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## **Non-compliance, board structures and the performance of financial firms during crisis:**

### **UK Evidence**

#### **Abstract**

This paper examines the effectiveness of internal corporate governance mechanisms for improving the performance of financial firms in the UK. The research is first of its kind to look into the relationship between corporate governance and performance of financial firms in the UK before and during the financial crisis. Using Generalised Methods of Moments (GMM) estimates that control for dynamic endogeneity, this study shows that firm performance as measured by Total Shareholder Returns (TSR) and Return on Equity (ROE) is negatively associated with the level of non-compliance with the UK Corporate Governance Code. The study also finds that having higher number of internal controls is most effective monitoring mechanism and is positively associated with firm performance. However, board independence represented by the number of non-executive directors (NEDs) is the least effective monitoring mechanism and is negatively associated with the performance of firms. The study also shows that directors' share ownership is an effective incentive mechanism for aligning their interests with shareholders as it is positively associated with firm performance. However, the findings suggest that remuneration is negatively associated with performance. Finally, the study provides evidence which indicates that board size impact the performance of firms differently in different time periods. As proposed by agency theory the study provides evidence that shows the positive impact of effective monitoring and incentive alignment for performance. It also provides support for the resource dependence view that directors are a critical resource during difficult economic times.

**Key words:** Corporate governance; Non-compliance; internal controls; directors' share ownership ; independence; committees; GMM

## 1. Introduction

Agency theory predicts a positive relationship between firm-level governance mechanisms that enhance monitoring and align directors' interests with shareholders. Similarly, resource dependence theory predicts that any firm-level governance mechanisms that better connects a firm with its external environment could have positive impact on its performance. This research examines the relationship between firm-level corporate governance mechanisms and firm performance during a financial crisis. In this paper we contribute to the understanding of the importance of contextual factors on the impact of non-compliance with a prescribed corporate governance code on the performance of financial firms before and during a financial crisis. To do so, the paper investigates the impact of non-compliance with the UK Corporate Governance Code on firm performance. In addition to this, we also investigate the effectiveness of two key internal corporate governance mechanisms i.e. monitoring and directors' incentives for improving the performance of financial firms during two economically different time periods.

It has been widely accepted in the corporate governance literature that the separation of ownership and control in modern corporations gives rise to agency costs (Jensen and Meckling, 1976). It is argued that corporate governance enhances economic efficiency and protects the interests of an organisations' stakeholders (Kay, 1996). Existing corporate governance literature, based predominantly upon agency theory (Jensen and Meckling, 1976, Jensen and Murphy, 1990, Shleifer and Vishny, 1997) suggests that firm-level good corporate governance mechanisms enhance the value of firms in the normal times by effectively monitoring directors and aligning their interests with shareholders' interests. However, the validity of such claims in extraordinary economic conditions such as financial crisis and for different types of firms has been questioned recently (Judge, 2012, Van Essen et al., 2013).

Recent research identifies a number of factors that may influence the effectiveness of corporate governance prescriptions. These factors include national economic development (Chen et al., 2011), national institutions (Carney et al., 2011, Henrekson and Jakobsson, 2012, Renders and Gaeremynck, 2012), industry context (Chancharat et al., 2012), ownership structure (Desender et al., 2013) and firm's financial condition and stage in its life-cycle (Dowell et al., 2011).

The 2007–08 transatlantic credit crisis has prompted some scholars to argue that inadequacies in the corporate governance mechanisms of financial firms could be one of the most probable causes of the crisis (Gregoriou, 2009, Kirkpatrick, 2009). Muller-Kahle & Lewellyn (2011) present evidence that boards of directors failed to monitor executives and evaluate the risks they were taking. On the other hand, Conyon et al. (2011) argue that institutional failings in governing risk management, corporate governance standards, credit rating and financial reporting standards were to blame.

The 2007–08 crisis led to reviews of corporate governance standards around the world. For instance, in the UK Sir David Walker was asked by the British government to review corporate governance mechanisms in UK banks. The Walker review (2009) recommended substantial changes to the way the boards of banks and big financial institutions function in regards to corporate governance. Similarly, the Financial Reporting Council<sup>1</sup> (FRC) in the UK also revised the corporate governance code in 2010, 2012 and 2014 and issued a new corporate governance code for institutional investors called The UK Stewardship Code.

We contribute to the existing literature by providing a unique focus on the governance mechanisms and performance of UK financial firms before and during the crises. Firms in the financial sector

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<sup>1</sup> The Financial Reporting Council is the UK's independent regulator responsible for promoting high quality corporate governance and reporting.

are required to report their compliance with the UK Corporate Governance Code on the basis of 'comply or explain' in the same way as non-financial firms. However, no study so far has analysed the association between the level of compliance with the UK Corporate Governance Code and performance for financial sector. The recent financial crisis has highlighted that any problems in the financial sector could have devastating impact on other firms in various industries and indeed the whole economy of a country. Therefore, it is very important to understand the corporate governance mechanisms of financial firms and its association with performance.

Furthermore, the time period of the study is also unique, as it covers a relatively stable economic time period before the financial crisis which commenced in July 2007 (Aebi et al., 2012, Beltratti and Stulz, 2012, Fahlenbrach and Stulz, 2011) as well as a challenging and unstable time period when the financial crisis materialised. This provides an opportunity to analyse how non-compliance with the UK Corporate Governance Code is associated with firms' performance in two different time periods of economic activity.

Another contribution of the study comes from the use of Generalised Methods of Moments (GMM) approach to analyse the data. In a recent study, Wintoki et al. (2012) highlight that the mixed results in the governance-performance literature are attributed to using inappropriate statistical techniques. They argue that employing proper statistical tools (i.e. GMM) could produce more consistent results. Therefore, GMM has been used in this study to contribute to this debate.

Using a sample of 86 UK financial firms, which includes banks, insurance, real estate and financial services for the period 2003–2010, this study shows that firm performance is negatively associated with the level of non-compliance with the UK Corporate Governance Code. This result shows that financial firms that are compliant with a prescribed code of good corporate governance perform better than those that are non-compliant. The study also reports that a higher number of internal

controls within financial firms could be an effective monitoring tool as it is positively associated with firm performance both before as well as during the financial crisis.

Results also show that another key monitoring tool i.e. board independence is significantly negatively associated with performance and financial firms with a higher number of NEDs experienced a greater decline in their ROE during the crisis period as compared with their counterparts with a lower ratio of NEDs. This could indicate that increasing the number of NEDs in financial firms is not an effective monitoring tool and is counterproductive. Furthermore, this negative relationship between board independence and performance is statistically stronger in the crisis period when compared with the pre-crisis period, indicating that context may affect the governance-performance relationship. It could also indicate that NEDs have less knowledge of the working of financial firms, they might not be able to provide strategic advice and monitor executive management when it is needed most during financial crisis (Adams, 2012).

Another key finding of the study is that out of the two incentive mechanisms (directors' share ownership and remuneration), increasing directors' share ownership is more effective mechanisms as it is positively associated with performance. Remuneration on the other hand, is negatively associated with the performance of financial firms and could indicate that it is not an effective governance mechanisms to align directors' interest with shareholders' interests.

