The governance-performance relationship: evidence from Ghana

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Abstract

Purpose – The purpose of this paper is to investigate the impact corporate governance, measured by a governance index, on the performance of listed firms in a developing economy, Ghana. It also evaluates the effect of the introduction of a code of corporate governance on compliance rates across Ghanaian firms as well as assessing the impact of the code's introduction on firm performance for the study period 2000 to 2009.

Design/methodology/approach – The paper develops a Ghanaian corporate governance index (*GCGI*) containing 33 provisions to measure corporate governance quality during the pre-code and the post-code sub-periods. The authors use a panel data analytical framework and fixed effects regressions to analyse the governance-performance relationships.

Findings –After controlling for endogeneity, we find a statistically significant and positive relationship between the *GCGI* and firm performance. The analysis shows evidence of a statistically significant increase in the degree of compliance with the Ghanaian Code from the pre-2003 sub-period to the post-2003 sub-period. We also find that the introduction of the code has led to improved firm performance. However, not all elements of corporate governance appear to have a significant effect on firm performance.

Research limitations/implications – One limitation of this study is the development of a corporate governance index. The binary coding used to construct the *GCGI* may not reflect the relative importance of the different corporate governance provisions. This means that all elements included in the index are given equal weighting. Future research may assign weights to each of the corporate governance provisions but this may have the disadvantage of making subjective judgements relative to the importance of each corporate governance provision recommended by the Ghanaian Code.

Practical implications – These results have important implications for both policy makers and companies. For policy makers, it is encouraging for the development of a code of corporate governance to regulate firms rather than enforcing rigid laws that may not be value relevant. For companies, the improvement in compliance with a code of corporate governance can provide a means of achieving improved performance.

Originality/value – This paper adds to the limited evidence on the governance-performance relationship in developing economies and in particular it analyses the role of a governance index. It is also the first paper to compare the pre-code and the post-code governance index-performance relationship in an African or developing country.

Keywords: Corporate Governance, Governance Index, Firm Performance, Ghana

1. Introduction

There have been many studies into the relationship between good corporate governance and company performance in developed economies, for example, Gompers *et al* (2003), Klein *et al* (2005) and Renders *et al* (2010). However, it has also been argued that good corporate governance is particularly important for developing economies (McGee, 2010; Agyemang *et al*, 2013; Robertson *et al*, 2013). Developing economies tend to face issues that are different to those encountered in developed economies. Gurgler *et al* (2003) argue that developing economies are more likely to have weaker corporate governance institutions than developed economies and will therefore experience less effective monitoring of management. Robelo and Vasconcelos (2002) identify weak legal systems, poor investor protection and illiquid capital markets as specific problems faced by developing economies. Consequently, it becomes difficult for firms in developing economies with weak corporate governance to attract the capital necessary to create a growing and vibrant economy (Okpara, 2011). The increasing globalisation of the world economy, coupled with the growth of codes of good governance in the developed world, has made it important that the developing countries also foster the conditions under which good governance can flourish.

The impact of corporate governance on developing economies is therefore an important indicator of a country's attractiveness to potential investors. Many developed economies have introduced governance codes, for example, the UK where the Cadbury Committee (1992) was the precursor to the UK Corporate Governance Code (2014) and the King Report I (1994), II (2002) and III (2009) for South Africa. In addition, countries such as the US have their own systems of governance based not on voluntary codes but on a combination of capital market regulation and legal requirements. The importance attached to corporate governance is also reflected by the fact that an international organisation such as the Organisation for Economic Corporation and Development (OECD) has published its own set of governance principles highlighting transparency, accountability, board oversight, and a respect for the rights of shareholders and role of key stakeholders as being central to a well-functioning corporate governance system (OECD, 2004). The world-wide interest in governance is shown by the fact that the European Corporate Governance Institute lists over 90 countries as having a governance system in place at the end of 2014.

This paper makes a number of contributions to the debate about the impact of corporate governance on firm performance in a developing economy, Ghana. First, there has been limited analysis of the effect of corporate governance changes on firm performance in developing economies. Ghana makes a particularly useful country to investigate because the Security and Exchange Commission Ghana (SECG) introduced corporate governance guidelines (hereafter the Ghanaian Code) in 2003 with which all Ghanaian listed firms were encouraged to comply. Second, the analysis builds on the view that a governance index, one that captures a range of governance mechanisms, will provide a better understanding of governance-performance relationship than looking at the impact of specific, individual mechanisms. Studies that have investigated the impact of governance indices on firm performance have focussed on developed and developing non-African countries and include Gompers *et al* (2003); Klapper and Love (2004); Drobetz *et al* (2004); Klein *et al* (2005); Chen *et at* (2007; Garay and González (2008); Bozec *et al* (2010) and Price *et al* (2011). For the first time, the analysis of the governance index-firm performance relationship is examined in Sub-Sahara Africa and the study of Ghana will help to address this gap in the literature. Third, there are no prior African studies or developing countries' studies that have analysed the pre and the post governance-performance relationship given the introduction of a governance code. In contrast a number of studies have analysed the impact of the introduction of a governance code on developed economies such as the UK (Weir and Laing,

2000), Australia (Cui *et al*, 2008) and the US (Bhagat and Bolton, 2009) and found that better governance resulted in better performance.

Ghana is one of the developing countries characterised by economic uncertainties, weak legal controls, poor investor protection, illiquid stock market and recurrent government intervention (Robelo and Vasconcelos, 2002). Recently, Fisher (2011) of Forbes magazine ranked Ghana ninth on their list of the world's worst-managed economies, and thus the possible negative impact on firm performance can be addressed. This is of particular importance because, in such an environment, a code of corporate governance becomes an important mechanism in protecting investors from expropriation by mangers (Klapper and Love, 2004). This is useful to regulators and policy makers because, if firms voluntarily adopt the recommendations of a code of corporate governance in a volatile economy like Ghana, investors' interests are more likely to be protected and overseas investment will increase. Therefore, Ghana may be regarded as a testing ground for investigating the extent to which corporate governance is a credible mechanism that can protect investors in a country that has weak legal controls and poor economic management.

We find a statistically significant increase in the degree of compliance with the Ghanaian Code provisions from the pre-2003 period to the post-2003 period. We also find that the corporate governance index has a statistically significant and positive impact on firm performance after controlling for endogeneity. Therefore, for Ghanaian firms, an improvement in their degree of compliance with the Ghanaian code provisions can provide a means of achieving improved performance. We also find that sub-indices dealing with audit committee, remuneration committee, shareholder interests and disclosure requirements have significant and positive effects on performance whereas sub-indices relating to board structure and financial affairs and auditing are insignificant.

The rest of the paper is structured as follows. Section 2 places the governance-performance discussion within the agency model. Section 3 outlines the corporate governance system in Ghana. Section 4 reviews the literature on the governance index-performance relationship and sets out the hypotheses. Section 5 describes the sample, variables and outlines the research methodology. Section 6 analyses the results, with the concluding remarks and brief discussion of policy implications presented in section 7.

2. Agency theory

There are a number of theoretical approaches to analysing corporate governance issues. These include agency theory, resource dependency theory and stewardship theory. Agency theory deals with the conflicts of interest between owners and managers associated with separation of ownership and control in public quoted companies. Resource dependency theory suggests that organisations are dependent on external resources (Pfeffer and Salancik, 1978), for example board members may also be members of other boards. Unlike the agency model in which managers' act in their own best interests, stewardship theory argues that shareholder interests are pursued by managers and that there is no inherent, general problem of executive motivation. This paper takes the agency model as its starting point and it therefore offers indirect tests of the stewardship and resource dependency models. If we find that the governance changes improve performance, this will offer support for the agency model. In contrast, an insignificant result would offer some support for the stewardship theory because the governance changes should have no effect on performance. Resource dependency theory argues that the board is a resource to the firm and regards outside directors as particularly important (Hillman *et al,* 2000). The agency model allows for a wider range of mechanisms to be considered when assessing the impact of governance codes.

