**Organisational non-compliance with principles-based governance provisions and corporate risk-taking**

**Abstract**

This paper examines how risk-taking is affected by non-compliance with a ‘comply or explain’ based system of corporate governance. Using System Generalised Methods of Moments (GMM) estimates to control for various types of endogeneity, the results of this study show that non-compliance with the UK Corporate Governance Code is positively associated with total, systematic and idiosyncratic risk. However, profitability moderates the impact of non-compliance on firms’ risk-taking. The findings of this study further reveal that the impact of non-compliance with various provisions of the UK Corporate Governance Code is not uniform. That is, non-compliance with board independence provisions is associated with higher risk-taking. However, non-compliance with committees’ chair independence is associated with lower risk-taking. These findings have implications for investors, policy makers and corporations regarding the usefulness of compliance with a prescribed code of corporate governance.

**Key words:** Risk-taking; non-compliance; comply or explain; System GMM

# Introduction

Corporate governance is one of the key mechanisms for not only protecting the interests of key stakeholders but also for enhancing firm value. Based on its perceived importance, corporate governance codes have been introduced in most countries to ensure efficient management of firms and to protect the interests of all stakeholders of a firm. In the event of a major corporate scandal or financial crises, questions are asked about firm level corporate governance mechanisms. We therefore either see the introduction of new governance regulations or certain changes and revisions in the existing rules. For instance, in the US, the Sarbanes Oxley Act was introduced after the collapse of Enron. Similarly, in the wake of the 2007-09 financial crisis, the Walker (2009) review in the UK, and The Dodd-Frank Wall Street Reform and Consumer Protection Act (2010) in the US, recommended substantial changes to the corporate governance regulations of financial firms. One of the fundamental components of governance regulations around the world in general, and the UK Corporate Governance Codes (UK CGC) in particular, is the emphasis on mitigating corporate risk and the procedures adopted by managers[[1]](#footnote-1) to realize the same.

In line with the above, several studies have investigated the impact of corporate governance regulations on corporate risk-taking. For example, using a sample of US firms, John, Litov, and Yeung (2008) argue that compliance with governance prescriptions that enhance shareholder protection is associated with increased risk-taking. Similarly, in the context of an emerging economy, Koirala, Marshall, Neupane, and Thapa (2020) report that corporate governance reform is positively associated with risk-taking in Indian companies. In contrast however, there is also evidence in the existing literature which suggests that corporate governance regulations that expand the personal liability of directors for non-compliance and restrict managerial flexibility, could discourage them from undertaking potentially value-enhancing risky projects (Bargeron, Lehn, & Zutter, 2010; Cohen, Dey, & Lys, 2013). Therefore, in these circumstances a negative relationship between corporate governance and risk-taking is observed. In all of the above-mentioned studies the impact of mandatory corporate governance reforms on risk-taking has been investigated.

The focus of this study, however, is non-compliance with the UK CGC, which operates on the principle of ‘comply or explain’. This means that all FTSE 350 listed firms are required, either to comply with the recommended provisions and in the case of non-compliance to provide explanations. Therefore, it can be argued that corporate governance reforms in the UK may affect the behaviour of directors and shareholders differently as compared to other jurisdictions where such regulations are mandatory. The arguments of expanded personal liability in the case of non-compliance and restricting the managerial flexibility put forward by Bargeron et al. (2010) and Cohen et al. (2013) may not hold in the UK context, where compliance is not mandatory. The present study exploits this flexibility offered by the UK CGC to firms and investigates whether non-compliance with the recommended provisions of the code affects corporate risk-taking? Since corporate risk plays a significant role in firms’ future prospects and survival, we argue that the findings of this study will be of significant interest to all the stakeholders.

The UK CGC’s Principle A.1 requires board of directors to “satisfy themselves on the integrity of financial information and that financial controls and systems of risk management are robust and defensible”(FRC, 2003, p. 4). Similarly, Principle C.3.2.2 of the code mandates the board of directors “to review the company’s internal financial controls and, unless expressly addressed by a separate board risk committee composed of independent directors, or by the board itself, to review the company’s internal control and risk management systems” (FRC, 2003, p.16). Therefore, on the one hand, if firms provide disclosures to shareholders and potential investors showing they are compliant with these prescriptions then they might be perceived as less risky as compared with their non-compliant counterparts. On the other hand, if firms implement alternative governance mechanisms and provide explanations for their non-compliance, then non-compliant firms may be perceived as risky. In line with these predictions, we analyse and explain how non-compliance with the UK CGC is associated with risk-taking.