Results of the study also show that in the case of board size there is evidence, which indicates that corporate governance mechanisms impact the performance of firms differently in the pre-crisis and crisis times. This finding contributes to the growing body of literature that questions the universality of corporate governance prescriptions (Aguilera et al., 2008, Desender et al., 2013, Dowell et al., 2011, Judge, 2012, Van Essen et al., 2013).

The paper is organised as follows: the next section outlines the existing literature on corporate governance indices and individual corporate governance mechanisms and presents the testable hypotheses of the study. Following that the data used and methodology adopted are discussed. The fourth Section outlines the results and discussion and the final section concludes the paper.

## **2. Literature review and hypotheses development**

### **Theoretical link between governance and performance**

In the existing literature the link between corporate governance and performance can be explained with the help of three theories i.e. agency theory, stewardship theory and resource dependence theory. The problems that arise from the separation of ownership and control in modern day organisations can be traced back to as early as 1776, when (Smith, 1776) highlighted the potential conflicts of interest between shareholders and managers in joint stock companies. However, it was not until late 20<sup>th</sup> century when Jensen and Meckling (1976) developed a theory outlining the potential issues arising from the separation of ownership and control. Since then agency theory has been the most commonly used theoretical framework to analyse the governance-performance relationship.

Agency theory assumes that both parties (i.e. owners and managers) in the agency relationship are wealth maximisers, they have different attitudes towards risk and they have different goals (Jensen and Meckling, 1976). This conflict of interest between owners (who own the company) and managers or directors (who control the company) leads to agency costs, which could include, the costs arising from inefficient use of resources, monitoring costs incurred by owners, investment in risky projects, risk averse behaviour of directors or business resources being used by directors for personal gains (Jensen and Meckling, 1976).

Hart (1995) argues that the transaction costs are such that these agency costs cannot be dealt with through contracts. Furthermore, in the case of dispersed ownership, small shareholders lack motivation and resources to actively monitor directors (Macey and O'Hara, 2003). As directors have control over the free cash flows of a firm, corporate governance mechanisms are needed to monitor directors so that they are not risk averse and self-serving, to make them accountable and to make sure that the free cash flows are returned to shareholders (Shleifer and Vishny, 1997). The increased monitoring and accountability will lead to efficient use of organisational resources and will be translated into improved profitability (Jensen, 1986). Furthermore, based on agency theory it is assumed that strong internal corporate governance mechanisms will lead to a decrease in agency costs, which will lead to lower premiums being charged by the providers of capital. Therefore, leading to lower cost of capital (Drobetz et al., 2004).

Based on the assumptions of agency theory, it can be argued that better corporate governance may be linked to, efficient use of resources (profitability), long term success and better equipped to face difficult times such as financial crisis, increased share price and lower risk. Irrespective of the economic conditions, firms with strong internal corporate governance mechanisms should perform better than firms with weak internal corporate governance mechanisms.

Agency theory assumes that directors are more inclined to work for their self-interests and proper monitoring and incentive mechanisms should be in place to align their interests with shareholders. On the other hand, stewardship theory assumes that executives (agents) are trustworthy individuals and will pursue organisational interests even when such interests are in conflict with their self-interest (Donaldson, 1990, Donaldson and Davis, 1991). Furthermore, stewardship theory assumes that competitive internal and external market discipline, coupled with the fear of damaging their future managerial capital, ensures that agency costs are minimised. In addition to this, stewardship



theory assumes that the executive directors know the company very well and have superior formal and informal knowledge about the firm. Therefore, they are in a good position to make better decisions for the company (Donaldson and Davis, 1991). Consequently, the proponents of stewardship theory argue that improved organisational performance can be achieved by governance mechanisms that encourage collaboration and trust (Nicholson and Kiel, 2007).

Another theory which demonstrates why internal corporate governance mechanisms could affect firm performance is the resource dependence theory. This theory assumes that corporate governance mechanisms such as boards of directors are not only necessary for monitoring, but also serve as a critical link between the firm and all the essential resources it needs for successful operations (Pfeffer, 1972, Selznick, 1966). Boards of directors link organisations to external resources and are mechanisms for managing external dependencies as well as reducing environmental uncertainties which organisations may be faced with (Pfeffer and Salancik, 1978).

Resource dependence theory assumes that directors could be an important resource for the firm in a number of ways. First, boards of directors bring experience, knowledge and independence (i.e. in the case of NEDs) to the firm. Second, they can bring reputation and critical business contacts to the firm (Haniffa and Hudaib, 2006). Third, boards of directors also provide access to businesses/political elite, information and capital (Nicholson and Kiel, 2007). Finally, boards of directors link organisations to the external environment and important stakeholders such as creditors, suppliers, competitors, and customers (Nicholson and Kiel, 2007). This link to external resources could have positive effects on the performance of firms.

In context of this study, agency and resource dependence theories seem appropriate frameworks to investigate the relationship between internal corporate governance mechanisms and

performance. This is because the UK Corporate Governance Code clearly states that the main purpose of the Code is to improve governance that will lead to better performance.

*Good corporate governance should contribute to better company performance by helping a board discharge its duties in the best interests of shareholders; if it is ignored, the consequence may well be vulnerability or poor performance. Good governance should facilitate efficient, effective and entrepreneurial management that can deliver shareholder value over the longer term..(FRC, 2008, p.1)*

The above quote clearly shows that the FRC is of the view that corporate governance mechanisms are needed to control the problems arising from the separation of ownership and control. In line with this most of the good corporate governance practices recommended by the Code aim to improve monitoring, accountability and transparency.

The peculiarities of financial institutions such as their opaqueness, heavy regulation and tendency to being subject to government bailouts all mean that a greater understanding about factors linked to their effective corporate governance is very important. As banks and other financial institutions are subject to government bailouts it means that shareholders are less engaged in monitoring activities and directors are encouraged to engage in more risky activities (Staikouras et al., 2007). Furthermore, intense government regulation weakens other external governance mechanisms such as, hostile takeovers, competition etc. (Levine, 2004). As a result, internal governance mechanisms such as board structure and disciplining managerial behaviour might help in mitigating the agency problems in banks (Andres and Vallelado, 2008, Pathan, 2009, Staikouras et al., 2007).

In line with this, Zahra and Pearce (1989) report that the effectiveness of the board of directors mainly depends on the corporate board structure. Furthermore, Adams, Hermalin and Weisbach (2010) document that board size, independence and executive compensation are of a particular

importance in mitigating the agency problems in financial institutions whereas, Belghitar and Clark (2015) show that monitoring mechanisms such as, board size and board composition play an effective role in reducing agency costs in large firms. In addition, Barakat and Hussainey (2013) argue that by taking outside directors on their corporate boards European banks could enhance their own risk disclosure mechanisms.

In the context of this study corporate governance quality of financial firms will be assessed using two types of measures. The first measure takes into account the level of compliance with the provisions of the UK Corporate Governance Code. High level of compliance with the Code would indicate strong internal corporate governance mechanisms. The second proxy takes into account a number of individual corporate governance mechanisms related to monitoring (NEDs, board committees, internal controls and board size) and incentives (compensation and share ownership). The performance of financial firms is measured by two proxies TSR (total shareholder returns), and ROE (return on equity). TSR is calculated as the sum of capital gains and dividend yields (Shabbir and Padgett, 2008). The return on equity (ROE) is calculated as net income (net profit after tax) divided by the book value of equity.