The principal agent model identifies conflicting interests between the managers and owners (Jensen and Meckling, 1976). Managers favour the pursuit of discretionary policies designed to enhance their standing or status whereas shareholders wish to maximise returns. Information asymmetry enables managers to pursue their own interests whilst the principals are assuming that theirs are being pursued. Information asymmetry will persist in firms that have dispersed ownership because there is no effective means of influencing the board. The lack of monitoring and accountability is therefore central to the agency problem, something which corporate governance codes try to address. However, it is important to be aware of the fact that there are a number of potential issues with the agency model including the effectiveness of some of the board-related mechanisms. For example, duality may be appropriate in certain circumstances and outside directors may not be independent.

3. The Ghanaian corporate governance environment

Ghana's corporate governance regime is based on the 1963 Ghanaian Companies Code which was enacted to govern the formation and operation of Ghanaian firms. Its provisions are largely based on the English Common Law and are similar to the UK Companies Act 1948. Consistent with these provisions, the Securities Industry Law 1993 (PNDCL 333) created the Securities and Exchange Commission Ghana (SECG) to supervise the operation of stock exchanges and firms in Ghana. In addition, the Ghana Stock Exchange (GSE) Listing Rules have played a significant role in the regulation of firms and in the development of corporate governance in Ghana.

However, the corporate governance requirements enshrined in the SECG regulations and the GSE listing rules were limited only to audit committees and were therefore much narrower than the requirements of other countries (Owusu and Weir, 2013). The SECG mandates all public companies to make available to the Commission written evidence covering the operation and effectiveness of audit committees every year. However, this did not mention the composition of the committee. The GSE listing rules on the other hand did not specifically mention the audit committee but the guidelines and the steps for listing on the GSE state that written evidence of the existence, operation and effectiveness of such committee must be submitted as one of the listing requirements (GSE Listing Regulation 1990, LI 1509). Although the GSE Listing Regulation (1990) recommends the membership should consist of non-executive directors, it failed to provide information about either the number or qualifications of these directors. This suggests that governance practices in Ghana were much weaker relative to international best practice prior to the introduction of the Ghanaian Code.

The Ghanaian Governance Code introduced in 2003 was the first attempt to introduce official corporate governance guidelines not backed by the force of law. Consistent with the approach of many countries, including the UK and South Africa, the Ghanaian Code embodies a '*comply* or *explain*' philosophy whereby firms are required to explain why they have not adopted the specific elements of the code in their annual report and it is down to the shareholders to accept or reject the explanation. This is of particularly important because the annual report should contain a statement by the board on how they have complied with the corporate governance provisions in the code. Unlike the SECG regulations and the GSE listing rules which focused more on the establishment of an audit committee, the code has 33 provisions covering the six broad governance areas: board composition; audit committee; remuneration committee; shareholder rights; financial affairs and auditing and disclosure practices. The Code is also more detailed in its requirements relating to audit committees for example, it recommends for at least three directors the majority of whom should be non-

executive directors and they must have adequate financial knowledge before they can become a member of an audit committee. Appendix 1 presents the 33 provisions required by the code as well as the disclosure requirements of the SECG and GSE. As shown in the Appendix, the GSE requirements only covered 7 of the Code's requirements and the SEGG only 3. The Code therefore represented a significant widening of corporate governance in Ghana.

The six broad governance areas identified in Ghana's Code are also consistent with the OECD's Principles of Corporate Governance (OECD, 2004), which have become a model for the governance codes of developing economies (McGee, 2010). The OECD principles also cover six broad areas: ensuring the basis for an effective corporate governance framework; the rights of shareholders and key ownership functions; the equitable treatment of shareholders; the role of stakeholders in corporate governance; disclosure and transparency; and the responsibilities of the board. The Ghanaian code is also consistent with UK's governance framework, recently updated by the Financial Reporting Council (2014), which covers how the board is led, its effectiveness, its accountability, how remuneration is set and its relations with shareholders.

4. Literature review and hypotheses development

4.1 Governance index and performance

The relationship between individual governance mechanisms such as non-executive director representation and the lack of duality and company performance has been the subject of many studies. This literature covers both developed and developing economies: for example, Weir *et al* (2002) and Mura (2007) for the UK; Bozec (2005) for Canada; Chen *et al* (2008) and Field *et al* (2013) for the US; and Ghosh (2006), Isshaq *et al* (2009) and Mangena e*t al* (2012) for developing economies. However, the results are mixed. This lack of consistent support for individual governance mechanisms has prompted interest in the relationship between a broader set of governance mechanisms, a governance index, and performance. Core (2001) and Brown and Caylor (2006) argue that incorporating specific governance mechanisms into a governance index that covers a range of mechanisms will have better explanatory power than that of individual governance mechanisms when explaining firm performance.

Black (2001) was one of the first researchers to investigate corporate governance index and firm performance for a sample of 21 firms in Russia. He found that the correlation between the index and firm performance is positive and statistically strong, suggesting that corporate governance behaviour has a powerful effect on firm performance in Russia where legal and cultural constraints are poor. Similar studies that have focused on developing countries such as Venezuelan, and in particular South African listed firms, have found a positive association between their governance indices and performance (Garay and Gonzarez, 2008; Ntim, 2013). More generally, similar conclusions are drawn by Klapper and Love (2004) in their analysis of the governance index-performance relationship in emerging markets.

A number of studies in developed countries (Gompers *et al*, 2003; Drobetz *et al*, 2004, Beiner *et al*, 2006; Cheung *et al,* 2007; Arcot and Bruno, 2007; Chen *et al*, 2007; Henry, 2008; Bebchuk *et al*, 2009; Renders *et al*, 2010; Bauer *et al*, 2010) have mostly found consistent results with those of Black (2001). For example, Renders *et al* (2010) conducted a

cross-European study among 14 European countries[1] regarding the relationship between corporate governance index and firm performance and found evidence of a highly significant and positive relationship between the two after controlling for sample selection bias and endogeneity. Without controlling for these econometric problems, the relationship is insignificant or negative in some cases. In respect of the individual European countries, the evidence suggests that firms in countries such as the UK with strong shareholder rights or extensive corporate governance recommendations have better corporate governance ratings but the impact on firm performance is smaller compared to the countries with weak shareholder rights. Given the potential problems of endogeneity in the study of governance-performance relationship (Black, 2001), this evidence may have serious implications for majority of prior studies that have not addressed these econometric problems and may cast doubt on their results.

However, there is also evidence in developed economies that the relationship between governance indices and firm performance is insignificant, for example, Klein *et al*, (2005), Gupta *et al* (2009) and Bozec *et al* (2010) for Canada. Further, a number of studies have found no relationship in developing countries. For example, using a single year's data in a developing country, Cheung *et al* (2008) also reported an insignificant relationship between their governance index developed from the OECD principles of corporate governance introduced in 2004 and firm performance across Chinese listed firms. However, Cheung *et al* (2010) extended the study period across Chinese listed firms from 2004 to 2006 and found evidence of a statistically significant and positive relationship between their governance index and firm performance. This suggests that the effect of corporate governance on firm performance might take longer than one year period before any relationship can be established. In addition, Price *et al* (2011) have also found further evidence in Mexico, from 2000 to 2004 to suggest no association between governance index and firm performance. They noted that monitoring mechanisms alone may not be enough to cause fundamental change in the economic behaviour of Mexican listed firms.

