Revisiting the Relationship between Corporate Governance and Firm performance: Evidence from British Manufacturing Firms

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Abstract

This research looked at the link between corporate governance (CG) proxies and corporate financial performance (CFP) in the post financial crisis period for FTSE 350 enlisted firms while also revisiting the relevance of the agency theory to corporate governance mechanisms in the United Kingdom. OLS regression, Generalized Method of Moments (GMM) and Hausman test were applied to panel dataset of 230 FTSE 350 UK manufacturing firms over the period 2014-2018. The findings reveals that, with the exception of CEO duality and Firms growth where the Tobin's Q and Return on Asset (ROA) were the dependent variables respectively, other corporate governance mechanism such as board size and board independence, firm size, leverage, and growth had statistically insignificant effects on CFP. The results are robust when utilizing GMM estimation for adjusting for potential simultaneity and endogeneity problem. Contrast to prior findings in CG field this study suggest that firm internal CG traits do not play a substantial role in determining CFP in the UK context, and so provide more robust conclusions than prior studies in the field.

Keywords: Corporate governance, FTSE 350, corporate financial performance, generalized method of moments (GMM), United Kingdom.

JEL Classification: G34, L25

1. Introduction

The start of this century witnessed several corporate scandals which rocked the business world and consequently increased the drive to entrench corporate governance within firms (Arora & Sharma, 2016). For instance, in 2005, British car manufacturer MG Rover declared bankruptcy, with debts equaling approximately 1 billion GBP. A consortium, the Phoenix 4, bought the firm for 10 pounds in 2000, with the promise to turn it into a profit-making firm within two years. However, the consortium stripped the firm of its assets and posted losses continuously, ultimately resulting in a government bailout of 6.5 billion in 2005 to help pay workers' wages (Mcgregory & Newey, 2009). While excessive borrowing and debt buying failed some well-established financial institutions, such as the Royal Bank of Scotland, and resulted in bankruptcy and government acquisition of the firm in 2009 (Rayner, 2009), the contention here

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is that had corporate governance practices been adhered to in these scenarios, shareholders' wealth would have been sustainable. Corporate governance regulations set out ethical guidelines for firms to adhere to while also providing control and relational mechanisms to govern the operations of businesses (MacMillan & Downing, 1999). The underlying intention of these guidelines is that if the moral duties laid down by corporate governance tools are employed effectively, firms can avoid undergoing administration and bankruptcy (Bhagat & Black, 2001). In view of this, abundant literature has been produced in which attempts have been made to explore the influence of corporate governance factors on the financial performance of a firm (Arora & Sharma, 2016). Nonetheless, practices for identifying the relevant tools to ensure the successful implementation of corporate governance practices within an organization remain unresolved, both theoretically and empirically. For instance, with respect to CEO duality, agency theory advocates the separation of powers as an essential ingredient for reducing agency costs while retaining effective control and monitoring (Jensen, 1993). Bhagat and Bolton (2008) offered empirical evidence supporting this theory. Meanwhile, stakeholder theory suggests that separation within the leadership structure might not be beneficial to a firm, as it could increase information costs and inhibit the decision-making process, thereby constraining productivity (Freeman & Reed, 1983; Wither & Fitza, 2017).

The United Kingdom is an exemplary case study environment in which to address the significance of corporate governance practices. Although the principal intention behind firms' compliance with corporate governance mechanisms is to protect shareholders' interests (Walker Review, 2009, p.23), the theoretical objective of the UK's corporate governance code aligns more closely with agency theory (Akbar et al., 2016). Thus, when a firm complies with the UK Corporate Governance Code (2014), it signals to stakeholders that the firm's management structure meets the required standards, which in turn propels demand for the firm's shares (Akbar et al., 2016).

The goal of this study was to evaluate the influence of corporate governance policies on company financial performance using quantitative financial data and quantitative methodologies. More specifically, the research aims were:

a) To probe how the number of directors can impact the financial performance of firms.
b) To assess the impact of an independent board of directors on the financial performance of firms.
c) To examine how CEO duality may impact the financial performance of a firm.
d) To examine how the size of a firm influences its financial performance.
e) To determine whether there is a relationship between capital structure and firm performance and
f) To examine the link between a firm's growth and its performance.

This study comprised an empirical investigation of the influence of corporate governance factors on financial performance by using data from non-financial FTSE 350-listed firms. The data analysis was conducted by first employing an OLS regression for panel data and then estimating variables using GMM to control for potential endogeneity. Results indicate that the majority of the selected corporate governance factors have a statistically insignificant impact on corporate performance. The exception to this is CEO duality, which was statistically significant when the Q Ratio[1] was used as the dependent variable; and firm growth, when ROA was used as the dependent variable. However, these variables were statistically insignificant

[1] The market value of a corporation divided by the replacement cost of its assets is the Q ratio, commonly referred to as Tobin's Q. Equilibrium thus occurs when market value and replacement cost are equal. The link between market valuation and intrinsic value is best expressed by the Q Ratio at its most fundamental level.

when GMM was used in both one-step (Arellano & Bond, 1991) and two-step estimation techniques (Brundell & Bond, 1998).

Academics have called for more robust research, involving more dynamic approaches with multiple datasets and sophisticated econometric techniques, on how long-run reactions to corporate governance influence the performance of firms (Duru et al., 2016). Therefore, this study makes a methodological addition by employing a dynamic model to analyze corporate governance mechanisms and their influence on firm financial performance.

Following this introductory section, section two explores the theoretical aspects of the study and investigates the empirical evidence needed to both identify and close gaps in the existing literature. Section three presents the methods employed to test the research hypotheses, including the examination of the statistical properties of the data. Section four analyses and section five discusses the research findings to determine which theoretical assertions are stipulated by the study. Section six concludes the study by outlining the necessary recommendations and exploring avenues for future research.

2. Literature Review and Hypothesis Development

This section will provide a review of existing quantitative studies in which the impacts of different aspects of corporate governance on firms' financial performance were explored. Empirical evidence for and against different aspects of corporate governance factors are also presented so that the gap in the literature can be identified as making a relevant contribution.

2.1 Corporate Governance in the UK

The London Stock Exchange (LSE) has a market capitalization of over US$6 trillion, making it the third largest stock market globally, following the New York Stock Exchange (NYSE) and the NASDAQ. Firms which are listed on the LSE are expected to benchmark their practices against the UK Corporate Governance Code. Although the UK Corporate Governance Code has been heralded as flexible, firms are expected to state in their financial reports whether they have adhered to the code, providing explanations for instances when they have not (Donnelly & Kelly, 2005). This is referred to as the 'comply or explain approach', as set out in the code (FRC, 2016). However, there has been ongoing debate over the approach. For instance, in 2009, a Corporate Governance Code review highlighted the reservations expressed by firms and investors regarding how comply and explain works; consequently, there have been calls for a more clearly defined approach, with all parties being encouraged to participate by applying the approach in the intended manner (FRC, 2016).

