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THE PERFORMANCE CONSEQUENCES OF BOARD STRUCTURE CHANGES: EVIDENCE FROM GHANA

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Abstract

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This paper analyses the performance consequences of board structure changes in Ghana for the study period 2000 to 2009. In 2003, the Ghanaian listed firms adopted the Ghanaian Corporate Governance Code on comply or explain basis but no study to date has analysed the pre-2003 and post-2003 board structure changes impact on firm performance in the Ghanaian environment. We predict that board structure changes prompted by the introduction of the Ghanaian Code in 2003 should lead to better firm performance. Using a panel regression model, our results show that duality decreases firm performance pre-2003, but those firms that separate the two posts in line with the recommendations of the Ghanaian Code did not perform better than those that combined the two post-2003. While we find no relationship between board committees and firm performance pre-2003, the relationship switched to positive and statistically significant post-2003. The most consistent result we find concerns board size. However, the non-executive director representation on the board appears to have no impact on firm performance. These results show that not all board structure recommendations introduced by the Ghanaian Code are effective in achieving superior performance in Ghana.

Keywords: Corporate Governance, Board Structure, Firm Performance, Ghana

1. INTRODUCTION

In this paper, we analyse the impact of board structure changes on the performance of the Ghanaian listed firms. The Ghanaian listed firms have recently adopted corporate governance guidelines on best practices (hereafter the Ghanaian Code) and are expected to comply or provide an explanation for non-compliance with the code provisions. Although compliance is not backed by the force of law as in the case of the UK and South African codes, it has provided a number of recommendations on governance best practices, including role separation between the Chief Executive Officer (CEO) and the Chairman of the board of directors, board size ranging from eight to sixteen members, a balance of executive and non-executive directors with at least one-third of independent directors on the board and the establishment of board committees (both audit and remuneration).

Despite the objective of these codes being underpinned by agency theory aligning the shareholders' and managers' interests, prior studies on the relationship between board structure governance mechanisms and firm performance is inconclusive. One stream of empirical papers has indicated that corporate governance is positively associated with firm performance whereas others have found a negative or no relationship between the two. The empirical papers that reported a positive relationship are based on the aspect of agency theory that implies efficient board structures can significantly minimise agency costs with the consequential effect on firm performance. First, Rechner and Dalton (1991) showed that firms with separate board chairpersons consistently outperformed those with the combined role or CEO duality for large US corporations. Similarly, Adams and Mehran (2012), as well as Meyer and Wet (2013), observed a statistically significant and positive association between board size and firm performance. Cho and Kim (2007) reported that the

rate of outside directors' participation is significant and positively related to firm performance. Laing and Weir (1999) found that the presence of audit and remuneration committees do have a positive impact on firm performance. Recently, Soliman *et al* (2014) found a positive association between role separation, board size, board independence, audit committee and firm performance.

In contrast, other studies have found a negative relationship between these board structure governance mechanisms and firm performance. In particular, Donaldson and Davis (1991) observed that firms with the combined roles of the CEO and the Chairman or CEO duality perform better than those that separate the two roles. Similarly, Dey *et al* (2011) discovered that firms that split the CEO and Chairman roles due to investors' pressure have significantly lower announcement returns and subsequent performance, and lower contribution to shareholder wealth. Yarmack (1996) reported that board size is negatively related to firm performance, evidence supported by Eisenberg *et al* (1998) and Guest (2009). Bozec (2005) found that the proportion of outside representation on the board and the presence of audit committees are negatively related to firm performance.

The third stream of researchers found no relationship between these board structure governance mechanisms and firm performance. Chen *et al* (2008), for example, documented an increased number of firms changing from dual to non-dual but their findings do not show any significant relationship between CEO duality and firm performance nor improvement in firm performance after a change of leadership structure. Wintoki *et al* (2012) found no causal relationship between board size and firm performance after re-examining a larger sample of US firms. Haniffa and Hudaib (2006) observed that the representation of outsider directors has no impact on firm performance. Dulewicz and Herbert (2004) found no statistically significant differences in firm performance between boards with audit and remuneration committees and those that do not have such committees.

Although the relationship between board structure governance mechanisms and firm performance are still not conclusive, evidence on the pre and post-adoption of a particular code impact on firm performance is still limited. In the UK, Weir and Laing (2000) analysed the relationship between board structure governance mechanisms and firm performance for two years, 1992 (pre-1992 Cadbury report) and 1995 (post-1992 Cadbury report) but documented mixed evidence. They found a significant and consistent negative relationship between outside directors and firm performance during both sub-periods. However, they found the presence of a remuneration committee to have no impact on firm performance during the pre-1992 Cadbury Report, but a positive and significant impact on firm performance during the post-1992 Cadbury Report. On the other hand, Bhagat and Bolton (2009), using US firm data, separated their sample into pre and post 2002 Sarbanes-Oxley Act (S-Ox) to investigate how governance-performance relationship might have been impacted by the Act. They reported a negative and significant relationship between board independence and operating

performance during the pre-2002 period, but a positive and significant relationship during the post-2002 period.

Ghana, a developing country was selected because, from an institutional perspective, it differs significantly from the two developed countries (UK and US) noted above. To the best of our knowledge, there is no study in any developing countries that has examined board structure changes impact on firm performance before and after the introduction of a code of corporate governance. We, therefore, add to the literature by investigating the extent to which board structure recommendations made by the Ghanaian Code have affected firm performance. In this respect, we assess the relationship between board structure governance mechanisms and firm performance for two sub-periods across Ghanaian listed firms, one for pre-2003 (2000-2002) and the other for post-2003 (2004-2009). The Ghanaian Code which was published in 2003 by the Security and Exchange Commission Ghana (SECG) will be the basis for the analyses of the impact of board structure changes on firm performance. The pre-2003 represents the period prior to the publication of the code and therefore board structure governance mechanisms-performance relationship pre-Ghanaian Code. The post-2003 findings will show the extent to which the recommended board structure changes have been implemented and their subsequent impact on firm performance post-Ghanaian Code.

Unlike Weir and Laing (2000), we use panel data drawn from annual reports published by the Ghana Stock Exchange (GSE) listed firms over a ten-year period from 2000 to 2009. We explicitly separate the data into two distinct periods: pre-2003 and post-2003, thus to enable us to capture the changing corporate governance landscape. Given the panel nature of our data, we use a panel regression model to find whether firm performance might have been impacted by the board structure changes. We find evidence to suggest that duality is statistically significant and negatively related to firm performance pre-2003, but those firms that separate the two posts in line with the recommendations of the Ghanaian Code did not perform better than those that combined the two post-2003. While we find no relationship between board committees and firm performance pre-2003, the relationship switched to statistically significant post-2003. The most consistent result we find concerns board size. However, the non-executive director representation on the board appears to have no impact on firm performance. Our results over the whole period, 2000-2009 show that duality, board size and board committees explain some of the changes in firm performance.

The paper is structured as follows. Section 2 discusses the recent corporate governance reforms in Ghana, reviews the relevant studies and develops a series of hypotheses for testing. Section 3 describes the sample, variables and the model used in our empirical analysis reported in section 4. Finally, we provide concluding remarks and some suggestion for future research in section 5.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Agency theory

This paper's theoretical basis is founded on agency theory and in this context we clarify the development of the rationale for an application in the corporate governance landscape. Although not naming the problem, Berle and Means (1932), can be identified as a logical starting point; they elaborated on the structure of the modern corporation whilst identifying the paradox of the shareholders as 'masters', yet ceding control and oversight to management. Essentially, dispersed ownership as it was in the US context meant that shareholders owning a portfolio of shares were unlikely to be concerned with the day to day operations of the corporation. Therefore it provides management with a possible incentive, and most definite opportunity, to serve their best interest instead of the shareholders.

The conflict of interests between the shareholders and managers (Jensen and Meckling, 1976) emanated from the separation of ownership and control (Berle and Means, 1932) has led to the notorious agency problem. Fundamental to the agency problem is lack of monitoring and accountability, something which agency theory tries to address through board structure governance mechanisms such as the leadership role separation, optimum board size, non-executive directors representation, audit, and remuneration committees to realign the interests of shareholders and managers. The theory has impacted on the development of corporate governance codes around the world, and in 2003, the SECG published the Ghanaian version and encouraged firms to comply with its recommendations or provide an explanation for non-compliance. We argue that the introduction of the Ghanaian Code should lead to board structure changes, hence effective monitoring and accountability with a consequential effect on superior firm performance.

2.2. Board leadership structure (CEO duality)

The agency theory position is that CEO duality is bad because having the CEO as the Chairman of the board to evaluate his/her own work defeats the objective of having the board to monitor management leading to accountability failure. This is because the CEO may use his/her power as a board Chairman to select directors who are not expected to challenge his/her actions (Westphal and Zajac, 1995). In this respect, the board will be incapable of effectively monitoring and evaluating the CEO's actions because the CEO duality 'signals the absence of separation of decision management and decision control' (Fama and Jensen, 1983, p.314). This suggests that a board controlled by the CEO is expected to lack independence which may lead to more agency problems, and eventually, poor firm performance (Rechner and Dalton, 1991; Pi and Timme, 1993). This problem is addressed by the UK and the South African codes which recommend that the roles of the CEO and the Chairman should be separated. The Ghanaian Code also recommends a similar leadership structure. In fact, there is likely to

be lack of independence between the board and management if one person occupies the two roles.