Given the mixed evidence about the governance index-performance relationship in developing economies in particular, we address issues such as endogeneity and the use of panel rather than cross sectional data in this study. Following the introduction of a governance Code in an emerging market economy which exhibits a lack of investor protection and one that is dominated by concentrated ownership (Tsamenyi *et al*, 2007), Ghana offers a rich environment to investigate the impact of improved governance-related disclosures on firm performance. If a Ghanaian firm can commit to improved governance, then it is more likely that the firm will invest properly leading to fair returns to its investors. In addition, the analysis, unlike for example, Cheung *et al* (2008), uses Ghana's own specific governance code and therefore we hypothesise that:

H1:   There will be a positive relationship between governance index scores and firm performance

4.2 Governance sub-indices and performance

As discussed earlier, the Ghanaian code consists of six sub-sections, each of which deals with a different governance mechanism. It is therefore of interest to analyse the impact of these sub-sections on performance because it may be that some have a more important

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[1] These are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden and the UK

influence on performance than others. A number of studies have found that sub-indices are important in developed economies. Klein *et al* (2005) find that not all of the sub-indices that constitute their total governance index affect firm performance equally. They report that the compensation, disclosure and shareholder rights sub-indices have a positive impact on the performance of Canadian firms but find no relationship between a board independence sub-index and firm performance. Cheung *et al* (2007) also found that the disclosure and transparency sub-indices had a positive effect on the performance of Hong Kong companies. Cheung *et al* (2010) found that shareholder rights sub-indices have a positive effect on firm performance in China.

Other studies have also shown the importance of analysing the relationship between performance and specific sub-indices in developing economies, for example, Balasubramanian *et al* (2010) for India and Price *et al* (2011) for Mexico. They find that a shareholder rights sub-index has a positive and significant impact on firm performance but find that other sub-indices are insignificant. Consistent with the empirical evidence, we hypothesise that:

H2:   There will be a positive relationship between governance sub-indices and firm performance

5.   Sample, variables and methodology

5.1   Data and sample
Our sample consists of all listed firms quoted on the Ghana Stock Exchange over the period 2000 to 2009, a period spanning the introduction of the 2003 Ghanaian Corporate Governance Code. This allows us to divide the sample into two sub-periods, pre 2003 (2000-2002) and post 2003 (2004-2009). The names of listed companies were taken from the GSE website. Firms listed during each of the years under consideration were included in the sample based on the availability of their annual reports. Following Chen and Zang (2014), a longer post-code period (2004-2009) is used to control for the possible lagged effects of the introduction of the code. Table 1 contains the breakdown of the Ghanaian listed firms by industry and year excluding 2003, the year of the Code's introduction. As of December 2009, there were 38 listed firms on the GSE but three of these firms did not have their annual reports available for all the study period. Our final sample of 35 represents 92% of all listed firms currently traded on the GSE which generates a database of 258 firm year observations.

INSERT TABLE 1 HERE

In line with Gompers *et al* (2003) and Garay and Gonzalez (2008), we develop a Ghanaian Corporate Governance Index (*GCGI*) based on the criteria set out in the Ghanaian Corporate Governance Code. These criteria are used to construct an index which is then used as a proxy for firm-level governance quality. In relation to measuring the extent to which a company complied with the Ghanaian Code, the annual reports of each firm were read and each time a comment was included that showed compliance with a specific recommendation, it was given a value 1, and 0 if there was non-compliance. Unlike Mexico where regulators require each listed company to complete a Code of Best Practices questionnaire at the end of each financial year (Price *et al*, 2011), we relied on the corporate governance information disclosed in each firm's annual reports to develop our index because firms are not required to

produce separate corporate governance report in Ghana, an approach similar to Abraham *et al* (2015). The coding was initially done by one of the principal researchers and this was independently checked to ensure consistency and accuracy.

The index, as set out in Table 2, consists of 33 elements identified in the code as representing good governance. A firm's governance index in a particular financial year end can vary between 0 and 33, with 0 indicating complete non-compliance (0%) and 33 indicating complete compliance (100%). The index consists of six sub-indices: (1) board composition; (2) audit committee; (3) remuneration committee; (4) shareholder rights; (5) financial affairs and auditing; and (6) disclosure practices. Each sub-index consists of six elements with the exception of the financial affairs and auditing sub-index which consists of three legally required elements and three 'comply or explain' elements. This sub-index is therefore scored out of three rather than six. We ran the complete analysis excluding the partial sub index and the results were qualitatively the same. The partial sub index result is included for completeness.

INSERT TABLE 2 HERE

Table 3 contains the variable definitions used in the analysis with all firm performance and control variables data taken from the 2005 and 2010 GSE Factbooks which contain the relevant financial statements and ownership data of the sample firms. The measures of firm performance we use are return on assets (*ROA*), return on equity (*ROE*), and Tobin's Q (*Q*). These accounting-based (*ROA* and *ROE*) and market-based (*Q*) firm performance measures used are very important because insiders (management) and outsiders (investors) measure firm performance differently (Black *et al*, 2006). *ROA* and *ROE* are commonly used short-term measures of operating performance, whereas *Q* represents the widely used long-term proxy for firm valuation (Sami *et al*, 2011).

Consistent with prior studies (Gompers *et al*, 2003; Klapper and Love, 2004; Garay and Gonzalez, 2008; Bozec *et al*, 2010), we include several control variables. These are: gearing (*GEAR*), growth opportunities (*GROWTH*), firm size (*SIZE*), block shareholdings (*BLOCKHOLD*), board ownership (*BOARDOWN*) and firm age (*AGE*). Given that firms that are not actively followed by analysts or brokers and audited by one of the Big 4 auditors try to artificially improve their performance by manipulating their accounting numbers and abnormal accruals (Yu, 2008), we control for the accounting regime which is the adoption of the International Financial Reporting Standards (*AIFRS*), and earnings smoothing measures such as discretionary accruals (*DAs*) and audit quality (*AUDITOR*). We also include firm specific dummy and year dummy variables.

INSERT TABLE 3 HERE

5.2 Research methodology

We employ a panel data regression analysis which provides a means of controlling for unobserved firm heterogeneity. This allows us to analyse the impact of corporate governance that varies over time on firm performance. We use the Breusch and Pagan (1980) Lagrange Multiplier test to choose between pooled OLS and the alternative random or fixed effects models; and the Hausman (1978) specification test to differentiate between random and fixed effects regression models.

The Hausman specification test allows us to decide which model is appropriate by testing for correlation between the independent variables and the individual firm-specific effects. If there is no correlation, a random-effects model should be used but if correlation is

present, fixed-effects is more appropriate. Using *ROA*, *ROE* and *Q* as the firm performance measures in equations 1, 2 and 3, the Hausman test gave X^2 of 45.01, 82.22 and 68.44 (*p-value* = 0.000, 0.000 and 0.012), respectively. This suggests that the hypothesis of no correlation between the independent variables and the individual firm-specific effects is rejected and therefore fixed effects regression is appropriated as a method of estimation. The fixed effects regression model initially used to investigate the relationship between the *GCGI* and performance across the Ghanaian firms has the following general forms:

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

$$ROE_{it} = \alpha + \sum_{j=1}^{n} \beta_j (Governance_{jit}) + \sum_{k=n+1}^{n+m} \beta_k (Control_{kit}) + \theta_t + \delta_i + u_{it} \qquad (2)$$

$$Q_{it} = \alpha + \sum_{j=1}^{n} \beta_j (Governance_{jit}) + \sum_{k=n+1}^{n+m} \beta_k (Control_{kit}) + \theta_t + \delta_i + u_{it} \qquad (3)$$

where ROA_{it}, ROE_{it} and Q_{it} are the dependent variables; α is the overall intercept; $Governance_{jit}$ is a set of governance provisions represented by the *GCGI*, *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. We also perform regressions on equations (1), (2) and (3) using each of the sub-indices of the *GCGI* as explanatory variables.