In 1992, the Cadbury Committee (FRC, 2016) developed the first version of the UK Corporate Governance Code in direct response to major corporate scandals. The code elucidated the requirements for ethical corporate governance and provided underlying regulations. It was agreed that the code should be reviewed every three years, and so in 1995 and 1998 Greenbury reports were published. In 1998, Hampel proposed that the findings of both reports be combined and addressed if compliance were to be achieved; a combined governance code subsequently followed.

The code proposes the separation of the operational chief, i.e., the CEO, and the board's chairperson within a firm's leadership structure. The UK Corporate Governance Code states that to ensure effectiveness and performance, there should be a clearly defined distinction between the head of the business and the executive responsible for running the firm. Therefore, no single individual should be given tangential decision-making powers. Hence, the chair of the board is not only responsible for leading and directing it but also for its overall effectiveness in all business areas of the firm; meanwhile, the CEO is required to focus on the successful

running of the business (FRC, 2016, A1, A3).

In the initial drafts of the Corporate Governance Code, there was no mention of a board's independence. In 2003, the Higgs Report raised the issue of board independence and highlighted the effectiveness of non-executive directors. The report recommended that at least three of the directors should be non-executive, two of whom should have no ties, financial or personal, with the managing executives of the firm. Therefore, board independence implies that at least 50% of board members are independent, i.e., not involved in the day-to-day running of business affairs. This is to ensure that non-executive members continuously and constructively challenge management and assist in developing strategies to maximize profit and increase shareholders' wealth (FRC, 2016, A4). It is worth mentioning that the UK Corporate Governance Code does not regulate board size. The only mention of board size appears in section A4 (FRC, 2016, A4), in which small business enterprises are required to have at least two non-executive directors.

2.2 Impact of Board Size on Firm Performance

A vast amount of literature has examined the influence of board size, i.e., the number of board directors, on the performance of a firm, which is particularly interesting given the number of corporate scandals which have occurred in the last decade (Jackling & Johl, 2009). However, there is no conclusive evidence to show that the number of directors on the board of directors can impact the financial performance of a firm. Some researchers, like Yermack (1996), have argued that larger board sizes have a negative impact on firm performance. Studies by Lipton and Lorsch (1992) and Jensen (1993) have revealed that larger board sizes make task coordination difficult, widen communication gaps and foster conflicts, in turn complicating efforts by members of the board of directors to achieve amicable strategic conclusions. Yermack (1996) suggested that larger boards negatively impact the amount of dividends that might accrue for shareholders. Furthermore, some researchers have contended that it is easier for smaller boards to dismiss CEOs in the event of poor performance, as well as to curtail their compensation (Bhagart & Black, 2001; Eisenberg et al., 1998). With regard to establishing an appropriate number of individuals on a board, Jensen (1993) recommended that the average number of individuals on a board of directors should generally not exceed eight. Elsewhere, Suleiman et al. (2017) argued that this number should be standardized across all firms, irrespective of their industry. Supporting this argument is a study by Adams and Mehran (2003), in which it was suggested that manufacturing firms require fewer board members than financial firms. Kumar and Singh (2013) suggested that the nature of the economy can also be a significant factor in determining ideal board size. Hence, firms in emerging markets are better suited for smaller board sizes than firms in developed economies.

Conversely, some studies have argued that larger board sizes contribute extensive knowledge, expertise, diversity and experience, which is essential for effective decision making and hence performance (Dalton & Dalton, 2011). Moreover, it can be easier for CEOs to expropriate the wealth of firms when fewer directors on the board have a decision-making role, and monitoring activities can also suffer (Dalton & Dalton, 2005). The disagreements outlined above have arisen due to the inconclusive results provided by empirical evidence. For instance, Yermack (1996) observed that board size negatively influences the value of a firm. In this study, Yermack conducted cross-sectional and longitudinal analysis of data from 452 publicly traded firms from 1981 to 1984. By employing the Q Ratio (Tobin's Q) to measure a firm's performance, Yermack (1996) found that there was a significant incremental loss when firms raised their board sizes from six to 10 members.

Similarly, Eisenberg et al. (1998) offered empirical evidence that board size indirectly influences the value of a firm. Likewise, Cheng (2008) investigated firm profitability and board

size and found a significant negative relationship between the two variables. Cheng used various measures of firm performance to ascertain robustness, including monthly stock returns, ROA and the Q Ratio (Tobin's Q). The results of Cheng's analysis are consistent with those of proponents of smaller board sizes, who believe smaller size enhances the financial performance of firms. Furthermore, Guest (2009) assessed how, in the UK, the financial performance of a firm is influenced by the size of its board of directors, observing an inverse relationship. Guest (2009) used data from 2746 London Stock Exchange-listed firms for the 1981–2002 periods to argue that there was an inverse relationship resulting from numerous factors, such as the institutional setting within the UK and the coalescence of different firms over time. Belkhir (2009), using seven years (1995–2002) of panel data from 174 financial institutions, investigated the impact of board size on the financial performance of firms. The study reported that an increase in firms' board sizes was positively and statistically relevant to performance. In that study, the performance of a firm was measured by ROA and the Q Ratio. Employing a similar approach, Mohapatra (2017) studied the experience of 35 Nifty firms and examined the relationship between board size and performance of firms using a six-year dataset (i.e., 2005–2010). Mohapatra (2017) also observed that a firm's value and size are positively related. The author suggested that in the case of larger firms, larger board sizes enhance their profitability.

The above empirical studies, which evaluated board size and firm performance, provide contrasting results (see table. 1). In addition, the findings of studies exploring this nexus in publicly traded firms in the UK remain equivocal. Certainly, a careful study of the UK governance code suggests that it is based on an agency theory approach (Mura, 2007).

Table 1 List of Studies: Board Size and Performance of a Firm

Author	Study Period	Domicile	Findings
Guest (2009)	1981–2002	UK	Negative Correlation
Coles et al. (2008)	1992–1998	US	Positive Relationship
Cheng (2008)	1996–2004	US	Positive Relationship
Smith et al. (2014)	1996–2010	UK	Negative Correlation
Nguyen et al. (2015)	2001–2011	Australia	Negative Relationship
Kalsie and Shrivastav (2016)	2008–2012	India	Positive Relationship

Source: Authors Compilation

Therefore, this study hypothesizes that the size of the board *does* matter when it comes to a firm's financial performance.

***H_1*: Board size has no significant impact on a firm's performance.**

2.3 Board Independence and Firm Performance

The conventional wisdom of corporate governance is that board members are expected to monitor and control management, thus facilitating firm value. One of the ways this can be effectively achieved is by increasing the level of board independence, and yet the literature is inconclusive with respect to how to facilitate such independence. For instance, agency theory posits that the more external directors a firm has, the more rigorously it is controlled. The underlying premise here is that independent directors are usually more objectively minded and more motivated by the desire to increase stakeholders' wealth. However, stakeholder theory suggests that diversified firms increase complications, such as generational confusion among managers (Cole et al., 2008).