Using a sample of 158 non-financial FTSE 350 firms, this study investigates how non-compliance with the UK CGC is associated with risk-taking. To measure the level of non-compliance with the UK CGC, we develop a comprehensive index that contains 22 governance provisions. Using content analysis of 1,264 corporate governance reports, an index is developed to measure the quality of corporate governance for the sample firms. The findings of this paper are consistent with our hypothesis that non-compliance with the UK CGC is positively associated with total, systematic and idiosyncratic risks. This implies that, non-compliant firms, which adopt alternative corporate governance mechanisms to those recommended by the UK CGC, exhibit higher risk.

The findings of additional analysis indicate that the relationship between non-compliance and risk-taking is moderated by the profitability of firms. These findings therefore, document that the impact of non-compliance on corporate risk-taking decreases as the profitability of firms increases. Additionally, non-compliant firms appear to be riskier during the financial crisis as compared with their compliant counterparts. Furthermore, the results also reveal that the impact of non-compliance with various provisions of the code is not uniform. For instance, non-compliance with board independence provisions is associated with higher risk. However, non-compliance with committees’ chair independence is associated with lower risk.

In light of all of the above points we argue that this study makes several important contributions to the existing literature in this area. First, it contributes to the stream of literature that investigates the impact of mandatory corporate governance regulations on risk-taking (Bargeron et al., 2010; Cohen et al., 2013; John et al., 2008; Koirala et al., 2020). The present research adds to this literature by examining how non-compliance with a principle based corporate governance regulations affects risk-taking. In doing so, this study shows that non-compliance with the UK CGC is positively associated with corporate risk-taking. Second, this study also contributes to the corporate governance literature that investigates the impact of compliance or non-compliance indices on the operating and financial performance of firms (Arcot, Bruno, & Faure-Grimaud, 2010; Bozec & Bozec, 2012; Dedman, 2016; Elmagrhi, Ntim, Wang, Abdou, & Zalata, 2018; Farag, Mallin, & Ow-Yong, 2014; Gompers, Ishii, & Metrick, 2003). Contrary to these studies, the current study focuses on risk-taking as opposed to financial performance and sheds light on the channels through which organisational performance is affected by compliance with corporate governance prescriptions.

Third, this study also contributes to the stream of literature that questions the validity of the one-size-fits-all approach (Black, Carvalho, Khanna, Kim, & Yurtoglu, 2017; Judge, 2012; Ullah, Ahmad, Akbar, Kodwani, & Frecknall‐Hughes, 2020; Van Essen, Engelen, & Carney, 2013) and the effectiveness of the ‘comply or explain’ principle of corporate governance (Hooghiemstra & van Ees, 2011; Shrives & Brennan, 2017). Within this line of research, the findings of this study reveal that the impact of non-compliance with various provisions of the code is not uniform. This study documents that non-compliance with board independence provisions is positively associated with risk-taking. However, non-compliance with committees’ chair independence provision is negatively associated with risk-taking. These findings thus highlight the significance of the flexibility offered by the ‘comply or explain’ approach adopted in the UK CGC. We therefore argue that non-compliance with certain provisions of the code may be beneficial for firms in certain situations.

Finally, the study also contributes to the stream of literature that analyses the impact of corporate governance practices on firm-level outcomes in the context of financial crisis (Aebi, Sabato, & Schmid, 2012; Ahmad, Akbar, Kodwani, Halari, & Shah, 2021; Erkens, Hung, & Matos, 2012). In the context of financial crisis, we document that non-compliance with the UK CGC is associated with an increased level of corporate risk-taking. Considering the importance of corporate risk taking and its potential impact on stakeholders in the short, medium, and long-term, we argue, that our findings have implications for investors, policy makers and other stakeholders regarding the usefulness of compliance with a prescribed code of corporate governance in the UK and other countries.

The remainder of this paper is organised as follows. Section 2 provides a review of the relevant literature and develops testable hypotheses. Section 3 presents the research data and methodology. Section 4 provides a discussion of the empirical results and documents robustness checks. Finally, Section 5 concludes the paper with an overall summary of the main findings and discusses the research implications.