Literature on each of the governance measures is reviewed in the next section.

### **Corporate governance indices and performance**

Indices have been developed by commercial organisations as well as researchers and have been widely used to study the link between internal corporate governance and the performance of firms (see for example, Aggarwal et al., 2011, Brown and Caylor, 2006, Farag et al., 2014, Gompers et al., 2003, Gupta et al., 2013, Mallin and Ow-Yong, 2012). The main advantage of using a composite measure is that it can provide a holistic picture and more information about the corporate governance of a firm (Bikiris and Doukakis, 2011). Based on the agency theory a key

assumption in using these indices is that a higher level of compliance with a prescribed code of corporate governance will reflect better monitoring and control mechanisms to safeguard the interest of shareholders. Therefore, a positive relationship between the level of compliance and corporate performance (both operating and stock market) can be expected.

However, the empirical evidence in this regard is mixed. There are a number of US based studies that report a positive relationship between corporate governance indices and performance (Aggarwal et al., 2010, Bebchuk et al., 2009, Bruno and Claessens, 2010, Cremers and Nair, 2005, Gillan et al., 2004, Gompers et al., 2003). On the other hand, some US based studies have challenged the validity of these studies and report that there is no relationship between corporate governance indices and performance (Bhagat et al., 2008, Core et al., 2006).

Similarly, mixed results are also reported in the European context. Bauer et al. (2004) use the Deminor governance ratings for a sample of 123 European companies (FTSE Europstar 300) for the period 2000 to 2001 and report a negative relationship between compliance and the performance of firms. On the other hand, using the same index as employed by Bauer et al. (2004) but using return on assets (ROA) and net profit margin (NPM) to measure performance, Vander Bauwhede (2009) reports a positive relationship between compliance and ROA. Similarly, using a compliance index for a sample of Swiss firms Beiner et al. (2006) also report a positive relationship between the level of compliance and firm performance measured by Tobin's Q. These studies highlight that results are affected by proxy for firm performance and the challenge it poses for researchers as using a different measure of performance could produce different results.

In the UK context, Shabbir & Padgett (2008) report a statistically significant and positive relationship between compliance with the Code and firms' market value measured by total shareholder returns (TSR) in a study of 122 non-financial FTSE 350 companies for 2000-2003

period. Similarly, Dahya & McConnel (2007) study non-financial listed firms during the period 1989–1996 and find a positive relationship between compliance and performance. More recently Farag et al. (2014) studied a sample of UK firms listed on the Alternative Investment Market (AIM) and report a positive relationship between corporate governance characteristics and financial performance.

Dahya & McConnel (2007) and Shabbir & Padgett (2008) both analyse only the non-financial sector, while Farag et al. (2014) only focus on the AIM firms. In addition, they also study the association between compliance and performance in a relatively stable economic time period. To the best of our knowledge, no study has so far analysed the association between the level of non-compliance with the UK Corporate Governance Code and performance for financial firms in the UK and also during a financial crisis. We test the following hypothesis for the relationship between non-compliance and performance.

*H1: There is a negative relationship between the level of non-compliance with the UK Corporate Governance Code and the performance of financial firms.*

### **Board structures and performance of financial firms**

To get a more holistic picture of the corporate governance structures of the sample firms and to make the study more comparable with the existing literature, we also include a number of individual corporate governance mechanisms related to monitoring and directors' incentives. Effective monitoring and directors' incentives which will align the interests of directors and shareholders are considered to be essential for minimising agency costs and improving firm performance (Bozec, 2005, Jensen and Meckling, 1976, Jensen, 1993). Therefore, the following individual corporate governance mechanisms are included in the study: (1) board independence, (2) internal control systems, (3) extra board committees, (4) board size, (5) directors' share

ownership and (6) remuneration. The first four mechanisms could be considered as related to monitoring of directors while the last two are related to incentives (used for aligning directors' interests with shareholders' interests).

### **Directors monitoring and performance**

Agency theory predicts that one of the key mechanisms to overcome agency problems is effective monitoring of directors (Jensen and Meckling, 1976). Effective monitoring of directors would ensure that firms' resources are used efficiently which will lead to improved firm performance (Shleifer and Vishny, 1997). There is empirical evidence that shows the positive impact of effective monitoring mechanisms on performance (see for example, Chhaochharia and Grinstein, 2007, Jackling and Johl, 2009). In the UK context for non-financial firms, Weir et al. (2002) study 311 listed firms for the period 1994 to 1996 and report a positive relationship between presence of NEDs and the performance of firms measured by Tobin's Q. Similarly, Dahya & McConnell (2005) studying a sample of 700 UK listed firms for the period 1988–1999 report that the appointment of outside directors lead to higher stock returns as well as better decision making by board of directors. In addition, the positive impact of the presence of board committees on the performance of firms has also been documented (Chen and Zhou, 2007, Chen and Lee, 2008, Sun and Cahan, 2009, Xie et al., 2003).

The UK Corporate Governance Code requires every FTSE 350 firm to put in place a system of internal controls and carry out an annual review of the system of internal controls. A greater number of internal controls within an organisation will indicate that it has strong mechanisms to manage risks and that there is greater accountability and improved monitoring. Therefore, firms with more internal controls in place should demonstrate better performance when compared with their counterparts with fewer internal controls. Some studies have analysed the association

between internal controls and accruals (Doyle et al., 2007), earning quality (Ashbaugh-Skaife et al., 2009) and CEO compensation (Hoitash et al., 2012). However, no study so far has analysed the impact of internal control systems on firm performance. Therefore, this is one of unique contributions of this study in this area.

The link between board size and firm performance has been extensively researched in the existing literature. However, the results are inconclusive with some studies showing a negative relationship (Huang et al., 2009, Jensen, 1993, Lipton and Lorsch, 1992, Yermack, 1996) and others showing a positive relationship (Chaganti et al., 1985, Coles et al., 2008, John and Senbet, 1998, Van den Berghe and Levrau, 2004). Based on the resource dependence theory the proponents of the positive relationship between board size and performance argue that firms with large corporate boards will have greater diversity, skills, experience, and business contacts. Such firms will be better equipped to perform well in competitive environments and will have greater opportunity to acquire critical resources during crisis times (Haniffa and Hudaib, 2006, Mangena et al., 2012, Yawson, 2006). Furthermore, in the case of financial firms it has been documented that due to the complex business structure and big size of such firms a positive relationship between board size and performance could be expected (Aebi et al., 2012, Belkhir, 2009).

The above review of the literature shows that effective monitoring should lead to improved performance. Therefore, we test the following hypothesis:

*H2: There is a positive relationship between effective monitoring (represented by board independence, higher number of internal controls, extra board committees and large boards) and the performance of financial firms.*

## **Directors incentives and performance**

Agency theory predicts that providing incentives to directors will motivate them, which could reduce the conflict of interest between directors and shareholders and will lead to improved performance (Jensen and Meckling, 1976). The two commonly used incentive mechanisms to reduce agency problems are directors' share ownership and performance based remuneration.

