UNIVERSITY OF GHANA

CORPORATE GOVERNANCE AND TRANSPARENCY: EVIDENCE FROM STOCK RETURN SYNCHRONICITY.

MATTHEW NTOW- GYAMFI

THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MPHIL FINANCE DEGREE

JUNE 2013

DECLARATION

I do hereby declare that this thesis is the result of my own original research and has not been presented by anyone for any academic award in this or any other university. All references used in the work have been fully acknowledged. Nonetheless, I bear sole responsibility for all errors and omissions within the work.

Candidate's Signature: ……………………   Date: ……………..........

Matthew Ntow- Gyamfi

10228605

CERTIFICATION

I hereby certify that this thesis was supervised in accordance with the procedures laid down
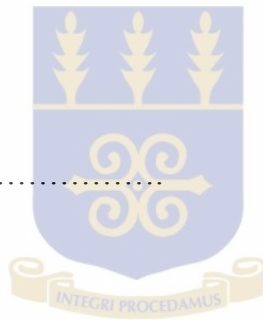
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1st Supervisor's Signature: …………………….   Date: …………………..

(Godfred Alufar Bokpin, PhD)

2nd Supervisor's Signature: ……………….……..   Date: ………………………

(Albert Gemegah, PhD)

DEDICATION

I dedicate this work to my mother Comfort Asare Ntow who gave me support in every step

on the way to attaining this height.

ACKNOWLEDGEMENT

ABSTRACT

The purpose of this study was to investigate the extent of stock return synchronicity on the Ghana Stock Exchange. The study compared synchronicity levels across firm size, age and industry type. Finally, the study examined the influence of corporate governance on transparency while using stock return synchronicity as a measure of transparency.

A ten year panel data spanning from 2000 to 2009 collected from 31 listed firms in Ghana was used. Daily stock returns were also collected from the Ghana Stock Exchange. A trend analysis of synchronicity was made for the 10 year period. A non-parametric comparison was made between the synchronicity levels of small and large firms, old and new firms, financial and non-financial firms using the Wilcoxon Rank Sum Test. In the empirical estimation, the study uses the panel correct standard errors as well as the Generalized Least Square techniques to provide robust evidence of governance influencing synchronicity through the information environment. The study found that newly listed firms are generally more synchronous while larger firms also exhibited higher levels of R^2.

The study found Board Size, Board Composition and CEO duality to be significant determinants of transparency proxied by stock return synchronicity. Both the Panel Corrected Standard Errors and the Generalized Least Square estimations provided consistent results. After correcting for possible thin-trading effect using the Dimson's Beta approach to estimating synchronicity, governance still remains significant determinant of transparency.

The study recommends that listed firms choose smaller boards over larger boards since the free rider effect associated with larger boards can increase stock return synchronicity; hence, reducing transparency. Companies should encourage CEO duality but this must be done cautiously in order not to dilute the independence of the corporate board. Companies should increase the proportions of non-executive directors on their boards since this could negatively influence synchronicity and impacts positively on transparency.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The purposes of many of the corporate governance reforms that are made by stakeholders are ones geared towards reducing the event that some parties will have more information about a firm than others do (informational asymmetry). In the reduction of information asymmetry, transparency is ensured. This position has not been controversial in literature in that the ability of corporate transparency and corporate governance to elicit good effects is undisputable (Kyereboah-Coleman *et al.,* 2006). For Beeks and Brown (2005), firms with high corporate governance quality make more informative disclosures; adding that, firms with an institutionalized corporate governance structure would be more transparent than firms that have weaker corporate governance frameworks. However, caution should be taken in explaining the benefits of corporate governance and transparency. This is because in recent times, some studies have established that there are likely to be both costs and benefits to increased transparency, leading to an optimum level beyond which increasing transparency lowers profits (Hermalin and Weisbach, 2007).

But even so, Hermalin and Weisbach (2007) maintain that transparency is key to corporate success while acknowledging that governments around the world have responded to the popular corporate governance scandals by adopting a number of regulatory changes. A case in point is the Sarbanes-Oxley Act (SOX) which is now well adopted in response to the Enron, Worldcom, and other public governance failures. In such documents, governance is improved by more stringent regulations such as the requirement of detailed reporting of some off-balance sheet activities and other special events. Also additional penalties are given to executives for

misreporting. With this, the link between governance and transparency is made clear; that by improving governance, transparency is increased.

In explaining stock return synchronicity, Morck et al. (2000) who were part of the first people to research into the area documented that Stock return synchronicity is the extent to which the return of the stock of a particular firm co-moves with the market return. Years after Morck et al. (2000), the definition of stock return synchronicity has not varied. According to Du et al. (2007), synchronicity of stock price movement refers to the extent to which individual stock prices move up and down en masse. Khandaker (2011) also explains that stock price synchronicity is the tendency of a stock market to move in the same direction in a particular period of time; such as a given day or week. By this explanation, a market is more synchronous if generally the prices of individual stocks vary together.

The fact that seminal studies into stock return synchronicity started around 2000 makes it a relatively new area in finance literature. In their seminal study, Morck et al. (2000) found that synchronicity is less in economies where there exists better government protection of property rights. They interpreted their results that strong property rights leads to inclusion of more firm-specific information and less stock return co-movement across firms. After this study, there have been a number of studies into the area of synchronicity leading to several relationships drawn between stock return synchronicity and various other firm and country wide variables. Durnev et al. (2003) for instance found that firms whose stock exhibit less synchronicity tend to use more external financing and allocate capital more efficiently. In their interpretation they stated that a firm with higher firm-specific price variation will cause informed arbitrageurs to focus more on the firm so that stock prices will start to track fundamentals closely, which in turn will reduce information asymmetry problems that impede external financing and distort

capital spending decisions. Given this, owners of firms will have a preference between a more and less synchronous firm since their interest is best served under one of the conditions. Jin and Myers (2006) also documented that stock return synchronicity decreases with a country's accounting transparency. In recent times, studies by Fernandes and Ferreira (2008, 2009) and Kim and Shi (2009) all found stock return synchronicity to be higher in emerging markets than what is experienced in developed markets.

Bushman et al (2004) in explaining corporate transparency documented that it is the availability of firm-specific information to those outside publicly traded firms or the dissemination of information to market participants. Jin and Myers (2006) put up a strong argument that R-square can be interpreted as a measure of corporate transparency because it represents how much market indices explain individual firm returns.

Although several studies have been done on stock return synchronicity (Morck, et al., 2000; Li et al, 2004; Jin and Myers, 2006; Fernandes and Ferreira, 2009), most of these studies concentrated on country level synchronicity and only few have considered it on firm level. This study investigates the linkage between firm level synchronicity which is employed as a measure of transparency (Bushman et al., 2004 and Jin and Myers, 2006) and corporate governance mechanisms employed by firms in Ghana which have the ability to influence the release of firm specific information to the market. The study believes that corporate governance mechanisms employed by owners which set managerial constraints and their incentives can influence synchronicity (transparency) through the information environment. It is important to note that this position is undoubtedly supported by several finance literature (Gompers et al, 2003; Bushman et al., 2004; Cremers and Nair, 2005).

1.2 Statement of the Problem

The various literature on synchronicity have used Morck et al. (2000) as their basis. Such studies regress the market return against the individual stock return (estimate the market model). The R square is then interpreted as the extent to which the market return explains the individual stock return and depending on the value of the R square, the synchronicity or otherwise of the stock is determined. In Morck et al. (2000), it is stated that in low-income and weak-institution economies stock prices moved much more synchronously than those in high-income and strong institution economies. In a similar study, Beny (2005) documented a significant positive relationship between the stringency of a country's prohibitions against insider trading and the asynchronicity of individual stock returns. Interpreting her results she stated that, countries with tougher insider trading laws' stock prices are more informationally efficient. In separate studies, Jin and Myers (2006) and Bushman et al (2004) have all established that the R-square from the market model can be used as a measure of transparency.

Albeit this new development of corporate transparency measure, previous literature that look at corporate governance and transparency/disclosure used governance and transparency measures constructed in the international context. A typical case is that found in studies by Bokpin and Isshaq (2009), Tsamenyi et al. (2007), Aksu and Kosedag (2006) who use the trinary procedure and the Standard and Poor's transparency and disclosure items in the construction of the disclosure index as follows:

$$\text{TDS}' = \sum_{j} \sum_{k} \frac{S_{jk}}{\text{TOTS}}$$

Where the attribute category subscript j =1, 2, 3; k, the attribute subscript $k = 1 \ldots 106$; S_{jk} , the number of information items disclosed (answered as "yes") by the firm in each category; and TOTS, the total maximum possible "yes" answers for each firm. This situation makes it quite

difficult for the variable to depict the true and fair transparency level of the firm. In that, the construction of Total Disclosure Score (TDS) in such a manner includes some corporate governance measures making it difficult to disentangle the transparency from corporate governance (Aksu and Kosedag, 2006). Some studies have sought to solve the problem by modifying the index to preclude those indexes that measures corporate governance in the construct (Bokpin and Isshaq, 2009). However, it still does not change the fact that disentangling the separate effects of corporate governance from transparency in the TDS is a difficult one since the modification that is done depends on the researcher in point. Aside Aksu and Kosedag (2006)'s own admission of a problem with the TDS measure, there are a number of challenges of this construct.

In the first place, Granados et al. (2006) define transparency as the offering of unbiased, complete, and accurate information to stakeholders. In this regard the quality of the information provided is important. However, the TDS rate companies on their ability to disclose information consistent with some financial statement disclosure practices but does not explicitly consider the quality of information within those disclosures; a situation that leads to construct validity problem. The TDS fails to investigate the extent to which the information provided is accurate. *"Markets rely on rules and laws, but those rules and laws in turn depend on truth and trust. Conceal truth or erode trust, and the game becomes so unreliable that no one will want to play. The markets will empty and share prices will collapse, as ordinary people find other places to put their money into their houses, maybe, or under their beds"* (Handy, 2002: 49).

Secondly, the degree to which the information is provided is not investigated by the TDS. The measure requires that firms make certain information available but the degree to which such

information is available is not investigated by the construct. Hence, TDS considers availability but fails to investigate quantity of such information. For example, the TDS requires that the company discloses backgrounds of senior managers. A company may provide very detailed information about its senior managers but another may provide just a brief. TDS will consider the two to be equally transparent ones the annual reports has a section for senior managers' background.

Also traditionally the TDS measure was constructed using the International Accounting Standards (IAS) and US Generally Accepted Accounting Principles (GAAP) as implicit benchmarks (Patel et al., 2002). However, in recent times companies have adopted the International Financial Reporting Standards (IFRS). Therefore, using benchmarks other than the IFRS poses methodological challenges to the TDS construct. According to Granados et al. (2006), it is inaccurate to measure an item against a standard if the item itself refrains from following the standard. As a way of solving this problem, studies have modified the list of questions to preclude the non-applicable cases and also include applicable questions that originally were not in the S & P's list of questions. Again, this approach to solving the problem takes away standardization of the TDS measure making the list of questions differ from one researcher to the other.

This study deviates from the use of variables constructed in the international context to one that can be verified through calculations with available data (synchronicity). This approach is supported by the positions in literature such as Jin and Myers (2006) who argue that R square can be interpreted as a measure of corporate transparency because it represents how much market indices explain individual firm returns. By this, individual firm returns are explained more by the firm-specific information if R square is low (high transparency) and vice versa.

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Hence, the originality of this study is that it uses stock return synchronicity as a proxy for corporate transparency for the first time in Ghana and Sub Saharan Africa. Our use of synchronicity as a measure of transparency has the advantage of being objectively observable and reproducible (Li et al., 2003).

Although the concept of synchronicity has been touched by some earlier studies, this was looked at from cross-country levels and not much on firm levels (Morck et al. 2000; Fox et al. 2003; Bushman et al. 2004; ; Li et al, 2004; Jin and Myers, 2006; Fernandes and Ferreira, 2009). In synchronicity literature where reference is made to Sub Saharan Africa, only a case is made about the higher synchronicity levels in developing countries (country level comparisons are made not firm level). There is a dearth of literature on firm level synchronicity especially in Sub Saharan Africa. This study will then be the first of its kind in Ghana and the whole of Sub-Saharan Africa.

Furthermore, the justification for the choice of Ghana for the study stems from the fact that Ghana has no strong legal framework for the development of its stock market. Also, there are no stringent information disclosure laws in Ghana that will compel firms to disclose true and fair information (relative to other developed countries). In some developed markets, there exist codes that serve as guide for the practice of good corporate governance. For some of these markets, companies are to provide the extent to which they have followed these guidelines and also explain when they deviate. Examples are the Combined Code by Financial Reporting Council (2010) in the UK; the Corporate Governance Principles and Recommendations by the Australian Stock Exchange (2007). Also Tokyo stock exchange (TSE) has the Principle of Corporate Governance for listed Companies (TSE, 2004). All these are geared towards breaking the tendencies that managers' activities will be opaque. Contrarily, no such

compulsory codes are set for listed firms in Ghana. In the absence of an effective framework for compliance, effective corporate governance at firm level is expected to play crucial role in improving disclosure of corporate information; hence, transparency.

Chan and Hameed (2006) reported that many emerging markets have disclosure regulations the quality of which is similar to those in developed markets; however, these regulations are often not fully enforced. Given these conditions, effective corporate governance at firm level is expected to play crucial role in improving disclosure of corporate information and transparency. Put differently, in the absence of effective formal legal institutions, corporate governance is used as a substitute to enhance transparency. This study therefore explores those corporate governance mechanisms that can influence transparency and their respective direction of influence as well.

1.3 Research Questions

i.   What is the extent of Stock Return Synchronicity on the Ghana Stock Exchange?

ii.   Does synchronicity differ across firm size, industry and years spent on the exchange?

iii.   What is the impact of corporate governance on transparency (stock return synchronicity)?

1.4 Objectives of the Study

Generally the study examines the influence of corporate governance on transparency measured by stock return synchronicity.

Specifically, the study seeks to:

i.   assess the extent of stock return synchronicity on the Ghana Stock Exchange.

ii.   compare the synchronicity levels of the various stocks on the exchange on the basis of firm size, years spent on the exchange, and industry type.

iii.   examine the influence of corporate governance on transparency in Ghana.