# Literature review and hypotheses development

The relationship between corporate governance and risk can be explained from the perspective of agency theory. In this theoretical framework, owners and managers have different attitudes towards risk and the conflict of interest between owners and managers leads to higher agency costs (Jensen & Meckling, 1976). However, agency costs cannot be dealt with through the provision of contracts only (Hart, 1995), and in order to monitor managers’ self-serving behaviour, make them accountable, and to make sure that free cash flows are either returned to shareholders, or re-invested in value adding projects, organisations need effective corporate governance mechanisms (Shleifer & Vishny, 1997).

If the risk-reward perspective of agency theory as outlined by Eisenhardt (1989) is considered then, in compliant firms the risk taking behaviour of managers may be more aligned with that of the principals. This is because compliant firms would have richer information systems which could also reduce information asymmetry arising from the agency relationship. In line with this, Beekes, Brown, Zhan, and Zhang (2016) document that better governed firms make more frequent and informative disclosures. Even in the case of non-compliance with the UK CGC, managers will need to justify the reasons for deviation from the code’s prescriptions by providing additional information. This should lead to alignment of interests between managers and shareholders as the alternative governance mechanisms adopted by firms would presumably be more suitable for the concerned firm than those recommended by the code. While examining a sample of Canadian firms, Luo and Salterio (2014) document that “comply or explain” governance disclosure regimes allow firms to develop governance practices that are tailored to their unique set of circumstances and that, on average, the deviated practices are associated with higher firm value and better performance.

However, it can also be argued that the flexible nature of the UK CGC could lead to a higher degree of ‘moral hazard’ problem[[2]](#footnote-2) as managers may choose to provide explanations opportunistically. Indeed, Shrives and Brennan (2017) document that non-compliant firms use ‘weasel words’ and ambiguous statements in justifying non-compliance, and thus abuse the flexibility granted by the regulators. Nevertheless, MacNeil and Li (2006) argue that shareholders of non-compliant firms tolerate and ignore the nature of explanations as long as such firms remain profitable. Furthermore, Stevens and Thevaranjan (2010) developed a principal-agent model that incorporates moral sensitivity in a way that builds upon the moral hazard context already contained in agency theory. In particular, they show that the agent possesses some level of moral sensitivity that causes him to suffer disutility if he provides less than a previously agreed-upon level of effort. Moreover, Hölmstrom (1979) asserts that any imperfect additional information is of value because it allows a more accurate judgment of the performance of the agent. More recently, Tosun (2021) documents that externally imposed governance regulations are determinantal for firm profitability. In line with all these insights, we argue that providing explanations for non-compliance with the UK CGC is in a sense ‘compliance’ with the spirit of the code and will not lead to additional moral hazard problems over and above the known problems associated with an agency relationship. This study is therefore intending to capture how this non-compliance or providing explanations is perceived by market participants in terms of riskiness of such firms.

In line with the assumptions of agency theory John et al. (2008) provide a theoretical framework that models the effect of corporate governance on corporate risk-taking as a utility function of an insider who derives utility from the wealth effect of investments and private consumption of the resources of a firm. Consequently, the relationship between corporate governance and risk-taking can be positive as well as negative. On the one hand, if improvements in corporate governance lead to a higher level of wealth effect from investment then in such cases managers’ appetite for value enhancing risky projects will increase. The specified framework, therefore, predicts a positive relationship between corporate governance and risk-taking. On the other hand, if better corporate governance mechanisms lead to a higher level of private benefits, then managers are more likely to be risk averse. For instance, if the establishment of certain corporate governance mechanism make managers more accountable for their investment decisions then it is in the self-interest of managers to avoid risky projects to protect their jobs and career prospects. Additionally, strong corporate governance mechanisms in the form of excessive investor protection leads to shareholder empowerment (John et al., 2008). However, due to information asymmetry shareholders are more likely to be well informed about the immediate costs of long-term risky projects but less so about the quality and potential long-term benefits for performance. Therefore, the introduction of a set of governance practices that align managers’ decisions to shareholders’ interests might lead to a negative effect by more intensely subjecting management to the will of the shareholders and ultimately reinforcing the tendencies towards short-termism and discouraging risky investments (Honoré, Munari, & van Pottelsberghe de La Potterie, 2015). Hence, a negative relationship between corporate governance and risk-taking will be observed.