The empirical evidence of whether CEO duality is better than separating the two roles in enhancing firm performance is mixed. First, and as in line with the agency theory, many prior studies have found a negative impact of CEO duality on firm performance (Rechner and Dalton, 1991; Pi and Timme, 1993; Dahya *et al*, 1996; Worrell *et al*, 1997; Faccio and Lasfer, 1999; Kiel and Nicolson, 2003; Bozec, 2005; Kyereboah-Coleman and Biekpe, 2006; Haniffa and Hudaib, 2006; Ujunwa, 2012; Soliman *et al*, 2014). These researchers argued that a combined leadership structure may lead to the implementation of the decisions that favours the CEO's personal objectives at the expense of the shareholders and therefore poor performance. In contrast, other studies have found a positive association between CEO duality and firm performance (Donaldson and Davis, 1991; Brickley *et al*, 1997; Boyd *et al*, 1997; O'Sullivan and Wong, 1999; Coles *et al*, 2001; Buckland, 2001; Abor and Biekpe, 2007; Peng *et al*, 2007; Dey *et al*, 2011; Guillet *et al*, 2013; Yang and Zhao, 2014). A third group of studies have found no significant association between CEO duality and firm performance (Daily and Dalton, 1993; Baliga *et al*, 1996; Vafeas and Theodorou, 1998; Dalton *et al*, 1998; Weir and Laing, 2000; Weir *et al*, 2002; Dulewicz and Herbert, 2004; Elsayed, 2007; Chen *et al*, 2008; Mashayekhi and Bazaz, 2008).

However, and consistent with the agency theory, the Ghanaian Code does recommend the separation of the two roles as best practice. This may be seen to be more effective in terms of enhancing firm performance and also to limit the power of the CEO of monitoring the monitors. Arguably, prior CEO duality-performance relationship evidence among listed firms in Ghana is limited to governance data from a questionnaire survey (Kyereboah-Coleman and Biekpe, 2006) which might not reflect the actual governance practices by the Ghanaian firms over a longer period. Given that no research to date has examined the impact of the Ghanaian Code recommendation of the changes in role separation on firm performance, the first relevant hypothesis is operationalised in the following form:

H1: There is a statistically significant negative relationship between a combined leadership structure and firm performance.

2.3. Board size

Lipton and Lorch (1992) and Jensen (1993) are of the view that although larger board size initially assists keyboard functions, it comes to a point when larger boards suffer from coordination and communication problems and therefore board effectiveness deteriorates. Prior studies have found some mixed results on the relationship between board size and firm performance (Yermack, 1996; Faccio and Lasfer, 1999; Kiel and Nicolson, 2003; Guest, 2009; Adams and Mehran, 2012; Wintoki *et al*, 2012). Yermack (1996) was one of the first researchers to investigate board size-performance relationship. Using a sample of 452 large US firms between 1984 and 1991, he found an inverse relationship between board size and firm performance. Recent studies (Eisenberg *et al*, 1998; Conyon and Peck, 1998; Vafeas, 1999;

Dahya *et al*, 2002; Lasfer, 2004; Bozec, 2005; Mak and Kusnadi, 2005; Cheng, 2008; Cheng *et al*, 2008; Bennedsen *et al*, 2008; Guest, 2009; O'Connell and Cramer, 2010; Guo and Kga, 2012; Ujunwa, 2012) have mostly found consistent results with those of Yermack (1996) that board size is negatively related to firm performance. In particular, Eisenberg *et al* (1998) criticised Yermack (1996) for mainly focusing on large firms, and for that matter, his findings cannot be extended to smaller firms, as well as those firms operating in different legal and cultural environments. In this respect, Eisenberg *et al* (1998) investigated the relationship between board size and firm performance across 879 small and medium size firms in Finland from 1992 to 1994. In line with Yermack (1996), they reported a statistically significant and negative relationship between board size and firm performance.

In contrast, other studies (Faccio and Lasfer, 1999; Kiel and Nicolson, 2003; Kyereboah-Coleman and Biekpe, 2006; El Mehdi, 2007; Kajola, 2008; Coles *et al*, 2008; Jackling and Johl, 2009; Sanda *et al*, 2010; Adams and Mehran, 2012; Meyer and Wet, 2013; Soliman *et al*, 2014) have found a positive relationship between board size and firm performance. These findings support the view that larger boards offer greater exposure to the external environment than smaller boards which improve access to various resources and therefore positively impacts on performance (Pearce and Zahra, 1992; Goodstein *et al*, 2006). The third group of studies has found no significant relationship between board size and firm performance (Dulewicz and Herbert, 2004; Bennett and Robson, 2004; Wintoki *et al*, 2012). In particular, Wintoki *et al* (2012) re-examined the relationship between board size and firm performance across 6,000 US-listed firms from 1991 to 2003 but found no relationship between the two.

Arguably, Coles *et al* (2008) in their study grouped 8165 firm-year observation from 1992 to 2001 into complex and simple firms in the US and reported that larger board size is positively associated with complex firms but this is opposite in simple firms where smaller board size is positively associated with firm performance. Their evidence suggests that very small or very large board size is optimal given the nature of a particular firm. Although the board size-firm performance relationship is inconclusive, the Ghanaian Code recommends a minimum board size of 8 and a maximum of 16, hence, the second relevant hypothesis is operationalised in the following form:

H2: There is a statistically significant positive relationship between board size and firm performance.

2.4. Board independence

Given the agency theory proposition that boards dominated by executive directors (insiders) are not accountable to shareholders (Fama, 1980; Sonnenfeld; 2002), the presence of non-executive directors on the board with their different expertise enhances board decision making process through their independent mind and judgment (Cadbury, 1992). Notwithstanding the important role that the presence of non-executive directors plays in reducing the agency problems, evidence on the relationship between board independence and firm

performance is mixed (Pearce and Zahra, 1992; Daily and Dalton, 1993; Agrawal and Knoeber, 1996; Klein, 1998; Vafeas and Theodorou, 1998; Weir *et al*, 2002; Bozec, 2005; El Mehdi, 2007; Coles *et al*, 2008; Kajola, 2008; Guest, 2009; Sanda *et al*, 2010, Adams and Mehran, 2012; Wintoki *et al*, 2012). Using a sample of 119 US *Fortune* 500 industrial firms from 1983 to 1989, Pearce and Zahra (1992) found the proportion of outside directors to have statistically significant and positive impact on firm performance. Similarly, recent studies have also reported a positive relationship between the presence of non-executive directors and firm performance (Faccio and Lasfer, 1999; Weir *et al*, 2002; Abor and Biekpe, 2007; El Mehdi, 2007; Cho and Kim, 2007; Coles *et al*, 2008; Gupta and Fields, 2009; Jackling and Johl, 2009; Soliman *et al*, 2014).

In contrast, other studies (Agrawal and Knoeber, 1996; Yermack, 1996; Kiel and Nicolson, 2003; Dulewicz and Herbert, 2004; Bozec, 2005; Kyereboah-Coleman and Biekpe, 2006; Guest, 2009, Mangena *et al*, 2012) have reported that the presence of non-executive directors' representation on the board is negatively related to firm performance. This indicates that the benefit of board independence; objectivity and experience expected from the representation of outside directors to influence board decisions appears to hold back managerial initiative through too much monitoring. Interestingly, a third group of studies (Daily and Dalton, 1992; Klein, 1998; Vafeas and Theodorou, 1998; Laing and Weir, 1999; Weir and Laing; 2000; Haniffa and Hudaib, 2006; Ghosh, 2006; Kajola, 2008; Sanda *et al*, 2010; Adams and Mehran, 2012; Wintoki *et al*, 2012) also suggest that the presence of outside directors on the board has no effect on firm performance.

Despite the inconclusive evidence, the Ghanaian Code recommends a balance of executive and non-executive directors on the board to monitor the activities of management. This means that the inclusion of non-executive directors on the board should, therefore, ensure effective monitoring of the executive directors whose interests are not aligned with shareholders value maximisation. Conyon and Peck (1998) argued that if outside directors either hold no shares or hold an insignificant number of shares, their motivation to monitor the executive directors, and therefore defend the shareholder interests may be immaterial. This is particularly important because the existence of the board as the most effective internal control mechanism for monitoring the executive directors' behaviour (Fama and Jensen, 1983) may not be achieved. Given that a high proportion of non-executive directors with little or no shareholdings suggest weak monitoring, the third relevant hypothesis is operationalised in the following form:

H3: There is a statistically significant negative relationship between the proportion of non-executive directors and firm performance.