1.5 Significance of the Study

It is an undeniable fact that literature on corporate governance as well as corporate transparency is not in dearth at all. Also quite a number of literature have considered the relationship between corporate governance and transparency that comes as a result of disclosure (Bokpin and Isshaq, 2009; Tsamenyi et al., 2007). However, these studies have used disclosure variables constructed in international context that might not necessarily reflect the Ghanaian context. This study provides a new way of measuring transparency in Ghana and sub-Saharan Africa in general. The study also serves as basis for further research into the determinants of synchronicity in Ghana and the sub-region. Since a synchronous market is informationally inefficient, findings of the study serves as a guide to policy makers to understand what causes synchronicity in Ghana and what can be done to ensure that the GSE becomes informationally efficient. Again, findings of the study can help owners of companies to realize the specific corporate governance measures that affect transparency. Finally, this study presents an opportunity to validate findings of previous studies that used other constructs as transparency and disclosure measures.

1.6 Chapter Disposition

The rest of the study is organized as follows;

Chapter two reviews extant literature on synchronicity and corporate governance throwing light on the positions of theories and empirical studies. The next chapter which is the chapter three discusses the methodological approach adopted for the study. The fourth chapter presents the

findings and discussion of the results while chapter five summarizes, concludes and provides recommendations for corporate governance policy makers and as well provides suggestions for future studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Since the seminal studies in the area by Morck et al (2000), several other studies have addressed the issue of stock return synchronicity taking into consideration other variables and their respective influence on synchronicity. In recent times, the concept of synchronicity has been found by some studies as a way of assessing the transparency level of firms. This section of the study therefore reviews literature that draws on synchronicity and relates to corporate governance. But first, the various theories that underpin corporate governance are discussed after which empirical works on governance, transparency and their interactions are reviewed. The study also reviews literature related to other variables that have been found to explain synchronicity. Though not the main focus of the study, these variables are employed as control variables in our study.

2.2 Theoretical Review

Corporate governance refers to the various ways through which corporations are administered, managed and controlled. Defining the concept, (OECD, 2010) states that corporate governance embraces the long-term management and oversight of a corporation in a manner that is consistent with the natural principle of transparency and responsibility. The concept undoubtedly remains one of the most researched areas in finance in recent times. Studies into the area have usually sought to find empirical evidence to support or otherwise the classical theories of the concept. The seminal study that provides the theoretical basis for corporate governance was done by Berle and Means (1932) in their work ''The Modern Corporation and Private Property''. Their work was used to identify the agency problem in corporate

governance that results from the fact that managers and owners of corporations are separated. To them, the separation of ownership and control forms the basis of the fundamental agency problem in corporate governance. Given this separation, the problem has since been how to align the interest of managers who are entrusted with the fortunes of the firm to that of shareholders who have entrusted their investment to the firm. After the thesis by Berle and Means (1932), there have been several theories that have also evolved around the concept of corporate governance. These theories include the agency cost theory, stewardship theory, the resources dependence theory, the stakeholder theory and the transaction cost theory. In this section, we review theoretical literature that serve as the underpinnings of corporate governance.

2.2.1 Agency Theory

According to Jensen and Meckling (1976), the agency relationship is legal arrangement whereby *''one or more persons (principal) engage another person (agent) to perform some service on their behalf, which involves delegating some decision-making authority to the agent.''* The delegation of decision making authority give rise to the possibility of agents not acting in the best interest of the principal-thereby seeking their own parochial interest. The tension could result in the fact that managers instead of investing in projects that will add value to shareholder's investment, will rather perk out firm resources for personal use. This tendency gives rise to agency cost to the principal. With this, shareholders are required to employ effective ways of aligning mangers interest to their (shareholders') interest. Agency cost refers to the expenditure incurred on the mechanisms to align management and shareholder interest while reducing the maximizations of managers' parochial interest. One way shareholders do this is to link management compensation to firm performance. But even so, there have been studies that suggest that linking managers' compensation to performance provides incentive

for earnings management (Thiruvida and Huang, 2011). Other agency costs include expenses on auditing, budgeting, control and compensation systems, bonding, and other losses traceable to the separation of ownership and control of firms.

It is important to note that the costs that arise from agency problem are not borne by principals alone but agents as well. For instance cost like bonding cost is borne by agents in their quest to adhere to internal controls. This may not necessarily be financial in nature. Such cost may include the cost of additional information demanded by principals. Sometimes even after expending on auditing, budgeting, control and compensation systems and bonding there is conflict of interest between managers and shareholders. This situation may give rise to residual cost as put by McColgan (2001). This agency cost is borne by shareholders in the form of the share price that they pay (Abor and Biekpe, 2007).

2.2.2 Stakeholder Theory

The stakeholder theory of corporate governance was proposed by Freeman (1984) when he defined the theory as "*any group or individual who can affect or is affected by the achievement of the organization's objectives*". This theory is said to have been emanated from the combination of a number of sociological and other organizational disciplines (Wheeler et al, 2003). According to this theory, because of globalization of markets and the use of technology, business are now influenced by a number of stakeholders other than their shareholders and these stakeholders are to be considered in deciding on critical success factors of the firm. This theory of corporate governance argues about the fact that attention should be given to all other stakeholder groups in addition to the investors in the firm (Freeman, 1984; Gibson, 2000). Some of these interest groups are customers, suppliers, employees and even the local

community. It is therefore important that as far as possible, these groups are represented on the board to ensure effective corporate governance.

In this regard, corporate boards are to be as divergent as possible in order that representatives of all parties are involved in the decision making process that have the tendency to impact on the organizational success. Therefore the board room becomes a place where consensus among people with varying views is reached or where cohesion is created (Donaldson and Preston, 1995; Luoma and Goodstein, 1999: Abor and Biekpe, 2007). In line with this theory, Clarkson (1995) posited that an organization runs as a system, in which there are several stakeholders and the purpose of the organization is to create wealth for these stakeholders. In this view of corporate governance, there exists no superior interest of one stakeholder but rather managerial decision making should interest all stakeholders' intrinsic value, and that no sets of interests should be considered to dominate the others (Donaldson and Preston, 1995).

This theory deviates from the traditional agency theory in the sense that the agency theory enjoins managers to serve the interest of shareholders but the stakeholder theory posits that managers have a whole network of relationships to satisfy and that ought to balance the interest of all the stakeholders of the firm. This approach is beneficial in that it makes all the other stakeholders feel a part of the success of the business and that work towards a common goal. In a study by Longo and Mura (2008), stakeholder approach toward employees can bring about the strengthening of internal legitimacy a feeling that can gear employees on to do more thereby leading to improved company competitiveness on the basis of intangible resources developed by company employees.
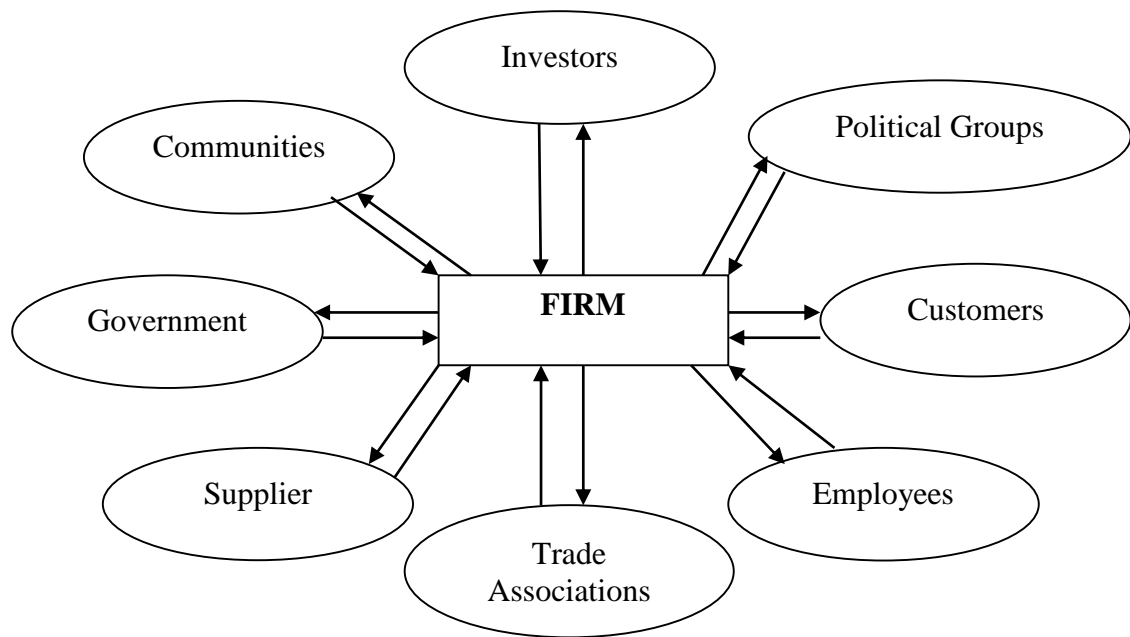
Source: The Stakeholder Model (Donaldson and Preston, 1995)

2.2.3 Stewardship Theory

Unlike the agency theory whose root is found in economics, the stewardship theory has its root from psychology and sociology. In psychology and sociology there are theories that concerns with the behaviors of man. In some of these theories, leaders and managers for that matter are motivated by the need to achieve. The achievement of success in especially challenging situations provides a feeling of intrinsic satisfaction and gain recognition from peers and bosses (McClelland 1961; Herzberg et al. 1959). Sometimes the individuals are melded with corporations and that managers' self-esteem is equated to his corporation's prestige (Donaldson and Davis, 1991). When this relationship occurs, in situations where managers regard an action as not personally rewarding, they may still carry it out from the sense of duty; normatively induced compliance (Etzioni 1975). According to Silverman (1970), what motivates individual calculative action by managers is their personal perception; an assumption that deviates from what the agency theorists posits (Jensen and Meckling 1976).

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In the words of Davis et al (1997), the stewardship theory is explained as follows; *"a steward protects and maximises shareholders wealth through firm performance, because by so doing, the steward's utility functions are maximised"*. Under this theory, the assumption is that both the steward and the principal benefits from a well built and strong organization. In this relationship, stewards are company executives and managers whose aims are to work for the shareholder, protect their interest and make returns on their (shareholders) investment for them.

According to Abor and Biekpe (2007), stewardship theory on the other hand suggests that managerial opportunism is not relevant and that the aim of management is to maximize the firm's performance since that speaks of the success and achievements of management. This theory deviates from the traditional agency theory in that, while the later assumes that there is some sort of mistrust among managers and shareholders, the former assumes that managers have no aim of seeking their parochial interest and that all they desire is to ensure a good job is done in the interest of all (Donaldson and Davis, 1991).

The stewardship theory assumes that managers and company executives in the execution of their duties have their integrity and reputation to protect. In a study by Daily et al. (2003), it was found that managers may protect their reputation by taking decisions that are inclined to making the firm maximize financial performance as well as shareholders' profits. Managers and executives may want to join back the market in search of other jobs as such a well-built reputation is of importance to them. Fama (1980) adds to this argument by stating that executives and directors also manage their careers in order to be seen as effective stewards of their organization.

2.2.4 Resource Dependency Theory

Resource dependence theory suggests that organizations' survival and success are contingent on their ability to control the flow of resources (Pfeffer and Salancik, 1978). Abdullah and Valentine (2009) draw a clear distinction between the resource dependency theory and the stakeholder theory by stating that the stakeholder theory focuses on relationships with many groups for individual benefits but resource dependency theory concentrates on the role of board directors in providing access to resources needed by the firm.

The resource dependency theory is attributed to Pfeffer (1973) and Pfeffer and Salancik (1978) as the proponents of the theory. The theory emphasizes that non-executive directors enhance the ability of a firm to protect itself against the external environment, reduce uncertainty, or co-opt resources that increase the firm's ability to raise funds or increase its status and recognition (Abor and Biekpe, 2007). The survival and growth of a firm is to large extent dependent on the amount of resources available to it. For this matter, rigorous efforts are made to ensure the availability of resources necessary for the survival and development of the firm. According to Abor and Biekpe, (2007), the board is hence seen as one of a number of instruments that may facilitate access to resources critical to company success.

In a work by Hillman *et. al* (2000), the resource dependency theory is seen to focus on the role that directors play in providing or securing essential resources to an organization through their linkages to the external environment. According to this theory, board members are appointed based on their representativeness of outside organizations that can gain the firm access to resources critical to firm success; a position that is supported by Johnson *et al* (1996). This means that a board that has a tax expert on it may be able to provide the firm with tax advice. One with a legal expert will also be able to access free legal counseling during board meetings.

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Last but not least, a board with a financial analyst may also benefit from free advice on the market prospects of the firm.

In a study by Abor and Biekpe (2007), Pfeffer and Salancik, (1978) are cited to provide some four primary types of broadly defined resources provided by boards of directors. These are, advice, counsel, and know-how; legitimacy and reputation; channels for communicating information between external organizations and the firm; and; preferential access to commitments or support from important actors outside the firm. Johannisson and Huse (2000) assert that these roles are played by directors mainly through their social and professional networks. In the provision of their roles, directors can be classified into four categories of insiders, business experts, support specialists and community influentials (Abdullah and Valentine, 2009). The insiders are the current and former executives of the firm who provide expertise in specific areas like finance and law. The business experts are current, former senior executives and directors of other large firms who provide expertise on business strategy, decision making and problem solving. The specialists are the lawyers, bankers, insurance company representatives and public relations experts who provide support in their individual specialized field. The community influentials are the political leaders, university faculty, members of clergy, leaders of social or community organizations who have what it takes to influence public perceptions about the firm.

2.2.5 Transaction Cost Theory

In the introduction of the transaction cost theory of corporate governance, Coase (1937) accepted the neoclassical economic assumption that markets exchanges are in theory the most efficient way of allocating resources but in the real world, there are no frictionless markets (Allen et al., 2009). These frictions (transaction costs) are associated with the negotiation of

market contracts and deals. Coase (1937) then argued that trade will be arranged within a firm when the transaction cost in using the market exceeds the cost of using an internal organization. According to Williamson (1985), transaction costs include the costs of information search, negotiation and re- negotiation, contracting, and enforcement.