Agency theory suggests that increasing directors' share ownership helps to reduce agency problems and will positively impact firm performance (Fama, 1980, Florackis, 2005, Florackis and Ozkan, 2008, Jensen and Meckling, 1976, Mangena et al., 2012). This positive relationship between share ownership and performance is achieved by aligning the interests of directors with shareholders (Jensen and Meckling, 1976). Similarly, the positive impact of remuneration on performance has also been documented in the existing literature (Bayless, 2009, Benito and Conyon, 1999, Florackis, 2005, Ozkan, 2011).

The above review of the literature shows that agency theory predicts a positive relationship between directors' incentives and firm performance. Therefore, we test the following hypothesis:

*H3: There is a positive relationship between directors' incentives (represented by directors' share ownership and remuneration) and the performance of financial firms.*

## **3. Data and methodology**

### **Model**

This research covers a period of eight years for 86 firms. Therefore, the data is panel data which has the benefit of controlling for the effect of variables which cannot be observed or measured (e.g. director personality, management quality and corporate strategy etc.) (Gujarati, 2003). However, as these unobserved effects cannot be measured, it leads to correlation between independent variables and error term in the case of panel data and violates one of the basic



assumptions of ordinary least square regression (OLS). Hence, using OLS will produce inconsistent results (Wooldridge, 2002). In addition to this, the empirical econometric models in finance research often encounter issue of endogeneity (Schultz et al., 2010). Wintoki et al. (2012) report at least three sources of endogeneity in the corporate governance–performance relation models. These sources of endogeneity are: unobservable heterogeneity, simultaneity and dynamic endogeneity (Wintoki et al., 2012). The presence of at least one form of endogeneity leads to inconsistent and inefficient estimates and unreliable inferences (Roberts and Whited, 2011, Schultz et al., 2010).

There are a number of methods to address endogeneity. For example, inclusion of instrumental variables, fixed effects models and generalised methods of moments (GMM) estimates. In order for a variable to be used as an instrumental variable, Wooldridge (2002) states that two conditions must be satisfied. First, the instrumental variable must be uncorrelated with the error term of the model. Second, it should be partially correlated with one of the endogenous variables. However, Wooldridge (2002) further states that it is extremely difficult to find an instrumental variable which satisfies these two conditions making this approach difficult to implement.

Fixed effects models can potentially eliminate the bias arising from unobservable heterogeneity (Wintoki et al., 2012). However, Schultz et al. (2010) argue that fixed effects panel specifications only produce consistent parameter estimates under the assumption of strict exogeneity. However, as discussed above, it has been widely documented that the governance–performance relation is subject to simultaneity and dynamic endogeneity (see for example, Coles et al., 2008, and, Welch, 2003). This simultaneity and dynamic endogeneity violate the strict exogeneity assumption of the fixed effects panel estimation procedure, as it results in the regressors being contemporaneously correlated with the errors (Schultz et al., 2010). To test for the presence of endogeneity we used

the standard Durbin-Wu-Hausman (DWH) test (Durbin, 1954, Hausman, 1978, Wu, 1973). The results are reported in Table 1 which shows that apart from Capital and Beta all of the variables are endogenous. Therefore, using OLS or fixed effects would produce inconsistent estimates.

**Table 1 DWH test results**

Independent and control variables	F-test	p-value
NCI	4.34	0.037
Board Independence	77.85	0.000
Remuneration	9.36	0.002
Board Size	4.60	0.032
Directors' share ownership	4.17	0.014
Extra Committees	8.44	0.003
Internal Controls	17.61	0.000
Leverage	10.70	0.001
Firm Size	8.08	0.005
Capital	0.06	0.808
Beta	0.34	0.559
Liquidity	3.68	0.055

To overcome these problems we follow Wintoki et al. (2012) and use a dynamic GMM estimator, as proposed by Arellano & Bover (Arellano and Bover, 1995) and Blundell & Bond (1998). GMM is designed for panel data where the time period is short (i.e.  $\leq 10$ ) and many individuals (whether countries, firms, people or in the current research, financial firms); with independent variables that are not strictly exogenous (Roodman, 2009).

Following Ammann et al. (2011) the model is implemented in three steps: first, the regression equation is rewritten as a dynamic model that includes lagged performance as an explanatory variable. Second, we take first differences of all variables which control for unobservable heterogeneity and eliminate a potential omitted variables bias. Third, we estimate the model by GMM and use lagged values of the governance variables and performance as instruments. Ammann et al. (2011) suggest using the lagged variables as instruments for the present values of these variables, as doing so controls for potential simultaneity and reverse causality. Furthermore,

an additional advantage of this approach is that GMM estimates are robust to dynamic endogeneity, firm fixed effects, endogenous regressors, heteroscedasticity and serial correlation (Schultz et al., 2010).

Following Kaczmarek et al. (2012) and Wintoki et al. (2012) we estimate the following model:

$$Y_{it} = \alpha Y_{i,t-1} + \beta_1 NCI_{it} + \beta_2 Monitoring_{it} + \beta_3 Incentives_{it} + \beta_4 Control_{it} + u_i + \omega_{it} \quad (1)$$

Where  $Y_{it}$  is the dependent variables used in the study (i.e. firm performance) for  $i = 1 \dots N$  financial firms across  $t = 2003, 2004, \dots, 2010$  years. *Monitoring* represents the corporate governance variables related to monitoring (Board independence, extra board committees, internal control systems and board size). *Incentives* represent corporate governance mechanisms in relation to directors' incentives (directors' share ownership and remuneration), whereas *Control* represents a number of control variables used. Finally,  $\varepsilon_{it} = u_i + \omega_{it}$  is the standard fixed/random effects decomposition of the error term.

Four models are run to analyse the hypothesised relationship between governance and performance. First, the relationship between the various governance mechanisms and performance is analysed in the pre-crisis period (2003–2006) using one model each for both dependent variables. Second, the same process is repeated for each of the dependent variables during the crisis period (2007–2010) using another two models.

The sample consists of 86 financial firms<sup>2</sup> listed on FTSE 350 for the period 2003–2010, that had been listed for at least three years before 2007. Comparison between the pre-2007 and post-2007 time periods requires that the sample includes the same set of companies in both periods for meaningful comparison.

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<sup>2</sup> Financial firms are all those firms for which Industry Classification Benchmark (ICB) is 8000. It includes banks, insurance companies, real estate and financial services.

Data for this study is collected from four sources; Morningstar Company Intelligence (previously known as Hemscott Guru Database), companies' annual reports, DataStream, and Companies House. Data for non-compliance with the UK Corporate Governance Code were manually collected from the annual reports of each company, which were mostly downloaded from Morningstar Company Intelligence or otherwise downloaded from companies' websites. Data for other corporate governance variables i.e. board size, board independence, remuneration, and directors' share ownership were collected from Morningstar Company Intelligence and the financial data were collected from DataStream. For those companies that were delisted at some point in the period after 2007 data was not available with Morningstar Company Intelligence or on their websites. Therefore, in this case data was gathered from Companies House.

### **Dependent variables**

The dependent variables in the analysis include firm performance which is measured by two proxies TSR (total shareholder returns), and ROE (return on equity). TSR is calculated as the sum of capital gains and dividend yields (Shabbir and Padgett, 2008). The return on equity (ROE) is calculated as net income (net profit after tax) divided by the book value of equity.

