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Article

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

Impact of corporate board size and board independence on stock returns volatility in Ghana

James N. Doku^{1*}, Haruna Abdul-Razak Borowa¹, Issah Mohammed¹ and Edward Attah-Botchwey¹

Abstract: This paper investigates the role of corporate board size and board independence on the volatility of stock returns of Ghanaian-listed firms. A sample of 22 listed firms on the Ghana Stock Exchange was used, between 2011 and 2019. The study adopted the panel-corrected standard error (PCSE) regression technique supported by Driscoll-Kraay and robust ordinary least square (OLS) approaches as robustness measures. It was found that corporate board size of listed firms must be sizeable enough to reduce the volatility of stock returns. More specifically, the findings demonstrate that firms with large corporate board sizes are associated with lower stock returns volatility in support of the agency theory. Moreover, board independence indicates a positive and significant relationship with stock return volatility in support of the risk-seeking hypothesis. This implies that increasing the number of outside board executives on corporate boards is not enough to reduce stock return volatility perhaps due to a high level of information asymmetry between outside board members and insiders. Similarly, large firms are more volatile in terms of stock returns than smaller firms. Thus, this study recommends stricter enforcement of monitoring and disclosure of relevant market information on listed firms as well as strengthening the capacity of independent board executives via appropriate training.

Subjects: Economics; Finance; Business, Management and Accounting

Keywords: Board size; board independence; stock returns volatility; GSE

1. Introduction

Investors are invested in firms that exhibit effective corporate governance practices. This is based on the strong conviction that firms that exhibit good and effective corporate governance practices are expected to be accountable to existing shareholders and management and could also win the interest of prospective investors (Berger et al., 1997; Faccio et al., 2010). Moreover, a firm that exhibits good corporate governance characteristics is most likely to provide a good return on shareholders' invested capital. Farooq and Ahmed (2014) added that firms with good corporate governance attributes provide transparent disclosures and are investor-friendly and therefore access capital market funding on better terms. The influence of corporate on firm performance has gained high public and academic interest and continues to engage public debt due to its ramifications on stakeholders (Antwi et al., 2022). Accordingly, Ntim, Opong and Danbolt (2015)

added that the increased public and academic interests in corporate governance issues demonstrates the crucial influence of corporate governance on firm valuation.

The complexities of corporate governance and its influence on firms generated several theoretical underpinnings. Of paramount relevance, the agency theory recognises corporate governance as an essential governance mechanism that ensures proper corporate performance (Jensen, 1993; Yermack, 1996; Ntim et al., 2015; Kafidipe et al., 2021) yet provides communication and coordination problems. The agency theory emphasizes that corporations face agency conflict of interest between shareholders (principals) and managers (agents). In that context, a well-functioning board that exercises its monitoring and supervision roles properly is most likely to minimize the opportunistic behaviour of managers' expropriation of investors' cash flow thereby enhancing the value of the firm. According to Holmstrom (1999), the agency theory argues that managers fear they may lose their jobs in the event of undertaking a risky project that does not yield positive results. Therefore, an effective board could reduce stock return volatility if it prevents excessive and value-destroying risky projects. On the other hand, an effective board can promote stock return volatility if it supports value-enhancing risky projects. Again, when it becomes impossible to expropriate a firm's cash flow, utilisation of more debt by managers becomes the best possible action to take (Jensen, 1986; Morellec, 2004). This consequently increases the firm equity volatility. This study, therefore, seeks to unravel the answer to the question: do effective corporate governance mechanisms (effective board and board independence) enhance equity value by reducing volatile stock returns? Providing an answer to this question will greatly inform corporate governance policies that affect firm-level equity volatility. This paper contributes to the literature and policy formation by filling the knowledge gap.

Nonetheless, there is no consensus with regard to the impact of corporate board size on corporate stock return volatility. On the one hand, bigger corporate boards have relatively, bigger capacity, expertise, knowledge and diversity of skills to monitor managers (Coles et al., 2008). Similarly, larger corporate boards have the opportunity to allocate responsibilities to various committee members (Klein, 2002). Theoretically, a larger board size should be associated with lower volatility and higher firm value. However, larger corporate boards are most likely to face two major setbacks: free-rider problems and coordination and communication problems (Cheng, 2008). Quicker decision-making is not usually common with larger corporate boards, and this paves the way for managers or chief executive officers (CEOs) to carry out most activities in the face of the least unified board who may oppose it (Jensen, 1993). Again, larger boards have difficulty in coordination and effective communication, and this affects real-time decision-making (Hambrick et al., 1996; Kogan & Wallach, 1966). On the contrary, group-based decisions are likely to be less extreme with lower variability in smaller corporate boardrooms.

Moreover, closely associated with board size is board independence. Theoretically, there is a consensus that an independent and well-functioning corporate board is expected to exhibit a high level of monitoring that could reduce the volatility of a firm's earnings (Dechow et al., 1996; Klein, 2002), improve decision-making for better results (Dahya & McConnell, 2005); and exhibits a high degree of disclosure (Karamanou & Vafeas, 2005). Nonetheless, empirical evidence suggests that not all firms with high board independence posit positive outcomes for shareholders (Bhagat & Black, 2002).

Despite the importance of stock return volatility, the prevailing discussions in the literature turn out to focus largely on how well-corporate institutions are well governed to enhance their performance (Dalton et al., 1998; Kajola, 2008; Kioko, 2014; Klapper & Love, 2004) with little attention to stock returns volatility (Lee et al., 2019) in general and Ghana in particular. The knowledge of the influence of corporate governance on a firm's stock return volatility is much-needed by researchers, policy analysts, equity market participants including investors and market regulators. Indeed, the implications of stock return volatility on a firm's investment decision and opportunities (Campbell, Giglio, Polk & Turley, 2018); CEO's compensation, yield spread and cost of

debt refinancing (Campbell & Taksler, 2003), expected return and portfolio allocation decisions (Babenko, Boguth & Tserlukevich, 2016) is most likely to be much appreciated.