The positive effect of corporate governance on a firm's risk-taking could stem from different channels. First, from the perspective of agency theory (Jensen & Meckling, 1976), managers pursue their self-interest. Therefore, due to career concerns and to protect their self-interest they will avoid projects that are value enhancing but risky (John et al., 2008). Therefore, corporate governance mechanisms that mitigate this agency problem will encourage managers to invest in value enhancing risky projects which may lead to increased risk-taking. Second, Morck, Yeung, and Yu (2000) argue that poor corporate governance mechanisms lead to poor resource allocation and low productivity, which in turn leads to high cost of capital. Better corporate governance could reduce the cost of capital as it reduces information asymmetry through greater disclosure and independent monitoring (Healy & Palepu, 2001). Furthermore, improvements in corporate governance also attract foreign investments which can reduce the cost of capital through international risk sharing (Errunza & Miller, 2000) and enhanced monitoring (Khanna & Palepu, 2000). In line with this, Koirala et al. (2020) document that stricter corporate governance reforms that enhance investor protection in emerging markets positively affect risk-taking.

Existing literature documents two reasons for the negative relationship between better corporate governance and risk-taking. First, dominant shareholders may have the incentive and power to reduce managerial discretion, however, improvements in corporate governance enhance investor protection which reduces the fear of exploitation by managers and, consequently, the benefit of having dominant shareholders as monitors of managerial behaviour decreases (Shleifer & Vishny, 1986). Therefore, the absence of dominant shareholders allows managers greater discretion to reduce risk-taking (John et al., 2008). In line with this, it can be argued that since shareholding of publicly listed firms in the UK is dispersed, therefore, compliance with the UK CGC would be negatively associated with risk taking. Second, Bargeron et al. (2010) document that risk-taking declined significantly for US firms after the implementation of Sarbanes Oxley Act (SOX), which expanded the role of independent directors and introduced rules related to internal controls. Similarly, Cohen et al. (2013) also provide evidence suggesting that corporate governance reforms introduced in the form of SOX negatively affected CEOs’ incentives to take risk and lead to a decline in investments, including research and development expenditures, capital investments and acquisitions.

Moreover, Ashbaugh-Skaife, Collins, and LaFond (2009) argue that firms that have internal control deficiencies as per the requirements of SOX have significantly higher idiosyncratic risk, systematic risk, and cost of equity. More recently, using a cross country sample of firms from 41 countries, Hu, Li, Taboada, and Zhang (2020) argue that board reforms that improve financial transparency reduce crash risk by 13%. Similarly, Cheung, Stouraitis, and Tan (2010) develop a corporate governance index for a sample of listed firms in Hong Kong and document that good corporate governance is associated with higher stock returns and lower risk. Results of these research studies highlight that firms which deviate from the recommended corporate governance prescriptions are perceived as risky by investors.

However, it is important to note that compliance with the governance prescriptions of SOX is mandatory for US firms. Contrarily, the UK CGC is based on the principle of ‘comply or explain’, which means that by providing appropriate explanations, firms in the UK can choose not to comply with the recommendations of the UK CGC without facing any penalties. Corporate managers, therefore, have the discretion to invest in risky projects even if such a strategy leads to deviation from the prescriptions of the UK CGC. To this end, the present research focuses on non-compliance with the UK CGC and risk-taking. Within the UK context, no previous study has investigated the relationship between non-compliance with UK CGC and risk-taking. There are, however, a number of studies which focus on how individual governance mechanisms such as, board structure and processes affect risk-taking. For example, McNulty, Florackis, and Ormrod (2013) document that financial risk is lower in those firms where non-executive directors (NEDs) have high effort norms and where board decision processes are characterized by a degree of cognitive conflict. Similarly, Akbar, Kharabsheh, Poletti-Hughes, and Shah (2017) argue that the presence of NEDs is negatively associated with risk-taking in the UK financial sector.

With regard to the application of governance indices, however, existing research in the UK has mainly focused on the impact of compliance on operating and financial performance. For instance, Dahya and McConnell (2007) find a positive relationship between compliance with the UK CGC and firms’ operating and stock market performance. More recently, (Ahmad et al., 2021) document that non-compliance with the UK CGC is negatively associated with the performance of financial firms during financial crisis. Similarly, Farag et al. (2014) report a positive relationship between governance characteristics and the financial performance of UK firms listed on the Alternative Investment Market (AIM). However, while examining a sample of FTSE 100 companies which were persistently non-compliant with the UK CGC, MacNeil and Li (2006) document that shareholders of such firms tolerate non-compliance and ignore the nature of explanations as long as such firms remain profitable. In addition to this, Dedman (2016) also reports that non-compliance with one particular provision of the governance code is not detrimental, and may not negatively affect firm performance. In another study, Shrives and Brennan (2017) show that companies use non-compliance explanations as an attempt to influence the perception of shareholders and investors.