### **Independent variables**

#### **Non-compliance index (NCI)**

The non-compliance index (NCI) is the main explanatory variable of the study. The index is constructed by assigning one point for each occurrence of non-compliance with the UK Corporate Governance Code. For example, the UK Corporate Governance Code recommends that the role of chairman and CEO should not be performed by one individual. So if a company complies with this provision a value of 0 is assigned and if not a value of 1 is assigned. This method of constructing the corporate governance index is consistent with the existing literature (for example, Bauer et al.,

2004, Bebchuk et al., 2009, Bhagat and Bolton, 2008, Brown and Caylor, 2006, Farag et al., 2014, Gompers et al., 2003, Klapper and Love, 2004, Mallin and Ow-Yong, 2012, Shabbir and Padgett, 2008).

The non-compliance index is based on the 2003, 2006 and 2008 versions of the UK Corporate Governance Code. A total of 22 provisions are included in the index, so the non-compliance score for each company could vary between 0 (fully compliant) and 22 (fully non-compliant).

**Table 2 Definitions for dependent, independent and control variables used in the study**

<b>Variable name</b>	<b>Definition</b>
<b>Dependent variables</b>	
Total Shareholder Returns (TSR %)	The sum of capital gains and dividend yields.
Return on Equity (ROE %)	Net income divided by book value of equity.
<b>Independent variables</b>	
Non-compliance index (NCI)	A score ranging between 0 and 22. Showing the level of non-compliance with the UK Corporate Governance Code.
Board Size	The total number of directors on board.
Board Independence	The ratio of NEDs to total board size.
Directors' share ownership (%)	The total percentage of equity shares held by all board members.
Remuneration in £ million	The total remuneration paid to directors.
Extra committees	The number of extra committees in addition to audit, remuneration, and nomination committee.
Internal Controls	The number of internal control systems in place.
<b>Control variables</b>	
Liquidity	The ratio of a firm's current assets to current liabilities.
Capital Ratio (%)	The percentage of total equity to total assets.
Beta value	A measure of company riskiness.
Sales in £million	Natural log of total sales.
Leverage	The percentage of total debt to assets.

### **Control variables**

A number of control variables have been included in the empirical model of the study. We control for firms size because larger firms will have access to more resources and are likely to perform better during difficult economic times (Fama and French, 1992, Mitton, 2002, Vafeas and Theodorou, 1998, Van Essen et al., 2013, Weir et al., 2002). The natural log of total sales is used

as a proxy for firm size (Shabbir and Padgett, 2008). Availability of liquid resource could also have implications for firm performance, we therefore, control for liquidity (Hunter, 1982). Liquidity will be measured as the ratio of a firm's current assets (cash, inventory and receivables) to current liabilities (payable in the next 12 months). Corporate governance literature shows that the amount of capital available to a firm could have major implications for its performance, especially in crisis situations. Therefore, to capture the effects of capital on firm performance, the capital ratio defined as the ratio of total equity to total assets (Beltratti et al., 2009) will be used as a control variable in this study. Relative riskiness of a firm could also affect its financial performance, we therefore control for risk by using market beta (a measure of risk) as a control variable in the study (Bae et al., 2012, Beiner et al., 2006, Belkhir, 2009, Beltratti and Stulz, 2012, Welch, 2003). Finally, the level of debt financing could have implications for firm performance both in normal as well as in crisis times. Therefore, leverage defined as total debt to total assets (Weir et al., 2002) is also used as a control variable (Agrawal and Knoeber, 1996, Bevan and Danbolt, 2002, Bevan and Danbolt, 2004, Black and Kim, 2012, Black et al., 2012, Brav, 2009, Coles et al., 2012, Short and Keasey, 1999, Vander Bauwhede, 2009).

Table 3 outlines the descriptive statistics for all these variables. Table 3 shows that the average non-compliance index score over the period analysed was 3.57 and had a maximum value of 16.

**Table 3 Descriptive statistics for all variables**

<b>Variables</b>	<b>Observations<sup>3</sup></b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
TSR (%)	679	9.80	33.54	-94.96	181.37
ROE (%)	679	2.50	6.66	-36.10	32.50
NCI	679	3.57	2.96	0.00	16.00
Board independence	679	0.72	0.21	0.14	1.00
Board size	679	8.18	2.95	3.00	20.00
Directors' share ownership (%)	679	2.43	5.34	0.00	54.71
Remuneration (£million)	679	2.80	3.41	0.04	27.53
Extra committees	679	1.24	1.16	0.00	5.00
Internal controls	679	9.88	2.57	0.00	14.00
Beta	679	1.06	0.48	0.05	3.37
Liquidity	679	2.40	3.76	0.00	33.59
Leverage (%)	679	21.85	22.00	0.00	130.21
Sales (£million)	679	3.97	11.53	0.00	74.30
Capital (%)	679	57.86	39.57	-41.83	174.01

#### **4. Results and discussion**

To test for multicollinearity we use Variance Inflation Factors (VIF) and tolerance statistics, the results are reported in Table 4. As the maximum value for VIF is 1.56 and the lowest value for tolerance statistic is 0.62177 indicating no multicollinearity problem as all VIFs remain well below the commonly used threshold of 10 (Field, 2009). Similarly, the tolerance statistic for all variables is above the threshold of 0.10, which again gives us no reason to believe that multicollinearity is an issue (Field, 2009).

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<sup>3</sup> The total observations should have been 688 but two years data was missing for two companies, one year data was missing for another two companies and three years data was missing for one company. Therefore, the total observations add up to 679 (688 – 9).

**Table 4 Variance Inflation Factors and Tolerance Statistics (calculated by author)**

Independent and control variables	VIF	1/VIF
NCI	1.28	0.778495
Board Independence	1.14	0.875011
Remuneration	1.55	0.645824
Board Size	1.61	0.621877
Directors' share ownership	1.07	0.936005
Extra Committees	1.29	0.776662
Internal Controls	1.14	0.874994
Leverage	1.24	0.804459
Firm Size	1.25	0.797109
Capital	1.56	0.641907
Beta	1.05	0.950501
Liquidity	1.09	0.919612
Mean VIF	1.27	

As recommended by Arellano & Bond (1991) we also carry out two post specification tests following the GMM estimation. The first test is Hansen–Sargan J– test (Hansen, 1982, Sargan, 1958) for over-identifying restrictions. This test is used to check the validity of the moment conditions. The second test is of residual autocorrelation (AR), which is used to test that the second order autocorrelation is zero. Table 5 shows that the null hypothesis of valid restrictions cannot be rejected for all of the four models. Therefore, this implies that the instruments used in models are valid. Similarly, Table 5 also shows that there is no serial autocorrelation of second order (AR2) in any of the models.

### **Corporate governance and the performance of firms**

Table 5 provides the GMM regression results for the relationship between corporate governance variables and the two measures of firm performance for the pre-crisis and crisis period. As Table 5 shows, the main explanatory variable of the study the NCI is significantly negatively associated with both measures of performance. Table 5 also shows that as reflected by the coefficients the negative association between NCI and performance is stronger during the financial crisis period. Therefore, we accept **H1** which states that there is a negative relationship between the level of non-compliance with the UK Corporate Governance Code and the performance of financial firms.