Once gathered, the available empirical evidence failed to support either of the two arguments. For instance, Cole et al. (2008) used Tobin's Q, i.e., the Q Ratio, as a measure of

performance, as well as data from 2740 publicly listed firms over a period of seven years (1992–1998); from their findings, the authors reported a negative link between the two variables. In contrast, Lefort and Urzua (2008) investigated the link between board members' independence and firm productivity using a sample of 160 Chilean firms. Their results suggested a positive association, as more external board members led to an increase in firm value, which in turn helped ameliorate the agency problems occurring within the firms. Similarly, Conheady et al. (2015) studied this nexus among 699 Canadian firms over a period of seven years (2003–2009). Conheady and colleagues reported that board independence had a positive and statistically significant impact on the level of effectiveness and the financial performance of these firms, as measured by the Q Ratio. Evaluating the same factor, Mohapatra (2016) investigated whether the addition of independent board members contributed to firm performance by reviewing a sample of Nifty firms in India using a dataset from 2005 to 2010 and the Q Ratio (Tobin's Q) as a measure for firm value. The study concluded that an independent board of directors positively impacts firm performance.

Dang et al. (2017), however, contradicted this argument. In their study, Dang and others used data from 478 non-financial Ho Chi Minh City Stock Exchange (Vietnam)-listed firms. The study employed quartile regression for robustness and reported an inverse relationship between board independence and firm value. Therefore, in correlation with the underlying theory guiding the UK Corporate Governance Code, this study proposed that board independence positively impacts the performance of a firm. Table 2 below lists empirical investigations in which the impact of board independence on the performance of firms was examined.

Table 2 The Impact of Board Independence on Firm Performance

Author	A study period	Country	Result
Guest (2009)	1981–2002	UK	Positive Correlation
Liu et al. (2015)	1999–2012	China	Positive Correlation
Nguyen et al. (2015)	2001–2011	Australia	Negative Significant Relationship
Mura (2007)	1991–2001	UK	No Significant Relationship
Conheady et al. (2015)	2003–2009	Canada	Positive Relationship

Source: Authors Compilation

Therefore, this study hypothesizes that the Board independence does not matter when it comes to a firm's financial performance.

H2: **Board independence has no significant impact on the performance of a firm.**

2.4 CEO Duality and Firm Performance

Abundant literature has discussed the contribution of several indicators of corporate governance on the performance of firms; however, the CEO duality leadership structure has been considered to be of paramount importance. This stems from trends in firms whereby the duality of the CEO's leadership structure has been abused by powerful dual CEOs, with resultant negative consequences for firms (Cheng et al., 2008). The question that often arises here, therefore, is whether a situation in which an individual holds two positions, i.e., Chairperson of the Board and CEO, and is in charge of looking after the day-to-day running of the business leads to enhanced financial performance (Peng et al., 2007).

Interestingly enough, the existing literature, both theoretical and empirical, has failed to provide a conclusive and robust argument to support or discourage CEO duality. For instance, Jensen (1993) believed that the duality of the CEO leadership structure is detrimental to the success of firms, as it hampers the board's ability to monitor and control manager excesses, thereby leading to agency costs. Thus, splitting the leadership roles of the CEO and the board chairman can reduce costs, which can in turn improve the financial performance of a firm (Koufopoulos et al., 2010; Syriopoulos et al., 2012). Other researchers have countered this view, arguing that when the CEO and chairperson are a single individual, a more clearly defined leadership structure results, facilitating the formulation and implementation of strategies within the firm (Stoeberl & Sherony, 1985). Furthermore, splitting the roles of the leadership position can impede firm performance and may serve to increase information-sharing costs, creating conflicts between leaders and causing inefficiencies. The costs of communicating firm-specific information, as may occur among leaders, can slow strategy implementation, making it difficult to apportion blame in the event of poor performance (Anderson & Anthony, 1986).

Cheng et al. (2007) assessed the role of CEO duality in the performance of firms using panel data from 403 publicly traded firms in the Shanghai Stock exchange as well as 1202 non-listed Chinese firms. The study found that CEO duality has a negative impact on firm performance. This implies that splitting the leadership structure does not help increase a firm's productivity. However, the authors argued that these results may differ with respect to environmental specifics, the availability of resources and the nature of the firm itself.

In contrast, Duru et al. (2016) used data from US firms as well as the Generalized Method of Moments (GMM) to control for endogeneity bias. The study found that CEO duality and firm performance have an inverse relation. Duru and colleagues' findings support the propositions of agency theory. In this vein, Lam and Lee (2008) investigated the link between CEO duality and firm performance using a sample of 128 publicly traded firms in Hong Kong in 2003. The study also introduced family control as a factor that might produce a moderating effect. The results revealed that CEO duality inhibits firm performance in family-run businesses but is efficient otherwise.

Likewise, Jeremias and Gani (2014) examined the impact of CEO duality and firm performance on a sample of S&P 500 firms in the US. The study found that the performance of sample firms was negatively affected by CEO duality, thereby supporting the postulates of stakeholder theory.

Table 3 CEO Duality and Firm Performance

Author	A study period	Country	Result
Duru et al. (2016)	1997–2011	US	Negative Correlation
Akbar et al. (2016)	1999–2009	UK	No Significant Relationship
Jeremias and Gani (2014)	1999–2010	US	Negative Correlation
Baghat and Bolton (2008)	1996–2003	US	Negative Relationship
Cheng et al. (2007)	1984–2002	China	- Negative Correlation

Source: Authors Compilation

Table 3 above lists empirical studies in which the impact of CEO duality on firm performance was investigated. It is clear from the table that these studies failed to generate conclusive evidence to suggest that CEO duality has either a positive or negative impact on firm

performance. This ambiguity might have arisen from the methodologies employed in these studies or the timeframes reviewed. These possibilities notwithstanding, there has been a general push for the separation of powers between the CEO and the Chairperson to boost the effectiveness of firms, especially in the UK.

In light of the above discussion, this study assumes that the financial performance of a firm is negatively impacted by CEO duality.

H3: **The dual role (duality) of a CEO has no significant impact on the financial performance of a firm.**

2.5 Control Variables

2.5.1 Size of the Firm

There is extensive debate in both the theoretical and empirical literature regarding the impact of a firm's size on its operational and financial performance. Some studies have hypothesized that the larger the firm, the better it performs. This assertion is based on the assumption that larger firms have a greater pool of resources, which in turn promotes better performance. It is also easier for large firms to generate revenue, through either the capital market or debts (Fama & Jensen, 1983). Other researchers have contended that as firms increase their reach, they diversify, which can sometimes breed confusion and can require more effective monitoring of profits (Nenova, 2003). Similarly, some researchers have asserted that as a result of agency problems in larger firms, the likelihood of increasing value for shareholders decreases relative to size.

Evidence exists to support both positions. For instance, Lee (2009), using a panel of 7000 firms publicly traded in the US over a 1987–2006 sample timeframe, identified a nonlinear relationship between profitability and firm size. Lopez-Valeiras et al. (2016) supported this empirical finding, stating that the level of indebtedness can be viewed as an intervening variable that must be considered when exploring the impact of firm size on firm performance. Akbar et al. (2016) observed that firm size and performance are positively related. These researchers argued that this positive impact may be a result of the scale differences involved in transactions, the costs associated with compliance, the significance of operations and market regulations. This study therefore hypotheses that a sample drawn from the FTSE 350 will show that the financial performance of a firm is negatively impacted by firm size.