In the words of Abdullah and Valentine (2009), "the underlying assumption of transaction theory is that firms have become so large that they in effect substitute for the market in determining the allocation of resources." This makes the structure of an organization a tool to determining price and production. In this arrangement, transaction cost theory suggests that managers are opportunists and may arrange firms' transactions to their interests (Williamson, 1996).

2.3 Review of Empirical Literature

2.3.1 What is stock return synchronicity?

Compared to other theories and concepts like the capital structure, dividend policy, corporate governance, stock return synchronicity is new in finance literature. Seminal studies into the area started around 2000 when Morck et al (2000) defined the concept as the extent to which the return of the stock of a particular firm co-moves with the market return. After these studies, several others have given similar definitions of the concept. Du et al (2007) defined synchronicity of stock price movement as the extent to which individual stock prices move up and down en masse. In recent times, Khandaker (2011) also explained stock price synchronicity as the tendency of a stock market to move in the same direction in a particular period of time; such as a given day or week. In these definitions, stock return synchronicity could be seen from two main focal points; first is market wide synchronicity and then firm level synchronicity. Market wide synchronicity can be described as the extent to which stocks on a particular market

moves together (either up or down) in a given time. Firm level synchronicity can be described as the extent to which a particular stocks price moves together with the market return in a given time. This study concentrates on the firm level synchronicity. It is also important to note that studies have averaged firm level synchronicity to ascertain market wide synchronicity. The concept of stock return synchronicity assumes that stock prices and that returns are explained mainly by two sets of information. The first is information that is related to the specific firm whose stock price or return is in question; second by market wide information. If a stock return is explained more by the market information, then that stock's return exhibits more synchronicity. In contrast, if the stock return is explained more by the firm specific information, then that stock exhibits idiosynchratic dependency.

In Morck et al. (2000), it is suggested that stock return in a high per capita GDP economies move in a relatively unsynchronised manner while stock prices in low per capita GDP economies tend to move up or down together. However, even before Morck et al. (2000), Roll (1988) had posited that the degree of stock price co-movement depends on the relative amounts of firm-level and market-wide information that have been capitalized into stock prices. Some studies have associated this situation with the institutional quality in a given country. Morck et al. (2000) stated that in the mid-1990s, stock prices in low-income and weak-institution economies moved much more synchronously than those in high-income and strong institution economics. Following the work of Morck et al (2000), Fox et al. (2003) found firm-specific price variations to be significantly higher in the years following a major historical tightening in the US disclosure laws than in prior years. It follows that greater firm specific variation reflected in stock prices is linked to better disclosure of corporate information. A year after Fox et al (2003) study, Bushman et al. (2004) documented that stock returns synchronicity is lower with a more developed financial analysis industries and with a freer press than in countries

where such industries are less developed and the press under greater restraints. Also the stringency of a country's prohibitions against insider trading has been found to be positively correlated with the asynchronicity of individual stock returns (Beny, 2005).

The concept is also useful in the context of capital allocation both on country level and firm level. In a study by Wurgler (2000), it was found that the efficiency of capital allocation across countries is negatively correlated with stock return synchronicity on the stock exchange of the country. Durnev, et al (2003) also found firms that exhibit less synchronicity as likely users of more external financing and that such firms are able to allocate capital in a more efficient manner and are also seen to be transparent.

2.3.2 Measurement of Synchronicity

The measurement of stock return synchronicity was pioneered by Morck et al (2000). Their study proposed two main ways of measuring stock return synchronicity. These were the classical measure and the R-square measure. Later, Skaife et al. (2006) introduced the zero return day measure.

Classical stock synchronicity measure

This measure proposed by Morck et al. (2000) is used in measuring market wide synchronicity. The measure fails in measuring firm level synchronicity. Morck et al. (2000) used the Classical stock synchronicity model to capture stock price synchronicity over a period of time for the market as a whole. The model is estimated as follows:

$$f_{jt} = \frac{MAX[n_{jt}^{up},\ n_{jt}^{down}]}{n_{jt}^{up} + n_{jt}^{down}}$$

In this estimation, f_{jt} is the change in price (which could be up or down) of the stock of country j in week t. n_{jt}^{up} is the number of the stock in country j whose prices rise in week t and n_{jt}^{down} is the number of stocks in country j whose prices fell in week t. In using the classical measure the number of stock that gained in price within a given period is recorded as well as the number of stocks that loss for the period. The two are compared and the maximum number is taken as the numerator for the measure. The total number of stocks that changed prices for the period is used as the denominator by adding the two recorded figures. In this method the maximum a country could record is 1 which indicates that stock prices are perfectly synchronized and a minimum of 0.5 which indicates that prices are not synchronized.

The R Square Measure

The R square is the synchronicity measure that is widely used in literature (Morck et al. 2000; Durnev et al., 2003; Chan and Hameed, 2006; Jin and Mayers, 2006). In using this approach, the market model is estimated and the R square of the regression model is used as a proxy for stock return synchronicity. Since the market model regresses the individual stock return on market return, the R square from the model is interpreted as the extent to which the market return explains the individual stock return. This measure makes it possible for firm level synchronicity to be estimated. Averages are also taken to represent the market wide synchronicity. However, the method cannot estimate synchronicity for a short period of time (say a given week). Below is an illustration of the R square measure:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t}$$

Where $R_{i,t}$ is the firm i return for period t, $R_{m,t}$ is the market return at t period, $\varepsilon_{i,t}$ is the error term and α_i and β_i are estimated parameters. The R square measure is the percentage of variation in periodic return of stock i explained by variations in market return, or:

$$R_{it}^2 = \left(\frac{\text{Cov}(R_i, R_m)}{\sigma_i \sigma_m} \right)^2$$

Where $\text{Cov}(R_i, R_m)$ is the covariance between the stock returns and the market return and σ_i is the standard deviation for stock i and σ_m is the standard deviation for the market. By this method, a higher R square indicates that the market return explains a higher proportion of stock $i's$ return; hence, high synchronicity.

Zero-return measure

The third and final measure of synchronicity is the zero-return measure. This was proposed by Skaife et al. (2006). They argue that the R-square statistics fails to provide an adequate market-level measure of synchronicity. This led to their proposition of the zero-return measure as a better measure than the classical synchronicity and R-square measures. According to the zero-return measure, for a marginal investor to trade, the information signal received should be enough to exceed the cost of trading. In case the marginal investor does not trade, there will be no change in price and thus a zero- return day for such stock. The zero-return days measure captures the variation in stock price synchronicity across firms due to the differences in firm-specific information. Nevertheless, this model requires each firm's long-term stock return data to capture the market co-movement (Khandaker, 2011). The proportion of zero-return days is measured by calculating the number of zero-return trading days over a fiscal year divided by the total number of trading days in that fiscal year. The zero-return measure is calculated as follows:

$$NOZRD = \frac{No\ of\ Zero\ Return\ Days}{Total\ Trading\ Days\ in the Year} \times 100$$

For the purpose of this study, the R- square measure is used in measuring the synchronicity which is our proxy for corporate transparency. Our choice of the R- square measure also stems from the fact that it has been established to be the most widely used measure of synchronicity in finance literature.

2.3.3 Determinants of Synchronicity

Extant literature has found relationships between stock return synchronicity and many other variables; both country wide and firm specific. Although this study focuses on the firm level synchronicity, it is important to also review literature that has also established relationships between macro factors and synchronicity. Drawing a relationship between synchronicity and transparency, Dasgupta et al. (2006) documented a strong correlation between corporate transparency and stock price synchronicity. In their explanation, they suggested that greater transparency and for that matter lower stock price synchronicity means there is early and timely disclosure of firm specific information to the market participants.

In Morck et al (2000), factors such as good governance index, number of stock listed in the market, GDP per capital, and geographical size were found to be statistically significant determinants of synchronicity. However, they did not find, anti-director right index, earning co- movement index and variance on GDP growth to be statistically significant in explaining synchronicity. Li et al. (2003) also find capital openness to be a significant determinant of synchronicity. Industry structure, size, and diversification were found to be statistically significant in explaining synchronicity by Durnev et al. (2003). In a study by Skaife et al. (2006), factors such as firm's research and development expense, analysts forecast earnings, standard deviation of ROA, market value of equity, average weekly turnover were all found to be significant in explaining synchronicity.

In an earlier study, Roll (1988) studied the market model of US firms and documented that stock in the US exhibited low levels of R square which means that much of the firm-specific information was captured in the stock prices. The study did not find firm-specific stock price movements to be associated with identifiable news releases. This suggests that the financial press misses a greater part of information that firms generate privately or that the variations are purely due to noise trading (Chan and Hameed, 2006). Chan and Hameed (2006) again posit that the level of a stock's trading volume affects stock return synchronicity. It influences the speed of price adjustments. Their argument is on the basis that stocks that trade actively are able to react to market information in a timely manner and that individual stocks will be more synchronous with the market . On the other hand, inactive stocks delay in reflecting market information and hence exhibit less stock return synchronicity.

According to Skaife et al. (2006), one major reason why there will be much of firm specific return volatility is a high level of volatility in the fundamentals of the firm. The standard deviation of return on assets captures the volatility of firm fundamentals. Market participants are guided by the profit levels of the firm. So long as the profit levels keep changing, participants may want to vary the amount of stocks of such firm that is held. In a study by Wei and Zhang (2006), it was found that within the U.S., greater volatility in a firms' return on equity is associated with increased stock return volatility.

Also according to Piotroski and Roulstone (2004), the industry a firm belongs has the ability to influence its stock return synchronicity. Firms operating in a similar industry may face similar constraints due to regulation and that their prices are expected to have high stock price synchronicity. In this regard, both the size of the industry in terms of the number of firms in that industry and the assets base of the industry may influence synchronicity positively.

In a study by Gul et al. (2010), using Chinese firms, they found that the M/B coefficients were significantly negative (p<0.01), which suggests that firms with high growth potential tend to have more firm-specific information incorporated into their stock prices. When a firm has high growth opportunities, it provides to the market more firm specific information in order to signal to the market that it has prospects so as to enjoy favorable reaction from the market. The same can be said for the use of debt. Due to the monitoring role of debt, firms that tend to use more debt have more firm specific information incorporated into their stock prices.

2.3.4 Does firm specific variation/asynchronicity represent transparency or noise?

Stock return synchronicity is explained to mean the extent to which the return of an individual stock moves with the market. Widely in literature, this has been used as price informativeness and an inverse measure of transparency. In a study by Mbarek and Hmaied (2012), opaque banks are interpreted as banks with higher stock return synchronicity. Shaiban and Saleh (2010) document that their findings show significant support for the current debate regarding stock price synchronicity as a measure of share price informativeness. Gul *et al.* (2010) also show that the amount of earnings information reflected in stock returns is lower for firms with high synchronicity. The understanding is that stock prices reflect two main types of information; first market-wide information and second firm specific information. When the market model is estimated, the R square of the estimation is interpreted as the extent to which the market return explains the individual stock return. This means that the difference between one and the R square (1- R^2) is the extent to which firm specific information is reflected in the stock price; a measure of opaqueness of the firm. The higher the amount of firm specific information reflected in the stock price, the more transparent the firm is and vice- versa.

Hillier and Lhaopadchan (2012) used firms from Thailand to research into whether corporate governance provide more transparency in emerging markets? In their study, stock return synchronicity was used as a measure of transparency. Their results were consistent using alternative proxies for information disclosure. In a study by Jin and Myers (2006), they conclude that lack of transparency increases R^2. Using stock returns from 40 stock markets from 1990 to 2001, they find strong positive relations between R^2 and several measures of opaqueness. In their study, Jin and Myers define opaqueness as the lack of information that would enable investors to observe operating cash flow and income and determine the firm value. They considered only value-relevant information which may not necessarily be same as accounting details. According to the study, accounting numbers could be misleading even in the US as recent scandals have emanated. This led them to use five alternative measures of opaqueness, the results of which are all consistent with the R^2 measure.

Although the argument of firm specific variation being an indication of improved transparency has been convincingly made in literature (Jin and Myers, 2006), there exists the possibility that it signifies noise trading. In Roll (1988), he explains noise as a frenzy unrelated to concrete information or a mania that periodically grip investors. He posits that firm specific variation might reflect noise. For this reason, there is the possibility that firm specific variation could be interpreted as noise trading.

However, in separate studies, Campbell *et al.* (2001) and Morck *et al.* (2000) found that over the decades, synchronicity on the US market has been decreasing steadily. If firm specific variation were to be as a result of noise, then the US market has become steadily noisier over the decades of the twentieth century, and that the markets of developed economies are more afflicted by noise than are emerging markets (Li et al., 2003); a situation that is in odd with the

general understanding that the US market has been over the years become more efficient and that the stock markets of developed countries are not less efficient than those of emerging economies. To accept firm specific variation as noise will mean that: much noise is evident in countries with less official and insider corruption (Morck et al, 2000), more efficient capital allocation (Wurgler, 2000) more scope for privately informed arbitrage (Beny, 2000).

Juxtaposing these findings with the proposition by Roll (1988), this study finds it difficult to accept that firm specific variation is as a result of noise trading. However, there is not enough evidence to say otherwise. This study therefore follows the work of Li et al. (2003) in applying *lex parsimoniae* (Ockham's razor) which at current time is in line with the conceptual arguments that firm-specific variation is not noise.

2.3.5 Stock Return Synchronicity; implications for firms

"The price system is just one of those formations which man has learned to use (though he is still very far from having learned to make the best use of it) after he has stumbled upon it without understanding it" Hayek (1945). This goes to suggest that there are enormous significance that could be drawn from the price behaviors of stocks. Understanding the pattern of synchronicity among stocks may have some implicit benefits to the market participants.

First, stock return synchronicity may have an influence on portfolio risk calculations and option valuation (Li et al., 2003). In a study by Campbell et al. (2001), it was documented that most of the investors on the US stock exchange are not fully diversified and that a higher firm specific variation only exposes them to higher risk. That notwithstanding greater firm specific variation will mean that investors will have to employ a larger number of stocks in order to be able to diversify fully. The argument holds for emerging market as well. Markets that have

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higher levels of firm specific variation (lower synchronicity) will require more stocks in order for an investor to fully diversify. Campbell *et al.* (2001) added that greater firm-specific variation will affect option prices. They explained by making reference to the Black Scholes equation and other option valuation techniques to state that option prices depend on the risk (firm specific) of the underlying asset. Campbell *et al.* (2001) further added that as firm specific variations are more capricious, event studies become less effective in identifying abnormal returns of a given size and incidence.