Existing findings demonstrate that when firms are well managed and governed, stock returns on investment by shareholders are most likely to go higher (Cremers & Nair, 2005; Gompers et al., 2003). Adams et al. (2005) observed that firms, which have more powerful CEOs have higher volatility of stock returns; while Cheng (2008) also indicates that larger corporate boards will lead to lower stock volatility. Some scholars hold the view that corporate governance plays a decisive role in destabilising the stock return volatility (Mitton, 2002), while Morck et al. (2000), indicated that weak corporate governance limits stock price discovery in stock markets, thereby increasing stock price return volatility. The above evidence shows both theory and empirical evidence seem not conclusive on the impact of corporate governance on stock return volatility. Studies on emerging market especially Ghana is also limited with respect to the above issue. One study, similar to the current study in Ghana relates to Kwadwo (2016) who found that real domestic product rate granger causes stock price volatility but the stock price volatility does not granger cause real domestic product rate.

In this paper, we examine the link between corporate board size and board independence and stock return volatility in Ghana. The Ghanaian setting is relevant to this study due to varied regulatory reforms aimed at enhancing the corporate governance landscape and achieving better outcomes for stakeholders. Some of these corporate governance rules include the Security Industry Law (PNDCL 333) of 1990, and the Security Industry Act of 2000 Listing Regulations 1990 (LI 1509) (Act 590). These acts are meant to ensure that companies become competitive internationally and are also compliant with good corporate governance practices. Becht et al. (2002) argue that the global privatization and integration of the capital markets in different economies led to countries reacting after the Asian scandals on corporate governance issues. In the wake of the global financial crisis and the need to enhance investor confidence in the equity market, Ghana responded with various programs aimed at ensuring sustainable growth and development (Kyereboah-Coleman & Biekpe, 2006). Towards that end, the Ghana Institute of Directors (IoD), in partnership with the Commonwealth Association of Governance, hosted several seminars in the years 1999 and 2000 on corporate governance matters. This shows that the business of Ghana's corporate organizations was rooted in good management practices. However, the IoD recommended measures for the enhancement of corporate governance in Ghana, including strengthening existing legislative and regulatory frameworks, which demand more transparency to support robust and stable corporate governance practices and clarifying governance roles and responsibilities.

The Ghanaian stock market was not left out in the wake of the series of corporate governance regulation enactments. Since its inception, the Ghana Stock Exchange has undergone significant changes in corporate governance practices. In November 2010, the Securities and Exchange Commission (SEC) commissioned public corporate governance codes in Ghana to enhance transparency and responsibilities by corporations in Ghana. In 2011, the first Corporate Governance codes in Ghana were adopted in order to strengthen shareholders' and investors' confidence. The Corporate Governance Guidelines for the Ghana Stock Exchange Regulation for listed companies were also established by the Securities and Exchange Commission (SEC). Despite the efforts continuously being made to enhance the corporate governance system in Ghana, the Ghanaian financial market suffered some collateral corporate governance failures between 2011 and 2019. The developments during this period affected some of the listed firms, such as UT bank, which was delisted from the GSE in 2017. Thus, in this context, it becomes relevant to question the role of corporate governance elements in influencing firm stock return volatility of listed firms in Ghana, which this study seeks to do.

Figure 1 also shows evidence of episodic volatilities of the GSE all-share index and that of the firm stock price. By implication, there exist some form of stock return volatilities associated with listed firms on the GSE.

Figure 1. Annualised volatilities (GSE & Firm).

Source: Authors' computation from GSE data.



Thus, the contribution of this paper is essential to the understanding of the critical role that corporate governance characteristics (board size and independence) play in influencing stock returns volatility.

Adding to existing evidence from the perspectives of corporate board features and their impact on stock return volatility from an emerging economy like Ghana will likely provide a complete insight to all stakeholders in the equity market. Emerging economies have institutional and corporate governance arrangements that are different from those of developed economies and consequently, the relationship between corporate governance attributes and firm value and stock return volatility may not be the same (Ntim, Opong & Danbolt, 2015) in developed economies as it pertains in developing economies. Again, Guest (2009) acknowledged that the relationship between corporate governance attributes and firm value may differ by country-specific corporate governance arrangements, institutional and legal differences in addition to firm-level attributes. Thus, given the unique exposition of varied corporate governance reforms following the corporate governance failures that affected some of the listed firms in Ghana, this study adds to the existing knowledge and informs policy greatly.

This paper complements the literature and policy debate by introducing the volatility of stock returns, commonly used as a measure of risk. Poor corporate governance of firms has negative consequences on stock price discovery and price volatility as well. Thus, in an environment of poor corporate governance, investors are ill-informed due to less disclosure and transparency thereby affecting investment decision-making. Thus, this study contributes to the regulatory policy debate about the need to enhance corporate the governance structures of listed firms in Ghana to enable them to attract more funding from investors. This would further enhance the development of the capital market in Ghana. The rest of the paper is structured in the following manner: Section two focuses on the literature review and development of relevant hypotheses, section three discusses the research methods and materials and section four relates to the analysis and discussion of the findings. The conclusions and policy recommendations are in section five.

2. Theoretical literature review

2.1. Theoretical literature

The existing literature provides a couple of theoretical underpinnings in explaining the influence of corporate governance characteristics on firm value. Some of these theories are the agency theory, the stewardship theory, and the resources dependency theory.

2.2. The agency theory

Issues about firm governance are centered on agency theory by 1976. The Agency theory underscores the distinctive relationship between management (agent) and the principal (owners) of a firm. The theory of the principal-agent relationship is based on the fundamental assumptions that managers (agents) have self-interest, which drives their daily actions, and they showcase varied goals and

risk-taking likings compared to the principal owners of a business. Based on these assumptions, agency theory implies that managers now had superior knowledge at the expense of the shareholders of the company and could therefore pursue self-interested action such as an expropriation of cash flows to their advantage, which might affect firm value and volatility of stock returns. Two areas of interest in the agency theoretic analysis is how the membership of the boards of directors influences a firm's performance and how corporate institutions' management structure (i.e. the duality of CEO/Chairman role) also influences corporate performance. View from the perspective of the agency theory, constant monitoring and supervision will give managers fewer opportunities (expropriation of cash flow) to the disadvantage of their owners (lower costs of the agency), so the shareholders benefit from higher revenues (or increased profits) and less volatility of stock returns.