H4: **Firm size has no significant impact on the financial performance of a firm**.

2.5.2 Leverage

This study proposes that leverage may also be an influential factor in UK-listed firms. Financial leverage is measured using the firm's debt to total asset ratio. In order to fund the acquisition of assets, a company is said to be "leveraged" when it has taken out loans. Financial leverage and financial performance have been linked, according to several research. The underlying notion here is that a firm's value is largely impacted by its financing decisions (Modigliani & Miller, 1956). These decisions could be conducted in terms of either debt or equity. Various theories have also attempted to explain how the capital structure decisions of a firm influence its financial performance. Agency theory holds that for effective monitoring to be necessary to facilitate firm performance, shareholders might require managers to be more inclined to debt than equity. The idea here is that borrowing costs could reduce managers' riskier behaviours and mitigate agency conflict, thereby propelling growth (Jensen & Meckling, 1976). This proposition is supported by mixed empirical evidence. For instance, Berger and Bonaccorsi di

Patti (2006) investigated the link between financial performance and the debt-to-equity ratio in a sample of US banks. They found a positive link between a higher debt ratio and firm performance. The authors postulated that if the debt ratio were increased by 1%, the firm's financial efficiency would be enhanced by 6%. However, conversely, Tian and Zeitun (2007) studied the impact of leverage on firm performance by using data from a sample of 167 Jordanian firms over an 18-year period (1989–2008); their results showed that the level of indebtedness had a negative impact on the financial performance of firms. In view of this, this study proposes that debt structure has a statistically negative impact on a firm's performance.

H5: **Leverage has no significant impact on the financial performance of a firm.**

2.5.3 Firm growth

Firm growth has also been suggested as a factor affecting firm performance. The theoretical assumption here is that firms with a larger volume of assets have a greater capacity to perform better financially (Penrose, 2009). Empirical evidence exploring this nexus remains inconclusive. Some researchers have even attributed it to the form or measure of a firm's growth. For instance, Xia (2007) studied the link between firm growth and firm performance using sales growth figures as an indicator of growth; the findings in this case showed a positive and significant relationship between the two variables. In contrast, however, Aktas et al. (2008) demonstrated a negative relationship when employment growth was used to measure firm growth. Accordingly, this study's suggested the following hypothesis:

H6: A firm's growth has no significant impact on its financial performance.

3. Research Methodology

3.1 Sample and Source

The quantitative panel data for FTSE 350-listed firms were collected using Thomson Reuter's Data Stream for a five-year period, i.e., 2014–2018. This specific timeframe was chosen because it covers the period during which the UK economy recovered from the negative impacts of the 2007 economic crisis and began to reap the benefits of the newly reviewed combined UK governance code. Financial data from FTSE 350 non-financial firms were collected and pooled into Stata. Financial firms were ignored because their overall regulatory environment varies considerably from that of non-financial firms. Moreover, financial firms are steered by the stewardship code, which could have connotations for the execution of the Corporate Governance Code. Later, firms with missing data, i.e., incomplete corporate governance or financial information, were deleted. That reduced the final sample size to 230. Therefore, 1150 firm year observations were assessed in this study.

3.2 Corporate Financial Performance Measures

To measure the financial performance of firms, this study adopted two accounting and one market measure: Return on Equity (ROE) and Return on Assets (ROA) were used as accounting measures, while the Q Ratio, i.e., Tobin's Q, was used as a market measure.

3.2.1 Accounting Measures (ROE and ROA)

ROE is an accounting measure of the financial performance of a firm and is commonly used to study the impact of different corporate governance factors on firm performance (Siddiqui, 2015; Arora et al., 2017). The basis of this measure stems from the principal objective of firms, which is to generate profit; as such, ROE reflects profits generated from the investments of shareholders (Epps & Cereola, 2008). ROE is calculated with the following formula:

$$ROE = (net\ income)/(common\ equity) \quad (1)$$

ROA is a short-term indicator of firm performance and measures how efficiently a firm's assets are utilized. ROA also reveals earnings from investments in capital assets. ROA is calculated with the following formula:

$$ROA = (net\ income)/(total\ asset) \quad (2)$$

3.2.2 Market-based Measures (Tobin's Q)

The Q Ratio or Tobin's Q is a market-based indicator used to measure the financial performance of a firm. The existing literature reviewed in Chapter two showed that the Q Ratio is extensively used (Bhagat & Bolton, 2008; Leung & Cheung, 2013). The Q Ratio represents the 'market value of a company divided by the replacement value of the firm's assets' (Bhagat & Jefferis, 2005). The Q Ratio reflects the long-run financial strength of a firm based on the perception of market value and is considered a measure of firm performance (Siddiqui, 2015). According to Min and Prather (2001), 'the market value of the firm represents the net present value (NPV) of the projects in hand and the opportunity for future growth (additively principle)'. Hence, a firm's managers, in order to increase the firm's market value, consider only those projects which pose a positive net present value and lead to a higher Q Ratio.

By using the Q Ratio as a measure of the financial performance of firms while studying the impact of corporate governance factors, this study assumed that an elevated Q Ratio would indicate a positive impact of corporate governance mechanisms, which in turn would enhance the market's view of a firm's performance. On the other hand, a lower Q Ratio would suggest a conflict of interest between shareholders and managers, whereas a higher Q Ratio would show that shareholders and managers closely aligned their interests (Weir et al., 2002). In this study, the Q Ratio, i.e., Tobin's Q, was calculated via the following formula:

$$\text{Tobin's Q} = (total\ Asset - equity + market\ capitalization)/(total\ asset) \quad (3)$$

3.3 The Independent Variables

3.3.1 Size of the Board of Directors (LNBS)

The underlying theoretical proposition here is that smaller boards are easier to control and more effective for CEOs (Eisenberg et al., 1998; Coles et al., 2008). This study measured board size by taking the natural logarithms for the total number of board members and representing them as *LNBS.*

3.3.2 Independence of the Board of Directors (BI)

Board independence demonstrates how many non-executive directors (NED) are on the board of directors. In this study, the NED percentage as a proportion of total board members was used to measure board independence.

3.3.3 CEO duality (CEO Dual)

Here, CEO duality served as a binary dummy variable, taking a value of either 0 or 1. In the case of small firms, if CEO duality existed, then CEO Dual = 1; otherwise, CEO Dual = 0. However, in the case of larger firms, this dummy variable took a value of 1 when the CEO was not the chairperson on the board, and 0 otherwise (Chen et al., 2007).

3.4 Control Variables

Along with the above mentioned independent variables, this study used some other parameters,

which also play a role in a firm's financial performance, as control variables.