2.5. Board committees

The impact of the presence of board committees on firm performance is still not clear as the research in this area is at its emergent stage (Dalton *et al*, 1998; Laing and Weir, 1999). However, and given the important functions of the board committees in an

attempt to help reduce the agency problems resulting from the separation of ownership and control (Berle and Means, 1932) provide an interesting area for further research. This is particularly important in a developing country context as it may help to provide further insights on the board committees-performance relationship. The empirical evidence on board committees-performance relationship is mixed (Wild, 1994; Klein, 1998; Vafeas and Theodorou, 1998; Laing and Weir, 1999; Bozec, 2005; Black and Kim, 2012). Using a sample of 260 US-listed firms from 1966 to 1980, Wild (1994) investigated the market reaction before and after the establishment of audit committees. He reported a statistically significant improvement in share returns following the establishment of audit committees, indicating that the presence of audit committees can improve managerial accountability to shareholders. Similarly, and using a sample of 115 UK listed firms during 1992 and 1995, Laing and Weir (1999) observed that the presence of audit and remuneration committees do positively affect firm performance. Recently, Soliman *et al* (2014) reported a positive association between the presence of audit committee and firm performance across Egyptian listed firms.

In contrast, and unlike Laing and Weir (1999) and Soliman *et al* (2014), prior studies have failed to find consistent evidence between board committees and firm performance (Bozec, 2005; Black and Kim, 2012; Lam and Lee, 2012). Using a sample of 25 Canadian firms from 1976 to 2000, Bozec (2005) found the presence of audit committees to have a negative impact on firm performance. However, he found the presence of nomination committees to have a positive impact on firm performance. Recent evidence by Black and Kim (2012) in Korea on 658 large public firms and 611 smaller firms found nomination and audit committees to have a statistically significant and positive impact on large public firms' performance but not smaller firms. They, however, observed that remuneration committees have no impact on both large and smaller firms' performance. Consistent with Black and Kim (2012), Lam and Lee (2012) examined the relationship between board committees and firm performance in a sample of 346 Hong Kong public listed firms from 2001 to 2003 and found a statistically significant and positive relationship between the presence of nomination committees and firm performance. At the same time, however, they found a statistically significant and negative relationship between the presence of compensation committees and firm performance.

The third group of studies (Klein, 1998; Vafeas and Theodorou, 1998; Weir *et al*, 2002; Dulewicz and Herbert, 2004; Kajola, 2008) have indicated no empirical relationship between board committees and firm performance. In Ghana, Kyereboah-Coleman and Amidu (2008) reported that the presence of audit committees is beneficial to the performance of SMEs. However, there is no available evidence regarding the impact of the establishment of board committees on Ghanaian listed firms' performance. Given that the Ghanaian Code recommends the establishment of an audit committee and a remuneration committee in order to improve the effectiveness of the Ghanaian listed

firms' board operations, the fifth relevant hypothesis is operationalised in the following form:

H4a: The presence of an audit committee should lead to better firm performance.

H4b: The presence of a remuneration committee should lead to better firm performance.

3. RESEARCH DESIGN

3.1. Data and sample

The data is drawn from annual reports published during 2000-2009 by firms listed on the GSE. We choose this period for two main reasons. First, the SECG introduced the Ghanaian Code in 2003 and required firms to comply or provide an explanation of non-compliance in their annual reports; hence, we can obtain the required data before and after the introduction of the code from the annual reports. Second, we are able to separate the sample period into pre-2003 (2000-2002) and post-2003 (2004-2009) introduction of the Ghanaian Code, thus allowing us to capture the changing corporate governance landscape in Ghana and its effect on firm performance. As at 31 December 2009, 38 firms were listed on the GSE but 3 of them did not have their annual reports available and therefore excluded from the sample. The remaining 35 listed firms represent 92% of all listed firms traded on the GSE as at the period under consideration, bringing together 283 firm-year observations. Based on the Ghanaian Code provisions, the board structure variables include CEO duality (*DUALITY*), board size (*BODSIZE*), board independence (*BODINDP*), audit committee (*AUCOM*) and remuneration committee (*RECOM*) which are defined in Table 1.

Table 1. Measurement of the board structure variables

<i>Variable Name</i>	<i>Acronym/ Code</i>	<i>Operationalisation of the variable</i>
CEO Duality	<i>DUALITY</i>	A binary number of '1' if the CEO also holds the position of chairman or '0' if both positions are separated
Board Size	<i>BODSIZE</i>	The total number of directors on the board of a firm at the end of each financial year
Board Independence	<i>BODINDP</i>	The number of NEDs divided by the number of directors on the board of a firm at the end of each financial year
Audit Committee	<i>AUCOM</i>	A binary number of '1' if a firm has an audit committee in place at the end of each financial year or '0' if otherwise
Remuneration Committee	<i>RECOM</i>	A binary number of '1' if a firm has a remuneration committee in place at the end of each financial year or '0' if otherwise

The firm performance measures we use are return on assets (*ROA*); defined as operating profit after tax divided by the book value of total assets, and return on equity (*ROE*) defined as operating profit after tax divided by the book value of equity. Consistent with Samia *et al* (2011) who argue that *ROA* and *ROE* are short-term performance measures, we also use Tobin's *Q* (*Q*) defined as the market

value of total assets divided by the book value of total assets, where the market value of total assets is measured by the market value of equity plus the book value of total assets minus the book value of equity (Gompers *et al.*, 2003; Klapper and Love, 2004; Garay and Gonzalez, 2008) to take account of the long-term firm performance measure in our analysis. This is particularly important because of insiders (management) and outsiders (investors) value firm performance differently (Black *et al.*, 2006), hence, the accounting-based (*ROA* and *ROE*) and market-based (*Q*) performance measures for our empirical analysis.

We also include several variables to control for other potential factors that may influence firm performance. In line with prior studies (Short and Keasey, 1999; Gompers *et al.*, 2003; Klapper and Love, 2004; Haniffa and Hudaib, 2006; Garay and Gonzalez, 2008; Bozec *et al.*, 2010), we include gearing (*GEAR*) defined as the ratio of total debt to capital employed, where capital employed is the sum of total debt and equity; growth opportunities (*GROWTH*) defined as the percentage of the difference between the current year's of sales and previous year's of sales divided by the previous year's of sales of each firm; firm size (*SIZE*) defined as the natural log of the book value of a firm's total assets; institutional shareholdings (*INSTHOLD*) defined as the proportion of shares held by institutional shareholders in excess of 3% of total shareholding and managerial ownership (*MGROWN*) defined as the proportion of shares held by executive directors to the total shareholdings.

Yu (2008) is of the view that firms that are not actively followed by analysts or brokers or not audited by one of the Big 4 auditors try to always artificially improve their performance by manipulating their accounting numbers and abnormal accruals, hence, we control for the accounting regime which is the adoption of the International Financial Reporting Standards (*AIFRS*) defined as a binary number 1 if the firm has adopted IFRS or 0 if otherwise, and earnings smoothing measures such as discretionary accruals (*DAS*) estimated using modified Jones Model (Dechow *et al.*, 1995) - $DAS_{it} = (TAC_{it}/TA_{it}) - NA$ and audit quality (*AUDITOR*) defined as a binary number of 1 if the firm is audited by one of the big 4 audit firms

or 0 if otherwise. We also include firm-specific dummy and year dummy variables.

3.2. Method of estimation

Most prior studies involving panel data in examining the association between board structure changes and firm performance turn to use ordinary least square (OLS) model or the alternative of the panel regression models (e.g. random effects or fixed effects) without testing to ensure consistent and efficient results. To achieve consistent and efficient results in this study, and unlike prior pre and post board structure-performance relationship studies (Weir and Laing, 2000; Bhagat and Bolton, 2009), we assess the suitability of the regression models before our empirical analysis. This makes our study different from prior pre and post studies in general and in particular the Ghanaian studies. We therefore employ Breusch and Pagan (1980) Lagrange Multiplier test to enable us to differentiate between OLS and the options of random effects or fixed effects; and the Hausman (1978) specification test to distinguish between random effects and fixed effects regression models.

The Hausman specification test allows us to determine which panel regression model is appropriate for our empirical analysis. The *null hypothesis* of the Hausman test is that there is no correlation between the unique errors and the explanatory variables used in the regression model, suggesting a test of strict exogeneity. The decision is as follows: if there is no correlation between the unique errors and the explanatory variables, random effects regression model is suitable. Otherwise, use the fixed effects model if there is a correlation between the unique errors and the explanatory variables. Using *ROA*, *ROE* and *Q* as the firm performance measures in equations 1, the Hausman test gave X^2 of 27.32, 31.12 and 18.51 (*p-value* = 0.000, 0.000 and 0.000), suggesting that the hypothesis of no correlation between the unique errors and the board structures as explanatory variables is rejected, hence, fixed effects regression is considered suitable for our method of estimation. The following fixed effects regression model is therefore specified:

$$PERFORMANCE_{it} = \alpha + \sum_{j=1}^n \beta_j (Governance_{jit}) + \sum_{k=n+1}^{n+m} \beta_k (Control_{kit}) + \theta_t + \delta_i + u_{it} \quad (1)$$

where, $PERFORMANCE_{it}$ is the dependent variable, which is measured using *ROA*, *ROE* or *Q*; α is the overall intercept; $Governance_{jit}$ is the board structure governance variables represented by the CEO duality (*DUALITY*), board size (*BODSIZE*), board independence (*BODINDP*), audit committee (*AUCOM*) and remuneration committee (*RECOM*), j , for firm i in year t ; $Control_{kit}$ is a set of firm specific control variables, k , for firm i in year t , where $k = 1$ to m ; θ_t is a vector of 9 dummy variables representing the 10 sample years; δ_i is the firm specific fixed effects, consisting of a vector of 34 dummy variables to represent the 35 sample firms; and u_{it} is the

unobserved error component. As previously operationalised, the hypotheses expectations in relation to board structure variables are summarised in Table 2.