2.3. The stewardship theory

Unlike the agency theory discussed earlier, the stewardship theory holds the strongest view that management believes it is neither self-interested nor motivated by individual goals, but that they are inspired to function in the shareholder's interest. Within the principal-agent relationship, a company's executives and managers (agents) are viewed as stewards whose aims are to work for the shareholders, protect their interests and make returns on their investment for them and by doing so, the utility function of the steward is maximised. The proponents of the steward theory further argue that the Boards of Directors (BoDs) are the best agents to maximize their shareholders' wealth through their firm performance (Akhalmeh et al., 2011). This theory emphasizes that, directors within the company are better informed about the dynamics of their business and can take better decisions than self-employed or external directors (Donaldson & Davis, 1991; Donaldson, 1990). The fundamental tenets underpinning the stewardship theory are due to the high reliability and trust assumed to be associated with the roles of the agent in discharging daily tasks. Agents (managers) are assumed to be reliable and good custodians of resources (Donaldson & Davis, 1991; Donaldson, 1990), and thus place the interests of their stockholders over theirs (Sundaramurthy & Lewis, 2003). This assumption makes irrelevant, the need for external and independent executive directors to be on a corporate board of directors to enforce a high level of independence and accountability (Daily et al., 2003). More specifically, the stewardship theory assumes that managers must act rationally and for that reason, there is no need for external monitoring and supervision. In its practical application to this study's intent, the stewardship theory suggests that corporate governance features are irrelevant to enhancing the value of a firm since enhancing firm value and reducing the volatility of stock returns is already embedded in the steward's best interest.

2.4. The resource dependence theory

The theory of resource dependence is of the view that the existence and attainment of organizations depend on their capacity to manage resource flows (Pfeffer & Salancik, 1978; Pfeffer, 1973). This theory further shows that a company's objective to appoint a committee member is to give attention to the problems facing the firm when the necessary resources are allocated. According to this theory, directors provide resources such as information, skills, key elements and legitimacy to decrease ambiguity, thereby reducing transaction costs and potential linkage between an organization and its networks. This allows for more information and even skills to be gathered in several specialties. The assemblage of varied skills and capabilities of all resources needed to ensure the firm survival is most likely to ensure decreased opportunistic behaviour by managers which consequently enhances firm valuation and stability in returns.

This theory does in fact consider the role of managers in linking their external environment to the company's resources (Hillman et al., 2009). The resource dependence theory introduces the fundamental concept of 'network' that underlies the structure of corporate governance. Lawrence and Lorsch, (1967) connected the theory of resource dependence with corporate management, by proposing that effective institutions have aligned their internal resources and structures with that of their external environment's demand. They further argued that external independent managers could connect their firms with that of opportunities outside their firm in

order to create a sustainable future. Again, this theory introduces the fundamental concept of “network” that underlies the structure of corporate governance. In the view of Pfeffer (1972), a firm’s board size and its structure are critical to meeting the demands of its external environment. From the theories discovered and reviewed so far, it can be deduced that the agency and resource dependency theories complement each other in controlling the self-interested behaviour of the agent.

3. Empirical literature review and hypotheses development

3.1. Empirical literature review

Quite a number of existing literature pay attention to the impact of corporate governance on firms’ share price and performance with a minority of them focusing on the effect of corporate governance, especially corporate board size and independence, on the volatility of a firm’s returns. For instance, Black et al. (2003) explored the relationship between corporate governance and share prices in a survey of 526 Korean firms. It was discovered that firms that exhibit a high standard of corporate governance experience higher share prices, while Brown and Caylor (2004) provided evidence that support a strong correlation between the effectiveness of corporate governance features and firm profitability.

Also, in a meta-analysis of 54 firms, Dalton, Ellatran, and Johnson (1998) found evidence indicative of a relationship between board composition and firm financial performance. Again, using a unique governance index from 1500 large firms, Gompers et al. (2003), found that highly valued firms were those who were characterized by high corporate governance practices. Moreover, Kajola (2008) examined the effect of some key elements of corporate governance (board size, board composition, chief executive status, and audit committee) on firm performance. It was found that corporate governance impacts a firm’s survival. The findings show that there is a connection between corporate governance and a company’s success. Evidence from emerging markets by Klapper and Love (2004) shows that well-governed firms perform better than firms that are not well governed. These findings tend to support the existence of a connection between governance standards and firm value.

In addition to the above, there are other scholars who focus on the effectiveness of governance on corporate stock return volatility. Sias et al. (2006) found that firms with a high percentage of institutional shareholdings have high stock price volatility. Additionally, Chen and Jaggi (2000) emphasize an inverse relationship between board composition and characteristics of outside directors and stock return volatility of a firm. They further added that when an outside director enforces effective monitoring of managerial actions, investors’ confidence positively increases in the firm and that reduces the panic selling in the firm. Morck et al. (2000) also noticed that firms with weak corporate governance structures are less transparent and this confines price discovery in stock markets, which consequently increases stock price volatility. Jordan et al. (2012) examined the impact of outside directors’ selected demographic characteristics on stock price volatility and concluded that outside directors with advanced foreign degrees stabilize stock price volatility.

Besides corporate governance attributes, most of the existing studies observed that the macroeconomic environment of the firm is an important determinant of its stock return volatility. Thus, Joseph et al. (2017) examined the influence of inflation on the volatility of stock market returns in the Nigerian stock market using GARCH and E-GARCH volatility models. They found that inflation does not influence stock market return volatility. Similarly, Kwadwo (2016) confirmed this with evidence from Ghana with regards to the impact of the macroeconomic environment on the stock price. Other studies (Al-Raimony & El-Nader, 2012; Aliyu, 2012; Attari & Safdar, 2013; Emenike Kalu & Odili, 2014; Okoli, 2012; Oseni & Nwosa, 2011; Zakaria & Shamsuddin, 2012) further examined the effect of broad macroeconomic variables on stock returns and volatility using various econometric estimation approaches.