3.4.1 Firm size (LNFS)

This study hypothesized that the larger the size of a firm, the better its performance. This stems from the supposition that larger firms benefit from economies of scale to better meet the costs associated with agency problems, market regulations and associated transactions (Akbar et al., 2016; Salim et al., 2016). In this study, firm size (LNFS) was calculated using the following formula:

$$LNFS = \log total\ assets \tag{4}$$

3.4.2 Leverage (LEV)

Here, leverage is the proportion of total debts to total assets. It is widely believed in the business world that a higher debt ratio denotes higher firm performance. This stems from agency theory, which views debts as crucial for mitigating managerial excesses, reducing agency costs and preventing non-positive NPV investments. However, higher debt thresholds can increase the possibility of bankruptcy and credit risks, which could in turn inhibit firms from investing in profitable projects and erode financial performance (Jensen, 1986).

$$\text{LEV} = (\text{total debts})/(\text{total assets}) \tag{5}$$

3.4.3 Growth (LNFGWR)

Sales growth was determined by the difference in current sales relative to preceding sales and multiplied by 100. This is because if a firm experiences an increase in sales, then this firm can be said to be growing Xia (2007).

$$\textit{Firm Growth} = \textit{(Current Year Sales – Previous Year Sales) *100} \tag{6}$$

Table 4 below lists the variables in this study. It is clear from the table that the selection of variables (independent and control) was based on previous empirical and theoretical studies, some of which were reviewed in Chapter Two.

Table 4 Summary of Independent, Control and Dependent Variables

Symbols	Variable Description	References
Independent Variables (CG Factor)		
LNBS	Board Size: Natural log of total number of members of a board of directors	Akbar et al. (2016); Duru et al. (2016)
BI	Board Independence: Number of non-executive independent members/total number of board members	Duru et al. (2016)
CEO Dual	CEO Duality: Dummy variable equal to 1 when CEO doubles as board chair and 0 otherwise	Azeez (2015); Duru et al. (2016)
Control Variables		
LNSIZE	Firm Size: The natural log of total assets	Salim et al. (2016); Duru et al. (2016)
LNFGWR	Firm Growth: Natural log of total sales - previous year total Sales	Xia et al. (2007)

Lev	Leverage: total debt/total asset	Arora & Sharma (2016); Akbar et al. (2016)
Dependent Variable		
ROA	Return on Asset=Net income/total asset	Salim et al. (2016); Akbar et al. (2016);
ROE	Return on Equity =Net Income/Shareholders equity	Duru et al. (2016); Mishra and Mohanty (2016)
Tobin's Q	Adjusted Q Ratio: This represents the proportion of market capitalization plus total debts divided by the firm's total assets	Bhagat and Bolton (2008); Akbar et al. (2016)

Source: Authors Compilation

3.5 Econometric Model

To empirically investigate the impact of corporate governance factors on the financial performance of a firm, this study employed two econometric techniques: OLS regression and GMM to control for possible endogeneity bias. The empirical investigation in this study was conducted by using the following regression model;

$$y_{it}=\alpha_0+\beta_1 X_{i,t}+\beta_2 C_{i,t}+\delta_{it} \quad (7)$$

Here, Y_{it} represents firm performance indicators, $X_{i,t}$ denotes the vector of corporate governance factors, $C_{i,t}$ serves as an indicator of control variables, and i represents the firms in the model, where t denotes time. B_1 and B_2 are the parameters to be estimated, α_0 is the intercept, and ε_{it} is the error term, which covers unexplained variations in the model.

More specifically, the models are given as:

$$\alpha_0 - \beta_1 LNBS_{i,t} - \beta_2 CEOdual_{i,t} + \beta_3 BI_{i,t} + \beta_4 LNSIZE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 LNFGWR_{i,t} + \varepsilon_{it} \quad (8)$$

$$ROE_{i,t} = \alpha_0 - \beta_1 LNBS_{i,t} - \beta_2 CEOdual_{i,t} + \beta_3 BI_{i,t} + \beta_4 LNSIZE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 LNFGWR_{i,t} + \varepsilon_{it} \quad (9)$$

$$TOBIN'S\ Q_{i,t} = \alpha_0 - \beta_1 LNBS_{i,t} - \beta_2 CEOdual_{i,t} + \beta_3 BI_{i,t} + \beta_4 LNSIZE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 LNFGWR_{i,t} + \varepsilon_{it} \quad (10)$$

3.6 Estimation Techniques

3.6.1 OLS Linear Regression Analysis

The panel model, when used for regression, has some shortcomings, e.g., it can result in omitted variable bias when estimating parameters and might not be able to effectively solve endogeneity. The study employed the Hausman test to handle potential omitted variable bias. The test helps specify whether the fixed or random effect model is best suited for the study. Here, the alternative hypothesis is that the model is a fixed effect model (Greene, 2012).

3.6.2 Generalized Method of Moments (GMM)

In seeking to establish robustness for the study, GMM was employed. GMM helps address problems associated with endogeneity in a dataset (Greene, 2012). The variables in this study were endogenous in nature, as the impact of corporate governance mechanisms is largely determined by a firm's preceding performance (Wintoki et al., 2012). Similarly, firm growth, as represented by the change in total assets, is also determined by the same variable relative to the size of the firm. Therefore, in order to limit measurement errors caused by endogeneity and simultaneity, some special measures needed to be taken. The GMM is specifically designed to address circumstances in which finding instruments to assuage problems is difficult (Roodman, 2009). The GMM uses a dynamic panel model, utilizing past values of the variables as instruments without compromising the competence or stability of the estimators. This estimation technique for panel data was developed by Arellano and Bond (1991), with subsequent full operationalization by Blundell and Bond (1991). The model has been welcomed in the governance and performance literature as its measures incorporate past effects resulting from the application of corporate governance mechanisms to performance (Aorora & Sharma, 2016). The GMM introduces a system of equations into the existing model to reflect time-lag periods. These equations vary in response to context, as they are dependent on their conditioning sets. Therefore, the endogeneity of the variables can be determined by finding first differences in the variables and then employing an instrument with an appropriate lag length.

$$\Delta\gamma_{i,t} = \alpha^{\iota}\Delta\gamma_{it-1} + \beta^{\iota}\Delta X_{i,t-1} + \gamma^{\iota} z_{it} + V_i + \varepsilon_{i,t} \quad (11)$$

Where, $\Delta y_{i,t}$ denotes the first difference of the natural log of financial performance for the firms in the sample *i* at time *t*, and $\Delta y_{i,t-1}$ is the lagged difference of the dependent variable, which is distributed independently. Thus, to examine the link between the contributions of past governance mechanisms on performance, the assumptions posited by Wintoki et al. (2012) were adopted.

4. Findings and Analysis

4.1 Statistical Properties Analysis

The statistical properties of the data employed in this study are given in Table 5. The study involved a dataset of 1150 firm year observations; column two presents the total number of observations for each of the variables.