Table 2. Predicted signs for the relationship between board structure and firm performance

Board structure variables	Firm performance measures		
	ROA	ROE	Q-ratio
CEO duality	-	-	-
Board size	+	+	+
Non-executive directors	-	-	-
Audit committee	+	+	+
Remuneration committee	+	+	+

4. ANALYSIS AND RESULTS

4.1. Descriptive statistics

Table 3 shows the descriptive statistics of the board structure and firm performance variables for the whole period from 2000 to 2009. The average return on assets, return on equity and Tobin's Q are 5.699, 18.667 and 2.128 respectively. On average, 16% of the Ghanaian listed firms have the posts of CEO and chairman combined with the board size making up an average of 8.52. The average non-executive director representation on the board is 75.80%. Some 70% of the Ghanaian firms have established audit committee but only 28% on average have a remuneration committee.

Table 3. Descriptive statistics of board structure and firm performance variables

	Mean	Std. Dev.	Min	Max
ROA %	5.699	11.322	-29.737	70.669
ROE %	18.667	39.769	-40.061	53.611
Q	2.128	1.674	-2.59	15.121
DUALITY %	16.00	2.200	0.000	1.00
BODSIZE	8.52	2.154	4.000	18.000
BODINDP %	75.80	13.096	22.222	90.909
AUCOM	0.70	0.461	0.000	1.000
RECOM	0.28	0.448	0.000	1.000
GEAR %	26.95	26.089	0.00	70.326
GROWTH	0.091	0.517	-0.999	3.303
SIZE	6.498	1.325	3.886	9.284
MGROWN %	8.59	18.549	0.00	86.82
INSTTISH %	72.96	13.815	27.27	95.14
AIFRS %	29.00	45.60	0.000	1.000
DAs	0.076	0.413	0.84	1.38
AUDITOR %	76.00	42.80	0.000	1.000

Note: ROA is the return on assets. ROE is the return on equity. Q is the Tobin's Q. DUALITY is when the CEO and the Chairman posts are occupied by the same person. BODSIZE is the number of board members. BODINDP is the proportion of non-executive directors on the board. AUCOM is a dummy variable that has the value of 1 if a firm has an audit committee and 0 if not. RECOM is a dummy variable that has a value of 1 if a firm has a remuneration committee and 0 if not. GEAR is the ratio of total debt to capital employed. SIZE is the log of sales. MGROWN is the % shares held by the executive directors. INSTTISH is the total % shares held by institutions where the holding is greater than 3%. AIFRS is the adoption of the International Financial Reporting Standards. DAs is the discretionary accruals. AUDITOR is the Big 4 auditor.

Table 4 compares the differences in board structure variables across Ghanaian listed firms during the pre-Code and the post-Code sub-periods to enable us to investigate the extent to which there have been significant changes in the keyboard structure monitoring mechanisms. As Table 4 shows, CEO duality although experienced 2% decrease, the difference is not statistically significant. However, board size experienced significant decrease during the post-Code period from 9.03 to 8.17. This suggests that Ghanaian boards became smaller after the introduction of the Ghanaian Code. Although the non-executive director representation on the board increase by 1% in post-Code period, the difference is not statistically significant. More importantly, Table 4 indicates a significant increase in audit committees during the post-Code period from 33.30% to 85%. Similarly, a remuneration committee experienced a significant increase in the post-Code period from 16.70% to

32.50%. These suggest that two of the keyboard structure mechanisms experienced significant changes across Ghanaian listed firms after the introduction of the Ghanaian Code.

Table 4. Differences in board structure variables across Ghanaian listed firms

	Pre-2003 (2000-2002) Mean	Post-2003 (2004-2009) Mean	t-test
DUALITY%	17	15	0.316
BODSIZE	9.03	8.17	1.843**
BODINDP%	75	76	-0.546
AUCOM%	33.60	85	-7.582***
RECOM%	16.70	32.50	3.563***

Note: The t-test in column 4 is the independent-samples t-test (mean) based on pre-2003 and post-2003 introduction of the Ghanaian Code. The variables include DUALITY, BODSIZE, BODINDP, AUCOM and RECOM. The mean differences test for equality of means between pre-2003 and post-2003 board structure changes. A mean difference with (***) and (**) indicate that the null hypothesis that the means are equal is rejected at 1% and 5% significant level.

4.2. Results

Table 5 presents the Pearson's correlation coefficients for the firm performance, board structure and control variables to determine the level of collinearity between the variables included in the analysis. As Table 5 demonstrates, there is no evidence of multicollinearity; hence, all the variables were included in each of the relevant regression models.

Table 6 reports the fixed effect regression results for the impact of board structure variables on firm performance during the whole period from 2000 to 2009. A positive coefficient shows high firm performance and a negative coefficient low firm performance. As models 1, 2 and 3 of Table 6 show, duality is found to be statistically significant and negatively related to firm performance measured by return on assets, return on equity and Tobin's Q, suggesting that hypothesis 1 is supported. This is also consistent with prior researchers (e.g. Rechner and Dalton, 1991; Haniffa and Hudaib, 2006) who argue that firms with the leadership structure combined tend to performance poorly as a result of implementing decisions which are in favour of the CEO's personal objectives relative to the shareholder value maximisation.

However, there is a positive relationship between board size and all the three firm performance measures, indicating that hypothesis 2 is supported. Although the Ghanaian Code recommends board size to be in the range of 8 and 16, this evidence clearly demonstrates that smaller board size is optimal across Ghanaian listed firms. Contrary to hypothesis 3, non-executive director representation on the board has no impact on firm performance, evidence consistent with Daily and Dalton (1993) and Wintoki *et al* (2012) who reported similar findings. Consistent with hypothesis 4, there is a statistically significant and positive relationship between the establishment of board committees and all the firm performance measures.

Table 5. Correlation matrix of firm performance and all other variables

	ROA	ROE	Q	DUALITY	BODSIZE	BODINDP	AUCOM	RECOM	GEAR	GROWTH	SIZE	MGROWN	INSTITSH	AIFRS	DAs	AUDITOR
ROA	1															
ROE	.685	1														
Q	.177	.184	1													
DUALITY	-.003	-0.126	-0.040	1												
BODSIZE	.107	.236	.114	-.297	1											
BODINDP	-.194	-.185	-.182	.064	-.179	1										
AUCOM	.025	.064	.034	-.035	.135	-.028	1									
RECOM	.091	.035	.044	-.230	.331	.244	.254	1								
GEAR	-.214	-.216	.031	-.104	.154	.142	.203	.212	1							
GROWTH	.134	.161	.058	.037	.064	.035	.185	.017	-.046	1						
SIZE	-.066	.027	-.112	.075	.148	-.013	.015	.121	.230	.160	1					
MGROWN	.230	.222	.198	.048	-.339	.031	-.018	-.167	.038	-.103	.127	1				
INSTITSH	.139	.125	.277	.215	.247	-.168	-.078	-.097	-.011	.108	-.012	-.157	1			
AIFRS	-.109	.083	.046	-.131	-.043	.028	.204	.045	.119	.039	-.123	.025	.039	1		
DAs	.149	.126	.112	.075	-.083	.059	.063	.019	-.121	.064	-.167	-.045	-.028	.132	1	
AUDITOR	.182	.092	.028	-.037	-.082	.189	.066	-.137	-.130	-.035	-.105	.435	.041	.056	-.078	1

Note: Pearson's correlation coefficient during the whole period. ROA is the return on assets. ROE is the return on equity. Q is the Tobin's Q. DUALITY is when the CEO and the Chairman posts are occupied by the same person. BODSIZE is the number of board members. BODINDP is the proportion of non-executive directors on the board. AUCOM is a dummy variable that has the value of 1 if a firm has an audit committee and 0 if not. RECOM is a dummy variable that has a value of 1 if a firm has a remuneration committee and 0 if not. GEAR is the ratio of total debt to capital employed. SIZE is the log of sales. MGROWN is the % shares held by the executive directors. INSTITSH is the total % shares held by institutions where the holding is greater than 3%. AIFRS is the adoption of the International Financial Reporting Standards. DAs is the discretionary accruals. AUDITOR is the Big 4 auditor.