3.2. Hypotheses development

3.2.1. Board size

Existing literature measures the size of a corporate board in terms of the number of Executive Directors and Non-Executive Directors on the board of a firm. The key functions of the board are to ensure that strategic decisions are made to maximize the wealth of shareholders and promote sustainable growth of the firm. The board is also supposed to uphold high corporate governance standards via high disclosures that would minimise information asymmetry, improve investor confidence and reduce stock price volatility. Nonetheless, the precise impact of the board size on firm value maximisation is not conclusive. On the one hand, there are views and suggestions based on the resource dependence and agency theories that large board-size firms have the ability to incorporate key skills and perspectives that would benefit the firm in terms of monitoring managerial opportunism. In that way, smaller boards are prone to increase volatility by means of quicker and more extreme decisions, and they may show lack of capacity to monitor managerial actions which are not in congruence to shareholders' interests. Lefebvre and Vieider (2013) found that bigger corporate boards monitor managers better and this reduces excessive risk-taking and consequently impact positively on firm performance. Again, Adams and Mehran (2003) added that bigger boards are effective monitors of managerial actions that potentially limit agency costs and its opportunistic behaviour. The above evidence suggests that the impact of board size on a corporate's performance is well known. For instance, Pfeffer (1972) observed that corporate board size must be large enough to offer effective monitoring, provide suggestions in a positive manner and make available better linkages to the external environment. Larger corporate boards can monitor managers' activities more effectively, and also it would be difficult for a CEO to control a large board of directors. On the other hand, there are suggestions drawing on the agency theory that the size of the board should be small enough to allow for the active involvement of all the members and the smooth functioning of meetings. This view is in line with increasing coordination and communication problems associated with a larger board size (Cheng, 2008). Lipton and Lorsch (1992) are of the view that smaller boards can effectively and consensually take better strategic decisions than a larger board which may always have problems reaching consensus. Thus, drawing on the inconclusive empirical literature and the agency theory, we conclude that the precise effect of board size on firm stock return volatility is indeterminate. Accordingly, we formulate the following hypothesis:

H₁: *Board Size has no impact on stock return volatility*

3.2.2. Board independence

The independence of the board of directors as a corporate governance indicator is key in promoting accountability, transparency and reduction of information asymmetry in equity market development. Investors pay key attention to the independence of a corporate board in their investment decision-making and this affects the cost of capital of firms. The concept of board independence was grounded on the agency theory due to the need to monitor the activities of the agent by the principal. A corporate board is regarded as independent if more of its board members are outside directors not directly involved in the daily operations of the firm. Hence, an independent board is expected to offer high oversight and accountability of operations, due to the level of independence of outside directors. Therefore, based on the stewardship theory, independent board members may not be inclined to pursue policies that are self-centred but are instead guided by the interests of the stakeholders who appointed them (La Porta et al., 1999). For this reason, a larger proportion of independent members on a board should promote less variability of outcome but positive performance. Board independence is determined by the ratio of a number of outside (non-executive) directors to a firm's total board membership. Thus, the total directorship of the firm is composed of internal and external directors. This mix creates a balance of power issues. For instance, internal executive directors have more insider information about the firm, which can be used to their advantage than external directors. According to Adams et al. (2010), given the

uniqueness of the status and the role of internal directors, the optimal functioning of the board can be affected.

Thus, to mitigate the opportunistic behaviour of internal directors in their day-to-day operations that could result in the exposure of shareholders to sub-optimal decisions on firm value and risk exposure, regulators opt for the inclusion of more independent outside directors on a firm's board to enhance transparency, reduce information asymmetry and improve disclosure processes, which will increase firm valuation and reduce stock return volatility. Consistent with this line of reasoning, Jiraporn and Lee (2018) refer to this as the "risk-avoidance hypothesis" based on the postulation that board independence lowers a firm's risk whereby managers are forced to align policies of the firm with that of shareholders' interest. On the other hand, board independence could also impact stock return volatility in a positive manner. Independent directors are not in charge of day-to-day management of the firm and thus may possess limited access to critical information as well as a high cost of assessing the reliability of firm-specific information. This consequently leads to ineffective monitoring and consequently to a high level of volatility (Adams & Ferreira, 2007). Jiraporn and Lee (2018) called this "risk-seeking hypothesis" based on the simple guess that an effective and highly independent board, which lacks necessary information is less effective in thwarting the efforts of managers from approving policies that reflect their risk aversion, thereby increasing firms' risk-taking. From the above discussions, it can be seen that the relationship between board independence and firm risk-taking is supposed to be positive, according to the "risk-seeking hypothesis" whereas negative in the case of the "risk-avoidance hypothesis". This indicates that the theoretical position on the impact of board independence on a firm's risk taking is inclusive. Nonetheless, existing evidence shows that independent boards are an effective corporate governance mechanism that reduces risk in support of the risk-avoidance hypothesis (Bird et al., 2018; Dechow et al., 1996; Jiraporn & Lee, 2018; Klein, 2002; Pathan, 2009), whereas others (Huang & Wang, 2015; Sá et al., 2017; Zhang et al., 2018), observed a positive relationship between board independence and stock return volatility (risk-seeking hypothesis). Furthermore, other scholars did not see any meaningful relationship between board independence and stock volatility (Cheng, 2008; Sila et al., 2016). Based on the foregoing inclusive evidence, both in theory and empirics, we thus propose the following testable hypothesis:

H₂: *Board Independence has no impact on stock return volatility*

3.2.3. CEO duality

The CEO of a firm has the executive responsibility to manage the firm's business; whereas, the chairman of the board of directors has the responsibility to handle the affairs of the board (Sheikh & Wang, 2012). In a situation whereby both positions are occupied by the CEO, CEO duality is said to have happened (Rechner & Dalton, 1991). The implications of CEO duality in a firm's operations and strategy is that dualistic CEO can manipulate decisions to his/her interest, which may ultimately impact firm performance and competitiveness. Again, dualistic CEO can offer positive outcomes to a firm's performance as the dualistic CEO exercises complete authority over the corporation and his/her role is unambiguous and unchallenged. On the contrary, Lam and Lee (2008), based on the agency theory, argue that combining the role of the chair of the governing board and the CEO might result in CEO dominance which potentially weakens the effective functioning (monitoring and control) of the board, thereby exacerbating agency costs. This implies that the proponents of the agency theory believe that CEO duality increases agency cost, reduces effective monitoring and performance compared to instances where CEO duality does not exist. Thus, partitioning the responsibilities of the CEO and board chairman into different personalities will enhance the firm value (Rechner & Dalton, 1991) and reduce stock return volatility. However, the supporters of the stewardship theory (Donaldson & Davis, 1991) suggest the opposite view. Promoters of the stewardship theory are of a strong conviction that when the CEO doubles as the board chair, the CEO is more effective as a leader to take quick action, especially on critical decisions. Admittedly, Dehaene et al. (2001) confirm that CEO duality has a significant impact on

the financial performance of firms. It can be seen that the competing theories (agency and stewardship) are inconclusive on the impact of CEO duality on firm outcomes. More precisely, whereas the agency theory proposes a negative outcome of CEO duality on firm, that of the stewardship theory opts for a positive outcome of CEO duality on firm. The resource dependency theory would rather consider the high benefits of CEO duality on firm value as against the costs (agency theory) under instances where powerful CEO is needed to make smart strategic decisions to remain competitive and maximise shareholders' wealth in the financial market. Accordingly, Elsayed (2010) suggests that the inclusive impact of CEO duality depends on varying circumstances and this may indicate a trade-off between costs and benefits depending on the specific situation at hand. Empirical evidence is also far from a conclusion on the precise outcome of the CEO dualistic responsibility on firm outcomes. On the one hand, evidence point to the negative effects (based on the agency theory) of CEO duality on firm volatility in performance (Bebchuk et al., 2011; Tang et al., 2011). On the other hand, Yang and Zhao (2014) supported the evidence that, under certain conditions, firms with CEO dualistic responsibilities perform better than those without. From the foregoing discussions, we propose the following hypothesis:

H₃: *CEO duality has no impact on stock return volatility*

3.2.4. Board gender diversity

Board of directors in a company need to have the right composition of males and females to provide diverse viewpoints. Accordingly, the number of female board members' representation on a corporate board has attracted policy attention. The proportion of female directors on the board is normally used to calculate board gender diversity (Fuente et al., 2017). Helfat et al. (2006) had observed that, there seem to be an increase in the women representation on corporate board positions over the past decade, which might be due to an important role that board gender diversity brings into boardroom decision-making. Based on the resource dependence theory as well as the agency theory, inclusivity of all talents and skilled human resources may minimize agency cost, enhance effective monitoring and decision-making which consequently improve firm performance and reduce stock return volatility. Empirical evidence on board gender diversity has revealed that, representation of females on corporate boards influence corporate decision-making (Nielsen & Huse, 2010), firms' risk-taking (Faccio et al., 2016), managing (Loden, 1985), firm value enhancement (Carter et al., 2003), and increase transparency and disclosure (Adams & Ferreira, 2009). Nielsen and Huse (2010) added that women directors on corporate boards play an influential role in the board's decision-making by means of their professional expertise and different value systems. From a purely theoretical angle (resource dependence view), diversity of corporate board membership could enhance decision-making due to the logic that, diverse group may possess a pool of varied talents and skills, abilities and knowledge, which can lead to effective corporate decision-making for better results (Williams & O'Reilly, 1998). The agency theory also supports board gender diversity concept with the view that when women are included on corporate boards, they are more dedicated to the provision of high transparency and disclosing public information to enable investors to evaluate firms, which improves stock value (Gul et al., 2011).

However, the social identification and social categorization proponents (Tajfel, 1981; Turner, 1987) argue that group diversity may influence dynamics and performance negatively. Nielsen and Huse (2010) identified two types of characteristics (non-traditional professional experience and value systems) through which women directors can influence corporate boardroom decision-making and make a meaningful impact. In terms of women's participation in decision-making positions, board gender diversity enriches board decision-making, quality of ideas, and examination of different aspects of the same issue by providing varied alternatives for consideration. In terms of value systems, gender diversity proponents (Schubert, 2006) argue that males are more adventurous and risk-loving, whereas females are more risk-averse. By logical extension, female directors are more likely to make low-risk financing decisions and show high avoidance of debt financing than male directors. Accordingly, Schicks (2014) found that women have less over-

indebtedness risk than their male counterparts. Again, there is some general view that equitable representation of female directors on the board of governors is a positive development because a gender-diverse board is said to reduce managerial opportunism and bridge knowledge and informational gaps. Consequently, broad gender diversity is likely to lead to an improvement in the quality of information disclosure as well as transparency issues in the financial market. This reduces information asymmetry among investors (Gul et al., 2011), enhances firm valuation, and is expected to reduce stock return volatility. Thus, based on inclusive consensus between the social identification and categorisation proponents on one hand and resource dependence theory, on the other hand, we provide the following hypothesis:

H₄: *Board gender diversity has no impact on stock return volatility*

In addition to the corporate governance characteristics discussed above, existing literature indicated that stock return volatility is also influenced by macroeconomic indicators, such as inflation, Gross Domestic Product (GDP) and firm-specific factors as well (Fama, 1981; Frimpong & Adam, 2010; Kimani & Mutuku, 2013; Kuwornu & Owusu-Nantwi, 2011; Patra & Poshakwale, 2006).

4. Research design

4.1. Data: sample size, sources and description and model specification

This study used data on twenty-two (22) listed firms listed on the Ghana Stock Exchange from 2011 to 2019, mainly due to relevant data availability. The data was taken from two key sources: corporate annual reports released by the Ghana Stock Exchange (GSE) and corporations available online, and Osiris database. The corporate governance elements of the listed firms were derived from corporate annual reports, while firm-specific features and stock return variables were retrieved from the GSE and Osiris database. The macroeconomic variables were obtained from the World Bank database.