Again, stock return synchronicity plays a vital role in corporate governance decisions. When the stock return of a firm falls several corporate governance mechanisms come into play. In a study by Morck *et al.* (1989), it is documented that boards dismiss the chief executive officer (CEO) in response to negative stock market performance. Given that this was the situation, boards will not be treating CEOs fairly in that negative stock market performance of a firm may be as a result of firm specific negative performance or market wide negative performance. Morck *et al.* (1989) show that boards only dismiss the chief executive officer (CEO) in response to negative firm specific stock market performance, but not negative industry or market movements. Stock return synchronicity therefore provides a guide to understanding to what extent the performance of stock is dependent on firm specific or market wide variations.

According to Li et al (2003), other corporate governance mechanisms, such as shareholder lawsuits, proxy contests, institutional investor pressure, executive stock options, and the like all depend on firm specific share price changes which help to distinguish well-run from poorly-run firms. In order that corporate governance mechanism will achieve the maximum benefits, there should be low levels of synchronicity so that there can be a more differentiable firm-specific performance is from general trends (Li et al, 2003).

2.3.6 Corporate Governance and Transparency

According to Gul and Leung (2004), the corporate board is responsible for the policies of the firm and that firms with strong boards are more likely to pursue policies that ensure higher financial transparency. But then what are those characteristics of the board that qualifies it as a strong board or otherwise? This makes it necessary to investigate the corporate governance mechanisms and board characteristics that have the tendencies to influencing the transparency in a firm.

CEO Duality

Several studies have acknowledged that concentrated decision making power as a result of CEO duality may constrain board independence and impair the board's oversight and governance roles including corporate disclosure/transparency policies. These studies have often cited the agency theory as the basis for their conclusions (Gul and Leung 2004; Fama and Jensen, 1983; Carver, 1990; Millstein, 1992; Whittington, 1993; Brickley et al., 1994; Worrell et al., 1997). CEO duality creates a situation where there exists a strong individual power that has the potential of eroding the ability of the larger board to exercise their monitoring and effective controlling duties (Gul and Leung, 2004). According to Fama and Jensen (1983), CEO duality signals the absence of separation of decision control and decision management and that ''the board is not an effective device for decision control unless it limits the decision discretion of individual top managers''. Having the same individual as the CEO as well as the chairman of the board reduces the impact of the independent role that boards are supposed to play and corrodes the power of oversight that is exerted in the board (Finkelstein and D'Aveni, 1994; Millstein, 1992).

The role of the board is to serve as a check on managers so that they (the board) can reveal the hidden activities of managers if so exist. However, in the event that the CEO doubles as the chairman of the board, then it becomes very difficult for the board which is chaired by the CEO to reveal the hidden activities of management spearheaded by the same CEO. In this regard, firms in which there exists CEO duality are likely to be more opaque than those that separate the two entities. This view is shared by Forker (1992) who asserts that CEO/chairman duality poses a threat to disclosure quality. In his study, Forker found a significant negative relationship between the existence of CEO/chairman duality and the quality of share-option disclosure; adding that in the presence of CEO duality, even outside directors are perceived to have reduced influence in strengthening the quality of financial disclosure. In the case that the chairperson of the board is independent of the CEO, there is less likelihood for him to withhold unfavorable information from outsiders because he is perceived to enhance the board monitoring role by acting as an independent check on the CEO (Chau and Gray 2010; Collier and Gregory, 1999).

Notwithstanding, there are some associated benefits that a firm may get from practicing CEO duality; however, it is not clear if that could be in the form of increased transparency. A less persuasive perspective based on stewardship theory (Donaldson, 1990; Finkelstein and D' Aveni, 1994) suggests that CEO duality helps provide strong unambiguous leadership and are in a better position to make decisions that are in the interest of the firm (Gul and Leung 2004; Brickley et al. 1997).

Board Composition / Independence

According to John and Senbet (1998), the composition and for that matter the independence of a corporate board serves as a necessary determinant of the effectiveness of the monitoring

provided by such board. In literature, board composition and independence have been used interchangeably. Studies that use board composition refer to it as the proportion of independent, outside directors of the board. As the number/proportion of independent, outside directors increases board independence increases as well (Cheng and Courtenay, 2006). These independent directors are to ensure that the likely effects predicted by the agency theory of corporate governance do not emanate. Wan- Hussin (2009) cited Clarke (2006) in stating that: "theoretically, independent directors can monitor management effectively as they have no need or inclination to stay in the good graces of management, and can speak out, inside and outside the boardroom, in the face of management misdeeds, in order to protect the interests of shareholders". It is in line with this theory that the Sarbanes Oxley's Act of 2002 required all members of a listed company's audit committee to be independent directors. This is to ensure that there is proper check on management on behalf of shareholders. It is important to note that these checks on management are necessitated as a result of shareholders and outsiders desire for transparency.

However, empirically, there have been mixed results on whether board composition affects management's disclosure tendencies. Forker (1992) found the inclusion of independent non-executive directors on boards to strengthen the quality of financial information disclosure and also make firms less likely to withhold unfavorable information to outside investors. In a study by Cheng and Courtenay (2006), using data from Singapore, it was found that firms that have higher proportions of independent directors on their board, or with a majority of independent directors on the board, have higher levels of voluntary disclosure. Patelli and Prencipe (2007) in using Italian companies with dominant shareholders also had results consistent with Cheng and Courtenay (2006).

Albeit these evidence in favour of board composition, some studies do not find any significant relationship between board composition and disclosure/ transparency. In separate studies, Ho and Wong (2001) and Haniffa and Cooke (2002) could not document any significant relationship between the extent of independent directors inclusion on boards and the extent of voluntary disclosure in Hong Kong and Malaysia respectively. According to Carter and Lorsch (2004) as cited in Wan- Hussin (2009), board independence may come with its own downside; adding that sometimes independence can make directors even more captive to management's view of the business. Bringing on board outside directors who may not be conversant with the operations of the firm may not be in the interest of shareholders. This may make it difficult for such persons to unearth the opaque activities of management since they lack critical understanding of how the firm operates. To help surmount this inconvenient truth, Carter and Lorsch (2004, p 46) suggest that "it might be better if a board has a few nonexecutive directors who have deeper knowledge of the company and its industry because of prior association even though this knowledge prevents them from being classified as truly independent."

Board Size

To ensure that managers do not keep their activities on the blind side of shareholders (to ensure transparency), the need for empanelling corporate boards arises. If the board checks on management and that break the tendencies of opaqueness of management activities, what then should be the appropriate board size? If corporate board ensures transparency, does an increased board size necessarily increase transparency? According to Jensen (1993), a larger board size can lead to less candid discussion of critical issues which could also lead to poor monitoring. The study concluded that the optimal board size that companies should keep should be eight (8). Also, in the view of Lipton and Lorsch (1992), large boards are less effective compared to small boards because of the free rider effect; a situation whereby some members

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of the board free ride on the efforts of others. Conversely, Adams and Mehran (2003) contend that a bigger board can effectively monitor the actions of management and provides better expertise. There appears to be mixed empirical results on the direction of influence of board size. In this study we investigate whether there is a possible non-linear relation between the size of corporate board and the level of corporate transparency.

Audit Quality/ Big4Auditors

The theoretical underpinnings of the demand for the services of external auditors stems from the agency theory (Chaney et al., 2004; DeAngelo, 1981; Dye, 1993; Watts and Zimmerman, 1986). The separation of ownership and control may result in management seeking their parochial interest (Fama and Jensen, 1983) hence the need to check on their activities especially the financial statements that they present to shareholders. To ensure that the activities of managers are transparent, quality audit services must be employed by shareholders. A careful review of literature reveals that there are two main tenets of audit quality (Lin and Liu, 2009; Lee et al, 2003; Copley and Douthett, 2002). First is the ability to detect misstatements and second, the willingness to report the misstatements uncovered in an audit engagement. Due to the agency theory there is the need for shareholders to employ audit firms that have the ability to provide quality audit; a situation that will ensure increased transparency.

According to Beasley et al (2005: 524), most studies classify the largest international accounting firms, the Big4 firms, as high quality auditors. These firms are PricewaterhouseCoopers, Ernst and Young, Deloitte and Touche and KPMG. Previous studies argue that the Big4 audit firms have the ability to provide quality audit than the non- Big4 audit firms theoretically due to the fact that large audit firms with greater investment in reputational capital has more incentives to minimizes audit errors through "auditor-reputation effects"

(DeAngelo, 1981; Beatty, 1989). This is because they stand a chance of reputational damage if they provide substandard services. In recent times there has been an increased necessity of audit quality as part of corporate governance mechanism especially for emerging markets where there exist relatively weaker institution regulations on companies (Cohen et al., 2002; Fan and Wong, 2005). Literature does not mince words in stating that high quality audit has the ability to uncover and report misstatements or irregularities in the financial statements and hence ensures transparency. Therefore, we expect audit quality to be negatively related to stock return synchronicity.

Institutional Ownership

Institutional ownership is very crucial as a corporate governance variable. There is a large consensus built in literature on the monitoring role of institutional investors (Elgazzar, 1998; Sellah and Mallin, 2002; Kim and Nofsinger, 2004; Leng, 2004; Solomon and Solomon, 2004; Seifert et al., 2005; Le et al., 2006; Langnan et al., 2007; and Ramzi, 2008). These studies provide reasons why institutional owners/investor increase monitoring and hence transparency. Firstly, institutional investors usually hold a large number of shares. In this case, the benefit they seek to attain is worth the effort as compared to an individual investor who owns just a minute portion of the equities. Secondly, institutional investors' decision to liquidate their shares in an event of dissatisfaction with managerial activity opaqueness can affect the share price much more than a single individual investor. Also, these are usually large companies who have the needed resources to monitor management activities. Institutional investors also have fiduciary duties to perform for their ultimate owners thereby the need to protect every investment made with owners' funds. The close monitoring role played by institutional owners/investors results in the reduction of information asymmetry and the enhancement of transparency. In this study we expect institutional ownership to positively influence

transparency. However, we are mindful of the fact that pockets of studies do not find significant evidence to support the increased transparency/disclosure that results from institutional ownership. A case in point is a study by Haniffa and Cooke (2002) who predicted a positive impact of institutional ownership on voluntary disclosure but found otherwise using data from Malaysian listed firms.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter of the studies discusses the methodological approach used by the study. The study follows the R square approach of synchronicity as used by Morck et al. (2000) and Gul et al. (2010). This chapter also discusses the estimation of the market model through which the synchronicity measure is attained. As well, it discusses the empirical model, data used, as well as the variables employed in the empirical econometric model estimation.

3.2 Estimation of synchronicity

For the purpose of this study, the R- square measure is used in measuring the synchronicity which is our proxy for corporate transparency. This stems from the fact that first the classical synchronicity measure only aids in calculating the country or market level synchronicity and not that of firm level. Also according to Khandaker (2011), the zero-return measure requires each firm's long-term stock return data to capture the market co-movement. Also, the model uses trading days' information while this study only uses daily returns. Our choice of the R-square measure also stems from the fact that it has been established to be the most widely used measure of synchronicity in finance literature. In Morck et al. (2000), both the R-square and the Classical measures were used. Skaife et al. (2006) used the R-square measure and the Zero-return measure. Several other studies have also used just the R- square as a measure of synchronicity (Li et al., 2003; Durnev et al., 2003; Durnev et al., 2004a; Chan and Hameed, 2006; Durnev et al., 2004b).

In our use of the R-square measure, we estimate the market model making two different assumptions. The first is that the ability of the market return to determine a stock's return is contemporaneous and specifies the market model as follows:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \tag{1}$$

Where $R_{i,t}$ is the firm i return for period t, $R_{m,t}$ is the market return at t period, $\varepsilon_{i,t}$ is the error term and α_i and β_i are estimated parameters. The study estimated the market model using the daily data for each year for each firm. This was done in order to arrive at an R square figure for each firm for each year (a proxy for transparency for each firm for each year).

Secondly, we follow the work of Gul et al. (2010) and assume a non- contemporaneous effect of the market return on the individual return and estimate the market model as follows:

$$R_{i,t} = \alpha_i + \beta_1 R_{m,t} + \beta_2 R_{m,t-1} + \varepsilon_{i,t} \tag{2}$$

However, we do not include industry return in the estimation of the market model. The study used both market models to arrive at two sets of R- squares; ***R Square and * R Square*** respectively. This helped in comparing finding in an efficient market where the transfer of information is contemporaneous and an inefficient one where the transfer is non-contemporaneous. It is worth noting that conclusions based on the two approaches in literature have not been significantly different.

After the R squares are obtained, in order to correct for the bounded nature of R-square within [0, 1], we used a logistic transformation of R-square as used by Gul *et al.* (2010) as follows:

$$SYNCH_{i,t} = log\left(\frac{R^2}{1 - R^2}\right) \qquad (3)$$

Where R^2 is the coefficient of determination from the estimation of Eq. (1) and (2) for firm i in year t. When a firm's $SYNCH_{i,t}$ is high, it means that such a firm is synchronous with the market; hence, less transparency in such firm. The study measures $SYNCH_{i,t}$ based on daily returns of firm i.

3.3 Exploring synchronicity

To help achieve objective one, the study performs a trend analysis in the average levels of R^2 on the entire market from 2000 to 2009. For the purposes of objective two, the study performs a non-parametric Wilcoxin Rank Sum test in comparing R^2 on the basis of size, years spent on the exchange and industry type. The analyses are made between smaller firms and larger firms using log of asset as a measure of size, financial firms and non-financial firms (industry type), as well as between old and newly listed firms. Industry type was measured as a dummy; 1 if the firm is a financial firm and 0 if otherwise. Years spent on the exchange was also a dummy; 1 a firm is newly listed and 0 if otherwise. In grouping the firms on the basis of size and years listed on the exchange, the median was used under both cases. Firms that had been listed for more than the median age were considered old firms while those that had been listed for less than the median age were considered newly listed. Firms with sizes more than the median size were considered larger firms while those with sizes less than the median size were considered smaller firms.