Table 6. Fixed effects regression results for the impact of board structure variables on firm performance

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
	ROA	ROE	Q
DUALITY	-0.174 (1.80)*	-0.250 (2.23)**	0.123 (1.79)*
BODSIZE	0.341 (2.28)**	1.665 (1.87)*	0.178 (2.05)**
BODINDP	-0.130 (1.15)	-0.383 (1.05)	-0.046 (0.78)
AUCOM	0.140 (2.73)***	0.231 (2.04)**	0.066 (2.23)**
RECOM	0.132 (1.93)*	0.191 (1.04)	0.211 (2.52)**
GEAR	-0.055 (1.69)*	-0.553 (4.87)***	0.089 (1.74)*
GROWTH	0.331 (2.11)**	0.426 (2.39)**	-0.076 (0.43)
SIZE	-0.369 (0.46)	0.204 (1.62)	-0.017 (1.14)
MGROWN	0.061 (2.21)**	0.124 (3.13)***	0.158 (2.38)**
INSTTISH	0.230 (1.71)*	1.421 (2.87)***	0.062 (2.78)***
AIFRS	-0.349 (2.26)**	0.053 (0.94)	0.234 (2.91)***
DAs	0.368 (2.47)**	0.106 (1.82)*	0.205 (3.23)***
AUDITOR	0.051 (1.52)	0.158 (1.97)*	0.386 (2.67)**
_cons	0.318 (2.18)**	-0.152 (2.90)***	1.483 (2.69)**
R ²	0.31	0.25	0.28
N	283	283	283

Note: In Models 1, 2 and 3, ROA represents return on assets; ROE represents return on equity and Q represents Tobin's Q. DUALITY is when the CEO and the Chairman posts are occupied by the same person. BODSIZE is the number of board members. BODINDP is the proportion of non-executive directors on the board. AUCOM is a dummy variable that has the value of 1 if a firm has an audit committee and 0 if not. RECOM is a dummy variable that has a value of 1 if a firm has a remuneration committee and 0 if not. GEAR is the ratio of total debt to capital employed. SIZE is the log of sales. MGROWN is the % shares held by the executive directors. INSTTISH is the total % shares held by institutions where the holding is greater than 3%. AIFRS is the adoption of the International Financial Reporting Standards. DAs is the discretionary accruals. AUDITOR is the Big 4 auditor. Year dummy and firm dummy variables are included in the regression models but their coefficients are not reported. ***, ** and * significant at 1, 5 and 10 percent, respectively.

The analysis is developed to investigate whether the board structure changes influenced by the introduction of the Ghanaian Code can explain the whole period's (2000-2009) results presented earlier. Consistent with the agency theory which posits that good corporate governance enhances firm performance (Jensen and Meckling, 1976), we argue that the board structure recommendations introduced by the Ghanaian Code in 2003 represent good corporate governance and therefore expect the changes to lead to better firm performance relative to poor firm performance during the pre-Code period where board structures might have been ineffective monitoring mechanisms. To test this conjecture, we construct a variable 'BODCHANGE' which takes the value of 1 in each of the years following the introduction of the code and 0 for each of the years preceding it including 2003. BODCHANGE therefore measures the overall effect of the board structure recommendations on firm performance.

First, we find that all the firm performance measures improved significantly after the

introduction of the Ghanaian Code. In particular, the return on assets rose from 3.7046 pre-Code period to 8.1278 post-Code period, the return on equity rose from 13.0486 to 22.8554 and Tobin's Q rose from 1.0333 to 2.8082, all differences being statistically significant at the 1% level. Models 1, 2 and 3 of Table 7 present the results of the impact of board structure changes on firm performance. As Table 7 indicates, the BODCHANGE is statistically significant and positively related to all the firm performance measures, suggesting that the board structure changes influenced by the Ghanaian Code is associated with greater firm performance. These results, therefore, suggest that the code recommendations have improved the key board structure monitoring mechanisms in Ghana.

Table 7. Fixed effects regression results for the impact of board structure changes on firm performance

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
	ROA	ROE	Q
BODCHANGE	0.304 (2.95)***	0.196 (2.38)**	0.267 (3.13)***
GEAR	-0.155 (1.68)*	-0.299 (4.54)**	0.105 (1.73)*
GROWTH	0.134 (2.11)**	0.190 (3.62)***	0.103 (2.54)**
SIZE	-0.544 (1.74)*	0.182 (1.63)	-0.208 (2.07)**
MGROWN	0.068 (2.03)**	0.161 (3.18)***	0.032 (2.75)***
INSTTISH	0.222 (3.54)***	0.137 (3.88)***	0.247 (2.06)**
AIFRS	-0.098 (1.02)	0.204 (2.04)**	0.178 (2.43)***
DAs	0.236 (1.78)*	0.196 (1.68)*	0.262 (3.46)***
AUDITOR	0.201 (3.16)***	0.138 (2.06)**	0.125 (3.24)***
_cons	-0.158 (3.02)***	-0.131 (2.48)**	-0.367 (2.25)**
R ²	0.23	0.32	0.21
N	283	283	283

Note: In Models 1, 2 and 3, ROA represents return on assets, ROE represents return on equity and Q represents Tobin's Q. BODCHANGE is a dummy variable which takes the value of 1 for years after the introduction of the Ghanaian Corporate Governance Code and 0 for years before. GEAR is the ratio of total debt to capital employed. SIZE is the log of sales. MGROWN is the % shares held by the executive directors. INSTTISH is the total % shares held by institutions where the holding is greater than 3%. AIFRS is the adoption of the International Financial Reporting Standards. DAs is the discretionary accruals. AUDITOR is the Big 4 auditor. Year dummy and firm dummy variables are included in the regression models but their coefficients are not reported. ***, ** and * significant at 1, 5 and 10 percent, respectively.

Given the significant impact of BODCHANGE on all the firm performance measures, we develop the analysis further to determine which of the individual board structure mechanisms is more effective in improving firm performance during pre-2003 (2000-2002) and post-2003 (2004-2009) sub-periods. If each individual pre-2003 board structure mechanisms is ineffective because of the absence of code recommendations, then we would expect to find poor firm performance, whereas the agency theory would predict that the improved individual board structure mechanisms during post-2003 should each lead to better firm performance. To test

this conjecture, we divide our sample into two sub-groups and run regressions for each sub-group to determine the performance consequences of board structure changes prompted by the Ghanaian Code.

Table 8 reports the results for both sub-periods where models 1, 2 and 3 represent the pre-2003 sub-period and 4, 5 and 6 represent the post-2003 sub-period. The results show that duality is negative and statistically significant during pre-2003 but insignificant during post-2003, suggesting that firms that separate the posts do not perform better than those that combined the two after the introduction of the Ghanaian Code. As Table 8 shows, board size has had a consistently positive and statistically significant impact on all the firm performance measures in both sub-periods showing that the board size of around 9 (pre-2003) or 8 (post-2003) are all important in improving firm performance. Unlike Weir and Laing (2000) who find a negative and significant relationship between non-executive director representation on the board and firm performance during both pre-Cadbury Report

and post-Cadbury Report (1992 and 1995), we find a consistent insignificant relationship between them during both sub-periods.

Of the board committee variables, there is insignificant relationship during pre-2003 sub-period. However, there is evidence that both committees have had a significant and positive impact on all firm performance measures post-2003 sub-period. These suggest that firms that complied with the board committee recommendations proposed by the Ghanaian Code perform better than those that did not post-2003 sub-period. Overall, the pre-2003 and post-2003 analysis clearly show that the initial results presented for the whole period (2000-2009) can be explained by the board structure changes prompted by the introduction of the Ghanaian Code. These results differ significantly from pre and post board structure-performance relationship studies conducted in developed countries such as UK and US (Weir and Laing, 2000; Bhagat and Bolton, 2009), probably due to different institutional settings across these countries.