This result supports the view that non-compliance with a prescribed code of good corporate governance could have negative implications for the performance of firms, and is consistent with (Bebchuk et al., 2009, Cremers and Nair, 2005, Farag et al., 2014, Gompers et al., 2003). Non-compliance with a prescribed code of good governance could indicate that such firms have weak monitoring and control mechanisms in place to control agency problems. Therefore, the agency problems could lead to a decrease in shareholders' wealth.

The sample period of the study includes an economic time period where financial firms around the world (including UK) faced extreme difficulties and such companies experienced poor performance. Therefore, it is possible that the decline in performance was a result of an external shock rather than non-compliance. However, it can be argued that even if that is the case decline in the performance of compliant firms should be less than those of non-compliant firms. This is because compliant firms are expected to have better governance and control mechanisms in place to face difficult times.

To this end we divide the sample into compliant and non-compliant firms on the basis of their NCI score and compare the percentage decrease in their TSR & ROE during the crisis period (2007–2010). We divide the sample into two groups 'Compliant firms' with an NCI score of less than 7<sup>4</sup> and 'Non-compliant firms' with an NCI of 7 or more. Results as shown in Panel A (Table 6), confirming that the percentage decrease in the ROE of the 'Non-compliant firms' is significantly higher than the decrease in the ROE of 'Compliant firms' during the crisis period.

With respect to UK studies this result supports Dahya & McConnell (2007) and can also be considered as consistent with (Arcot et al., 2010). Arcot et al. (2010), who study a sample of 245

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<sup>4</sup>Ideally 11 should have been chosen as this will indicate non-compliance with 50% or more provisions but only 2% firms had an NCI score of 11 or more. Therefore, a meaningful comparison was not possible. Furthermore, an NCI score of 7 is almost two times the sample mean NCI of 3.57, indicating a relatively higher level of non-compliance as compared with the other firms in the sample.

non-financial FTSE 350 firms over the period 1998–2004 show that the level of compliance with the UK Corporate Governance Code<sup>5</sup> has increased. The increase in the level of compliance with the Code as reported by Arcot et al. (2010) could indicate that over the years companies have realised the importance of compliance. This is because results of this research show that non-compliance is negatively associated with performance of financial firms.

Table 5 also shows that board independence is significantly negatively associated with both measures of performance. This finding does not support the hypothesised positive relationship between increased monitoring (represented by board independence) and performance. However, this finding is consistent with a number of recent studies that report a negative relationship between board independence and performance of financial firms (Adams, 2012, Aebi et al., 2012, Belkhir, 2009, Beltratti and Stulz, 2012, Erkens et al., 2012, Pathan, 2009, Van Essen et al., 2013). Furthermore, the coefficients for board independence and both measures of performance have increased substantially during the crisis period when compared with the pre-crisis period. Table 5 shows that the coefficients for TSR (-52.83), and ROE (-7.615) in the crisis period. On the other hand, Table 5 also shows that the coefficients for board independence during the pre-crisis period are TSR (-12.49) and ROE (-1.46). This could indicate that the negative impact of higher numbers of NEDs representation increases during a financial crisis and is consistent with the results reported by Van Essen et al. (2013).

To confirm that this negative impact is not the result of the financial crisis we divide the sample into two groups on the basis of NED ratio of 0.50<sup>6</sup>. A firm with a ratio of 0.50 or more is classified as ‘Higher NED ratio’ and a firm with a ratio of less than 0.50 is classified as ‘Lower NED ratio’.

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<sup>5</sup> Known as *Combined Code* at the time

<sup>6</sup> *Principle A 3.3 of the 2003 code states that except for smaller companies at least half of the board excluding the chairman should be independent non-executive directors. Therefore, 0.50 is a suitable ratio to distinguish between independent and non-independent boards.*

As reported in Panel B (Table 6) the percentage decrease in the performance of firms with 'Higher NED ratio' is significantly higher than those with a 'Lower NED ratio' in the crisis period, confirming the negative impact of financial crisis on performance is more severe in the financial firms with a higher number of NEDs.

There could be a number of explanations for the negative relationship between board independence and firm performance. Choi & Hasan (2005) argue that the managerial hegemony theory i.e. where the non-executive directors' dependency on top management, explains the negative relationship between the number of non-executive directors on a board and firm performance. Lack of adequate knowledge and information about the firm's business may also be responsible for this negative relationship (Adams, 2012, Vafeas and Theodorou, 1998). Simply increasing the number of NEDs may therefore not be sufficient for performance improvement.

Explaining the negative relationship between board independence and performance, Beltratti & Stulz (2012) argue that during the financial crisis, banks chose shareholder friendly boards (i.e. boards with higher number of NEDs) as they were exposed to more risks due to their strategies. It was the risky strategies of the banks, rather than the good governance mechanisms, which have led to poor performance during the crisis. However, it can be argued that if the banks performed poorly due to excessive risk taking and not due to the higher number of NEDs, then this could indicate that NEDs have failed to do their job (i.e. to monitor and challenge excessive risk taking). Therefore, increasing the representation of NEDs on boards could negatively affect firm performance. Similarly, Adams (2012) argues that as the NEDs have less knowledge of the working of the company, they might not be able to provide strategic advice or monitor executive management when it is needed most.

There is another explanation for the negative relationship between board independence and the performance of firms. Lipton & Lorsch (1992) argue that personal costs to directors fall in large boards, which gives rise to 'free riding'. This argument could also be extended to the NEDs, as in the case of poor firm performance, it is the executive directors who are held responsible. Therefore, the personal cost to NEDs is very minimal when their firm is not performing well. This means that NEDs will lack motivation to monitor executive directors and protect the interests of shareholders. Hence, increasing the number of NEDs on board will lead to increased costs without having any positive impact on the performance of firms.

Furthermore, Table 5 shows that another key monitoring tool the number of internal control systems in place within an organisation is positively associated with performance. This finding supports **H2** that there is a positive relationship between effective monitoring (in this case represented by the number of internal control systems) and the performance of financial firms. The finding related to internal controls is consistent with the findings of Ashbaugh-Skaife et al. (2009), who argue that firms with weak internal control systems are more likely to report new losses, miss quarterly analyst forecast and show a decrease in book-to-market ratio. This finding extends the literature on internal control systems as a monitoring tool to protect the interests of shareholders. This finding shows that as predicted by agency theory, internal control systems could minimise the conflict of interest between agents and principals, thus leading to improved firm performance. Therefore, this implies that in our sample those financial firms that had introduced more internal control systems performed better.

In addition, the results reveal that board size is positively associated with both measures of firm performance during the crisis period. Therefore, again supporting **H2** which states that effective

monitoring (in this case represented by board size) is positively associated with the performance of financial firms.

However, as reported in Table 5 board size is negatively associated with performance in the pre-crisis period. This could indicate that some corporate governance variables have different impact on the performance of firms during different time periods, because different governance mechanisms will be suitable for different time periods (Aguilera et al., 2008, Desender et al., 2013, Dowell et al., 2011, Judge, 2012, Van Essen et al., 2013). As reported by Van Essen et al. (2013) using the same set of governance variables for different contexts might not work. This finding would indicate that having larger boards during crisis time might be beneficial, as this would connect such a firm to key resources (Mangena et al., 2012).