4.1.1. Variable definition and measurements

4.1.1.1. Dependent variable (stock return volatility). The dependent variable used in this study is the stock return volatility. To determine the volatility of the stock's return, two steps were followed. In the first step (equation 1), an estimate of monthly mean returns using monthly share price series was done. An annual average was then calculated to obtain annualised stock return. The monthly return was estimated as:

$$\text{Stock return}(R)_t = \ln \left[\frac{P_t}{P_{t-1}} \right] \quad (1)$$

Where R_t is the natural logarithm of the continuously compounded return. The log return is preferred to the simple discrete returns on the basis that, the log returns are time additive (Giversen & Bendkia, 2011) and also the statistical properties of the log returns are more tractable (Tsay, 2005). In the second step, the volatility was estimated using the returns from equation 1 as equation 2 shows.

$$\text{Volatility} = \text{std} \left[\ln \frac{P_t}{P_{t-1}} \right] \quad (2)$$

where is $P_t, P_{t-1} \dots$ are stochastic processes that represent the price returns. The standard deviation is used as the measure of stock return volatility.

4.2. Independent variables

Of immense interest in this study is the influence of the key corporate governance variables (board size and board independence) stock return volatility. Additionally, other covariates of corporate governance characteristics (*CEO Duality & Board Gender Diversity*) and macroeconomic variables (annual inflation growth rate and annual GDP growth rate) as well as firm-specific covariates have been added justifiably based on existing evidence as discussed in the literature earlier. Table 1 throws more light on the description of the variables used in this study.

4.2.1. Model specification

The model used in this study is specified as follows:

$$RetV_{it} = \alpha_0 + \beta_1 BSIZE_{i,t} + \beta_2 BIND_{i,t} + \beta_3 CEOD_{it} + \beta_4 GEND_t + \beta_5 INF_t + \beta_6 GDP_t + \beta_7 FSIZE_{it} + \beta_8 LEV_{it} + \varepsilon_{it} \quad (3)$$

where,

$RetV_{it}$ = annualised stock return volatility for firm i in time t

$BSIZE_i$ = Natural log of number of directors for firm i in time t

$BIND_{it}$ = Ratio of non-executive members on the board to total board members for firm i in time t

$CEOD_{it}$ = dummy variable for 1 if the CEO is the same the board chairman, otherwise 0

$GEND_{it}$ = Ratio of women membership on the board to total board members for firm i in time t

Table 1. Variables description

Variables	Symbol	Measurement	Expected Sign.
Dependent Variables			
Stock Return Volatility	RetV	Annualized standard deviation of weekly stock return	
Independent Variables			
Board Size	BSIZE	Natural log of number of directors on the board.	+/-
Board Independence	BIND	Ratio of non- executive directors on the board to total board members	+/-
CEO Duality	CEOD	If the CEO is the same as the board chairman 1 otherwise 0	+/-
Gender Diversity	GEND	Ratio of number of female directors on the board to total board members	+/-
Control Variables			
Inflation Rate	INF	inflation rate	-
Gross Domestic Product	GDP	Growth rate of gross domestic product	+
Firm Size	FSIZE	Natural log of total assets	+
Leverage ratio	LEV	Total debt divided by total assets	-

Source: Authors' Construct (2021)

INF_t = inflation at time t

GDP = Gross Domestic Product Growth at time t

$FSIZE_{it}$ = the size of the firm (log of total assets) for firm i in time t

LEV_{it} = debt-to-asset ratio for firm i in time t

Subscripts i and t denote the firm cross-sections and time, respectively. B_1 - β_9 are the coefficients to be estimated, α_0 is the intercept of the model and ϵ_{it} denotes error term.

Equation (3) was estimated by Ordinary Least Squares (OLS), robust OLS, Driscoll-Kraay estimator and Panel Corrected Standard Errors (PCSE) approach in order to avoid the autocorrelation and heteroscedasticity problems for more robust findings as recommended by Beck and Katz (1995); Khalil and Chihi (2020); Khalil and Taktak (2020).

5. Empirical findings and discussion

5.1. Descriptive statistics, correlation analysis and regression results

Table 2 presents the descriptive statistics on the variables of interest and other covariates used in the study. The descriptive statistics used are mean, standard deviation, minimum and maximum values.

The mean of board size is almost nine directors while the minimum and maximum membership is five (5) and thirteen (13), respectively. Board independence has a mean of 0.73 with minimum and maximum values of 0.40 and 0.92, while stock return volatility has a mean value of 1.475 and a maximum value of 5.97.

5.1.1. Correlation matrix

The correlation matrix (Table 3) shows the significant relationship between the stock return volatility and corporate board size, board independence in addition to other independent variables. The essence of the matrix is to detect the presence/absence of high correlation coefficient supporting the existence/non-existence of multicollinearity between the variables used. Table 4.2 shows that the presence of multicollinearity can be rejected given low values of the correlation coefficients. Of prime interest in this study is the association between board size (BSIZE) and stock return volatility (RetV) and also the relationship between board independence (BIND) and stock return volatility. The coefficient between board size and stock return volatility is negative and statistically significant offering support to the agency theory that large boards are characterised

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
RetV	180	1.475	1.027	0.00	5.97
BOARDSIZE	180	8.6	2.273	5	13
BIND	180	0.729	0.154	0.4	0.923
CEOD	180	0.15	0.358	0	1
GEND	180	0.457	1.011	0	4.8
INF	180	0.118	0.041	0.07	0.18
GDP	180	0.066	0.035	0.02	0.14
FSIZE	180	12.284	2.393	7.02	16.4
LEV	180	0.666	0.243	0.046	1.433

Source: Authors' estimation (2021). RetV (Return Volatility), BOARDSIZE (board size), BIND (Board Independence), CEOD (CEO Duality), GEND (Board Gender Diversity), INF (Inflation rate), GDP (GDP growth rate), FSIZE (firm size measured as log of total assets), LEV (leverage ratio).