Table 8. Pre 2003 and Post 2003 Fixed effects regression results for the impact of board structure variables on firm performance

	Pre 2003 (2000-2002)			Post 2003 (2004-2009)		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	ROA	ROE	Q	ROA	ROE	Q
DUALITY	-0.123 (1.68)*	-0.172 (2.12)**	-0.296 (1.85)*	-0.195 (1.65)	-0.212 (1.29)	-0.059 (1.11)
BODSIZE	0.223 (1.88)*	0.272 (3.17)**	0.196 (2.55)**	0.264 (2.08)**	0.167 (1.79)*	0.208 (2.11)**
BODINDP	0.029 (0.75)	0.120 (0.51)	0.204 (1.56)	-0.022 (1.18)	-0.092 (0.27)	-0.018 (1.43)
AUCOM	0.194 (1.35)	0.281 (0.70)	0.293 (1.61)	0.167 (2.45)**	0.096 (2.30)**	0.104 (3.31)***
RECOM	0.227 (1.11)	0.057 (1.27)	0.113 (1.21)	0.235 (2.52)**	0.161 (3.38)**	0.050 (3.50)***
GEAR	-0.024 (1.18)	-0.237 (3.25)***	0.094 (1.05)	-0.033 (1.70)*	-0.222 (2.19)**	0.102 (2.47)**
GROWTH	0.158 (0.78)	0.024 (0.43)	0.203 (1.59)	0.279 (2.48)**	0.284 (2.97)***	0.097 (1.78)*
SIZE	-0.071 (0.81)	0.093 (0.93)	-0.164 (1.20)	-0.063 (2.08)**	0.143 (2.36)**	-0.163 (1.90)*
MGROWN	0.094 (1.32)	0.166 (0.99)	0.143 (0.54)	0.037 (2.13)**	0.073 (3.09)***	0.089 (2.31)**
INSTITSH	0.602 (0.41)	0.197 (0.38)	0.046 (1.04)	0.045 (2.20)**	-0.408 (3.64)***	0.023 (1.98)**
AIFRS	-0.125 (1.06)	-0.117 (0.91)	0.162 (0.33)	-0.285 (2.55)**	-0.217 (1.81)*	-0.232 (3.03)***
DAs	0.157 (1.29)	0.227 (0.93)	0.069 (1.57)	0.257 (2.22)**	0.260 (3.45)***	0.056 (3.47)***
AUDITOR	0.218 (1.24)	0.197 (1.46)	0.073 (0.63)	0.368 (2.05)**	0.168 (1.86)*	0.376 (2.51)**
_cons	1.823 (1.75)*	1.720 (2.88)***	-0.085 (1.78)*	-1.830 (2.34)**	2.130 (2.03)**	2.029 (2.99)***
R ²	0.29	0.22	0.60	0.35	0.28	0.22
N	65	65	65	193	193	193

Note: In Models 1, 2, 3, 4, 5 and 6, ROA represents return on assets; ROE represents return on equity and Q represents Tobin's Q. DUALITY is when the CEO and the Chairman posts are occupied by the same person. BODSIZE is the number of board members. BODINDP is the proportion of non-executive directors on the board. AUCOM is a dummy variable that has the value of 1 if a firm has an audit committee and 0 if not. RECOM is a dummy variable that has a value of 1 if a firm has a remuneration committee and 0 if not. GEAR is the ratio of total debt to capital employed. SIZE is the log of sales. MGROWN is the % shares held by the executive directors. INSTITSH is the total % shares held by institutions where the holding is greater than 3%. AIFRS is the adoption of the International Financial Reporting Standards. DAs is the discretionary accruals. AUDITOR is the Big 4 auditor. Year dummy and firm dummy variables are included in the regression models but their coefficients are not reported. ***, ** and * significant at 1, 5 and 10 percent, respectively.

4.3. Robustness test

We undertook additional analyses in an attempt to investigate how robust the results were to the problem of endogeneity and sectoral differences. First, board structure-governance performance relationship may suffer from endogeneity (Coles *et*

al, 2008; Linck *et al*, 2008, McKnight and Weir 2009). In particular, the level of firm performance may determine board structure governance mechanisms rather than board structure governance mechanisms determining firm performance (Bozec *et al*, 2010). One way to address this problem is to use lagged values of the board structure variables as

instruments (Hermalin and Weisbach, 1991; Himmelberg *et al*, 1999; Coles *et al*, 2008; Larcker and Rusticus, 2010). Following Larcker and Rusticus (2010), we lagged all the board structure variables in Tables 6 and 8 to address the problem of endogeneity but the results were similar to those reported earlier.

Second, the use of fixed effects regression model raises the concern of whether sectoral differences affect firm performance. Owusu and Weir (2016) report that there are seven industries across Ghanaian listed firms including finance, distribution, ICT, manufacturing, mining, agriculture, food, and beverage. To check the robustness of our results and following Gompers *et al* (2003), we exclude the dummy variables representing the 10 sample years (time effect) from equation 1 and use the industry dummies to control for sectoral effects. We, therefore, repeated the regression models in Tables 6, 7 and 8 and included 6 dummy variables representing the 7 industries to control for sectoral effects. Overall, the results were qualitatively the same as those reported above.

5. CONCLUSION

This paper assesses the performance consequences of board structure changes across Ghanaian listed firms. We predict that the board structure changes prompted by the introduction of the Ghanaian Code in 2003 should lead to better firm performance. Using a sample of the Ghanaian listed firms from 2000 to 2009 and a panel data analytical framework, our results over the whole period (2000-2009) show duality is negatively related to firm performance but there is a positive and statistically significant relationship between board size, the establishment of board committees and firm performance.

We develop the analysis further to investigate how firm performance might have been impacted by board structure changes after the introduction of the Ghanaian Code. We find evidence to suggest that

duality is statistically significant and negatively related to firm performance pre-2003, but those firms that separate the two posts did not perform better than those that combined the two post-2003. While we find no relationship between board committees and firm performance pre-2003, the relationship switched to statistically significant post-2003. The most consistent result we find concerns board size. However, the non-executive director representation on the board appears to have no impact on firm performance. These results show that not all board structure recommendations introduced by the Ghanaian Code are effective in achieving superior firm performance in Ghana.

Our results are important for Ghanaian listed firms and policymakers. For Ghanaian listed firms, the board size ranging from 8 to 9 and the establishment of board committees are value relevant. For policymakers, firms should be encouraged to implement board structure of between 8 and 9 if they are to achieve superior performance to the satisfaction of shareholders.

There are some limitations to this study which require consideration when interpreting the results. First, we use a sample of Ghanaian listed firms and therefore generalisation of the results should be limited to this category. Second, the accounting-based and the market-based performance measures used in this study are statistically significant and positively related to discretionary accruals showing that higher performance is influenced by earnings manipulation. Hence, a greater understanding of the board structure recommendations introduced by the Ghanaian Code in reducing earnings management may provide further insights into the effectiveness of board structure monitoring mechanisms. Also, future research could look into the board structure changes since 2009 and its impact on firm performance. This is of particular importance because a lot of changes might have occurred which could provide new insights on the board structure-performance relationship nexus.

REFERENCES

1. Abor, J., & Biekpe, N. (2007). Corporate governance, ownership structure and performance of SMEs in Ghana: Implications for financing opportunities. *Corporate Governance: The international journal of business in society*, 7(3), 288-300. <https://doi.org/10.1108/14720700710756562>
2. Adams, R. B., & Mehran, H. (2012). Bank board structure and performance: Evidence for large bank holding companies. *Journal of Financial Intermediation*, 21(2), 243-267. <https://doi.org/10.1016/j.jfi.2011.09.002>
3. Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of Financial and Quantitative Analysis*, 31(03), 377-397. <https://doi.org/10.2307/2331397>
4. Baliga, B. R., Moyer, R. C., & Rao, R. S. (1996). CEO duality and firm performance: What's the fuss? *Strategic Management Journal*, 17(1), 41-53. [https://doi.org/10.1002/\(SICI\)1097-0266\(199601\)17:1<41::AID-SMJ784>3.0.CO;2#](https://doi.org/10.1002/(SICI)1097-0266(199601)17:1<41::AID-SMJ784>3.0.CO;2#)
5. Bennedsen, M., Kongsted, H. C., & Nielsen, K. M. (2008). The causal effect of board size in the performance of small and medium-sized firms. *Journal of Banking & Finance*, 32(6), 1098-1109. <https://doi.org/10.1016/j.jbankfin.2007.09.016>
6. Bennett, R. J., & Robson, P. J. A. (2004). The role of boards of directors in small and medium-sized firms. *Journal of Small Business and Enterprise Development*, 11(1), 95-113. <https://doi.org/10.1108/14626000410519137>
7. Berle, A. A., & Gardiner, C. (1968). Means. 1932. *The modern corporation and private property* (pp.204-5). USA/UK: Transaction Publisher.
8. Bhagat, S., & Bolton, B. J. (2009). *Sarbanes-Oxley, governance and performance*. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1361815
9. Black, B. S., Love, I., & Rachinsky, A. (2006). Corporate governance indices and firms' market values: Time series evidence from Russia. *Emerging Markets Review*, 7(4), 361-379. <https://doi.org/10.1016/j.ememar.2006.09.004>
10. Black, B., & Kim, W. (2012). The effect of board structure on firm value: A multiple identification strategies approach using Korean data. *Journal of Financial Economics*, 104(1), 203-226. <https://doi.org/10.1016/j.jfineco.2011.08.001>
11. Boyd, B. K., Howard, M., & Carroll, W.O. (1997). CEO duality and firm performance: an