Table 5 shows that as far as extra committees on board are concerned our results are statistically not significant for the pre-crisis period but the coefficient sign is negative for both measures of performance. During the crisis period, consistent with McKnight & Weir (2009) the relationship is significantly negative for ROE. This could indicate that increasing the number of board committees might be detrimental for firm performance during a financial crisis and is consistent with the view that board committees lead to more agency costs (McKnight and Weir, 2009).

Results show that of the two incentive mechanisms analysed in this study directors' share ownership could be considered as more effective for aligning their interests with shareholders. Table 5 shows that directors' share ownership is positively associated with firm performance in both time periods for both measures of performance. Consistent with agency theory this finding supports **H3** which states that there is a positive relationship between directors' incentives (in this case represented by directors' share ownership) and the performance of financial firms (Fama,

1980, Florackis, 2005, Florackis and Ozkan, 2008, Jensen and Meckling, 1976, Mangena et al., 2012).

On the other hand Table 5 shows that there is a negative relationship between remuneration and performance. This findings contradicts **H3** which states that there is a positive relationship between directors' incentives (in this case represented by remuneration) and the performance of financial firms. This finding shows that remuneration is not an effective tool to align directors' and shareholder's interest. Morck et al. (1988) and Denis et al. (2006) also report a negative relationship between remuneration and firm performance and argue that higher remuneration could be the result of weak internal corporate governance mechanisms within a firm. Similarly, explaining the negative relationship between executive compensation and firm performance, Cheng et al. (2015) argue that firms with high executive remuneration experienced poor performance during the financial crisis.

Table 5 shows that in terms of statistical significance the negative impact of remuneration on performance is more severe during the financial crisis as compared with the pre-crisis results. This result shows that those financial institutions that paid higher remunerations to their directors to align their interests with the interests of shareholders performed worse during the financial crisis and is consistent with (Fahlenbrach and Stulz, 2011, Van Essen et al., 2013).

Directors' share ownership and remuneration both are mechanisms which are expected to align directors' interests with shareholders. However, results of the study show that its impact on performance is not the same. The reason for this could be that the remuneration structures at these financial institutions encouraged a short term view and excessive risk taking. Indeed, Mehran et al. (2011) postulate a positive association between remuneration and risk taking in banks. Similarly, Cheng et al. (2015) show that compensation is higher at riskier firms. Therefore, for the

sample firms it could well be the case that higher remunerations were paid to directors that encouraged excessive risk taking but it did not translate to improved financial performance. In fact, the negative relationship between remuneration and performance is stronger in the crisis period when compared with the pre-crisis period. This could indicate that excessive risk taking behaviour could have led to poor performance during financial crisis. On the other hand, directors' incentives in the form of increased ownership in the firm would encourage directors to take a long term view and will improve performance of firms. Therefore, it could be argued that directors' share ownership is more effective mechanism to align directors' interests with shareholders.

As far the control variables are concerned results show that leverage as well as Beta are negatively associated with performance in the crisis period. This result also demonstrates that high leveraged and more risky firms underperformed during the crisis and is consistent with most of the existing literature (such as, Adams, 2012, Agrawal and Knoeber, 1996, Belkhir, 2009, Beltratti and Stulz, 2012, Short and Keasey, 1999, Weir et al., 2002).

**Table 5 Regression results for corporate governance and the performance of financial firms for the sample period 2003–2010**

VARIABLES	Pre-crisis (2003-2006)		During-crisis (2007–2010)	
	TSR	ROE	TSR	ROE
L.1	-0.474*** (0.0438)	-0.880*** (0.108)	-0.273*** (0.00535)	-0.165*** (0.0105)
L.2	- -	- -	-0.408*** (0.00675)	-0.777*** (0.00596)
NCI	-0.347 (0.435)	-0.457*** (0.134)	-1.645** (0.696)	-0.246*** (0.0898)
Board Independence	-12.49*** (3.170)	-1.146* (0.647)	-52.83*** (3.292)	-7.615*** (0.517)
Remuneration	-0.285 (0.266)	-0.115** (0.0545)	-0.496*** (0.152)	-0.0691*** (0.0189)
Board Size	-1.186** (0.485)	-0.181 (0.119)	1.432*** (0.321)	0.464*** (0.0408)
Directors' share ownership	0.416*** (0.140)	0.0604 (0.0982)	0.380*** (0.0563)	0.0650* (0.0333)
Extra Committees	-1.984 (1.804)	-0.404 (0.309)	-2.253 (1.598)	-1.565*** (0.178)
Internal Controls	3.006*** (0.642)	0.592*** (0.188)	4.567*** (0.701)	2.256*** (0.105)
Leverage	0.134* (0.0787)	0.0367*** (0.0109)	-0.960*** (0.0486)	-0.0312*** (0.00642)
Firm Size	-0.114 (0.152)	-0.0311* (0.0165)	-0.126 (0.0882)	-0.0439*** (0.0142)
Capital	0.212*** (0.0438)	0.0465*** (0.0103)	0.737*** (0.0282)	0.100*** (0.00701)
Beta	-4.933 (6.064)	-0.791 (0.839)	-8.879*** (0.870)	-2.994*** (0.195)
Liquidity	0.0515 (0.245)	-0.142*** (0.0474)	0.196 (0.223)	-0.0353 (0.0406)
Constant	7.383 (12.26)	-7.050** (2.849)	-41.31*** (8.179)	-14.72*** (1.159)
<i>J-test (p-value)</i>	33.72(0.142)	75.45(1.00)	79.75(1.00)	39.75(0.22)
<i>AR (1) (p-value)</i>	-3.21(0.001)	-3.04(0.002)	-4.86(0.000)	-2.84(0.004)
<i>AR (2) (p-value)</i>	-0.43(0.918)	0.18.(0.85)	-1.53(0.125)	-0.62(0.53)
Observations	258	258	335	335
Number of firms	86	86	86	86

Table 5 provides the results when the data is analysed for the pre-crisis period (i.e. 2003–2006) and crisis period (i.e. 2007–2010). TSR and ROE are dependent variables. L.1 & L.2 are lags 1 and 2 respectively of the dependent variables. The independent variables are NCI (level of non-compliance with the UK Corporate Governance Code), Board size (total number of board members), Board independence (the ratio of non-executive directors on board), Remuneration (total remuneration of board members), Directors' share ownership (total percentage of shares held by the board of directors), Leverage (the ratio of total debt to assets), Beta (a measure of systematic risk), Extra committees (the



number of extra board committees in addition to nomination, audit, and remuneration committees), Internal controls (the number of internal control systems in place within the company), Firm size (log of total sales), Liquidity (the ratio of current assets to current liabilities), Capital (the ratio of total equity to total assets). \*\*\* significance at  $p < 0.01$ , \*\* significance at  $p < 0.05$ , \* significance at  $p < 0.1$ . Standard errors in parentheses.