6. Analysis and results

6.1 Descriptive statistics

The results in Table 4 show that the firm-level governance quality based on the Ghanaian Code criteria has improved over time. The *GCGI* increased from an average of 52% compliance in 2000 to 74% compliance in 2008. This increase in compliance with the Ghanaian Code is in line with other studies such as Weir and Laing (2000), Price *et al* (2011), Ntim *et al* (2012) and Abraham *et al* (2015) that reported a significant increase in compliance with corporate governance practices among UK, Mexican, South African and Indian listed firms, respectively. On average the *GCGI* recorded a 68% compliance with the Ghanaian Code during the ten year period. Whereas Ntim *et al* (2012) found a mean compliance of 61% across South African firms, Aggarwal *et al* (2007) in their cross-country study reported mean compliance of 69%, 61%, 57% and 56% for Canadian, US, Finland and the UK firms, respectively. These findings suggest that the Ghanaian listed firms' degree of compliance with corporate governance provisions not only increased over the period but is above average compared with the compliance levels in the other parts of the world. This is consistent with Owusu and Weir (2013) who find that the directors of the Ghanaian listed firms regard the Ghanaian Code as a benchmark for good corporate governance.

Table 4 also shows that most of the six sub-indices experienced substantial increases since 2000. The exception was BOARDINDEX which saw a reduction of 2 percentage points, from 66% in 2000 to 64% in 2009. A possible reason for this is that one of the components of the board composition sub-index, board size, experienced a significant reduction in compliance over the period. The compliance figure fell from 71% in 2000 to 51% in 2009 and may therefore explain the overall small fall in the board composition index.

The audit committee sub-index experienced the highest increase over the ten-year period with a 53 percentage point increase in the degree of compliance. This suggests that firms had not taken the audit issues seriously prior to the introduction of the Code. The remuneration committee index recorded a 10 percentage point increase and remained the sub-index with the lowest level of compliance in 2009. Increases in compliance were also found for the shareholder (12 percentage points), financial affairs and auditing (26 percentage points) and disclosure (23 percentage points) sub-indices. The overall trend is that there is a greater degree of compliance in the various sub-indices which indicates that the Ghanaian firms had been adopting the Ghanaian corporate governance code.

INSERT TABLE 4 HERE

Gurgler *et al* (2003) argued that developing economies such as Ghana will exhibit weak corporate governance mechanisms. We investigate this in Table 5. In relation to the pre-Code period, column 1 shows that there was an average (median) of 56% (50%) compliance with the features that are regarded as good governance. In terms of the sub-indices, we find that for four of the six categories the compliance rates were between 65% (65%) and 75% (67%). However, the categories relating to audit committees and remuneration committees showed compliance rates of only 26% (0%) and 29% (17%) respectively. These results are important because they illustrate that two of the key monitoring mechanisms were missing from the majority of firms quoted on the GSE prior to the introduction of the code. They also suggest that in spite of the strong legal and institutional frameworks within which quoted firms operated, many key governance mechanisms were not present suggesting that there were areas of weak governance prior to the introduction of the code.

Table 5 also compares the mean (median) compliance figures for the overall governance index, and for each of the individual sub-indices of the *GCGI*, for periods covering before and after the introduction of the Ghanaian corporate governance code. As Table 5 Panel A shows, there was a significant increase in the *GCGI* in the post-code period from 56% (50%) to 73% (72%). Other studies, for example, Cui *et al* (2008) also reported increases in governance scores post the introduction of a governance code in Australia.

Panel B of Table 5 reports the changes in the sub-indices. Although there has been a fall in the average (median) compliance of BOARDINDEX, it is insignificant. There have been significant increases in the extent of compliance in each of the other five sub-indices. The biggest improvement is found in the audit committee index where a 189% increase occurred. This would appear to bring into line with the current trends in the adoption of audit committee requirements worldwide.

Compliance remains lowest for the REMCOMINDEX with, on average (median) 36% (18%) of firms complying in the post-code period however, the improvement was statistically significant. With the exception of reporting the highest aggregate compensation paid to directors, all other elements of the sub-index exhibited poor compliance levels. For example, by 2009, only 6% of firms included company stock as part of executive remuneration and only 22% had a non-executive director as chairman of the remuneration committee.

The shareholder rights index also recorded a significant increase in compliance over the two sub-periods. The average (median) figure would have been higher but for the continued very low levels of compliance with one of the recommendations with only 3% of firms giving shareholders the opportunity to vote by mail by 2009.

The FAAINDEX also saw a significant increase post-code with the increase being driven by the compliance with the requirement to monitor risk, the average (median) rising from 75% (66%) to 95% (100%). The DISCINDEX also increased significantly in the post-code period.

INSERT TABLE 5 HERE

Table 6 presents the descriptive statistics for the firm performance and control variables. The average return on assets is 5.69%, the return on equity is 18.67% and Tobin's Q averages 2.13. Average gearing is 26.95% and sales growth was, on average, 9%. The average log of assets as a measure of firm size is 6.49 and the average age of the firms was 32 years. We find that boards held an average of 8.59% of a firm's equity and the average total block shareholdings was 52.96%. Also, the average discretionary accruals is 0.08, change in accounting regime in the form of the adoption of the IFRS averages 29% and on average, 76% of the Ghanaian listed firms have one of the Big 4 auditors as external auditor.

INSERT TABLE 6 HERE

6.2   Results on the governance index-performance relationship

Table 7 presents Pearson's correlation coefficients for the firm performance, corporate governance and control variables. There are large positive correlation coefficients between the *GCGI* and its sub-indices (i.e. *BOARDINDEX, AUCOMINDEX, RECOMINDEX, SHOLDINDEX, FAAINDEX* and *DISCINDEX*). Also, high collinearity exists between *AUCOMINDEX* and *FAAINDEX & DISCINDEX*. Due to the problem of multicollinearity, these variables were included in separate regression models in our empirical analysis.

INSERT TABLE 7 HERE

Table 8 presents the fixed effects regression model results. Models 1, 2 and 3 report the relationship between the *GCGI* and all the performance measures (*ROA, ROE* and *Q*) and the results is insignificant. These initial results therefore suggest that there is no relationship between governance and performance.

However, the relationship between governance and performance may be endogenous (Black, 2001). For example, better performing firms may have better governance structures; however, poorer performing firms may be in the process of improving their governance mechanism with the objective of improving performance (Beiner *et al*, 2006). Therefore the relationship between governance and performance might run from performance to governance rather than from governance to performance (Bozec *et al,* 2010). Given the panel nature of our data, we use the Wooldridge (2006) formal endogeneity test to ascertain whether or not our main explanatory variable, the *GCGI,* is endogenous. The test involves estimating the fixed effects regression model augmented by the inclusion of leading and lagged values of the potentially endogenous variable (*GCGI*). If the coefficient of either the leading or lagged variable is statistically significant, then *GCGI* is endogenous. We find that the lagged *GCGI* to be statistically significant and positively related to the firm performance measures of *ROA, ROE* and *Q* indicating that the *GCGI* is endogenous.