3.4 Empirical Model

We hypothesize that corporate governance will influence the level of corporate transparency and that information efficiency. Consequently, we specify the following model for estimation:

$$SYNCH_{i,t} = \beta\ CopGov_{i,t} + \gamma\ \text{Firm Controls}_{i,t} + \eta_i + \delta_t + \mu_{i,t} \qquad (4)$$

where *i* indexes firms and *t* indexes years. The dependent variable $SYNCH_{i,t}$ is estimated from the market model to measure corporate transparency. β is a vector of parameters to be estimated on explanatory variables. $CopGov_{i,t}$ is a vector of the corporate governance variables. γ is a vector of parameters to be estimated on the control variables. $\text{Firm Controls}_{i,t}$ is a vector of firm control variables that have been established in literature to influence transparency (synchronicity). η_i are firm fixed effects which control for time-invariant unobserved firm characteristics. δ_t are year fixed effects which control for macroeconomic changes. $\mu_{i,t}$ is the random error term of the equation.

3.4.1 Corporate Governance variables

The study employed a total of five corporate governance measures in investigating the determinant role corporate governance can have on transparency. These variables were Board Size (BS), Audit Quality (BIG4AUD), CEO Duality (CEO), Board Composition (BC) and Institutional Ownership (INO).

Table 3.1 Measurement of Corporate Governance Variables

Variables	Definitions
BS	Natural log of total number of board members.
CEO	Dummy variable with the value of "1" if the CEO is the same as the chairman and "0" if otherwise.
BIG4AUD	Dummy variable with the value of "1" if the firm is audited by any of the Big four Auditors and "0" if otherwise.
INO	The percentage of institutional shareholding relative to the total number of shares of the firm.
BC	The proportion of independent directors on the board

Source: Author's Compilation, 2013

3.4.2 Firm controls

After a careful review of extant literature (Gul *et al.*, 2010; Piotroski and Roulstone, 2004; Chan and Hameed, 2006; Ferreira and Laux, 2007) we include in our model three (3) control variables in order to minimize specification bias. These variables and their measurements are presented below as follows: earnings volatility (STDROA), market-to-book ratio (MB), Standard deviation of Stock return (STDRET).

Table 3.2 Measurement of Control Variables

Variable	Definition
STDROA	Volatility of a firm's earnings stream measured by the standard deviation of a firm's return on assets (ROA)s over the preceding five-year period, including the current year
STDRET	Standard deviation of Stock return computed as the standard deviation in the daily stock returns of a firm in a year
MB	Market-to-book ratio, computed as the total market value of equity, divided by the total net assets at the end of the fiscal year

Source: Author's Compilation, 2013

3.5 Data and Sources

The study uses a ten (10) year panel data spanning from 2000 to 2009 in the estimation. The use of this ten year panel data is purely due to availability of data and also to ensure that the time series dimension of the panel is not more than the cross sectional dimension- to ensure efficient estimation of the panel. The main source of the data is the GSE fact books. Data on the stock return synchronicity are obtained using the daily return from the Ghana Stock Exchange (GSE). Corporate governance data and all other control variables are obtained from the annual fact books produced by the GSE.

3.6 Justification of variables

Corporate Governance has been found by several studies to influence the level of transparency of a firm. According to Jin and Myers (2006), managers have the tendency to conceal bad news in attempts to protect their jobs. It is the duty of owners to put in place effective governance mechanisms that have the ability to break through the opaqueness of management and expose their (managers') secrets. In this regard, the specific governance structure put in place matters in the fight against management opaqueness. In this section of the study, the various governance mechanism employed by this study are revealed in relation to their potential direction of influence on transparency which in this very case is measured by stock return synchronicity.

3.6.1 CEO Duality

A number of corporate governance studies assert that a situation whereby the CEO happens to chair the board can raise issues of agency problems (Gul and Leung 2004; Fama and Jensen, 1983). In that case, the independence of the board and its ability to check on management is compromised. The basic question is how can a CEO who is also a manager chair a board that

is meant to check on its own activities? Empirically, several evidence is recorded in favour of the fact that CEO duality leads to increased management opaqueness and hence less transparency (Chau and Gray 2010, Gul and Leung 2004). Some few studies documents that CEO duality helps to provide an unambiguous leadership for the firm. However, there is not enough evidence that unambiguous leadership can have transparency benefits. Owing to this fact, this study expects COE duality to influence R square (synchronicity) positively.

3.6.2 Board Composition

The composition of the corporate board may influence synchronicity. According to Wan-Hussin (2009) and Clarke (2006), independent directors or non-executive directors do not have any inclination to remain in the good books of managers and so can speak out on issues both in and outside the board room. This means that an increased proportion of non-executive directors on the board will increase transparency as they will have no incentive to cover up the rot of management. If an increase in synchronicity signifies less of transparency, board composition is expected to have a negative relationship with synchronicity.

3.6.3 Board Size

The debate on the most appropriate board size needed to be in place to serve as enough check on management continues unabated. Even in earlier studies, researchers were divided on the size of corporate boards to keep. Jensen (1993) posited that a lager board can lead to a less candid discussion in board rooms which invariably reduces monitoring. This view is also shared by Lipton and Lorsch (1992) who assert that larger boards bring about free rider issues and hence less effective monitoring. However, Adams and Mehran (2003) maintain that a larger board can effectively monitor management in that such a board comes with an array of

expertise needed to unearth all managers' hidden activities. Board Size is expected to increase with transparency.

3.6.4 Audit Quality

Perhaps the most agreed upon corporate governance variable documented to influence transparency is audit quality. The consensus in literature is that quality audit can expose the opaque activities of managers (Lin and Liu, 2009; Lee et al, 2003; Copley and Douthett, 2002). These studies agree to the point that to ensure that the activities of managers are transparent, quality audit services must be employed by shareholders. The question has been what constitutes quality audit? In literature, studies have tried using constructs such as the BIG4AUD to characterize audit services provided by the big four auditing firms (PricewaterhouseCoopers, Ernst and Young, Deloitte and Touche and KPMG) as being of more quality. These firms have the necessary skill set needed to expose managers and also the incentive to protect their reputation by delivering quality services. We expect that firms that are audited by one of the big four audit firms to be more transparent and hence, less synchronous with the market.

3.6.5 Institutional Ownership

The presence of institutional owners on the shareholder list of companies means more to such company's transparency level. Institutional owners are usually large shareholders and that managers do not want to dissatisfy these institutions actions of whom can send strong and quick signals to the market. These are also large firm who usually have the resources to monitor management activities (Le et al., 2006; Langnan et al., 2007; and Ramzi, 2008). Close monitoring done by institutional owners results in the reduction of information asymmetry

leading to enhancement of transparency and hence less synchronicity. Institutional ownership is expected to have a negative relationship with stock return synchronicity.

3.6.6 Volatility of Firm Fundamentals

In a study by Skaife et al. (2006), it was documented that much of firm specific variation is experienced in firms that have high level of variation in the firm fundamentals. The study used the standard deviation of ROA as measure of volatility in firm fundamentals. As the fundamentals of the firm keeps changing, market participants vary the amount of stocks of such firm held. In this case, firm specific variation seen in the stock prices may be as result of the volatility in the firm fundamentals (profit). If volatility in firm fundamentals increases firm specific variation, then invariably it reduces market wide variation. Also in a US study by Wei and Zhang (2006) greater volatility in a firms' return on equity is associated with increased stock return volatility. Hence, we expect that standard deviation of ROA will have a negative relationship with synchronicity.

3.6.7 Market-to-Book

Gul et al. (2010) found that Market-to-Book was significantly negative in predicting synchronicity. Market-to-Book measures the growth opportunities of the firm. Firms with higher growth opportunities may want to signal to the market their abilities. In this case, such firms will be relatively transparent. They can afford to make outsiders see what the abilities of the firm are. For this reason, firms with higher Market-to-Book value will exhibit more of firm specific variation and less of synchronicity; hence more transparency.

3.6.8 Standard Deviation of Stock Return

Stock return synchronicity is explained to mean the moving of individual stock returns in line with the market return. This means that a moving stock is what shows that possibility of moving with the market. For this reason, the study includes the standard deviation of the individual stock returns in order to control for the difference between moving and non-moving stocks as well as between liquid and non-liquid stock.

Table 3.3 Summary Expectations

Variable	Symbol	Expected Sign
Board Size	*BS*	-
Board Composition	*BC*	-
CEO Duality	*CEO*	+
Audit Quality	*BIG4AUD*	-
Institutional Shareholding	*INO*	-
Market-to-Book Value	*MB*	-
Volatility of firm Fundamentals	*STDROA*	-
Standard deviation of Stock return	*STDRET*	+

Source: Author's Compilation, 2013

3.7 Estimation Technique and Robustness Checks

The study uses the Beck and Katz's (1995) panel corrected standard errors in the estimation of the empirical models. The Generalized Least Square (GLS) was used to check for robustness of the estimation. To further correct for possible thin-trading that might have existed in the daily stock return, the study further used the Dimson's Beta market model to generate a new set of synchronicity values which were also used as new dependent variable in another estimation.

CHAPTER FOUR

ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter discusses the analysis and findings of the study. The chapter discusses the current trend in the stock return synchronicity on the Ghana Stock Exchange as well as descriptive statistics of the other variables used in the study. The relationships between the variables are hashed out while discussing the empirical findings of the econometric models stated in chapter three. In this chapter, robustness checks are made on the empirical estimations to check for the consistency of the empirical findings when alternative estimation techniques are used.

4.2 Trend in Stock Return Synchronicity on the Ghana Stock Exchange

Figure 4.1 Trend in Synchronicity

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
RSQUARE	0.0429	0.0062	0.0302	0.0229	0.2955	0.0416	0.0396	0.0054	0.0088	0.0072
*RSQUARE	0.0446	0.0129	0.0347	0.0275	0.3503	0.0472	0.0407	0.007	0.0129	0.0098
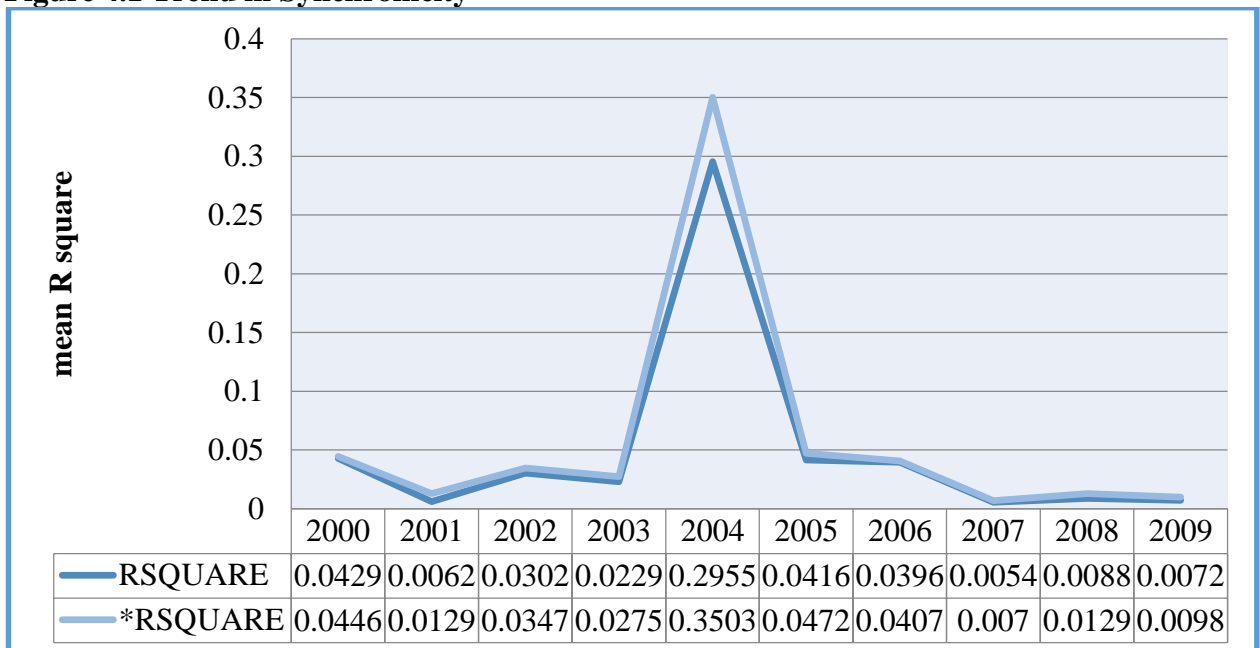
RSQUARE represents the R^2 from the model $R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots. (1)$
**RSQUARE represents the R^2 from the model $R_{i,t} = \alpha_i + \beta_1 R_{m,t} + \beta_2 R_{m,t-1} + \varepsilon_{i,t} \ldots\ldots. (2)$*
Source: computations from Research Data, 2013

Figure 4.1 above shows the trend in the stock return synchronicity on the Ghana Stock Exchange for the period 2000 to 2009. The figure shows the means of the R^2 from the two market models estimated by the study. These R squares are employed by the study as an inverse measure of transparency after passing through the logistic transformation $SYNCH_{i,t} = log\left(\frac{R^2}{1-R^2}\right)$ to arrive at the synchronicity score for each firm for each year. The trend indicates that over the years, R^2 has not been stabled at all. The mean R^2 has had angular shape characterized by sharp turns in alternating directions. This signifies a non-regular trend in transparency on the GSE for the period as against some developed markets where synchronicity has been reducing over the years. The trend seen in the R^2 is consistent in all our two different measures of synchronicity. Although the trend has been consistent in both measures of synchronicity, it is clearly shown that at every point in time, the R^2 from the simple market model ($R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t}$) is found to be lower than that from the model in which the lag of the market return is included as a regressor ($R_{i,t} = \alpha_i + \beta_1 R_{m,t} + \beta_2 R_{m,t-1} + \varepsilon_{i,t}$). This shows that the synchronicity scores are increasing functions of all possible market wide variables (information). As the number of variables that reflect market information is increased in the model, the R^2 from such model employed as a measure of synchronicity (after it has been passed through the logistic transformation) is increased. This implies that as market wide information considered in stock pricing increases, stock return synchronicity is more likely to increase to reflect all those information incorporated.