Table 5 Descriptive Statistics

Variables	Obs.	Mean	St. Dev.	Min.	Max.	Variance	Kurtosis	Skewness
ROA	1140	453.52	254.10	1	861	64568.18	1.74	-0.09
ROE	1115	391.35	229.81	1	764	52815.61	1.79	0.07
TOBIN'S Q	1150	472.72	324.08	1	1042	105027.9	1.74	0.07
BI	1112	44.15	20.64	1	81	426.31	0.11	2.51
BS	1150	11.61	6.94	1	19	48.16	1.36	-.45
CEODUAL	1143	0.89	0.44	0	1	0.102	-2.41	6.79
LNSIZE	1135	14.67	1.59	10.33	19.74	2.530	3.37	0.57
LNFGWR	1142	479.46	277.47	1	954	76992.89	0.51	1.81
LEV	1150	364.81	299	1	915	89403.29	0.24	1.69

Source: Authors Calculation

Note: Where Obs. denotes Observation; St. Dev denotes Standard Deviation; Min. for Minimum and Max. For Maximum

The descriptive statistics frequency of non-executive directors relative to total board members reveal that of 1112 observations, there were about 44% non-executive directors to total board members, where some boards had as low a number as 1% of non-executive directors and others as high as 81% non-executive directors. In case of the CEO duality, in 89% of the firms from the sample, the CEO also held the office of Chairperson of the Board of Directors. In this study, the total number of observations made when measuring firm size (i.e., Natural Log of Assets) was 1135. The mean result was approximately 15, with a minimum of 10 and a maximum of 19. This implies that the majority of firms employed in this study were large firms, with a relatively small deviation from the mean, i.e., 1.5. Almost all firms in the sample shared similar patterns of growth, with an average of 476 and a maximum of 954. Table 5 demonstrates that almost all firms in the sample shared similar patterns of growth, with an average of 476 and a maximum of 954. However, the dataset failed to follow the assumptions set out in a normal distribution. Within the sample observation set of 1150, there was an average board size of 11, with a maximum of 19 and a minimum of 1.

4.2 Correlation between Variables

Table 6 Correlation Analysis

Variables	ROA	ROE	Q Ratio	BI	LNBS	CEO DUAL	LNSIZE	LNFGWR	LEV
ROA	1								
ROE	0.044	1							
TOBIN'S Q	-0.026	0.007	1						
BI	0.011	0.041	-0.017	1					
LNBS	0.074	0.007	-0.005	-0.019	1				
CEODUAL	-0.008	-0.007	0.043	-0.067	0.050	1			
LNSIZE	-0.019	0.024	0.014	-0.005	0.006	0.0213	1		
LNFGWR	0.185	0.020	-0.039	0.037	0.060	-0.046	-0.005	1	
LEV	-0.017	0.033	0.004	0.031	0.024	-0.039	-0.066	-0.013	1

Source: Authors Calculation

The correlation analysis was designed to assess the relationship between the variables under study. The closer the values from the correlation analysis, the stronger the association. Table 6 above details the correlation results using pair-wise correlation estimation techniques; column

two shows an inverse relationship between ROA and LNFIRMSIZE. This indicates that larger firms have lower operational performance and vice versa. The same link can be found between ROA and CEODUAL, as well as between ROA and LEV. However, the values presented show that the links between these variables are weak, as they are closer to zero, at -0.0077, -0.0191, - 0.0172, respectively. Interestingly there has been a positive association even though insignificant found between ROA and Firm growth, which means that higher sales growth firms have higher operational performance or vice versa.

4.3 Empirical Analysis of Relationship between Corporate Governance Variables and ROA

4.3.1 Hausman Tests

Table 7 Statistics from Hausman Test for ROA

Variables	FE	RE	Difference	Standard errors
BI	0.082	0.067	0.014	0.117
LNBS	4.728	9.553	-4.825	4.461
CEODUALITY	5.106	4.389	0.716	4.858
FIRMGRWTH	0.068	0.113	-0.045	0.010
LNFIRMSIZE	-5.475	-5.492	0.0172	1.401
LEV	0.0195	-0.007	0.0269	0.042

Source: Authors Calculation

Note: = 20.34 Prob > chi^2 = 0.0024

The Hausman test (Hausman, 1978) was used to determine whether the panel data followed a random or fixed effect model. The null hypothesis (H_0) was that the random effect was suitable when set against the fixed effect, as determined at the 5% significance level. The underlying motive was to establish whether the coefficients estimated from the random effect model tallied with the estimates from the fixed effect model. Here, the significance estimators were recognized by their *p*-value. The level of significance for the fixed effect model is determined if the *p*-value exceeds 0.05 ($p > 0.05$); if so, then it will be used instead of the random effect model. In Table 7 Above, the results from the analysis depict χ_3^2 of 20.34 and a *p*-value of 0.0024 as statistically significant at the 5% level. This implies that a fixed effect model is preferable to a random effect model.

4.3.2 Regression Analysis

Table 8 Regression Analysis with ROA as Dependent Variable

Variables	Coefficients	T-Stats	P-value
BI	0.082	0.22	0.822
LNBS	4.73	0.51	0.609
CEODUAL	5.11	0.23	0.815
LNFGWR	0.068	2.41	0.016 **
LNSIZE	-5.47	-1.17	0.241
LEV	0.019	0.37	0.711
CONS	478.29	6.06	0.000 ***
R^2	0.09		
Prob>F	0.25		

Source: Authors Calculation

Note: *, **, *** denotes statistical significance level at 10%, 5% and 1%, respectively.

Table 8 above details the results of the OLS regression analysis, where ROA was the dependent variable. Firm growth was shown to be positively and statistically significant at the 5% significance level ($\beta = 0.068$; $\sigma = 0.016$) implying that a 1% increase in firm growth would lead to a 0.06% increase in the operational performance of the firm, as represented by ROA. These findings confirm the proposed hypothesis that a firm's growth has a statistically significant positive influence on its financial performance. The results of the statistical analysis also show that independent boards lead to better financial performance, when ROA is used as a measure of financial performance. However, it was observed that firm size does not necessarily facilitate operational performance. The variables show that the relationships are, however, not statistically significant. Therefore, this study rejects hypotheses H_1, H_2, H_3, H_4, H_5 when ROA is taken as the dependent variable, i.e., the measure of financial performance.

4.3.3 GMM Analysis

Two-step estimation was performed utilizing the vector error correction model and a robust option to control for heteroscedasticity within variables. Sargan's test was also conducted (0.0609) (0.0577). The GMM output shown in Table 4.5 further confirms the findings from the panel OLS regression. Here, board size, CEO duality and firm growth are all shown to be positive facilitators of firm performance. Furthermore, the output determined that firm size, leverage and board independence were negative factors influencing firm performance. However, these findings were statistically insignificant.