One way to address the endogeneity problem is to use instrumental variables (Bozec *et al*, 2010; Larcker and Rusticus 2010). Instrumental variables involve choosing a proxy variable which is correlated with *GCGI*, but is also uncorrelated with the error term. A two-stage instrumental variable fixed effects regression methodology is used to address the endogeneity of *GCGI*. In the first stage, consistent with Henry (2008), a dummy variable was employed as an instrument called the Ghanaian Code Change (*GCC*), indicating the introduction of the 2003 Ghanaian Code. The dummy has a value of 1 for all companies and all years from 2004 onwards and 0 for all companies and all years up to, and including, 2003. It therefore differentiates between the pre and post code periods. The appropriateness of this dummy variable as an instrument is based on the expectation that the adoption of the Ghanaian Code provisions introduced in 2003 will impact on firm performance post-2003.

As models 4, 5 and 6 of Table 8 show, after addressing the endogeneity problem, there is a statistically significant and positive relationship between *GCGI* and all three performance measures.

INSERT TABLE 8 HERE

The analysis is developed in Panels A and B of Table 9 which report the results for the instrumental variables fixed effects regressions for the impact of each of the sub-indices on firm performance (i.e. *ROA* and *Q*). To save space we report only the results for the sub-indices and exclude the control variables. We find a statistically significant and positive relationship between performance and a number of sub-indices: AUCOMINDEX, RECOMINDEX, SHOLDINDEX and DISCINDEX but insignificant results for BOARDINDEX and FAAINDEX. These findings are consistent with Klein *et al* (2005) and support the view that certain elements of corporate governance appear to have a stronger effect on performance than others. They also show the importance of looking beyond board composition with its emphasis on non-executive director representation and the separation of the roles of CEO and chairman. Although not reported, we find similar results for *ROE* except for RECOMINDEX sub-index where the relationship between the two is insignificant.

INSERT TABLE 9 HERE

6.3   Robustness test
In our fixed effects regression analysis, one main concern is whether sectoral differences affect performance. In order to check the robustness of our results, we perform an additional test using industry dummies to control for sectoral effects (Gompers *et al*, 2003). This analysis will also help us to distinguish between the period (year) or cross-section (firm) specifications. Given that the Ghanaian listed firms are categorised into seven key industrial sectors, we replicated equations 1, 2 and 3 and included 6 dummy variables representing the 7 industries to control for sectoral effect and excluded the time effect (i.e. year dummy). Even after accounting for industry differences, we find a positive and significant relationship between the governance index and performance. Overall, the findings from these robustness tests are similar to the earlier results reported.

7. Conclusions
Based on agency theory (Jensen and Meckling, 1976), we expect firms with good governance to perform better than firms with poor governance. Prompted by the introduction of the Ghanaian Code in 2003, this paper investigates the impact of corporate governance changes

on the performance of the Ghanaian listed firms over the period from 2000 to 2009. This was evaluated by constructing a corporate governance index to measure the governance-performance relationship over the whole period as well as analysing the impact of the introduction of the code on compliance and performance.

The results show a statistically significant increase in the degree of compliance with the Ghanaian Code provisions from the pre-code period to the post-code period. This suggests that stronger governance mechanisms were in place after the code was introduced. As hypothesised, after controlling for endogeneity, we find that a greater degree of compliance with the Ghanaian Code is positively and significantly associated with better firm performance. In the absence of controlling for endogeneity, the results show an insignificant relationship. We also find that the sub-elements within the overall index dealing with audit, remuneration, shareholder and disclosure issues have a significant and positive effect on performance whereas board structure and financial affairs and auditing sub-indices are not. However, we must be cautious about how we interpret the financial affairs sub-index because it has only three elements whereas the others each have six. Nevertheless, the results suggest that, in Ghana, better governed firms, on average, perform better than less well governed firms.

Although a developing economy, the governance changes that have been introduced in Ghana have been shown to be effective in improving firm performance. Given the increasing globalisation of the world economy, this sends an important signal to overseas investors that Ghana has an effective governance framework, something which should make it a more attractive investment destination. These results support Bokpin (2011) who argues that Ghana, although a developing economy, has a strong corporate governance regime because of its combination of laws and stock exchange regulations.

One limitation of this study is the development of a corporate governance index. The binary coding used to construct the *GCGI* may not reflect the relative importance of the different corporate governance provisions. This means that all elements included in the index are given equal weighting. In this respect, future research may assign weights to each of the corporate governance provisions but this may have the disadvantage of making subjective judgements relative to the importance of each corporate governance provision recommended by the Ghanaian Code.

The results of our paper provide evidence of the importance of addressing the econometric problems within the governance-performance relationship studies. Our study also contributes to the literature by providing evidence from a developing African country that higher compliance with a code of corporate governance leads to better firm performance after controlling for endogeneity. Our results are important for both policy makers and companies. For policy makers, it is encouraging for the development of a code of corporate governance to regulate the operational environment of firms rather than implementing rigid laws that may not be value relevant. For the companies, the improvement in compliance with a code of corporate governance can provide a means of achieving improved performance.

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Table 1: Breakdown of the Ghanaian listed firms by industry and year

Panel A: Sample Distribution by Industry						
Industry	Finance	Distribution	ICT	Manufacturing	Mining	Food & Beverage	Agriculture
No. of firms	11	8	2	9	2	2	1

Panel B: Sample Distribution by Year Excluding 2003

Financial Year	2000	2001	2002	2004	2005	2006	2007	2008	2009	**Total**	**Firm-Years**
No. of firms	21	21	23	29	31	31	32	35	35		**258**

Table 2: Questions for construction of the Ghanaian Corporate Governance Index (*GCGI*)

GCGI Dimensions		Ghanaian Corporate Governance Index (*GCGI*) Questions
BOARDINDEX	1	Are the Chairman of the board and the Chief Executive Officer post separated?
	2	Does the company board meet at least six times a year?
	3	Is the board size between eight and sixteen members as recommended by the Ghanaian Code?
	4	Does the proportion of the independent non-executive directors (NEDs) represent at least one third but not less than two of the total members of the board?
	5	Does the company have a Finance Director charged with the responsibility for the finance function?
	6	Does the company have a Secretary charged with the responsibility for the effective function of the board?
AUCOMINDEX	1	Does the company have an audit committee in place?
	2	Is the audit committee of a company composed of a minimum of three directors of whom majority are independent NEDs?
	3	Do the company audit committee members comprise directors with adequate financial Knowledge?
	4	Is the chairman of the audit committee an independent NED?
	5	Does the company disclose in its annual report the membership of its audit committee for each financial year?
	6	Does the company report on the activities of its audit committee in the annual report to shareholders?
RECOMINDEX	1	Does the company have a remuneration committee in place?
	2	Is the remuneration committee of a company composed of a majority of independent NEDs?
	3	Is there any disclosure of the company's remuneration committee membership in the annual report?
	4	Is the chairman of the remuneration committee an independent non-executive director?
	5	Does the company provide information in its annual report on the aggregate amount of compensation paid to its directors?
	6	Do directors receive part of their remuneration in stock or stock option and disclose in the annual report?
SHOLDINDEX	1	Does the company give adequate notice and information to its shareholders prior to its Annual General Meeting (AGM)?
	2	Does the company allow shareholders to approve its directors' re-election at the AGM?
	3	Does the company facilitate voting by proxy to appoint directors at the AGM?
	4	Are there any opportunities given to the company's shareholders to vote by mail?
	5	Does the company provide information in its annual report related party transactions to its shareholders?
	6	Does the company disclose its directors share ownership in its annual report to shareholders?
FAAINDEX	1	Does the company produce its annual report by the legally required date?
	2	Does the company provide information in its annual report the existence of appropriate systems to monitor risk and financial governance measures?
	3	Does the company disclose in its annual report the fees paid to its external auditors for audit and non-audit related work?
DISCINDEX	1	Does the company annual report include information on its current and future prospects together with foreseeable material risk factors?
	2	Does the company disclose in its annual report a statement of responsibility of the preparation of its financial statements?
	3	Does the company produce a statement as to the adequacy of internal control in its annual report?
	4	Does the company disclose in its annual report a statement as to the compliance with the law?
	5	Does the company disclose in its annual report a statement of compliance with corporate governance?
	6	Does the company produce information on the degree of being a going concern in its annual report for each financial year?