Also the trend as shown in the figure 4.1 reveals that the highest level of R^2 was recorded in 2004. Put differently, general levels of transparency decreased drastically in 2004. In the said year, the mean R^2 recorded was 29.5% and 35% for equations (1) and (2) respectively. The lowest R^2 was also recorded in 2007 with mean values of 0.5% and 0.7% for equations (1) and two respectively. The GSE is noted to have shown significant changes in the year 2004 with

analysts unable to find reasons for. In the same year, the GSE recorded the highest growth rate in the Sub- Saharan Africa. It is however unknown if that could translate into higher levels of synchronicity. The study therefore recommends further enquiry into this finding.

4.3 Comparison of Synchronicity (R^2) level of firms on basis of Years spent on Exchange

Figure 4.2 Synchronicity of Old Vs New Firms
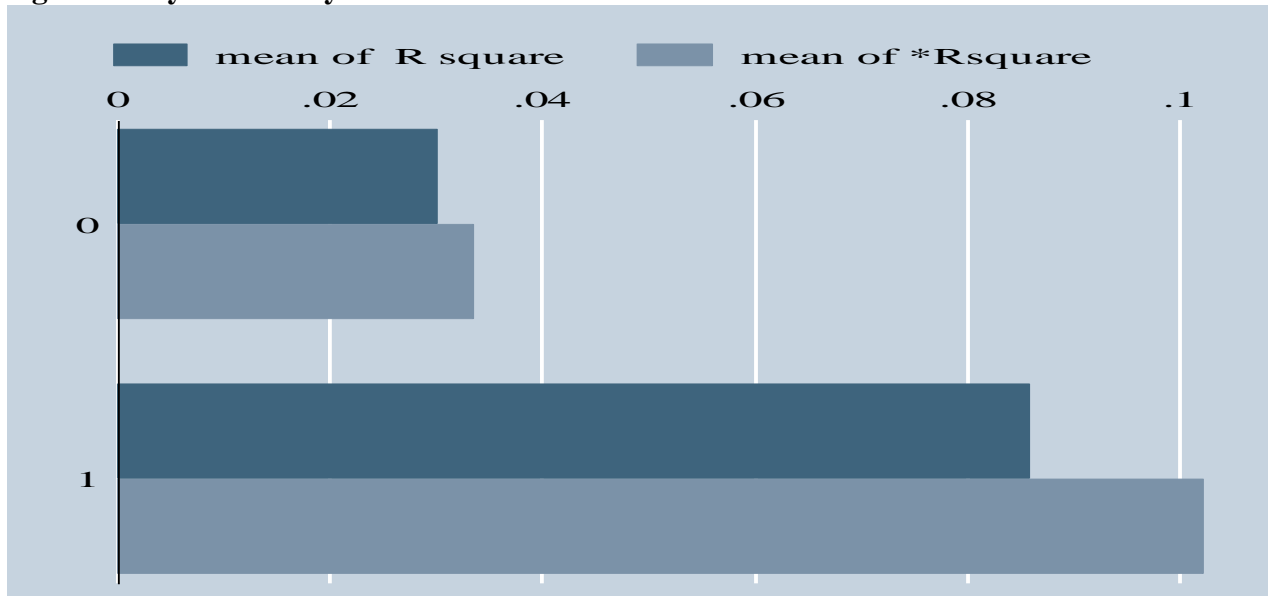
Categorical variable 0 = old on exchange, 1 = new on exchange
Source: computations from Research Data, 2013

Figure 4.2 above compares the mean R^2 of old firms and new firms on the exchange estimated using both equation (1) and (2) to generate **_R square_** and **_* R square_** respectively. In grouping the firms into old and newly listed, the study first found the median age spent on the exchange by the firms. After this, a dummy variable was employed; '1' if a firm's age on the exchange is less than the median age and '0' if firm age is older. The median age firm (Camelot Ghana Ltd) is not included in the segregation for the comparison. Using both equation (1) and (2), the means R^2 of firm newly listed on the exchange is higher than old firms on the exchange. This also means that firms newly listed on the exchange are less transparent than their counterparts that have stayed on the exchange for relatively longer period. The capital market has several stakeholders who also monitor the firms that are listed. As a firm comes public, market

participants start to follow with keen interest the activities of the firm leading to a reduced

opaqueness for firms that have stayed on the exchange for a longer period of time.

The study further tests whether the difference in the R^2 recorded for both old and newly listed

firms is statistically significant. In deciding on whether to use a parametric or non-parametric

approach, the study first performs test of normality on both set of R squares. The study performs

a Shapiro-Wilk *W* test for normal data, the results of which is shown in table 4.1 below.

Table 4.1 Shapiro- Wilk Normality Test

Variable	Obs	W	V	z	Prob>z
R square	255	0.40833	109.193	10.93	0.0000
*R square	255	0.41929	107.17	10.886	0.0000

Source: computations from Research Data, 2013

The test for normality rejected the null hypothesis that the data on the two sets of R squares is

normal. Due to the fact that the data breaches the assumption of normality under a parametric

approach, the study employs the use of a non-parametric approach by performing the Wilcoxon

Ranks Sum test which is the non-parametric counterpart to the Z or *t* test.

Table 4.2 Synchronicity of Old Vs New Firms

R Square	obs	rank sum	expected	*R Square	obs	rank sum	expected
old firms	95	8613.5	11685	old firms	95	8661	11685
new firms	150	21521.5	18450	new firms	150	21474	18450
combined	245	30135	30135	combined	245	30135	30135
z	-5.704			z	-5.625		
Prob > |z|	0.0000			Prob > |z|	0.0000		

Source: computations from Research Data, 2013

As shown in table 4.2 above, the difference recorded in the R^2 between old firms and newly

listed firms is found to be statistically significant under both sets of R^2. This means that firms

that have been on the exchange for a relatively longer period tend to have lower levels of

synchronicity than their counterparts that are newly listed. Since synchronicity is an inverse measure of transparency, it can be concluded that newly listed firms are less transparent than their counterparts who have been on the exchange for a longer period. The study conjectures that as firms stay listed and public, there is an increased scrutiny from market participants especially from investors in the stocks of such companies. This causes such companies to be more transparent.

4.4 Comparison of Synchronicity (R^2) level of firms on basis of Size

Figure 4.3 Synchronicity of Smaller Vs Larger Firms
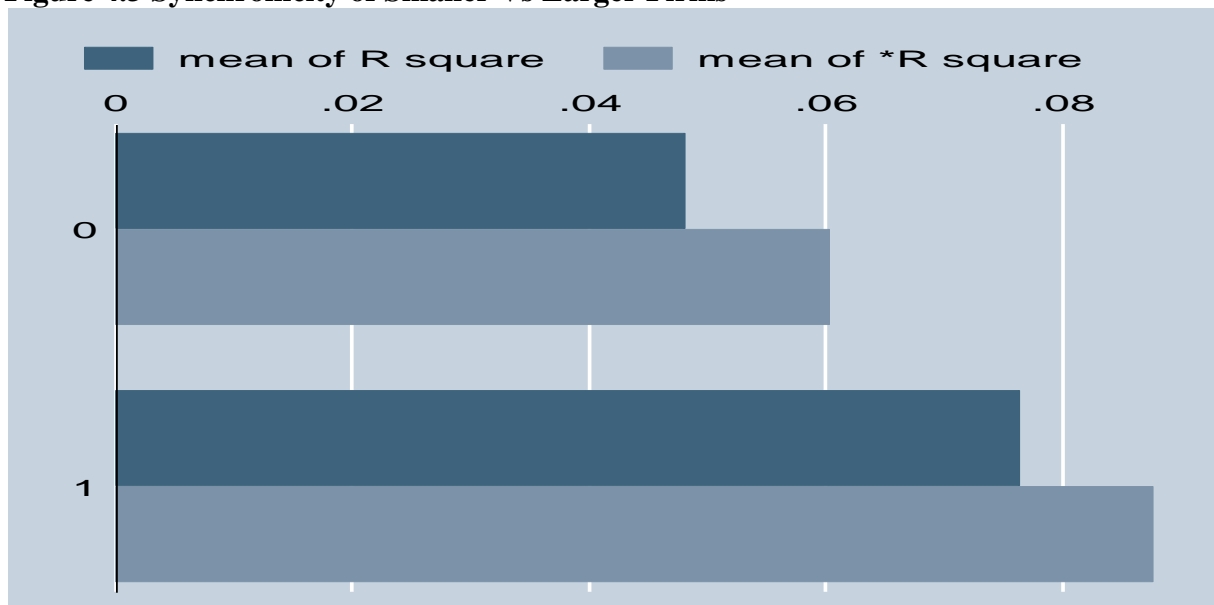
Categorical variable 0 = smaller firms, 1 = larger firms
Source: computations from Research Data, 2013

Figure 4.3 above presents a comparison made between the R^2 of smaller firms and that of larger firms. Both equation (1) and (2) were used to generate two separate sets of R squares; ***R square*** and **** R square*** respectively, all of which are compared in the figure above. The figure shows that the mean R^2 for larger firms are higher than that of the smaller firms under both sets of R squares. Contrary to expectations, larger firms exhibit higher levels of synchronicity (lower level of transparency) than their smaller counterparts. The study further tests whether this

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relationship is statistically significant. As already shown in Table 4.1, both sets of R^2 are not normally distributed breaching the assumption of normality under parametric techniques. The study therefore proceeds with a non-parametric Wilcoxon Ranks Sum test to determine whether the difference realized in the R^2 for smaller firms and larger firms is statistically significant.

Table 4.3 Synchronicity of Smaller Vs Larger Firms

R Square	obs	rank sum	expected	*R Square	obs	rank sum	expected
smaller	115	10934.5	13512.5	smaller	115	11122	13512.5
larger	119	16560.5	13982.5	larger	119	16373	13982.5
combined	234	27495	27495	combined	234	27495	27495
z	-4.998			z	-4.642		
Prob > |z|	0.0000			Prob > |z|	0.0000		

Source: computations from Research Data, 2013

Table 4.3 above shows the results from the Wilcoxon Ranks Sum test performed to test the statistical significance of the difference recorded in the R squares for smaller and larger firms. As a measure of size of the firm, the study uses a dummy variable; 1 if the size of the firm is greater than the mean size and 0 otherwise. The results shows that there is a significant difference in the R^2 values recorded for the two groups of firms (smaller and larger) across the two sets of R^2 values (from equations [1] and [2]). This may be as a result of the fact that the market return is a weighted average index on the exchange. As such the size of a firm may have an influence on the entire market return determination. Large firms are more likely to influence the direction of the market return in line with their individual return. Larger firms are therefore more likely to exhibit more synchronicity since they are likely to move more with the market.

4.5 Comparison of Synchronicity (R^2) level of firms on basis of Industry type

Figure 4.4 Synchronicity of Financial Vs Non-Financial Firms
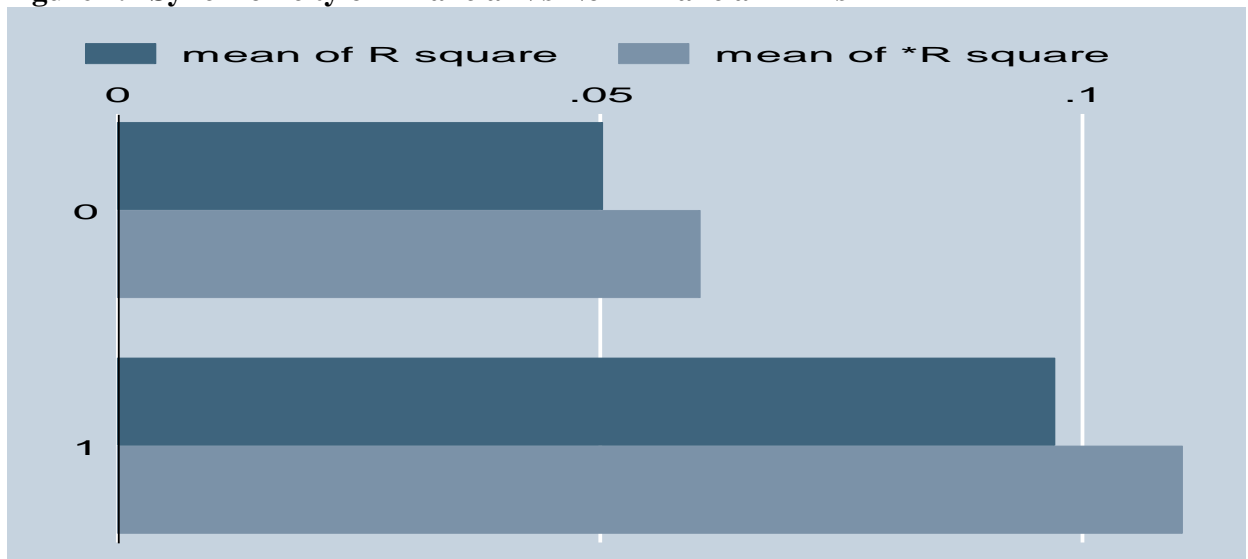
Categorical variable 0 = non-financial firms, 1 = financial firms
Source: computations from Research Data, 2013

Figure 4.4 above shows the difference recorded in the R square values of financial firms and non-financial firms. The figure shows that the mean R^2 for financial firms is higher than that of their non-financial counterparts. This means that contrary to expectations that the highly regulated nature of the financial institutions will make them exhibit much transparency, we find non- financial firms exhibiting lower levels of synchronicity rather. To test for the statistical significance of this relationship, the study again relies on Wilcoxon Ranks Sum test, a non-parametric approach due to the fact that both sets of R^2 values are not normally distributed as required by the parametric techniques.