**Table 6 Mean comparisons of the performance of companies divided on the basis of NCI score and NED ratio**

<b>Variables</b>	<b><i>Compliant firms</i></b>	<b><i>Non-compliant firms</i></b>	<b>t</b>	<b>p-value</b>
<b>Panel A</b>	NCI < 7	NCI ≥ 7		
TSR	43.1631	11.6600	0.3069	0.759
ROE	83.9753	-148.1080	39.6115	0.076
<b>Panel B</b>	<b><i>Lower NED ratio</i></b>	<b><i>Higher NED ratio</i></b>	<b>t</b>	<b>p-value</b>
	NED ratio < 0.50	NED ratio ≥ 0.50		
TSR	-79.8983	-271.4492	-1.4002	0.1624
ROE	81.3297	-67.7933	-1.4976	0.0135

## 5. Robustness tests

To test the robustness of the results, we analysed the data for the whole sample period i.e. 2003–2010, these results are reported in Table 7. As a robustness test we also used ROA as an alternative measure of firm performance the results are reported in Table 8. Tables 7 & 8 show that the main explanatory variable NCI is still negatively associated with firm performance during the pre-crisis period, crisis period, as well as when the data is analysed for the whole sample period. This shows that results of the study are robust even if a different measure of performance is used.

Similarly, board independence is still negatively associated with firm performance when data is analysed for the whole sample period and also when ROA is used as a measure of firm performance. The positive impact of directors' share ownership and internal control systems is also robust to the use of different measures of performance as well as when the data is analysed for the whole sample period.

**Table 7 Regression results for corporate governance and the performance of financial firms for the whole sample period (2003–2010)**

VARIABLES	(Whole period)	(Whole period)
	2003–2010	2003–2010
	TSR	ROE
L.1	-0.264*** (0.00761)	-0.195*** (0.00476)
L.2	-0.406*** (0.00994)	-0.758*** (0.00727)
L.3	-0.0788*** (0.0145)	-
NCI	-1.830* (1.054)	-0.368*** (0.0753)
Board Independence	-55.22*** (3.426)	-6.166*** (0.372)
Remuneration	-1.600*** (0.251)	-0.0535*** (0.0144)
Board Size	2.480*** (0.398)	0.507*** (0.0531)
Directors' share ownership	0.106** (0.0470)	0.120*** (0.0312)
Extra Committees	-0.211 (2.073)	-1.333*** (0.203)
Internal Controls	5.933*** (0.951)	1.826*** (0.0884)
Leverage	-0.952*** (0.0494)	-0.0127*** (0.00238)
Firm Size	-0.0172 (0.149)	-0.0554*** (0.00517)
Capital	0.719*** (0.0389)	0.0944*** (0.00507)
Beta	-2.180* (1.201)	-2.592*** (0.152)
Liquidity	0.484** (0.198)	-0.0419 (0.0267)
Constant	-45.40*** (9.582)	-12.45*** (0.952)
<i>J-test (p-value)</i>	79.86(1.00)	44.96(1.00)
<i>AR (1) (p-value)</i>	-4.89(0.000)	-2.99(0.002)
<i>AR (2) (p-value)</i>	-1.62(0.1038)	-0.38(0.69)
Observations	421	507
Number of firms	86	86

Table 7 provides the results when the data is analysed for the whole sample period (i.e. 2003–2010) all the variables are exactly the same as those used in Table 5. L.1, L.2 & L.3 are lags 1, 2 and 3 respectively of the dependent variables. \*\*\* significance at  $p < 0.01$ , \*\* significance at  $p < 0.05$ , \* significance at  $p < 0.1$ . Standard errors in parentheses.

**Table 8 Regression results for corporate governance and the performance of financial firms for the three time periods using ROA as a measure of firm performance.**

VARIABLES	(Whole Period)	(Pre-crisis)	(During crisis)
	2003–2010	2003–2006	2007–2010
	ROA	ROA	ROA
L.1	0.651*** (0.0155)	0.529*** (0.0492)	0.632*** (0.0138)
L2.	-0.997*** (0.0225)		-1.059*** (0.0242)
L3.	0.0126 (0.0196)		
NCI	-0.954*** (0.0767)	-0.413*** (0.124)	-0.826*** (0.0555)
Board Independence	-8.312*** (0.607)	-0.237 (0.429)	-7.947*** (0.489)
Remuneration	-0.168*** (0.0221)	-0.164** (0.0652)	-0.166*** (0.0125)
Board Size	-0.612*** (0.0388)	-0.109 (0.0731)	0.532*** (0.0266)
Directors' share ownership	0.0199 (0.0147)	0.142** (0.0564)	0.0122 (0.0112)
Extra Committees	-0.395 (0.287)	-0.423 (0.311)	-0.505 (0.313)
Internal Controls	1.182*** (0.102)	0.300** (0.125)	1.343*** (0.116)
Leverage	-0.0859*** (0.00521)	-0.0132 (0.0104)	-0.0797*** (0.00572)
Firm Size	-0.0519*** (0.00896)	-0.0287* (0.0148)	-0.0573*** (0.0146)
Capital	0.0443*** (0.00333)	0.0284*** (0.00890)	0.0337*** (0.00299)
Beta	-3.918*** (0.179)	-2.554*** (0.651)	-3.799*** (0.153)
Liquidity	-0.0185 (0.0223)	0.0552* (0.0308)	0.0284 (0.0191)
Constant	11.30*** (0.963)	0.239 (1.934)	8.798*** (1.144)
<i>J-test (p-value)</i>	76.57(1.00)	37.92(0.29)	73.34(1.00)
<i>AR (1) (p-value)</i>	-2.86(0.004)	-1.45(0.146)	-2.84(0.004)
<i>AR (2) (p-value)</i>	-0.92(0.354)		-0.89(0.369)
Observations	421	258	335
Number of firms	86	86	86

Table 8 provides the results when the data is analysed for the three time periods using ROA as dependent variable. All independent variables are exactly the same as those used in Table 5. L.1, L.2 & L.3 are lags 1, 2 and 3 respectively of the dependent variables. \*\*\* significance at  $p < 0.01$ , \*\* significance at  $p < 0.05$ , \* significance at  $p < 0.1$ . Standard errors in parentheses.

## 6. Conclusion

Using a sample of UK financial firms we tested the effectiveness of firm-level corporate governance mechanisms for reducing agency problems and improving firm performance in two economically different time periods. Results show that non-compliance with a prescribed code of good corporate governance is negatively associated with performance. This shows that although in the UK firms can either choose to comply with the UK Corporate Governance Code or provide explanation for non-compliance, but the non-compliance could lead to decrease in shareholders' wealth both in normal as well as extraordinary times. Furthermore, results also shows that the negative impact of non-compliance is more sever during the financial crisis.

Having a greater number of internal control systems within financial firms appears to be an effective monitoring tool and is positively associated with both measures of performance. The least effective monitoring mechanism in financial firms is board independence (represented by NEDs), as it is negatively associated with performance. Furthermore, during the crisis period the performance of financial firms with more independent boards was significantly lower than their counterparts with less independent boards. This indicates that although all financial firms may have experienced poor performance during the financial crisis but the impact of financial crisis was more severe in the firms with more independent boards.

Directors' share ownership appears to be an effective mechanism to align directors' interests with shareholders. This would indicate that in line with agency theory, it encourages directors to take a long term view and work in the best interest of shareholders. On the other hand, remuneration appears to be counterproductive in aligning directors' and shareholders' interests. There is strong evidence which shows that it is negatively associated with performance of financial firms and that the negative impact on performance is stronger during the crisis period.

Finally, there is some evidence in the case of board size that indicates that it impacts the performance of firms differently during normal and crisis times. The implications of this finding is that all governance prescriptions might not apply universally in different contexts and the optimal governance prescriptions will vary in different time periods.

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