Note: Each question has a yes or no answer based on the Ghanaian Code provisions. If the answer is yes, then the value of 1 is attributed to the question, otherwise the value is 0. The Ghanaian Corporate Governance Index is the sum of the points for each question. The maximum index value is 33 (100% compliance). Index dimensions are simply the sum of the points for each question. For example, the maximum value for Audit Committee Index (*AUCOMINDEX*) is 6 (100% compliance). All questions are answered using public information disclosed by the listed companies in their annual reports.

Table 3: Variable measurements in the regression models

CODE	Name of Variable	Variable Definition	Source of Data
ROA	Return on Assets	Calculated as operating profit after tax to total assets at year-end.	GSE 2005 and 2010 Factbooks
ROE	Return on Equity	Calculated as operating profit after tax to book value of equity at year-end.	GSE 2005 and 2010 Factbooks
Q	Tobin's Q	Calculated as the market value to 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.	GSE 2005 and 2010 Factbooks
GCGI	Ghanaian Corporate Governance Index	Corporate governance index based on binary objective questions, where each aspect of compliance with the Ghanaian Code provisions disclosed in the company's annual reports is scored '1', and scaled on a 0-33 range.	2000 to 2009 Annual Reports
BOARDINDEX	Board Composition Index	Sub-Index of the *GCGI* containing six questions relating to the board structure, scaled on a 0-6.	2000 to 2009 Annual Reports
AUCOMINDEX	Audit Committee Index	Sub-Index of the *GCGI* containing six questions relating to the existence and structure of the audit committee, scaled on a 0-6.	2000 to 2009 Annual Reports
RECOMINDEX	Remuneration Committee Index	Sub-Index of the *GCGI* containing six questions relating to the existence and structure of the remuneration committee, scaled on a 0-6.	2000 to 2009 Annual Reports
SHOLDINDEX	Shareholder Rights Index	Sub-Index of the *GCGI* containing six questions relating to shareholder rights provisions, scaled on a 0-6.	2000 to 2009 Annual Reports
FAAINDEX	Financial Affairs & Auditing Index	Sub-Index of the *GCGI* containing six questions relating to financial affairs and auditing provisions, scaled on a 0-3.	2000 to 2009 Annual Reports
DISCINDEX	Disclosure Index	Sub-Index of the *GCGI* containing six questions relating to disclosure provisions, scaled on a 0-6.	2000 to 2009 Annual Reports
GEAR	Gearing	Calculated as the total debt to capital employed, where capital employed is the sum of total debt and equity.	GSE 2005 and 2010 Factbooks
SIZE	Firm Size	Natural logarithm of book value of total assets in millions of Ghana Cedis at year-end.	GSE 2005 and 2010 Factbooks
GROWTH	Growth Opportunities	Calculated as the percentage difference between the current year's sales and previous year's sales divided by the previous year's sales.	GSE 2005 and 2010 Factbooks
AGE	Firm Age	Calculated as the number of years since a particular firm's incorporation to the 2009 year-end.	GSE 2005 and 2010 Factbooks
BOARDOWN	Board Ownership	Calculated as the proportion of shares held by board of directors to the total shareholdings.	2000 to 2009 Annual Reports
BLOCKHOLD	Block Shareholdings	Calculated as the proportion of shares held by shareholders in excess of 3% of the total shareholdings.	2000 to 2009 Annual Reports
DAs	Discretionary Accruals	Discretionary accruals estimated using Modified Jones Model (Dechow *et al.*, 1995) $DAs_{j,t} = (TAC_{j,t}/TA_{j,t}) - NA$	GSE 2005 and 2010 Factbooks
AIFRS	Adoption of IFRS	= 1 if the firm has adopted International Financial Reporting Standards, and 0 if otherwise.	2000 to 2009 Annual Reports
AUDITOR	BIG4 Auditor	= Estimated as 1 if the firm is audited by one of the international reputable audit firms, and 0 if otherwise.	2000 to 2009 Annual Reports

Note: The Ghana Stock Exchange (GSE) 2005 and 2010 Factbooks are the official documents that are used to consolidate all the financial data for every 5 years (2000 to 2004; and 2005 to 2009) for all listed companies in Ghana and are available from the GSE Library. The corporate governance and ownership data were collected from 283 annual reports. The annual reports were either hand collected from the companies and in some cases from the GSE Library.

Table 4: The degree of compliance with the Ghanaian Code overtime
GCGI is the Ghanaian corporate governance index, *BOARDINDEX* is the board composition index, *AUCOMINDEX* is the audit committee index, *RECOMINDEX* is the remuneration committee index, *SHOLDINDEX* is the shareholder rights index, *FAAINDEX* is the financial affairs and auditing index and *DISCINDEX* is the disclosure index.

Panel A:Descriptive statistics of the overall index

GCGI	All	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Mean	68	52	54	61	61	70	70	74	74	74	72
Minimum	39	42	42	42	39	44	44	50	50	50	42
Maximum	100	89	89	89	89	97	97	100	100	100	100

Panel B:Descriptive statistics of the sub-indices

BOARDINDEX	All	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Mean	64	66	66	65	63	65	65	63	64	64	64
Minimum	33	33	33	33	33	33	33	33	33	33	33
Maximum	100	83	83	83	83	100	100	100	100	100	100
Observations	283	21	21	23	25	29	31	31	32	35	35
AUCOMINDEX											
Mean	61	18	21	38	39	72	75	81	81	72	71
Minimum	0	0	0	0	0	0	0	0	0	0	0
Maximum	100	100	100	100	100	100	100	100	100	100	100
RECOMINDEX											
Mean	34	27	28	33	29	35	34	36	38	36	37
Minimum	17	17	17	17	17	17	17	17	17	17	17
Maximum	100	100	100	100	100	100	100	100	100	100	100
Observations	283	21	21	23	25	29	31	31	32	35	35
SHOLDINDEX											
Mean	74	67	67	73	73	74	73	75	75	79	79
Minimum	50	50	50	50	50	50	50	50	50	67	50
Maximum	100	83	83	83	83	83	83	100	100	100	100
FAAINDEX											
Mean	82	64	66	72	75	84	85	88	88	90	90
Minimum	50	67	67	67	50	67	67	83	83	83	83
Maximum	100	95	100	100	96	100	100	97	97	100	100
DISCINDEX											
Mean	88	71	72	79	81	90	90	95	96	94	94
Minimum	50	50	50	50	50	50	50	50	67	50	50
Maximum	100	100	100	100	100	100	100	100	100	100	100
Observations	283	21	21	23	25	29	31	31	32	35	35

Table 5: Differences in the *GCGI* across Ghanaian listed firms

The *t-test* and test statistics in columns 4 and 5 are the independent-samples *t-test* (mean) and Mann Whitney U test (median) based on pre-2003 and post-2003 *GCGI* and its sub-indices. The sub-indices include BOARDINDEX, AUCOMINDEX, RECOMINDEX, SHOLDINDEX, FAAINDEX and DISCINDEX. The mean (median) differences in panel *A* test for equality of means (median) between pre-2003 and post-2003 of the overall *GCGI*, while the mean (median) differences in Panel *B* test for equality of means (median) between pre-2003 and post-2003 sub-indices. A mean (median) difference with (***) indicates that the null hypothesis that the means (median) are equal is rejected at 1% significant level.