Table 4.4 Synchronicity of Financial Vs Non-Financial Firms

R Square	obs	rank sum	expected	*R Square	obs	rank sum	expected
non-financial firms	188	21473.5	24064	non-financial firms	188	21356	24064
financial firms	67	11166.5	8576	financial firms	67	11284	8576
combined	255	32640	32640	combined	255	32640	32640
z	-5.016			z	-5.252		
Prob > |z|	0.0000			Prob > |z|	0.0000		

Source: computations from Research Data, 2013

Table 4.4 above provides statistical evidence in support of the fact that the R^2 values of financial firms are significantly different from the R^2 values of non-financial firms. This may be as result of the fact that the composite share index which was used in the calculation of the market return is mainly driven by the financial stocks on the GSE. Once the financial stocks (financial stock index) drives much of the variations seen in the composite index, financial stocks are more likely to co- move with the market than non-financial firms.

4.6 Corporate Governance and Stock Return Synchronicity (Transparency)

To assess the influence of corporate governance on stock return synchronicity which the study employs as an inverse measure of transparency, an empirical model was estimated. In the estimation, the dependent variable was stock return synchronicity while the independent variables were Board size, Board composition, CEO duality, Institutional Ownership and Big4Auditors. As a measure of synchronicity, two separate sets of R^2 were generated using equations (1) and (2). Equation (1) is under the assumption that there is a contemporaneous relationship between the market return and the individual stock return while equation (2) assumes that a non-contemporaneous relationship exist between the two variables. Hence the first sets of R^2 are generated using the equation (1) as follows;

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \qquad (1)$$

The second set of R^2 values are generated using equation (2) as follows;

$$R_{i,t} = \alpha_i + \beta_1 R_{m,t} + \beta_2 R_{m,t-1} + \varepsilon_{i,t} \qquad (2)$$

Both sets of R^2 values are then passed through a logistic transformation as shown in equation (3) to arrive at **SYNCH** and ***SYNCH** respectively.

$$SYNCH_{i,t} = log\left(\frac{R^2}{1-R^2}\right) \qquad (3)$$

To reduce specification bias, control variables were included in the model. These were carefully selected on the basis of theory, empirical literature and preliminary estimations. These are market to book value, Standard Deviation of stock return and Standard Deviation of ROA.

4.6.1 Descriptive statistics
Table 4.5 Descriptive Statistics of Variables used in the Models

Variables	Mean	Min	Max	SD	Kurtosis	Skew	N	Sharpiro-Wilk
SYNCH	-1.9930	-7.8726	1.0276	1.6593	2.7714	-0.3772	247	3.28***
***SYNCH**	-1.4703	-4.0000	1.3003	1.2847	2.0762	0.0390	255	3.68***
BS	0.9434	0.6990	1.1461	0.0966	2.7810	-0.2640	252	3.52***
BC	0.7506	0.3333	0.9091	0.1229	3.3727	-0.7147	251	5.94***
CEO	0.6414	0.0000	1.0000	0.4805	1.3479	-0.5898	251	-1.58
INO	0.8222	0.4820	0.9523	0.1035	4.6618	-1.0530	241	6.97***
BIG4AUD	0.8235	0.0000	1.0000	0.3820	3.8810	-1.6973	255	3.51***
MB	2.6551	0.0025	17.5439	2.4355	13.5240	2.7674	201	8.42***
SDROA	0.0477	0.0008	0.1765	0.0397	3.5834	1.0922	253	6.92***
STDDEV	0.1002	0.0000	9.3518	0.7077	136.1032	11.1107	230	11.59***

*** *1% significance level*
Source: computations from Research Data, 2013

Table 4.5 above shows the descriptive statistics of the variables that were used in the regression analysis in the determination of the factors that explain the level of stock return synchronicity (transparency). The table also provides information on skewness and kurtosis to provide an indication of how the data is distributed. The table also shows the results of the Sharpiro-Wilk normality test performed to test the normality of the variables. The null hypothesis test in the

Sharpiro-Wilk normality test is that the data is normally distributed. However, the results as shown in the table rejects the null hypothesis under almost all the variables indicating that almost all the variables were not normally distributed. The descriptive statistics also show that at every point in time (whether mean, minimum or maximum), the *SYNCH* was seen to be higher than *SYNCH.* This is as a result of that fact that *SYNCH* was estimated using the R^2 from the simple market model while in generating *SYNCH,* the lag of the market return was included as an explanatory variable leading to higher set of R^2 generated. Also various variables have varying number of observations due to the fact that the data used in the estimation was an unbalanced panel data with some few missing data points.

4.6.2 Test of Multicollinearity

Table 4.6 Correlation Matrix

	1	2	3	4	5	6	7	8	9	10
SYNCH (1)	1.00									
*SYNCH (2)	0.81***	1.00								
BS (3)	0.23***	0.16***	1.00							
BC (4)	-0.02	-0.02	0.39***	1.00						
CEO (5)	-0.03	-0.12*	0.12*	0.11*	1.00					
INO (6)	-0.04	-0.03	0.10	-0.07	0.33***	1.00				
BIG4AUD (7)	0.01	0.01	0.02	0.11*	0.00	0.06	1.00			
MB (8)	0.16**	0.14**	0.10	0.03	-0.01	0.06	-0.12*	1.00		
SDROA (9)	0.08	0.10	0.00	0.20***	0.16***	0.11*	-0.08	0.03	1.00	
STDDEV (10)	-0.01	-0.04	-0.12*	-0.13	0.07	-0.03	0.04	-0.03	-0.03	1.00

***1% significance level, **5% significance level, *10% significance level
Source: computations from Research Data, 2013

Table 4.6 above shows the correlation matrix between the various variables under study. This pearson correlation shown in the table also serves as the test for multicollinearity of the variables that were included as part of the explanatory variables for the study. As shown in the table, none of the explanatory variables are found to be highly correlated (0.5 or above). The study finds a high positive correlation between the two measures of synchronicity. The

correlation between these two variables being strongly positive but a little less than 1 suggests that these two variables are different in themselves but the behaviour of pattern between them is to a greater extent similar. This suggests that both measures of synchronicity are themselves in synch. To support this assertion, the table shows that all the other explanatory variables exhibit similar relationships with the two measures; *SYNCH* and **SYNCH.*

Board size is found to be positively related to synchronicity indicating that the returns of firms with large board sizes are seen to move more with the market return than their counterparts with smaller board sizes. However, the correlation matrix fails to establish whether or not the size of the board is a predictor of stock return synchronicity (transparency). Findings to that effect can only be ascertained through the regression results.

4.6.3 Choosing an appropriate Estimation Technique

The study first sought to use the Ordinary Least Square (OLS) estimation in the regression process. But before then, the basic assumptions of the OLS were tested to ascertain whether the OLS could provide Best Linear Unbiased Estimator (BLUE). According to the Gauss–Markov theorem, the OLS will be BLUE when there are no difficulties of autocorrelation and hetroskedasticity. In deciding on the OLS, three different tests were performed. First, the study performs test for normality using Sharpiro-Wilk normality test as well as the Doornik-*Hansen test* for multivariate normality; secondly, Wooldridge's test for autocorrelation in panel data and finally Breusch-Pagan/Cook-Weisberg test for heteroskedasticity.

The results for the univariate normality test (Sharpiro-Wilk normality test) performed are shown in table 4.5. The null hypothesis of the Sharpiro-Wilk normality test is that the data is normally distributed. As shown in the table 4.5, the null hypothesis was rejected under all the

variables but CEO duality. A rejection of the null hypothesis basically means that the data is not normally distributed. The results for the Doornik-*Hansen test* for multivariate normality, Wooldridge's test for autocorrelation in panel data and Breusch-Pagan/Cook-Weisberg test for heteroskedasticity are reported in Table 4.7 below. These tests were conducted on the OLS estimation of the two models.

Table 4.7 Model Diagnostics

| | Dependent Variables | |
	SYNCH	**SYNCH*
Doornik-Hansen	chi2(18) = 7777.408 Prob>chi2 = 0.0000	chi2(18) = 7926.467 Prob>chi2 = 0.0000
Wooldridge AR(1)	F(1, 21) = 0.010 Prob > F = 0.9207	F(1, 21) = 0.041 Prob > F = 0.8416
BP/CW Hettest	chi2(1) = 21.13 Prob > chi2 = 0.0000	chi2(1) = 24.71 Prob > chi2 = 0.0000

Source: computations from Research Data, 2013

The Doornik-*Hansen test* for multivariate normality tests the null hypothesis that the data is normally distributed. As shown in table 4.7, in both models, the null hypothesis of normality was rejected. This indicates that the assumption of normality was not met in the OLS. The null hypothesis in the Wooldridge's test is that there is no first order autocorrelation. In the table, all the models met the assumption of no first order autocorrelation since the null hypotheses were not rejected. However, none of the two models met the assumption of homoskedasticity. In both cases the null hypothesis of constant variance amount the error terms was rejected. Hence to produce robust coefficients from the estimation, Beck and Katz's (1995) panel corrected standard errors estimation technique was used in estimating both models while the GLS was used as robustness check.

4.6.4 Regression Results

The Wald χ^2 a measure of goodness of fit tests the null hypothesis that the independent variables together explain none of the changes in the dependent variable. The Goodness of fit of both models as shown by the Wald χ^2 (Prob $>\chi^2 = 0.0000$) indicate that both models are significant in explaining stock return synchronicity, an inverse measure of transparency. Put differently, there is a significant linear relationship between the regressand and the regressors. The R^2, a measure of the coefficient of determination shows that about 47.72% and 52.01% of the variations in stock return synchronicity are explained by the regressors in both equations where *SYNCH* and **SYNCH* are used respectively.

Table 4.8 Panel Corrected Standard Errors Estimation

	Dependent Variable	
	SYNCH	**SYNCH*
Constant	-3.9842(-2.81)***	-4.6378(-4.82)***
BS	4.1235(3.23)***	3.4789(3.89)***
BIG4AUD	0.2089(0.75)	-0.0807(-0.41)
BC	-1.9891(-2.95)***	-1.1715(-2.05)**
CEO	-0.4953(-2.17)**	-0.6359(-4.12)***
INO	-1.6080(-1.62)	0.5945(0.9)
MB	0.1759(4.44)***	0.1500(4.42)***
SDROA	8.0459(3.69)***	4.5171(2.54)**
STDDEV	2.2647(3.77)***	1.8019(4.35)***
Wald $X^2(8)$	79.19	73.02
Prob > X^2	0.0000	0.0000
R^2	0.4772	0.5201
Adjusted R^2	0.4543	0.4991
Observations	168	168
Number of Firms	31	31

***, **, significance levels of 1% and 5% respectively, z-statistics are in parenthesis.
Source: computations from Research Data, 2013

In explaining synchronicity which this study employs as an inverse measure of transparency, synchronicity was regressed on several corporate governance variables in the presence of some control variables to minimize specification bias. The methodology as discussed in the previous

chapter was used to arrive at two separate set of synchronicity variables under the two assumptions of an instantaneous and non-contemporaneous relationship between the market return and the individual stock return. These two sets were used separately as dependent variables resulting in two different estimations as reported in table 4.8 above. Both measures of synchronicity provide consistent results as shown in table 4.8.

Board size was found to have a significant positive relationship with stock return synchronicity. The positive relationship indicates that larger board sizes are associated with higher levels of synchronicity. Since synchronicity was used as an inverse measure of transparency, we interpret our results to mean that as board size increases, corporate transparency reduces. Larger board sizes are difficult to coordinate, as well, there is a likely free- rider effect associated with large board size. This findings support the findings of Jensen (1993) and Lipton and Lorsch (1992) who concluded that lager board sizes may lead to less candid discussion of critical issues and free-rider issues thereby making managers have their way to keeping their activities opaque.

Contrary to prior expectation that the quality of audit employed by firms will have a significant relationship with transparency, the study finds no evidence in support of that assertion. Audit quality measured by the Big four Auditors was found to be statistically insignificant in explaining stock return synchronicity (transparency). This means that the amount of firm specific information in stock prices on the Ghana Stock exchange is not explained by the type of auditors a firm employs. According to Jin and Myers (2006), transparency measured by synchronicity refers to the provision of information that market participants consider meaningful enough to incorporate in stock pricing. The findings of this study suggest that the

capital market does not place extra premium on information from some particular auditors so as to cause changes in the stock pricing of such firms.

Findings of the study reveal that there is a significant negative relationship between board composition measured as the ratio of non-executive directors to total number of directors and stock return synchronicity. This finding is consistent under both measures of synchronicity. This also means that board composition is positively related to corporate transparency. An increased number of non-executive directors on the board increases the independence of the board in that such members have no incentive to please management. This finding also sit well with extant literature in that Forker (1992) concluded that independent non-executive directors on boards goes a long way to strengthen the quality of financial information disclosure. Forker (1992) continued that such a situation also make firms less likely to withhold unfavorable information to outside investors. Also consistent with Cheng and Courtenay (2006), firms that have higher proportions of independent directors on their board have higher levels of disclosure and transparency and lower level of stock return synchronicity.

A firm that practices CEO duality is one that has it CEO also doubling as the chair of the board. The findings of this study show that in the event that the CEO doubles as chair of the board, such a firm is likely to exhibit lower levels of stock return synchronicity and hence higher levels of transparency. This is contrary to earlier expectation that CEO duality should lead to higher levels of synchronicity; hence, less transparency. Several studies have cited the agency theory and concluded that CEO duality impairs board's oversight and governance roles among which are corporate disclosure and transparency policies (Gul and Leung 2004; Fama and Jensen, 1983; Carver, 1990; Millstein, 1992; Whittington, 1993; Brickley et al., 1994; Worrell et al., 1997). Contrary to all these studies, this study finds a significantly negative (positive)

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relationship between CEO duality and stock return synchronicity (transparency). This study suggests that CEO duality cannot create an individual strong enough to erode the ability of corporate board to exercise their monitoring and effective controlling duties as posited by Gul and Leung (2004). The findings of this study provides evidence for the less persuasive perspective based on stewardship theory (Donaldson, 1990; Finkelstein and D' Aveni, 1994: Brickley et al. 1997) that suggests that CEO duality helps provide strong unambiguous leadership and are in a better position to make decisions that are in the interest of the firm. This study conjectures that decisions in the interest of the firm may include reducing the opaqueness level of the firm so as to be able to benefit from cheaper external funding as a result of reduction in information asymmetry as posited by Durnev et al. (2003).