Table 9 Arellano–Bond Dynamic (Dependent Variable ROA)

Variable Coefficients	One-Step Estimator (1)	One-Step and Two-Year Lag (2)
BI	-0.440 (0.355)	-0.4957 (0.281)
LNBS	13.019 (0.357)	10.2597 (0.451)
CEODUAL	6.288 (0.897)	8.9078 (0.830)
LNFGWR	0.324 (0.387)	0.00794 (0.843)
LNSIZE	-5.778 (0.349)	-5.9210 (0.315)
LEV	-0.0201 (0.809)	-0.0312 (0.709)
Constant	456.203 (0.000)	420.108 (0.000)
Wald Chi's Square	4.85 (0.6784)	25.15*** (0.007)
AR(1)	10.55794** (0.060)	15.073 (0.0577)
AR(2)	-0.888 (0.374)	-2.37*** (0.0178)

Source: Authors Calculation

Notes: (*P* values in parenthesis). Level of significance is represented by stars using a conventional method: i.e. *** = 1% , ** = 5% , * = 10%.

4.4 Relationship between Corporate Governance Variables and ROE

4.4.1 Hausman Tests

Table 10 Statistics for Hausman Test with ROE as Dependent Variable

Variables	FE	RE	Difference	Standard errors
BI	0.79	0.54	0.26	2.05
LNBS	-16.47	-5.73	-10.74	6.86
CEODUAL	-15.11	1.46	-16.58	9.03
LNFGWR	0.012	0.025	-0.013	0.017
LNSIZE	-4.32	-3.36	-0.96	| 2.39
LEV	-0.004	0.016	-0.019	0.052

Source: Authors calculation

Note: 9.55Prob>chi2 = 0.1448

In Table 10 above, the results depict $X^{3\wedge 2}$ of 9.55 and a *p*-value of 0.1448 as statistically insignificant at the 5% level; thus, a random effect model was judged to be preferable to a fixed effect model.

4.5 Regression analysis with ROE as dependent variable

Table 11 Regression Analysis with ROE as Dependent Variable

Variables	**Coefficients**	**T-Stats**	**P-value**
BI	0.5393705	1.56	0.119
LNBS	-5.733056	-0.77	0.442
CEODUAL	1.462278	0.07	0.947
LBFG	.0257451	1.00	0.317
LNSIZE	-3.357278	-0.76	0.450
LEV	.0157047	0.67	0.505
CONS	410.4837	5.60	0.000 **
R^2	0.0005		
Prob>F	0.5074		

Source: Authors Calculation

Note: *, **, *** denotes statistical significance level at 10%, 5% and 15%, respectively.

Table 11 above presents the panel OLS analysis, where ROE was used as the dependent variable. ROE reflects the performance of shareholders' investments. This output shows a negative relationship (β =-5.733056; ρ = 0.442) between board size and ROE, which indicates that larger board sizes lower the performance of firms. This finding adheres to stakeholder theory. However, the *t*-statistics indicate that it is otherwise statistically insignificant. The analysis also noted a positive relationship between board independence and ROE (β=0.0394; σ = 0.119). This indicates that an increase in non-executive directors leads to a better return on a firm's investment, although this finding is insignificant statistically. The study also

found a positive link between CEO duality and ROE, but it was again insignificant; yet, it did indicate that a dual leadership structure boosts performance, which is in line with the expectations of stewardship theory (Dalton et al., 2007). The study therefore did not find any contribution from corporate governance mechanisms and firm performance for FTSE 350 non-financial firms in the UK when ROE was the dependent variable. Therefore, the study failed to accept all its hypotheses.

4.6 Relationships between Corporate Governance Variables and the Q Ratio

4.6.1 Hausman tests

In Table 12 below, the results from the analysis depict $\chi\_3\hat{}2$ of 2.14 and a *p*-value of 0.9066, which is statistically insignificant at the 5% level. This implies that a random effect model is preferable to a fixed effect model.

Table 12 Hausman Test for the Q Ratio (Tobin's Q)

Variables	FE	RE	Difference	Standard errors
BI	-0.0155	-0.0337	0.0182	0.0402
LNBS	7.5416	6.8840	0.6576	1.4404
CEODUALITY	58.773	57.404	1.3688	1.7585
FIRMGRWTH	-0.0110	-0.014	0.0031	0.0033
LNFIRMSIZE	5.4285	5.1385	0.2900	0.4656
LEV	0.0017	0.0022	-0.0004	0.0176

Source: Authors Calculation

Note: 2.14 Prob>chi2 = 0.9066

4.6.2 Regression Analysis with the Q Ratio (Tobin's Q) as the Dependent Variable

Table 13 presents the statistical findings of the OLS regression when Q Ratio (Tobin's Q) was taken as the proxy for the financial performance. When the Q Ratio (Tobin's Q) that is, long-run financial strength was taken as the dependent variable (Siddiqui, 2015), the analysis showed CEODUAL to be a statistically significant variable at the 1% significance level (β= 0.5740; σ =0.0) i.e., if the CEO duality leadership structure increases by 1%, then firm performance increases by 5.7%. This finding is in consonance with the proposed hypothesis, which anticipated a statistically significant link between CEODUAL and firm performance. Therefore, the study accepts the proposed hypothesis and posits that a CEO duality leadership structure benefits financial performance when the Q Ratio is used as a measure for financial performance, i.e., dependent variable. The outcome of the regression analysis presented in Table 13 also showed that the Q Ratio was positively affected by the size of the board.

Table 13 Regression Analysis with the Q Ratio (Tobin's Q) as the Dependent Variable

Variables	Coefficients	T-Stats	P-value
BI	-0.033	-0.13	0.896
LNBS	6.884	0.284	0.284
CEODUAL	57.404	3.72	0.000***
FIRMGRWTH	-0.014	-0.72	0.474
LNFIRMSIZE	5.138	1.56	0.118
LEV	0.002	0.07	0.947
CONS	340.427	5.81	0.000 **
R^2	0.0006		
Prob>F	0.0036		

Source: Authors Calculation

Note: *, **, *** denotes statistical significance level at 10%, 5% and 1%, respectively.

5. Discussion of Results

5.1 The Board Size and Performance of the Firm

Following agency theory (Jensen, 1976), the underlying conception was that larger board sizes are more difficult to manage, making it difficult to reach conclusions with regard to the operations of the firm, which can in turn promote conflicts and inhibit financial performance (Yermack, 1996). When applying all three models, the study found that larger board sizes facilitate firm performance. This is in line with stewardship theory, which suggests that large board sizes combine a wealth of knowledge, expertise, diversity and experience, which is essential to effective decision making and hence performance (Dalton & Dalton, 2011). Moreover, it is easier to expropriate the wealth of CEOs, as fewer board directors are occupied by decision making and thus may not have the requisite time for other monitoring activities (Dalton & Dalton, 2005). The study also contrasts with Jensen (1983), who argued that the average number of board members should be eight to optimize decision making. However, the study finds an insignificant relationship across all three models, where ROA, ROE and Tobin's Q are used to indicate financial performance. These findings are in consonance with the results reported by Akbar et al. (2016), as well as those from Mura et al. (2015)., who explored board size as a measure of corporate governance indices on the performance of firms in the UK and found no statistically significant link between them. Therefore, this study rejects the proposed null hypothesis that board size has a statistically significant impact on the financial performance of firms.