	Pre-2003 (2000-2002) Mean (Median) %	Post-2003 (2004-2009) Mean (Median) %	*t*-test	Mann-Witney U Test
Panel A: Overall index				
GCGI	56 (50)	73 (72)	-7.041***	(-6.595***)
Panel B: Sub-indices				
BOARDINDEX	65 (67)	64 (66)	0.563	(0.497)
AUCOMINDEX	26 (0)	75 (83)	-7.933***	(-7.286***)
RECOMINDEX	29 (17)	36 (18)	-1.511***	(-1.872**)
SHOLDINDEX	69 (67)	76 (84)	-4.167***	(-3.994***)
FAAINDEX	75 (66)	95 (100)	-10.512***	(-10.816***)
DISCINDEX	74 (65)	93 (100)	-8.851***	(-8.206***)

Table 6: Descriptive statistics of firm performance and control variables
ROA is the return on assets, *ROE* is the return on equity and *Q* is the Tobin's Q. *GEAR* is gearing, *SIZE* is the firm size, *GROWTH* is the growth opportunity, *AGE* is the firm age, *BOARDOWN* is the board ownership, *BLOCKHOLD* is the block shareholdings, *DAs* is the discretionary accruals, *AIFRS* is the adoption of International Reporting Standards and *AUDITOR* is the Big 4 auditor.

	Mean	Std. Deviation	Minimum	Maximum
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
GEAR %	26.951	26.089	0.00	70.326
SIZE	6.498	1.325	3.886	9.284
GROWTH	0.091	0.517	-0.999	3.303
AGE	32.781	13.989	1.000	65.00
BOARDOWN%	8.589	18.549	0.00	86.82
BLOCKOWN%	52.96	13.815	27.27	95.14
DAs	0.076	0.413	0.84	1.38
AIFRS%	29.00	45.60	0.00	1.00
AUDITOR%	76.00	42.80	0.00	1.00

Table 7: Pearson correlation matrix of the dependent and the explanatory variables

	ROA	ROE	Q-ratio	GCGI	BOARD INDEX	AUCOM INDEX	RECOM INDEX	SHOLD INDEX	FAA INDEX	DISC INDEX	GEAR	SIZE	GROWTH	AGE	BOARD OWN	BLOCK HOLD	DAs	IFRS	BIG4
ROA	1																		
ROE	.685**	1																	
Q-ratio	.177**	.184**	1																
GCGI	.001	.065	.032	1															
BOARD INDEX	.047	.168*	.157*	.481*	1														
AUCOM INDEX	038	.031	.018	.873**	.194*	1													
RECOM INDEX	.134	.094	.083	.679*	.337*	.700*	1												
SHOLD INDEX	.118**	.098*	037*	.460*	.286**	.229**	.164*	1											
FAA INDEX	-.093	-.097	-.088	.643*	.136*	.589**	.109	.397**	1										
DISC INDEX	.122	0.54*	.085**	.810*	.253*	.732*	.323**	.385**	.429*	1									
GEAR	-.214**	-.216**	.031	.177**	.137**	.150*	.216**	-.105	.135**	0.38	.1								
SIZE	-.066	.027	-.112	.018	-.135**	.039	.093	-.024	.018	-.034	197**	1							
GROWTH	.134*	.161**	.058	-.064	.028	-.070	.027	-.006	-.158**	-.128*	-.039	.144**	1						
AGE	.144**	.005	-.045	-.102	.072	-.214**	-.008	.092	-.048	-.115	-.189*	-.052	-.025	1					
BOARDOWN	.230**	.222**	.198**	-.129	-.362**	.037	-.161**	-.245*	.056	-.024	.002	.135*	-.105	-.178*	1				
BLOCKHOLD	.139**	.125**	.277**	.086	.111	.123**	-.054	.187**	.181**	.170**	.002	-.013	.115*	.082	-.140*	1			
DAs	.149*	.126**	.112*	-.140**	-.067	-.167**	-.004	.010	.066	.023	-.121	-.167**	.064	.130**	-.144**	-.128*	1		
AIFRS	-.109	.083	-.046	.211**	.019	.199**	.038	..229**	.330**	.172**	.140*	-.122	.031	-.004	.005	.047	.132**	1	
AUDITOR	.182**	.092	.028	.038	.172**	.196**	-.052	.266*	.175**	.104*	-.061	.102*	.029	.150*	.048	.445**	-.179**	.017	1

Notes: The table indicates Pearson's correlation coefficients. ** and * denote correlation is significant at the 1% and 5% level (two tailed). *ROA* is the return on assets, *ROE* is the return on equity, *Q* is the Tobin's Q, *GCGI* is the Ghanaian corporate governance index, *BOARDINDEX* is the board composition index, *AUCOMINDEX* is the audit committee index, *RECOMINDEX* is the remuneration committee index, *SHOLDINDEX* is the shareholder rights index, *FAAINDEX* is the financial affairs and auditing index, *DISCINDEX* is the disclosure index, *GEAR* is gearing, *SIZE* is the firm size, *GROWTH* is the growth opportunity, *AGE* is the firm age, *BOARDOWN* is the board ownership, *BLOCKHOLD* is the block shareholdings, *DAs*.is the absolute discretionary accruals, *AIFRS* is the adoption of the International Financial Reporting Standards and AUDITOR is the Big 4 auditor.