The study finds a negative relationship between institutional shareholdings stock return synchronicity indicating that increased institutional ownership translates into higher levels of transparency. However, this relationship is not statistically significant at any of the traditional levels of 1 percent, 5 percent or 10 percent. This finding contradicts earlier expectations that increased institutional ownership leads to increased transparency. It again contradicts large consensus in literature on the crucial role institutional ownership plays in ensuring corporate transparency (Elgazzar, 1998; Sellah and Mallin, 2002; Kim and Nofsinger, 2004; Leng, 2004; Solomon and Solomon, 2004; Seifert et al., 2005; Le et al., 2006; Langnan et al., 2007; and Ramzi, 2008). However, this finding of the study sits in the few studies that deviate from the popular findings on institutional ownership. Using Data from Malaysia, Haniffa and Cooke (2002) predicted a positive impact of institutional ownership on voluntary disclosure but found otherwise.

The study finds Market-to-Book ratio to have a significantly positive relationship with stock return synchronicity contrary to the findings of Gul et al. (2010) ; hence, a negative relationship with transparency. As discussed earlier in Chapter three of this study, a negative relationship between market-to-book ratio and synchronicity was expected in that high growth firms may have incentive to open up to the market and show of their potentials. We interpret our findings to mean that high growth firms are usually those that are newly listed unlike matured firms that might have stayed on the exchange for a longer period. As firms mature (market-to-book reduces) and keep long on the exchange, they become more transparent (less synchronous); in that the market participants get a better knowledge of the firm and incorporate firm specific information in stock prices. This study has already found that newly listed firms are more synchronous and so growth which is also associated with newly listed firms will have positive relationship with stock return synchronicity.

The study finds a significant positive relationship between Standard deviation of ROA a measure of volatility of firm fundamental and stock return synchronicity. According to Skaife et al. (2006), firm specific variation is experienced in firms that have high level of variation in the firm fundamentals. It is expected that as firm fundamental change, market participants change the amount of stocks of such firm held leading to a change in the stock prices. However, findings from this study are contrary. This study provides three reasons that may account for not realizing a significant negative relationship between standard deviation of ROA and synchronicity. First, changes in the firm fundamentals are expected to elicit changes in the stock prices of the firm due to the fact that such firm specific information will translate into the stock prices. Albeit if changes in firm fundamentals are synchronous in themselves, then there is a high likelihood that the changes that are experienced in stock returns will be as well synchronous leading to an increased synchronicity. However, this study did not explore the

possible influence on synchronicity in the firm fundamental changes. Secondly, changes in firm fundamentals may not automatically cause traders to vary the amount of stocks of the firm held. According to Skaife et al. (2006), for a marginal investor to trade, the information signal received should be enough to exceed the cost of transaction. This suggests that the influence of changes in firm fundamentals on stock prices is to some extent dependent on the transaction cost. Finally, there is the possibility of high incidence of informationally "idiot traders" (Krugman, 2009) or noise trading on the market.

As part of the control variables used in the study to reduce specification bias is the standard deviation of stock return. Stock return synchronicity deals with the extent to which the return of a stock moves (changes) with that of the market. This suggests a stock may be less synchronous not because such firm is more transparent but due to non-trading of such stock. Standard deviation of the stock return was used so as to control for such tendencies. The study finds a statistically significant positive relation between standard deviation of stock return and stock return synchronicity.

4.7 Robustness Check

To check for the robustness of the relationship between the independent variables and the dependent variables, the study employs the use of the Generalize Least Square method to estimate the two models discussed earlier. Results of the GLS estimation are reported in Table 4.9. Both models are significant as shown by the p-values of their Wald X^2. Results from the GLS estimation is consistent with that reported for the Panel corrected standard errors. This shows the evidence provided by this study in relation to the relationship between corporate governance and transparency (synchronicity) is robust.

Table 4.9 Generalized Least Square Estimation

	Dependent Variable	
	SYNCH	**SYNCH*
Constant	-4.9702(-3.45)***	-4.2118(-3.61)***
BS	5.7961(4.59)***	3.9266(3.84)***
BC	-2.4949(-2.42)**	-1.7229(-2.06)**
CEO	-0.5270(-2.07)**	-0.5273(-2.54)**
INO	-1.5816(-1.31)	-0.1015(-0.10)
BIG4AUD	0.3915(1.25)	0.1515(0.61)
MB	0.1210(2.57)**	0.0843(2.20)**
SDROA	6.4015(2.31)**	6.5083(2.90)***
STDDEV	2.1765(4.16)***	1.9254(4.52)***
Wald X^2 (8)	49.26	47.38
Prob > X^2	0.0000	0.0000
Log Likelihood	-291.9312	-260.8224
Observation	168	168
Number of Firms	31	31

***, **, significance levels of 1% and 5% respectively, z-statistics are in parenthesis.
Source: computations from Research Data, 2013

Also due to the fact that daily stock returns were used in the computation of the stock return synchronicity, there is the possibility of thin-trading. As a form of robustness check, the study estimates a new set of synchronicity variables while including the lead of the market return as regressors in the market model as used by Dimson (1979) in estimation of the Dimson's Beta as follows:

$$R_{i,t} = \alpha_i + \beta_1 R_{m,t} + \beta_2 R_{m,t-1} + \beta_2 R_{m,t+1} + \varepsilon_{i,t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(6)$$

The R^2 from this model is transformed using the logistic transformation in equation (3) to generate new set of synchronicity variable **LDSYNCH.**

The study then performs an ANOVA test to ascertain whether there are differences between these three measures of synchronicity (*SYNCH, *SYNCH and LDSYNCH*). The result of the test of ANOVA is reported in table 4.10.

Table 4.10 Difference between various measures of Synchronicity

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*
Between Groups	34.3211	2	17.1606	8.9882	0.0001
Within Groups	1336.4562	700	1.9092		
Total	1370.7773	702			

Source: computations from Research Data, 2013

ANOVA tests the null hypothesis that there is no significant difference between the means of the various variables being tested. As shown in table 4.10, the F statistics is significant indicating that the null hypothesis is rejected in favor of the alternative that there is a significant different between the variables. This provides justification for using all these different measures of synchronicity differently. Table 4.11 below shows the model diagnostics of the regression results using the panel corrected standard model with **LDSYNCH** as the dependent variable.

Table 4.11 Model Diagnostics for LDSYNCH

AR 1: F(1, 17)	0.136
Prob > F	0.7173
BP/CW Hettest	14.04
Prob > X^2	0.0002***
Doornik-Hansen X^2(18)	5680.67
Prob> X^2	0.0000***

*** Significant at 1%
Source: computations from Research Data, 2013

Table 4.12 Panel Corrected Standard Errors Estimation for *LDSYNCH*

	Dependent Variable: *LDSYNCH*			
	Coefficients	**Standard Errors**	**Z**	**P>z**
Constant	-3.4400	1.0130	-3.40	0.0010
MB	0.2120	0.0402	5.28	0.0000
SDROA	1.2849	1.9046	0.67	0.5000
STDDEV	1.9712	0.3255	6.06	0.0000
BS	2.1754	0.9562	2.28	0.0230
BC	-0.9130	0.5455	-1.67	0.0940
CEO	-0.1878	0.2298	-0.82	0.4140
INO	-0.3308	0.7419	-0.45	0.6560
BIG4AUD	0.2203	0.2035	1.08	0.2790
Wald X^2 (8)	88.23			
Prob > X^2	0.0000			
R^2	0.5589			
Adjusted R^2	0.5350			
Observations	137			

Source: computations from Research Data, 2013

Results shown in table 4.12 above consistent with the earlier findings of the study, indicates that Board size is statistically significant and has a positive relationship with the dependent variable. Board composition is as well statistically significant and negatively related to the dependent variable. Both Institutional Shareholding and audit quality are consistently not significant while both Market to Book ratio and standard deviation of returns are statistically significant with consistent signs for their coefficients. The only difference reported is with CEO duality and Standard deviation of ROA, both of which were significant using the SYNCH and *SYNCH but are not significant with the use of LDSYNCH.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents a summary of the entire study, concludes on the influence of corporate governance on stock return synchronicity and hence transparency. The study as well makes necessary recommendations for policy implementation and future research. The chapter also discusses some limitations of the study.

5.2 Summary

Finance literature that has considered corporate governance and transparency especially within the context of Ghana has placed much emphasis on measuring transparency through the use of disclosure scores constructed usually by the TDS proposed by S &P. According to this study such scores as measures of transparency may suffer some methodological challenges. In the light of this, the study proposes the use of stock return synchronicity as an inverse measure of transparency, an argument that has been made by studies including Jin and Myers (2006). The main purpose of this study was to examine the relationship between transparency and governance while seeking evidence for synchronicity as a measure of transparency within the context of Ghana Stock Exchange.

The study first discusses the trend in stock return synchronicity for the ten year period understudy starting from 2000. The study finds a non-stable nature of the trend in synchronicity over the years while recording the highest average synchronicity in 2004. This may be as a result of the major listings by AngloGold Ashanti Limited in replacement of Ashanti Goldfields Company Limited, Benso Oil Palm Plantation, Cal Bank Limited, Starwin Products Limitd and Clydestone Ghana Limited. This development on the market whipped the interest of investors

in the capital market and stocks in generals performed welled together. The study found that newly listed firms are generally more synchronous while larger firms also exhibited higher levels of R^2. Financial firms were also found to be more synchronous than their non-financial counterparts.

On the main empirical model estimation, Beck and Katz's (1995) panel corrected standard errors estimation technique was used while the GLS was used to test for robustness. This is due to the fact that data exhibited non-normality and hetroskedasticity. In all two different estimations were made using two sets of synchronicity measures. First synchronicity was generated using the simple market model and then using a modified market model where the lag of the market return was considered as part of the explanatory variables in the market model. The R squares from these two market models were used in constructing the two measures of synchronicity. In estimating the main models for the relationship between governance and transparency, eight (8) explanatory variables were used, five (5) of which were corporate governance variables. Three other control variables were used to minimize specification bias. These were market-to-book value, standard deviation of stock returns and volatility of firm fundamental measured as the standard deviation of the ROA.

The study found some of the corporate governance variables to be significant determinants of stock return synchronicity an inverse measure of transparency. These corporate governance variables are Board Size, Board Composition and CEO duality. Both Board Composition and CEO duality were found to be negatively related to synchronicity whereas Board size exhibited a significant positive relation with synchronicity. All the control variables used in the study were found to be statistically significant in explaining synchronicity. As well all the control variables exhibited positive relationships with the dependent variables. Results from both

models estimated using the panel corrected standard errors were consistent while the GLS estimation also provided consistent results with that of the panel corrected standard errors.

5.3 Conclusion

Consistent with extant literature, this study provides strong evidence of transparency as a function of governance in the light of an emerging trend in transparency measurement. The study concludes that in the determination of synchronicity, both assumptions of instantaneous and non-contemporaneous relationships between the market return and the individual stock return yield consistent results when used as inverse measures of transparency. The study provides strong evidence to support the argument of reduced monitoring by larger board size and free rider effect. Larger board sizes are associated with higher levels of synchronicity leading to a reduction in transparency.

Board Composition measured as the ratio of non-executive directors to total directors was found to be negatively related to synchronicity and hence positively related to transparency. An increase in the proportion of non-executive directors on corporate board can significantly reduce synchronicity and increase transparency.

CEO duality can improve the transparency levels of firms. CEO duality is not enough to create an individual powerful enough to reduce the monitoring role of boards. Some studies found that there are some benefits associated with CEO duality but could not conclude whether such benefits can be in the form of transparency. This study provides evidence of a possible increased transparency with CEO duality.

The study concludes that contrary to popular literature that growth firms may want to be transparent about their potentials, higher levels of growth opportunities associated with new firms may lead to higher levels of synchronicity, hence reduced transparency. Also, firms with volatile stock returns are more likely to exhibit higher levels of synchronicity and lower transparency. Volatility in firm fundamentals per se does not increase the idiosyncratic information in stock prices. When volatility in firm fundamentals are synchronous themselves, such volatility may lead to increased synchronicity.

Financial firms exhibit higher levels of synchronicity due to their ability to move the entire market return in their direction. Larger firms are more synchronous than smaller firms. This may be as a result of the ability of larger firms to influence the composite stock index (market return). The study concludes that listing on the exchange increases the level of transparency in a firm. For this reason, as a firm keeps longer on the exchange, transparency is improved since the market learns more about the firm.

5.4 Limitations

In the determination of the synchronicity levels of firms, some studies included as part of the independent variables in the market model, industry returns which are expected to capture industry-wide information that is not necessarily firm specific. In this study, only the market return was considered.

As found earlier in the study, volatility in firm fundamentals per se may not lead to increased firm specific information captured into stock prices; in that when such changes are synchronous in themselves, it may lead to an increased synchronicity. This study does not consider the synchronicity of changes in the firm fundamentals.

Prior to 2004, stocks on the GSE traded three times a day. This may present situation of breaks in the data especially for the years prior to 2004. Results should therefore be interpreted with caution.

5.5 Recommendations

Upon the findings of this study, the following are recommended for policy implementation. Firstly, the GSE should encourage the listing of many firms on the exchange so that the few large firms will not influence the composite index so much. Also, firms from diverse industries should be encouraged to list on the exchange so to prevent the likely dominant influence of some particular industry on the market return. The study finds years spent on the exchange to be significant in determining synchronicity and so firms must list as early as possible so to experience transparency sooner.

Companies listed on the exchange must at all times avoid keeping large boards since such situation increases stock return synchronicity; hence reducing transparency. Companies should encourage CEO duality but this must be done cautiously in order not to dilute the independence of the corporate board. Companies should increase the proportions of non-executive directors on their boards since this could negatively influence synchronicity.

5.6 Future Research

Future studies into the area of stock return synchronicity can extend the study to other countries in Sub-Saharan Africa to ascertain the nature of synchronicity in the region. Further studies may explore the possible relationship between liquidity and stock return synchronicity in Ghana. This is needed in the light of the fact that stocks on the GSE do not frequently trade which may have an influence on the level of synchronicity of stock returns. Also, further studies

may investigate the value relevance of stock return synchronicity in Ghana. Last but not least, future studies can explore the relationship between synchronicity, profitability and capital structure of listed firms.

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