It is, therefore, argued that the results of existing studies present two scenarios. On the one hand, if compliance is associated with better performance then investors and shareholders may perceive non-compliant firms less favourably. Therefore, non-compliant firms would be considered as risky investments by both the existing and potential investors. On the other hand, if shareholders do not regard non-compliance as a problem as long as such firms are profitable, then non-compliant firms may be regarded as less risky. This study, therefore, adds to this strand of literature and investigates how shareholders perceive non-compliant firms in terms of riskiness.

In light of the above discussion, we test the following two conflicting views on the role of non-compliance with the UK CGC and corporate risk-taking:

*Hypothesis 1: There is a positive relationship between the level of non-compliance with the UK CGC and risk-taking.*

*Hypothesis 2: There is a negative relationship between the level of non-compliance with the UK CGC and risk-taking.*

# Data and Methodology

## The Data Sample

The data sample of this study consists of 158 non-financial firms listed on FTSE 350 over the period 2003-10. The FTSE 350 is selected as a target sample as it represents approximately 96% of the market capitalisation of firms listed on the London Stock Exchange[[3]](#footnote-3). We therefore argue that the results of our study could be considered as representative of the whole UK market. Additionally, as part of the listing requirements in the UK, all FTSE 350 companies either have to comply with the UK corporate governance code, or if not, must explain their reasons for non-compliance. Smaller companies which are not constituents of the FTSE 350 are not required by the UK Listing Authority (UKLA) to report their compliance with the UK corporate governance code; hence, these companies are excluded from the sample.

The development of corporate governance codes in the UK started with the Cadbury report (1992). The Cadbury report was followed by a series of individual reports which provided various corporate governance recommendations[[4]](#footnote-4). In 2003, the FRC compiled the recommendations of all these reports into one document and issued the Combined Code on corporate governance or simply the “Code”. Therefore, this study investigates compliance with corporate governance provisions in Section 1 of this Code and its subsequent revised versions in 2006 and 2008. Since then the UK CGC has gone through minor revisions to only certain requirements in 2010, 2012, 2014 and 2016[[5]](#footnote-5). The major revision since 2003 took place in 2018 and applies to financial years commencing on or after 1st January 2019. Due to the current COVID-19 pandemic and its severe impact on businesses, including 2020 (which would be the first full financial year for the new code) will not be appropriate for this paper. Furthermore, the nature of the past revisions is minor and have not significantly affected board structures and compositions. Finally, there is limited variation in the level of compliance across different years. We therefore argue that studying the impact of non-compliance with the UK CGC in the first eight years would provide a good indication of the effectiveness of the corporate governance principles.

Financial institutions and firms from the utilities sectors are excluded from our analysis due to their substantially different risk profile, regulations and business operations. While constructing the sample we have applied two key selection criteria. First, the sample firms were required to be constituents of FTSE 350 in 2003. Second, if a firm is later on delisted or added to FTSE 350, in order for it to be included in the sample, it should have been listed for at least three consecutive years. This is because, for meaningful analysis between corporate governance mechanisms and risk-taking, governance data of less than three years may not be sufficient. Furthermore, since, the market data for delisted firms is not available they are excluded. However, if a firm was delisted at any time after being constituent of FTSE 350 for at least three years, it is still included in the sample.

Four different sources were used to establish the final data for this study, namely: Datastream, Companies House, Morningstar Company Intelligence[[6]](#footnote-6) and companies’ annual reports. The data for non-compliance with the UK CGC was hand-collected from the annual reports of the sample firms. Data for other corporate governance variables such as board size, independence, share ownership, and remuneration were collected from Morningstar Company Intelligence, whilst the financial data was extracted from Datastream. Finally, for companies that were delisted or where data was not available from other sources, the required data was acquired from the Companies House. Definitions of all variables used in the study are provided in Table 1.

