companies

	AGA	AYRTN	BOPP	CAL	CMLT	**CLYD**	**CPC**	**EBG**
31-Dec-2010	34.00	0.16	0.75	0.31	0.16	0.07	0.02	3.00

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4-Jan-2011	34.00	0.16	0.75	0.33	0.16	0.07	0.02	3.00
5-Jan-2011	34.00	0.16	0.75	0.33	0.16	0.07	0.02	3.00
6-Jan-2011	34.00	0.16	0.75	0.33	0.16	0.07	0.02	3.00
7-Jan-2011	34.00	0.16	0.75	0.33	0.16	0.07	0.03	3.00
10-Jan-2011	34.00	0.16	0.75	0.33	0.16	0.07	0.03	3.00
11-Jan-2011	34.00	0.16	0.75	0.34	0.16	0.07	0.03	3.00
12-Jan-2011	34.00	0.16	0.78	0.35	0.16	0.07	0.03	3.00
13-Jan-2011	34.00	0.16	0.78	0.36	0.16	0.07	0.02	3.00
14-Jan-2011	34.00	0.16	0.78	0.38	0.16	0.07	0.02	3.01
17-Jan-2011	34.00	0.16	0.78	0.37	0.16	0.07	0.02	3.01
18-Jan-2011	34.00	0.16	0.78	0.38	0.16	0.07	0.03	3.01
19-Jan-2011	34.00	0.16	0.78	0.38	0.16	0.07	0.03	3.01
20-Jan-2011	34.00	0.16	0.80	0.39	0.16	0.07	0.03	3.02
21-Jan-2011	34.00	0.16	0.80	0.39	0.16	0.07	0.03	3.07
24-Jan-2011	34.00	0.16	0.80	0.39	0.16	0.07	0.03	3.11
25-Jan-2011	34.00	0.16	0.80	0.38	0.16	0.07	0.03	3.22
26-Jan-2011	34.00	0.16	0.80	0.39	0.16	0.07	0.03	3.24
27-Jan-2011	34.00	0.16	0.80	0.39	0.16	0.07	0.03	3.46
28-Jan-2011	34.00	0.16	0.80	0.39	0.16	0.07	0.03	3.50
31-Jan-2011	34.00	0.16	0.80	0.39	0.16	0.07	0.03	3.52
1-Feb-2011	34.00	0.16	0.80	0.39	0.16	0.07	0.02	3.52
2-Feb-2011	34.00	0.16	0.81	0.39	0.16	0.07	0.02	3.52
3-Feb-2011	34.00	0.17	0.81	0.39	0.16	0.07	0.02	3.52
4-Feb-2011	34.00	0.17	0.81	0.39	0.16	0.07	0.02	3.52
7-Feb-2011	34.00	0.17	0.81	0.35	0.16	0.07	0.02	3.52
8-Feb-2011	34.00	0.17	0.82	0.35	0.16	0.07	0.02	3.52
9-Feb-2011	34.00	0.17	0.85	0.35	0.16	0.07	0.02	3.48
10-Feb-2011	34.00	0.17	0.80	0.35	0.16	0.07	0.03	3.50
11-Feb-2011	34.00	0.17	0.80	0.35	0.16	0.07	0.03	3.50
14-Feb-2011	34.00	0.17	0.80	0.34	0.16	0.07	0.03	3.50
15-Feb-2011	34.00	0.17	0.80	0.34	0.16	0.07	0.03	3.50
16-Feb-2011	34.00	0.17	0.80	0.34	0.16	0.07	0.03	3.50
17-Feb-2011	34.00	0.17	0.80	0.34	0.16	0.07	0.03	3.50
18-Feb-2011	34.00	0.17	0.80	0.34	0.16	0.07	0.03	3.49
21-Feb-2011	34.00	0.17	0.80	0.34	0.16	0.07	0.03	3.49
22-Feb-2011	34.00	0.17	0.80	0.34	0.16	0.07	0.03	3.49

APPENDIX XVIII-computation of monthly stock returns variability

	ALW	gains	div	div yield	Total ret	stand dev	mkt ret
31/12/2003	4,000.00						
31/01/2004	4,000.00	-	400	10.00	10.00		6.718295
28/02/2004	4,000.00	-	400	10.00	10.00		21.98676
31/03/2004	9,000.00	125.00	400	10.00	135.00		22.27231
30/04/2004	12,500.00	38.89	400	4.44	43.33		15.51457
31/05/2004	12,500.00	-	400	3.20	3.20		4.722698
30/06/2004	12,300.00	- 1.60	400	3.20	1.60		2.807549
31/07/2004	12,100.00	- 1.63	400	3.25	1.63		1.130421
31/08/2004	10,000.00	- 17.36	400	3.31	- 14.05		2.684399
30/09/2004	10,000.00	-	400	4.00	4.00		-4.35353
31/10/2004	10,000.00	-	400	4.00	4.00		-0.92728
30/11/2004	10,000.00	-	400	4.00	4.00		-2.67557
31/12/2004	10,000.00	-	400	4.00	4.00		0.758657
31/01/2005	10,000.00	-	450	4.50	4.50	39.33	1.336237
28/02/2005	6,250.00	- 37.50	450	4.50	- 33.00		-2.20969
31/03/2005	6,252.00	0.03	450	7.20	7.23		-4.206
30/04/2005	6,252.00	-	450	7.20	7.20		-5.35574
31/05/2005	6,252.00	-	450	7.20	7.20		-0.95222
30/06/2005	5,000.00	- 20.03	450	7.20	- 12.83		-3.09567
31/07/2005	5,000.00	-	450	9.00	9.00		-14.3803
31/08/2005	5,000.00	-	450	9.00	9.00		-3.64775
30/09/2005	5,000.00	-	450	9.00	9.00		0.899421
31/10/2005	5,000.00	-	450	9.00	9.00		0.484162
30/11/2005	5,009.00	0.18	450	9.00	9.18		-2.07583
31/12/2005	5,003.00	- 0.12	450	8.98	8.86		-0.49601
31/01/2006	5,540.00	10.73	446	8.91	19.65	12.86	-1.57965
28/02/2006	5,800.00	4.69	446	8.05	12.74		0.78679
31/03/2006	6,120.00	5.52	446	7.69	13.21		0.710694

30/04/2006	6,500.00	6.21	446	7.29	13.50		0.386719
31/05/2006	6,690.00	2.92	446	6.86	9.78		1.325539
30/06/2006	6,740.00	0.75	446	6.67	7.41		-0.08111
31/07/2006	6,800.00	0.89	446	6.62	7.51		1.069223
31/08/2006	7,000.00	2.94	446	6.56	9.50		0.591226
30/09/2006	7,010.00	0.14	446	6.37	6.51		0.624899
31/10/2006	7,020.00	0.14	446	6.36	6.50		0.623223
30/11/2006	7,251.00	3.29	446	6.35	9.64		0.396004
31/12/2006	7,251.00	-	446	6.15	6.15	3.99	0.261096