- international comparison. *Strategy, Structure and Style*. (pp. 23–39). Chichester: John Wiley & Sons.
12. Bozec, R. (2005). Boards of directors, market discipline and firm performance. *Journal of Business Finance & Accounting*, 32(9-10), 1921-1960. <https://doi.org/10.1111/j.0306-686X.2005.00652.x>
 13. Bozec, R., Dia, M., & Bozec, Y. (2010). Governance-performance relationship: a re-examination using technical efficiency measures. *British Journal of Management*, 21(3), 684-700. <https://doi.org/10.1111/j.1467-8551.2008.00624.x>
 14. Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies*, 47(1), 239-253. <https://doi.org/10.2307/2297111>
 15. Brickley, J. A., Coles, J. L., & Jarrell, G. (1997). Leadership structure: Separating the CEO and chairman of the board. *Journal of Corporate Finance*, 3(3), 189-220. [https://doi.org/10.1016/S0929-1199\(96\)00013-2](https://doi.org/10.1016/S0929-1199(96)00013-2)
 16. Buckland, R. (2001). *UK IPO board structures and post-issue performance*. (Accountancy, Finance & Mgmt. Working Paper, (01-5)).
 17. Cadbury Committee (1992). *Report of the committee on the financial aspects of corporate governance*. London: Gee Publishing.
 18. Chen, C. W., Lin, J. B., & Yi, B. (2008). CEO duality and firm performance: An endogenous issue. *Corporate Ownership and Control*, 6(1), 58-65. <https://doi.org/10.22495/cocv6i1p6>
 19. Cheng, S. (2008). Board size and the variability of corporate performance. *Journal of Financial Economics*, 87(1), 157-176. <https://doi.org/10.1016/j.jfineco.2006.10.006>
 20. Cheng, S., Evans III, J. H., & Nagarajan, N. J. (2008). Board size and firm performance: the moderating effects of the market for corporate control. *Review of Quantitative Finance and Accounting*, 31(2), 121-145. <https://doi.org/10.1007/s11156-007-0074-3>
 21. Cho, D. S., & Kim, J. (2007). Outside directors, ownership structure and firm profitability in Korea. *Corporate Governance: An International Review*, 15(2), 239-250. <https://doi.org/10.1111/j.1467-8683.2007.00557.x>
 22. Coles, J. W., McWilliams, V. B., & Sen, N. (2001). An examination of the relationship of governance mechanisms to performance. *Journal of management*, 27(1), 23-50. <https://doi.org/10.1177/014920630102700102>
 23. Coles, J. L., Daniel, N. D., & Naveen, L. (2008). Boards: Does one size fit all? *Journal of financial economics*, 87(2), 329-356. <https://doi.org/10.1016/j.jfineco.2006.08.008>
 24. Conyon, M. J., & Peck, S. I. (1998). Board size and corporate performance: Evidence from European countries. *The European Journal of Finance*, 4(3), 291-304. <https://doi.org/10.1080/135184798337317>
 25. Dahya, J., Lonie, A. A., & Power, D. M. (1996). The case for separating the roles of chairman and CEO: An analysis of stock market and accounting data. *Corporate Governance: An International Review*, 4(2), 71-77. <https://doi.org/10.1111/j.1467-8683.1996.tb00136.x>
 26. Dahya, J., McConnell, J. J., & Travlos, N. G. (2002). The Cadbury committee, corporate performance, and top management turnover. *The Journal of Finance*, 57(1), 461-483. <https://doi.org/10.1111/1540-6261.00428>
 27. Daily, C. M., & Dalton, D. R. (1993). Board of directors leadership and structure: Control and performance implications. *Entrepreneurship: Theory and Practice*, 17(3), 65-82.
 28. Dalton, D. R., Daily, C. M., Ellstrand, A. E., & Johnson, J. L. (1998). Meta-analytic reviews of board composition, leadership structure, and financial performance. *Strategic management journal*, 19(3), 269-290. [https://doi.org/10.1002/\(SICI\)1097-0266\(199803\)19:3<269::AID-SMJ950>3.0.CO;2-K](https://doi.org/10.1002/(SICI)1097-0266(199803)19:3<269::AID-SMJ950>3.0.CO;2-K)
 29. Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting review*, 70(2), 193-225.
 30. Dey, A., Engel, E., & Liu, X. (2011). CEO and board chair roles: To split or not to split? *Journal of Corporate Finance*, 17(5), 1595-1618. <https://doi.org/10.1016/j.jcorpfin.2011.09.001>
 31. Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of management*, 16(1), 49-64. <https://doi.org/10.1177/031289629101600103>
 32. Dulewicz, V., & Herbert, P. (2004). Does the composition and practice of boards of directors bear any relationship to the performance of their companies? *Corporate Governance: An International Review*, 12(3), 263-280. <https://doi.org/10.1111/j.1467-8683.2004.00368.x>
 33. Eisenberg, T., Sundgren, S., & Wells, M. T. (1998). Larger board size and decreasing firm value in small firms. *Journal of financial economics*, 48(1), 35-54. [https://doi.org/10.1016/S0304-405X\(98\)00003-8](https://doi.org/10.1016/S0304-405X(98)00003-8)
 34. El Mehdi, K. (2007). Empirical evidence on corporate governance and corporate performance in Tunisia. *Corporate Governance: An International Review*, 15(6), 1429-1441. <https://doi.org/10.1111/j.1467-8683.2007.00655.x>
 35. Faccio, M., & Lasfer, M. (1999). *Managerial ownership, board structure and firm value: The UK evidence*. (Cass Business School Research Paper).
 36. Fama, E. F. (1980). Agency problems and the theory of the firm. *The journal of political economy*, 288-307. <https://doi.org/10.1086/260866>
 37. Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics*, 26(2), 301-325 <https://doi.org/10.1086/467037>
 38. Garay, U., & González, M. (2008). Corporate governance and firm value: The case of Venezuela. *Corporate Governance: An international review*, 16(3), 194-209. <https://doi.org/10.1111/j.1467-8683.2008.00680.x>
 39. Ghosh, S. (2006). Do board characteristics affect corporate performance? Firm-level evidence for India. *Applied Economics Letters*, 13(7), 435-443. <https://doi.org/10.1080/13504850500398617>
 40. Goodstein, J., Gautam, K., & Boeker, W. (1994). The effects of board size and diversity on strategic change. *Strategic management journal*, 15(3), 241-250. <https://doi.org/10.1002/smj.4250150305>
 41. Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *Quarterly Journal of Economics*, 118(1), 107-155 <https://doi.org/10.1162/00335530360535162>
 42. Guest, P. M. (2009). The impact of board size on firm performance: evidence from the UK. *The European Journal of Finance*, 15(4), 385-404. <https://doi.org/10.1080/13518470802466121>
 43. Guo, Z., & Kga, U. K. (2012). Corporate governance and firm performance of listed firms in Sri Lanka. *Procedia-Social and Behavioral Sciences*, 40, 664-667. <https://doi.org/10.1016/j.sbspro.2012.03.246>