[Insert Table 1 about here]

## Model specifications

In the existing literature that investigates the impact of governance mechanisms on organisational outcomes, endogeneity has been regarded as a major concern which can significantly affect the research findings (Sila, Gonzalez, & Hagendorff, 2016). Wintoki, Linck, and Netter (2012) discuss three sources of endogeneity (unobserved heterogeneity, simultaneity, and dynamic endogeneity) and argue that the presence of any one of the three will lead to biased estimates. In the context of this study, for instance, time-invariant variables such as organisational culture and managers’ capability are not included in the model but could affect risk-taking. However, it is not possible to measure such time-invariant variables but ignoring them could lead to the omitted variable bias. Similarly, rather than non-compliance affecting corporate risk, the relationship might run in the opposite direction. Moreover, the current period’s NCI might be affected by the previous period’s risk, which necessitates controlling its effect (Li, Ding, Hu, & Wan, 2021). System Generalized Methods of Moments (GMM) allows the inclusion of a lagged dependent variable as a control variable to capture the effect of previous period’s risk, thus controlling for dynamic endogeneity. System GMM is the most popular estimation method among various GMM estimators and has been used widely by similar studies on firm-level governance variables and risk-taking (Sila et al., 2016). In order to control for the effects of potential simultaneity and reverse causality issues, Ammann, Oesch, and Schmid (2011) recommend the use of lagged variables as instruments for the present values of those variables.

GMM estimation method is particularly suited for this study for a number of reasons. Firstly, the model specifications that we have employed in this study encompasses endogenous variables. In order to test, for the presence of endogeneity we applied the standard Durbin-Wu-Hausman (DWH) test which revealed that a number of variables in our model may be endogenous (duality, extra committees on board, internal control mechanisms, liquidity and gender diversity). Secondly, it can be argued that risk-taking of the sample firms will show persistence over the sample period. That is, the present value of the dependent variable may be influenced by its past values. Such persistence in the dependent variable requires utilization of an autoregressive regression model, and GMM is particularly designed for an autoregressive model (Arellano & Bover, 1995). Finally, unlike other instrumental variable approaches such as two-stage least square (2SLS), system GMM does not require finding instruments from other sources, the same can be obtained from the lags of the endogenous variables .These lags can be applied in differences or levels, and the model is specified as a system of equations (Blundell & Bond, 1998). In the current study, the second lag of the endogenous variables were included in the estimation as instruments. Moreover, system GMM is robust to panel-specific heteroscedasticity and serial correlation (Sila et al., 2016). Therefore, we use a dynamic system GMM estimator and estimate the following model:

$Risk\_{it}=αRisk\_{i,t-1}+β\_{1}NCI\_{it}+\sum\_{n}^{N}β\_{1n}CONTROLS +u\_{i}+ω\_{it}$ (1)

where $Risk\_{it}$ is the dependent variable denoting risk-taking as measured by total risk, systematic risk and idiosyncratic risk for i = 1…...158, non-financial firms across t (2003-10). $αRisk\_{i,t-1}$ is the lagged dependent variable whilst NCI is the main explanatory variable that takes into account the level of non-compliance with 22 provisions of the UK CGC (outlined in Appendix 1). For each occurrence of non-compliance, it takes the value of 1 and 0 otherwise. Therefore, the NCI score for each company varies between 22 (fully non-compliant) and 0 (fully compliant). $CONTROLS$ refer to a number of control variables included in this study. Finally, $u\_{i}+ω\_{it}$ it is the standard fixed/random effects decomposition of the error term.

In line with Sila et al. (2016) risk is measured using three different proxies. Total risk is measured as logarithm of the square root of 250 (250 trading days assumed per year) times firm’s daily returns standard deviation. We measure systematic risk as the coefficients of the stock market portfolio returns from a market model of regression whilst the idiosyncratic risk is measured as logarithm of the square root of 250 times the residuals from the market model regression.

We also control for various board characteristics and a number of firm-level factors that may affect risk-taking. Existing literature documents that board size is associated with firm risk so it is used as a control variable in this study (Cheng, 2008). Similarly, the existence of NEDs on boards affects risk-taking, hence, we control for board independence (Akbar et al., 2017; McNulty et al., 2013). Existing literature also shows that the type and amount of compensation paid to directors affect corporate risk-taking (Gormley, Matsa, & Milbourn, 2013). Board ownership and compensation are, therefore, used as control variables (Belghitar & Clark, 2015). Additionally, extra board committees (Tan & Liu, 2016) , risk committee (Malik, Nowland, & Buckby, 2021; Yeh, Chung, & Liu, 2011), gender diversity (Abou-El-Sood, 2021; Farag & Mallin, 2017; Poletti-Hughes & Briano-Turrent, 2019), internal controls (Ashbaugh-Skaife et al., 2009) and board meetings (Ullah, Ahmad, Akbar, & Kodwani, 2018) are also used control variables.