Table 3. Pairwise correlations analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) RetV	1.000								
(2) BSIZE	-0.211*	1.000							
(3) BIND	0.348*	0.306*	1.000						
(4) CEOD	-0.208*	-0.420*	-0.409*	1.000					
(5) GEND	0.061	-0.061	-0.180*	-0.035	1.000				
(6) INF	-0.012	0.000	0.000	0.000	0.000	1.000			
(7) GDP	-0.041	0.000	0.000	0.000	0.000	-0.719*	1.000		
(8) FSIZE	0.305*	0.472*	0.410*	-0.397*	0.283*	0.052	-0.082	1.000	
(9) LEV	-0.149*	0.011	-0.062	0.030	0.187*	-0.053	0.025	0.236*	1.000

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. ***, **, and * indicate significance at the 1, 5 and 10 percent levels of significant, respectively. RetV (Return Volatility), BOARDSIZE (board size), BIND(Board Independence, CEOD(CEO Duality), GEND(Board Gender Diversity), INF(Inflation rate), GDP(GDP growth rate), FSIZE(firm size measured as log of total assets), LEV (leverage ratio).

with varied skills and provide effective monitoring and supervision of management actions and this reduces stock return volatility. However, board independence (BIND) relate positively with stock return volatility supporting “risk-seeking view” that highly independent corporate board can be ineffective at least due to lack of relevant information regarding the daily operations of the firm. Given these insights and for the fact that correlation does not suggest causality, we then proceed to explore if board size and board independence matter in stock return volatility, controlling for other covariates of governance, firm-specific and macroeconomic variables using regression analytic technique.

5.1.2. Regression analysis

RetV (Return Volatility), BOARDSIZE (board size), BIND(Board Independence, CEOD(CEO Duality), GEND(Board Gender Diversity), INF(Inflation rate), GDP(GDP growth rate), FSIZE(firm size measured as log of total assets), LEV(leverage ratio).

Table 4 presents the regression results that explored the causal relationship between board size and board independence and stock return volatility, among covariates. Table 4 presents four estimations (OLS, robust OLS, Driscoll-Kraay, PCSE) to ensure the robustness and generality of the findings. Among these estimations, this study focused on the panel-corrected standard errors (PCSE) estimator, which is reliably suited to small panels like this study and accounts for finite sample bias while producing panel-corrected standard errors that allow heteroscedasticity (Beck & Katz, 1995), which the Ordinary Least Square (OLS) does not. Moreover, a chi-square test conducted produced a value of 8.63, $\text{prob} > \chi^2 = 0.0033$ showing a significant presence of heteroscedasticity so the PCSE becomes a suitable choice (indeed, the robust OLS and Driscoll-Kraay estimators equally suitable).

5.2. Board size, board independence and stock return volatility (risk)

Two of the most critical aspects of governance structures this study focuses on are board size and board independence. The findings from Table 4 prove the significant impact of board size on stock return volatility. More precisely, the coefficient of board size in all the estimations is negative and statistically significant, implying larger boards are more capable of reducing stock return volatility due to the pool of skills, expertise, effective monitoring capacity and efficient decision-making machinery. On the other hand, this finding points to the fact that small board-size firms are more likely to suffer high stock volatility due to their disadvantaged inherent status compared to large board-size firms. Consistent with the agency theory and its associated assumption that managers have self-interest, different goals and objectives incongruent with principal owners of a firm, it is therefore convincing that effective monitoring of a manager’s activities is easier for larger boards

Table 4. Regression results. dependent variable, RetV (Return volatility)

	(1)	(2)	(3)	(4)
	RetV OLS	RetV OLS-ROBUST	RetV DRISCOLL-KRAAY	RetV PCSE
BSIZE	-0.092** (0.049)	-0.134*** (0.051)	-0.134*** (0.018)	-0.134*** (0.04)
BIND	3.151*** (0.795)	3.151*** (0.922)	3.151*** (0.395)	3.12*** (0.6)
CEOD	-0.079 (0.222)	-0.079 (0.194)	-0.079 (0.2)	-0.076 (0.191)
GEND	0.092 (0.076)	0.092 (0.057)	0.092 (0.055)	0.089 (0.068)
INF	-2.42 (2.418)	-2.42 (2.479)	-2.42 (3.969)	-1.893 (4.07)
GDP	-2.482 (2.841)	-2.482 (2.512)	-2.482 (2.692)	-1.963 (4.689)
FSIZE	0.111*** (0.038)	0.111*** (0.033)	0.111*** (0.027)	0.115*** (0.035)
LEV	-0.83*** (0.3)	-0.83*** (0.265)	-0.83*** (0.152)	-0.791*** (0.265)
_cons	-0.067 (0.678)	-0.067 (0.632)	-0.067 (0.591)	-0.217 (0.847)
Observations	180	180	180	180
R-squared	0.226	0.226	0.226	0.184

Note: Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$. ***, **, and * indicate significance at the 1, 5 and 10 percent levels of significant, respectively. Breusch-Pagan/Cook-Weisberg test for heteroscedasticity ($\chi^2 = 8.63$; p -value = 0.0033)

than smaller boards and also, it is costly for CEO to control the larger board size. Again, the resource dependency theory equally supports the view that the availability of a pool of varied skills and talents associated with large corporate boards ensures firm survival. A surviving firm faces less volatility. This evidence supports that of Cheng (2008) whose evidence points to the fact that board size has a statistically and economically significant negative effect on stock return volatility. Also, R. B. Adams and Mehran (2003) earlier stated that a larger board can effectively monitor the actions of management in that such a board comes with an array of expertise needed to unearth all managers' hidden activities, including those that are likely to be value-destructive. The finding of the current study is consistent with both agency and resource dependency theories as well as empirical evidence (Cheng, 2008; Huang & Wang, 2015; Nakano & Nguyen, 2012). Nonetheless, there are some scholarly evidence that pointed to a different direction to this study. For instance, Jensen (1993) criticised large board sizes as being less effective in decision-making and consequently weak in monitoring managerial actions which result in poor firm performance.