44. Guillet, B. D., Seo, K., Kucukusta, D., & Lee, S. (2013). CEO duality and firm performance in the US restaurant industry: Moderating role of restaurant type. *International Journal of Hospitality Management*, 33, 339-346. <https://doi.org/10.1016/j.ijhm.2012.10.004>
45. Gupta, M., & Fields, L. P. (2009). Board independence and corporate governance: evidence from director resignations. *Journal of Business Finance & Accounting*, 36(1-2), 161-184. <https://doi.org/10.1111/j.1468-5957.2008.02113.x>
46. Haniffa, R., & Hudaib, M. (2006). Corporate governance structure and performance of Malaysian listed companies. *Journal of Business Finance & Accounting*, 33(7-8), 1034-1062. <https://doi.org/10.1111/j.1468-5957.2006.00594.x>
47. Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the Econometric Society*, 46(6), 1251-1271. <https://doi.org/10.2307/1913827>
48. Hermalin, B. E., & Weisbach, M. S. (1991). The effects of board composition and direct incentives on firm performance. *Financial management*, 20(4) 101-112.
49. Himmelberg, C. P., Hubbard, R. G., & Palia, D. (1999). Understanding the determinants of managerial ownership and the link between ownership and performance. *Journal of financial economics*, 53(3), 353-384. [https://doi.org/10.1016/S0304-405X\(99\)00025-2](https://doi.org/10.1016/S0304-405X(99)00025-2)
50. Jackling, B., & Johl, S. (2009). Board structure and firm performance: Evidence from India's top companies. *Corporate Governance: An International Review*, 17(4), 492-509. <https://doi.org/10.1111/j.1467-8683.2009.00760.x>
51. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
52. Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance*, 48(3), 831-880. <https://doi.org/10.1111/j.1540-6261.1993.tb04022.x>
53. Kajola, S. O. (2008). Corporate governance and firm performance: The case of Nigerian listed firms. *European journal of economics, finance and administrative sciences*, 14(14), 16-28.
54. Kiel, G. C., & Nicholson, G. J. (2003). Board composition and corporate performance: How the Australian experience informs contrasting theories of corporate governance. *Corporate Governance: An International Review*, 11(3), 189-205. <https://doi.org/10.1111/1467-8683.00318>
55. Klapper, L. F., & Love, I. (2004). Corporate governance, investor protection, and performance in emerging markets. *Journal of Corporate Finance*, 10(5), 703-728. [https://doi.org/10.1016/S0929-1199\(03\)00046-4](https://doi.org/10.1016/S0929-1199(03)00046-4)
56. Klein, A. (1998). Firm performance and board committee structure. *The Journal of Law and Economics*, 41(1), 275-304. <https://doi.org/10.1086/467391>
57. Kyereboah-Coleman, A., & Biekpe, N. (2006). The relationship between board size, board composition, CEO duality and firm performance: Experience from Ghana. *Corporate Ownership and Control*, 4(2), 114-122.
58. Laing, D., & Weir, C. M. (1999). Governance structures, size and corporate performance in UK firms. *Management Decision*, 37(5), 457-464. <https://doi.org/10.1108/00251749910274234>
59. Lam, T. Y., & Lee, S. K. (2012). Family ownership, board committees and firm performance: evidence from Hong Kong. *Corporate Governance: The international journal of business in society*, 12(3), 353-366. <https://doi.org/10.1108/14720701211234609>
60. Larcker, D. F., & Rusticus, T. O. (2010). On the use of instrumental variables in accounting research. *Journal of Accounting and Economics*, 49(3), 186-205. <https://doi.org/10.1016/j.jaccoco.2009.11.004>
61. Linck, J. S., Netter, J. M., & Yang, T. (2009). The effects and unintended consequences of the Sarbanes-Oxley Act on the supply and demand for directors. *Review of Financial Studies*, 22(8), 3287-3328. <https://doi.org/10.1093/rfs/hhn084>
62. Lipton, M., & Lorsch, J. W. (1992). A modest proposal for improved corporate governance. *The business lawyer*, 48, 59-77.
63. Lasfer, M. A. (2004). On the monitoring role of the board of directors: The case of the adoption of Cadbury recommendations in the UK. *Advances in Financial Economics*, 9, 287-326. [https://doi.org/10.1016/S1569-3732\(04\)09012-7](https://doi.org/10.1016/S1569-3732(04)09012-7)
64. Mak, Y. T., & Kusnadi, Y. (2005). Size really matters: Further evidence on the negative relationship between board size and firm value. *Pacific-Basin Finance Journal*, 13(3), 301-318. <https://doi.org/10.1016/j.pacfin.2004.09.002>
65. Mangena, M., Taurigana, V., & Chamisa, E. (2012). Corporate boards, ownership structure and firm performance in an environment of severe political and economic crisis. *British Journal of Management*, 23(S1), S23-S41. <https://doi.org/10.1111/j.1467-8551.2011.00804.x>
66. Mashayekhi, B., & Bazaz, M. S. (2008). Corporate governance and firm performance in Iran. *Journal of Contemporary Accounting & Economics*, 4(2), 156-172. [https://doi.org/10.1016/S1815-5669\(10\)70033-3](https://doi.org/10.1016/S1815-5669(10)70033-3)
67. McKnight, P. J., & Weir, C. (2009). Agency costs, corporate governance mechanisms and ownership structure in large UK publicly quoted companies: A panel data analysis. *The Quarterly Review of Economics and Finance*, 49(2), 139-158. <https://doi.org/10.1016/j.qref.2007.09.008>
68. Meyer, E., & de Wet, J. H. V. H. (2013). The impact of board structure on the financial performance of listed South African companies. *Corporate Board: role, duties and composition*, 9(3), 18-31.
69. O'Connell, V., & Cramer, N. (2010). The relationship between firm performance and board characteristics in Ireland. *European Management Journal*, 28(5), 387-399. <https://doi.org/10.1016/j.emj.2009.11.002>
70. Owusu, A., & Weir, C. (2016). The governance-performance relationship: evidence from Ghana. *Journal of Applied Accounting Research*, 17(3), 285-310. <https://doi.org/10.1108/JAAR-06-2014-0057>
71. O'Sullivan, N., & Wong, P. (1999). Board composition, ownership structure and hostile takeovers: Some UK evidence. *Accounting and Business Research*, 29(2), 139-155. <https://doi.org/10.1080/00014788.1999.9729575>
72. Pearce, J. A., & Zahra, S. A. (1992). Board composition from a strategic contingency perspective. *Journal of management studies*, 29(4), 411-438. <https://doi.org/10.1111/j.1467-6486.1992.tb00672.x>
73. Peng, M. W., Zhang, S., & Li, X. (2007). CEO duality and firm performance during China's institutional transitions. *Management and Organization Review*, 3(2), 205-225. <https://doi.org/10.1111/j.1740-8784.2007.00069.x>

74. Pi, L., & Timme, S. G. (1993). Corporate control and bank efficiency. *Journal of Banking & Finance*, 17(2), 515-530. [https://doi.org/10.1016/0378-4266\(93\)90050-N](https://doi.org/10.1016/0378-4266(93)90050-N)
75. Rechner, P. L., & Dalton, D. R. (1991). CEO duality and organizational performance: A longitudinal analysis. *Strategic Management Journal*, 12(2), 155-160. <https://doi.org/10.1002/smj.4250120206>
76. Sami, H., Wang, J., & Zhou, H. (2011). Corporate governance and operating performance of Chinese listed firms. *Journal of International Accounting, Auditing and Taxation*, 20(2), 106-114. <https://doi.org/10.1016/j.intaccudtax.2011.06.005>
77. Sanda, A. U., Mikailu, A. S., & Garba, T. (2010). Corporate governance mechanisms and firms' financial performance in Nigeria. *Afro-Asian Journal of Finance and Accounting*, 2(1), 22-39. <https://doi.org/10.1504/AJFA.2010.035193>
78. Short, H., & Keasey, K. (1999). Managerial Ownership and the Performance of Firms: Evidence from the UK. *Journal of corporate finance*, 5(1), 79-101. [https://doi.org/10.1016/S0929-1199\(98\)00016-9](https://doi.org/10.1016/S0929-1199(98)00016-9)
79. Soliman, M. M., Ragab, A. A., & Eldin, M. B. (2014). Corporate governance structure and firm' financial performance: Evidences from Egypt. *Corporate Board: role, duties and composition*, 10(1), 49-59.
80. Sonnenfeld, J. A. (2002). What makes great boards great? *Harvard business review*, 80(9), 106-113.
81. Ujunwa, A. (2012). Board characteristics and the financial performance of Nigerian quoted firms. *Corporate Governance: The international journal of business in society*, 12(5), 656-674. <https://doi.org/10.1108/14720701211275587>
82. Vafeas, N., & Theodorou, E. (1998). The relationship between board structure and firm performance in the UK. *The British Accounting Review*, 30(4), 383-407. <https://doi.org/10.1006/bare.1998.0075>
83. Vafeas, N. (1999). Board meeting frequency and firm performance. *Journal of financial economics*, 53(1), 113-142. [https://doi.org/10.1016/S0304-405X\(99\)00018-5](https://doi.org/10.1016/S0304-405X(99)00018-5)
84. Weir, C., & Laing, D. (2000). The performance-governance relationship: The effects of Cadbury compliance on UK quoted companies. *Journal of Management and Governance*, 4(4), 265-281. <https://doi.org/10.1023/A:1009950903720>
85. Weir, C., Laing, D., & McKnight, P. J. (2002). Internal and external governance mechanisms: their impact on the performance of large UK public companies. *Journal of Business Finance & Accounting*, 29(5-6), 579-611. <https://doi.org/10.1111/1468-5957.00444>
86. Westphal, J. D., & Zajac, E. J. (1995). Who shall govern? CEO/board power, demographic similarity, and new director selection. *Administrative science quarterly*, 40, 60-83. <https://doi.org/10.2307/2393700>
87. Wild, J. J. (1994). Managerial accountability to shareholders: Audit committees and the explanatory power of earnings for returns. *The British Accounting Review*, 26(4), 353-374. <https://doi.org/10.1006/bare.1994.1024>
88. Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, 105(3), 581-606. <https://doi.org/10.1016/j.jfineco.2012.03.005>
89. Worrell, D. L., Nemeč, C., & Davidson Iii, W. N. (1997). Research notes and communications - One hat too many: Key executive plurality and shareholder wealth. *Strategic Management Journal*, 18(6), 499-507. [https://doi.org/10.1002/\(SICI\)1097-0266\(199706\)18:6<499::AID-SMJ898>3.0.CO;2-F](https://doi.org/10.1002/(SICI)1097-0266(199706)18:6<499::AID-SMJ898>3.0.CO;2-F)
90. Yang, T., & Zhao, S. (2014). CEO duality and firm performance: Evidence from an exogenous shock to the competitive environment. *Journal of Banking & Finance*, 49, 534-552. <https://doi.org/10.1016/j.jbankfin.2014.04.008>
91. Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of financial economics*, 40(2), 185-211. [https://doi.org/10.1016/0304-405X\(95\)00844-5](https://doi.org/10.1016/0304-405X(95)00844-5)
92. Yu, F. F. (2008). Analyst coverage and earnings management. *Journal of Financial Economics*, 88(2), 245-271. <https://doi.org/10.1016/j.jfineco.2007.05.008>