In terms of other firm-specific characteristics, we use natural log of total assets to control for firm size (Grey, Stathopoulos, & Walker, 2013) , firms’ liquidity (Pham, Vo, Le, & Le, 2018) , capital ratio (Beltratti & Stulz, 2012), leverage (Black & Kim, 2012) and profitability measured as ROA (Bonetti, Magnan, & Parbonetti, 2016).

We also carried out two post specification tests following the GMM estimation (Arellano & Bond, 1991). Hansen–Sargan J-test was employed to test for over-identifying restrictions and for checking the validity of the moment conditions in our study (Hansen, 1982; Sargan, 1958). The second test we carried out was the residual autocorrelation (AR). This test allowed us to confirm that the second order autocorrelation is zero. Results of the two specification tests confirm that the null hypothesis of valid restrictions cannot be rejected for all of our four models. More specifically, the results of Hansen test suggest that the instruments used in our models are valid and the results of the residual autocorrelation test show no signs of serial autocorrelation of the second order (AR2) in any of our models.

# Results and discussion

## Non-compliance and risk-taking

Table 2 shows the descriptive statistics for all variables used in this study. All variables have been winsorized at the top and bottom 1% to control for extreme values. The data in Table 2 indicates that on average the non-compliance index score over the period of our analyses was 2.36, and had a maximum value of 13. This indicates that on average firms were non-compliant with more than two provisions and provided explanations. Table 3 shows the correlation matrix for all independent variables. The highest correlation amongst any two variables is 0.44, which is well below the commonly used threshold of 0.80 (Field, 2009). Variance Inflation Factors (VIF) and tolerance statistics were used to test for the potential effects of multicollinearity among the variables. The values of all VIFs remained well below the commonly used threshold of 10[[7]](#footnote-7). Our results showed that the maximum value for VIF was 2.28 whereas the lowest value for tolerance statistics was 0.44. Similarly, the tolerance statistics for all variables was above the threshold of 0.10, .Therefore, this provides evidence that there is no issue of multicollinearity in the sample (Field, 2009).

 [Insert Table 2 about here]

[Insert Table 3 about here]

Table 4 outlines the main results of this study. It shows that NCI is significantly positively associated with all measures of risk. Table 4 shows that for total, systematic and idiosyncratic risk the relationship is ($β=0.0432), β=0.7170$ and $ β=0.0443)$ respectively. These coefficients are statistically significant at less than 1% for all three measures. This finding supports *H1,* which states that NCI is positively associated with corporate risk-taking. Higher values of NCI index indicate lower investor protection. This implies that firms with lower investor protection are perceived as riskier by investors. This finding is in line with the results reported by Bargeron et al. (2010) and Cohen et al. (2013) for US firms which cover the time periods after the adoption of SOX. Both the studies document that as compliance with SOX is mandatory and deviations from it could lead to personal liability for managers. Therefore, it discourages managers from undertaking potentially value-enhancing risky projects. However, in contrast to SOX, compliance with the UK CGC is not mandatory and deviation from its prescriptions does not lead to extended personal liability for managers, which cannot provide a valid justification for the positive association between NCI and risk-taking.

There are different explanations for the positive association between non-compliance with the UK CGC and risk-taking. First, in line with Ashbaugh-Skaife et al. (2009), firms reporting non-compliance with the UK CGC present greater information risk to investors and are, thus, perceived as risky. Second, J. Hu et al. (2020) argue that board reforms that improve financial transparency reduce crash risk. It is, therefore, argued that firms choosing not to comply with the UK CGC may be perceived by the investors as lacking financial transparency and risk-prone. Third, in consonance with the findings of Cheung et al. (2010), it is argued that higher level of non-compliance signals lower investor protection and leads to the perception that such firms are riskier. This also corroborates the assertion that poor investor protection is associated with poor governance which leads to inefficient resource allocation and low productivity (Morck et al., 2000). This specifically holds true for the UK where shareholding is widely held and non-compliance with the UK CGC recommendations may lead to fear of expropriation by managers, which is consistent with the predictions of agency theory (John et al., 2008). In this regard, Hawas and Tse (2016) document that compliance with the UK CGC is positively associated with major shareholdings. This implies that corporate governance of compliant firms improves because of better monitoring by major shareholders who have the incentive and power to do so. This could lead to the perception that such firms are less risky.