Table 8: Fixed effects regression results for the impact of the *GCGI* on firm performance.
Models 1, 2 and 3 do not correct for endogeneity. Models 4, 5 and 6 correct for endogeneity using the Ghanaian Code Change (GCC) as an instrumental variable measured as 1 if the observation is from the post-code period (2004-2009) and 0 otherwise. *ROA* is the return on assets, *ROE* is the return on equity and *Q* is the Tobin's Q. *GCGI* is the Ghanaian corporate governance index, *GEAR* is gearing, *SIZE* is the firm size, *GROWTH* is the growth opportunity, *AGE* is the firm age, *BOARDOWN* is the board ownership, *BLOCKHOLD* is the block shareholdings, *DAs* is the discretionary accruals, *AIFRS* is the adoption of International Reporting Standards and *AUDITOR* is the Big 4 auditor. The models provide *t*-statistics which are in parenthesis. Coefficients are on top of parenthesis. 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.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	ROA	ROE	Q	ROA	ROE	Q
GCGI	0.120	0.310	0.113	0.225	0.359	0.317
	(1.21)	(1.00)	(0.88)	(2.09)**	(2.61)***	(3.21)***
GEAR	-0.063	-0.517	0.009	-0.052	-0.417	0.007
	(1.84)	(4.62)***	(1.68)*	(1.70)*	(4.06)***	(1.72)*
SIZE	-0.698	0.110	-0.010	-0.506	4.139	-0.065
	(0.92)	(1.67)*	(0.09)	(0.76)	(1.83)*	(0.61)
GROWTH	0.958	8.454	0.461	1.867	10.122	0.383
	(0.64)	(1.74)*	(1.97)**	(1.27)	(2.06)**	(1.73)*
AGE	0.214	0.730	-0.178	0.048	0.439	-0.010
	(0.49)	(0.59)	(0.25)	(0.62)	(1.64)	(0.72)
BOARDOWN	0.018	0.234	0.027	0.186	0.679	0.021
	(0.07)	(0.26)	(0.62)	(3.16)***	(3.38)***	(1.96)**
BLOCKHOLD	0.243	0.684	0.050	0.083	0.456	0.036
	(1.65)	(3.51)***	(2.17)**	(1.23)	(1.98)**	(2.98)***
DAs	0.217	0.414	0.551	0.498	0.085	0.428
	(1.72)*	(1.87)*	(3.34)***	(1.84)*	(1.76)*	(2.78)***
AIFRS	-0.405	0.503	-0.556	-0.797	0.345	-0.211
	(1.25)	(3.38)***	(1.00)	(1.74)*	(4.22)**	(0.41)
AUDITOR	0.325	0.504	0.570	0.516	0.025	0.306
	(0.35)	(1.05)	(0.96)	(1.05)	(0.37)	(0.76)
_cons	-19.597	-16.355	14.970	19.504	-17.998	-12.852
	(2.65)***	(1.96)**	(2.19)**	(2.70)***	(1.85)*	(1.97)**
R^2	0.16	0.29	0.15	0.22	0.34	0.26
N	244	244	244	244	244	244

Table 9: Instrumental variables fixed effects regression results for the impact of the sub-indices on ROA & Q

All the models correct for endogeneity using the Ghanaian Code Change (GCC) as an instrumental variable measured as 1 if the observation is from the post-code period (2004-2009) and 0 otherwise. *ROA* is the return on assets and *Q* is the Tobin's Q. *BOARDINDEX* is the board composition index, *AUCOMINDEX* is the audit committee index, *RECOMINDEX* is the remuneration committee index, *SHOLDINDEX* is the shareholder rights index, *FAAINDEX* is the financial affairs and auditing index, *DISCINDEX* is the disclosure index. The model provides *t*-statistics which are in parenthesis. Coefficients are on top of parenthesis. All the control variables are included in the regression models but their coefficients are not reported. ***, ** and * significant at 1, 5 and 10 percent, respectively.

Panel A: The relationship between the sub-indices and ROA

	ROA	ROA	ROA	ROA	ROA	ROA
BOARDINDEX	1.269	-	-	-	-	-
	(0.92)	-	-	-	-	-
AUCOMINDEX	-	0.298	-	-	-	-
	-	(2.77)***	-	-	-	-
RECOMINDEX	-	-	0.281	-	-	-
	-	-	(1.82)*	-	-	-
SHOLDINDEX	-	-	-	0.259	-	-
	-	-	-	(2.20)**	-	-
FAAINDEX	-	-	-	-	0.191	-
	-	-	-	-	(2.15)**	-
DISCINDEX	-	-	-	-	-	0.154
	-	-	-	-	-	(2.11)**
_cons	-47.414	-10.819	30.043	17.768	-28.401	35.262)
	(2.30)**	(2.15)**	(2.16)**	(2.72)**	(2.30)**	(2.34)**
R^2	0.18	0.24	0.25	0.35	0.40	0.41
N	244	244	244	244	244	244

Panel B: **The relationship between the sub-indices and Q**

	Q	Q	Q	Q	Q	Q
BOARDINDEX	0.055	-	-	-	-	-
	(0.24)	-	-	-	-	-
AUCOMINDEX	-	0.113	-	-	-	-
	-	(2.22)**	-	-	-	-
RECOMINDEX	-	-	0.124	-	-	-
	-	-	(1.93)*	-	-	-
SHOLDINDEX	-	-	-	0.218	-	-
	-	-	-	(2.90)***	-	-
FAAINDEX	-	-	-	-	-0.013	-
	-	-	-	-	(0.88)	-
DISCINDEX	-	-	-	-	-	0.316
	-	-	-	-	-	(2.92)***
_cons	14.730	-10.866	-2.649	-6.476	1.781	-2.876
	(2.05)**	(2.10)**	(1.86)*	(2.36)**	(2.16)**	(1.93)*
R^2	0.22	0.19	0.16	0.23	0.17	0.26
N	244	244	244	244	244	244

Appendix 1: Corporate governance disclosure requirements by the code, SECG and GSE

	Disclosure Items	Code	SECG	GSE
Board composition	The Chairman and the Chief Executive Officer post should be separated	√	×	×
	The board of directors should meet at least six times a year	√	×	×
	The board size should be between eight and sixteen members	√	×	×
	The proportion of independent non-executive directors (NEDs) should represent at least one third of the board but not less than two of the total members of the board	√	×	√
	There should be a finance director charged with the responsibility for the finance function	√	×	×
	There should be a secretary charged with the responsibility for the effective function of the board	√	×	×
Audit Committee	Each company should establish an audit committee	√	√	√
	The audit committee should comprise of a minimum of three directors of whom majority are independent NEDs	√	×	√
	The membership of the audit committee should ideally comprise directors with adequate financial knowledge	√	×	×
	The chairman of the audit committee should be an independent NED	√	×	×
	Each company should disclose in their annual report the membership of its audit committee for each financial year	√	√	×
	Each company should report on the activities of its audit committee to shareholders	√	√	×
Remuneration Committee	Each company should have a remuneration committee	√	×	×
	The remuneration committee should comprise of a majority of independent NEDs	√	×	×
	There should be a disclosure of the remuneration committee's membership in the annual report	√	×	×
	The chairman of the remuneration committee should be an independent NED	√	×	×
	Each company should disclose in their annual report the aggregate amount of compensation paid to its directors	√	×	×
	The directors should receive part of their remuneration in stock or stock option and disclose in the annual report	√	×	×
Shareholder Rights	Each company should give adequate notice and information to its shareholders prior to its Annual General Meeting (AGM)	√	×	√
	Each company should allow its shareholders to approve directors re-election at the AGM	√	×	√
	Each company should facilitate voting by proxy to appoint directors at the AGM	√	×	×
	Each company should provide the opportunity for its shareholders to vote by mail	√	×	×
	Each company should provide information in its annual report any related party transactions to its shareholders	√	×	√
	Each company should disclose its directors share ownership in its annual report to shareholders	√	×	√
Financial Affairs & Auditing	Each company should produce its annual report by the legally required date	√	×	×
	Each company should provide information in its annual report the existence of appropriate systems of monitoring risk and financial governance measures	√	×	×
	Each company should disclose in its annual report the fees paid to its external auditors for audit and non-audit related work	√	×	×
Disclosure practices	Each company should include in its annual report information on its current and future prospects together with material risk factors	√	×	×
	Each company should disclose in its annual report a statement of responsibility by it directors of the preparation of the financial statements	√	×	×
	Each company should produce a statement of the adequacy of internal controls in its annual report	√	×	×
	Each company should disclose in its annual report a statement of the compliance with the law	√	×	×
	Each company should disclose in its annual report a statement of compliance with corporate governance	√	×	×
	Each company should produce information on the degree of being a going concern in its annual report	√	×	×

Note: The table shows a comparison of the Ghanaian Code requirements as well as the SECG and the GSE. '√' indicates the required corporate governance disclosure by the code, SECG and the GSE and '×' indicates no requirement.