Another important driver of a firm value and stock return volatility is board independence. In the event of a growing level of information asymmetry and lack of transparency in corporate managerial activities, the influence of external directors on the operations of the firm is regarded as a key panacea to avert firm risk-taking. This makes board independence an indispensable tool in offering objective, unbiased and effective monitoring of managerial opportunism. Thus, firms with more proportion of independent directors on the board are more likely to deploy positive policies with less risk (high firm value) and lower stock returns volatility (Jiraporn & Lee, 2018). With regard to the evidence provided in Table 4 between board independence and stock return volatility,

a positive relationship between stock return volatility and board independence is observed. This positive relationship could be explained in the context of the risk-seeking hypothesis by Jiraporn and Lee (2018) and demonstrates further that, increasing the number of outside executives on the board of corporate listed firms in Ghana is not enough to influence stock volatility downward, perhaps due to weak monitoring capacity and huge information asymmetry between management and outside directors. This provides an opportunity for policymakers to be more critical about who gets appointed to corporate boards as non-executive director. An appointment of non-executive members to corporate boards must be based on a clearly definable trajectory epitomised with character, integrity, capacity and relevant skills in monitoring managerial actions.

Again, consistent with the resource dependency theory, outside directors bring into their respect corporate boardroom, rich experiences, great networking and relationship with external financiers that facilitate quicker access to finance and other opportunities as well as risk (Peng, 2004). Accordingly, Minton et al. (2011) argue that corporate boards with high levels of independence are most likely to be associated with a high level of risk. The findings from this study align with Zhang et al. (2018) whose evidence in the Chinese capital market shows that firm risk is higher for firms with higher independence. Furthermore, this positive relationship between board independence and risk level of a firm's stock is contrary to the agency theory's prediction and evidence from existing studies in the US. In that vein, the recent argument put forth by Teodósio et al. (2022) is worthy of note. They argue that whereas the majority of findings with respect to board independence-stock risk reduction point to a beneficial effect of board independence on stock risk reduction in the US context, the opposite holds in the non-US context. This may imply that context-specific cases may matter as far as the relationship between board independence and stock return volatility is concerned. The obvious differences observed above could be possibly due to the fact that outside directors in the Ghana (non-US) jurisdiction are less effective in monitoring inappropriate managerial self-serving behaviour leading to volatile stock returns.

Concerning, the influence of other corporate governance elements (CEO Duality & board gender diversity) on stock return volatility, the findings from this study do not support our expectations (both covariates are not promoters of stock return volatility) similar to macroeconomic variables. This, however, provides suggestions that more is left to be done by women's representation on corporate boards to influence corporate policies that will reflect in firm value and risk policies. Regarding firm size, the findings show a positive and significant relationship between firm size and stock return volatility. By implication, bigger firms are more likely to be associated with high stock return volatility than smaller firms. This finding is consistent with other existing scholars (Pathan, 2009; Sila et al., 2016). Meanwhile, leverage, LEV, provides a negative and significant relationship with stock return volatility. The leverage used here is measured as a ratio of total debt to total assets. Based on the signalling theory, this finding may suggest that listed firms use more debt financing to communicate their good intentions and capacity to honour their payments and this removes any uncertainty around the firms' operations and risk.

6. Summary and conclusion

One of the crucial aspects of stock market development that attract the attention of investors and policymakers is actual fluctuations in stock prices over a considerable period, also known as stock return volatility. This is largely due to the negative implication of high stock volatility on investors' portfolio return and risk. Highly volatile stocks expose investors to a high risk of loss of return with implications on liquidity in the financial market. Given the growing globalisation of financial markets and the quest by global investors to seek higher returns on their investments in emerging markets, stock market volatility has become a great concern for investors who may want to move funds away from one market to another. Thus, emerging financial markets are becoming preferred investment destinations for investors who want better risk-adjusted returns as developed markets seem not attractive any longer. Moreover, stock return volatility has implications on market efficiency theory which assumes that pricing of financial assets and investments on financial markets adjust in accordance with the arrival of new information for which rational investors can be informed. Despite the significance of stock return volatility, much is not discovered in

developing and emerging markets, especially, the impact of corporate governance systems on stock return volatility. Existing evidence suggests that one of the mechanisms needed to reduce stock returns volatility is effective corporate governance system. An effective corporate governance system provides a platform for transparency, accountability, disclosure mechanisms and efficient use of investors' resources, which enhances investor confidence, stock market development, firm value and reduces stock return volatility.

Thus, this study examined the impact of two important corporate governance elements, board size and board independence, on stock return volatility, from an emerging market perspective. Twenty-two listed firms from the Ghana Stock Exchange were sampled with their relevant information on daily stock prices, corporate governance features and macroeconomic variables. Using the standard deviation of stock returns as a proxy for stock volatility, the empirical evidence points to the fact that, listed firms with large corporate boards are capable of reducing stock return volatility. This actually rejects the null hypothesis stated earlier. This evidence may be possibly due to several advantages associated with large board size such as the presence of a pool of skills, expertise, effective monitoring capacity and efficient decision-making machinery, which promotes price discovery and transparency on the stock market. Consistent with the agency theory, this evidence also underscores the impact of large corporate boards on limiting the opportunistic activities of CEO due to effective monitoring mechanisms. Again, this study found that, despite the important influence of highly independent corporate boards on corporate firms' performance and risk-taking, a large number of outside executives on corporate boards may not always guarantee less volatility in a firm's stock return. This also rejects the null hypothesis. Again, this finding is due to the fact that in as much as highly independent corporate boards are likely to provide effective monitoring mechanisms on managerial actions, avoid managerial self-serving decisions and provide easy access to finance from the financial market, highly independent corporate boards may also lack effective monitoring capacity and could also provide more risk opportunities due to huge information asymmetry between outside board executives and inside executives. In the light of the findings, this study recommends stricter enforcement of monitoring, disclosure of relevant market information and strengthening the capacity of board executives to effectively monitor the actions of managers.

6.1. Limitations and further research

Despite the relevance of the findings, the study has some limitation worth reporting. First, the sample size is limited to twenty-two listed firms with relevant data points. Secondly, the measure of volatility used in this study is the standard deviation of the returns. Future studies could expand the sample size and also use an advanced form of risk analytic tool such as the GARCH (1,1). Nonetheless, the findings of this study provide valuable inputs to informed decision-making and public policy discourse on corporate governance system and its implications on the development of stock market.

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Highlights

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