5.2 Board Independence and the Financial Performance of the Firm

The underlying premise is that independent directors typically have an objective mind and thereby contribute to an increase in stakeholders' wealth (Jensen, 1993). However, the data analysis conducted in this study suggests that board independence has a statistically insignificant impact on the financial performance of firms, in all three models or when using either econometric technique. These relationships are, however, positive when ROA and ROE are dependent variables, and negative when the Q Ratio is used as a dependent variable. This means that non-executive directors can improve efficiency in decision making with regard to the operational and investment decisions of the firm. These may become ineffective when decisions about long-run financial strength are required, e.g., regarding market capitalization

or the generation of shares. All the proposed regression models showed that the relationships were insignificant; hence, this study failed to accept the proposed hypothesis that an independent board leads to better financial performance. This finding confirms the results reported by Mura (2007), Akbar et al. (2016) and Guest (2009). For instance, Akbar et al. (2016) explained that although a UK governance code exists, it is not necessarily applicable to, or entrenched in, UK firms, and any firm that does not adhere to its practices is usually required to explain why. This helps to elucidate why independent board members might not be effective decision makers, with consequences that could reflect on the firm's balance sheet.

5.3 An Insignificant Impact of CEO Duality on the Financial Performance of the Firm

This study adopted the propositions of agency theory as set out by Jensen (1993); i.e., that duality in the CEO leadership structure is likely to prove detrimental to the success of a firm as it hinders the board's ability to monitor and control managers' excesses and resultant agency costs. The regression analysis showed that in all three regression models, CEO duality positively influenced financial performance; however, the relationship was statistically insignificant. This means that the study failed to accept the hypothesis that CEO duality has a statistically significant impact on the financial performance of a firm. A study of 435 non-financial UK firms conducted by Akbar et al. (2016) corroborates these findings. The study also survived robustness tests, as three measures of firm performance were introduced into the model and a different econometric measure was tested (GMM). The study noted a positive effect of CEO duality on operating performance when the ratio of non-executive directors accounted for almost one-half of all board members, at 44%, which corresponds to the findings of Cheng (2008). This result is not significant; however, when measured against the long-run financial strength of the firm (i.e., the Q Ratio), it becomes statistically significant. This clearly implies that merging the board's chairperson and the CEO in a single individual exudes power, creating an interdependence that enhances the board's capacity to excel and also improves monitoring. In other words, a powerful CEO improves a board's capacity to extend valuable resources to benefit the firm, to communicate the information necessary to enhance the financial strength of the firm, and to gain a competitive advantage by boosting firm performance.

The coefficients estimated in the analysis of sample data, i.e., 230 non-financial firms listed on the FTSE 350, indicate that the selected corporate governance factors have a statistically insignificant impact on performance. The exception to this is CEO duality, which was statistically significant when the Q Ratio was used as the dependent variable; and firm growth, when ROA was used as the dependent variable. However, these variables were statistically insignificant when GMM was used in both one-step (Arellano & Bond, 1991) and two-step estimation techniques (Brundell & Bond, 1998). The main findings of the analysis from both the panel OLS and the GMM techniques were as follows:

a) Board size had a statistically insignificant influence on the sample firms' financial performance.
b) Board independence had a statistically insignificant impact on the sample firms' financial performance.
c) CEO duality had a statistically significant positive impact on the Q Ratio (i.e., Tobin's Q) and Tobin's Q in OLS regression analysis, but a statistically insignificant impact in GMM analysis.
d) Firm size had a statistically insignificant influence on the sample firms' financial performance.
e) Leverage had a statistically insignificant impact on the sample firms' financial performance.
f) Firm growth had a statistically insignificant impact on the sample firms' financial

performance.

6. Conclusion

This paper presented a quantitative analysis of data from sample firms to shed light on the influence of some corporate governance factors on financial performance, as used in previously published studies. The sample included panel data for 230 non-financial firms, for a period of five years (2014–2018). Although analysis from the literature supports the contribution of corporate governance to financial performance, the empirical evidence confirming this link is inconclusive, as there are various relevant theoretical propositions. In seeking to close the gap in the empirical literature, the researcher assessed three corporate governance factors and drew on agency theory when constructing the hypotheses.

In this study, three measures of financial performance – Return on Equity (ROE), Return on Assets (ROA) and the Q Ratio – were used as dependent variables; while board size, board independence and CEO duality, as factors of corporate governance practices, were selected as independent variables. The study also used leverage, firm size and firm growth as control variables because these factors could potentially influence a firm's financial performance. Hausman tests were used to determine the model for the coefficients. The model in which ROA was the dependent variable followed a fixed effect model, while ROE and Tobin's Q followed a random effect model.

The analysis began with ordinary least squares (OLS) regression for panel data to estimate the coefficients. The analysis here showed that statistically significant effects of the selected corporate governance factors on the financial performance of firms in all three models were absent with the exception of CEO duality, where the Q Ratio (Tobin's Q) was the dependent variable, and firm growth, where ROA was the dependent variable. However, these variables do not correlate with a priori expectations. The study also controlled for possible regression bias that might have arisen within the dataset, such as simultaneity, as well as endogeneity issues often associated with growth models by using GMM techniques for robust and vector correction error estimates. The empirical evidence from these estimation techniques also revealed no statistically significant contribution from corporate governance factors or the financial performance of a firm. Potential explanations relating to the statistically insignificant contribution have been linked to arguments by Akbar et al. (2016), who argued that positive links revealed elsewhere could be explained by the presence of endogeneity. According to the findings of other studies, there is a chance that the link between corporate governance compliance and performance is caused by changes in internal business characteristics. Similarly, for non- financial UK firms, corporate governance practices are not compulsory, although they are expected to guide firms' managerial practices. Therefore, compared to the results of earlier studies in this field that have been published, the conclusions of this study are quite unique and robust.

In conclusion, this study found that adhering to corporate governance mechanisms does not contribute to either the operational success or financial performance of a firm. These findings are robust and were cross-checked to overcome endogeneity issues and regression bias present within the data. In light of the data analysis, the study contends that variations in an organization's level of performance could impact its level of compliance with corporate governance codes among UK firms. These findings also raise questions as to the efficacy of the theories and assumptions underlying the regulations. For instance, agency theory states that a reduction in agency costs through the use of corporate governance mechanisms will influence firm performance, and yet the empirical analysis conducted in this study does not support this assertion. The findings also question the importance of enacting more stringent regulations

within financial markets in the aftermath of the global financial crises of 2007. This study therefore follows the assertions made by Akbar et al. (2016) and Cloke (2013), who reported the absence of a link between corporate governance and financial performance.

The overall results are consistent with stewardship theory, which regards managers as stewards who take every step to safeguard the interests of the company's stakeholders. Although the study provides robust and comprehensive evidence of the relationship between selected corporate governance factors and the financial performance of non-financial firms from the FTSE 350, questions remain unanswered that could usefully be introduced and explored in future studies. For instance: What is the ideal average number of board members needed to boost performance? What are the appropriate channels with which non-executive directors can facilitate performance? Do the characteristics of board members, such as the director's ethnicity, age, level of education, proximity to the firm's headquarters and directorial incentives, also affect directors' monitoring and decision-making capacity, and hence the level of firm performance?

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