Furthermore, these results also support the view adopted by Arcot et al. (2010) that some companies do not explain the reasons for their non-compliance because of fear of risks, due to which they may tend to comply with the UK CGC, irrespective of their circumstances and need for compliance. Similarly, in a letter to the Financial Times, Richard Hopper, Chairman of Informa PLC, stated, that:

*“There are still too many institutional shareholders or their collective voice-pieces who approach the code as a rather rigid list of absolute obligations and who appear reluctant even to consider explanations for non-compliance. Explanations of non-compliance by companies are at best ignored by some shareholders organizations or at worst the company is criticized for not achieving a full set of ticked boxes”.[[8]](#footnote-8)*

In support of the above arguments, the current study provides evidence that non-complying firms are perceived riskier because their reputation may be at stake due to non-compliance with the UK CGC.

 [Insert Table 4 about here]

## Does non-compliance lead to improved profitability?

The UK CGC is not a set of rigid rules that must be followed by all listed firms; managers can instead choose to provide plausible explanations if they think doing so is beneficial for the firm. Therefore, it is possible that firms are choosing to provide explanations and are investing in riskier projects because doing so may lead to increased profitability. In this regard, MacNeil and Li (2006) argue that shareholders of persistently non-compliant firms tolerate non-compliance and ignore the nature of explanations as long as such firms are profitable. This implies that investors may fully appreciate the circumstances of a company in which non-compliance is inevitable. Furthermore, Dedman (2016) also reports that non-compliance with one particular provision of the governance code is not detrimental and may not negatively affect firm performance. We, therefore, test whether non-compliance coupled with increased profitability is associated with lower risk-taking. We therefore include an interaction (NCIROA) term between NCI and ROA in the model and estimate the following equation:

$Risk\_{it}=αRisk\_{i,t-1}+β\_{1}NCI\_{it}+ β\_{2}NCIROA\_{it }+\sum\_{n}^{N}β\_{1n}CONTROLS +u\_{i}+ω\_{it}$ (2)

Results reported in Table 5 reveal that the coefficient of the interaction term, *NCIROA* is negative and statistically significant for total and systematic risk. Although for Idiosyncratic risk the result is not significant but the coefficient sign is still negative. This implies that the positive effect of NCI on risk-taking will decrease as profitability increases. We, therefore, argue that this finding highlights the importance of the ‘comply or explain’ principle as it shows that non-compliance does not necessarily mean weak governance and managers may be making informed choices keeping in view their organisational needs. Therefore, as long as the increased riskiness associated with non-compliance is compensated by higher returns, managers will choose to provide explanations rather than complying with the recommendations of the code.

[Insert Table 5 about here]

## Non-compliance and financial crisis

The sample period also includes the financial crisis of 2007–2009, therefore we include a financial crisis dummy in the model to investigate how the crisis affected risk. Additionally, we also include an interaction term between the crisis dummy and NCI to evaluate the moderating role of the crisis period on the relationship between non-compliance with the UK CGC and risk taking. Results reported in Table 6 show that the crisis dummy is significantly positively associated with all measures of risk. Furthermore, the results for the interactions term highlight that during the crisis period, non-compliant firms became significantly riskier as compared to their compliant counterparts. Therefore, this further highlight that non-compliant firms are perceived riskier during turbulent economic time periods.

[Insert Table 6 about here]

## Principal Component Analysis

In line with the existing literature in this area we formed principal components from the 22 provisions included in our NCI index (Black et al., 2017). This allowed us to identify five principal components with the highest eigenvalues (explaining 62% of the variance). For each component, corporate governance provisions with “loadings” of greater than 0.4 are retained (Costello & Osborne, 2005). We use promax oblique rotation, as it allows factors to be correlated and results in principal components which are easier to interpret (Field, 2009). The analyses identified five principal components, namely: *Reward, Committee Independence, Committee Establishment, Board Independence and Performance Evaluation*. We, therefore, estimate the following model:

$Risk\_{it}=αRisk\_{i,t-1}+β\_{1}Reward\_{it}+ β\_{2}Commitee Independence\_{it}+ β\_{3}Commitee Establishment\_{it}+ β\_{4}Board Independence\_{it}+ β\_{5}Performance Evaluation\_{it} +\sum\_{n}^{N}β\_{1n}CONTROLS +u\_{i}+ω\_{it}$ (3)

According to the results of the PCA reported in Table 7, out of the five principal components, four factors (reward, committee establishment, board independence and performance evaluation) are significantly positively associated with risk. These findings corroborate the results reported for aggregate NCI index in Table 4. However, the results in Table 7 also show that non-compliance with the UK CGC’s provisions in relation to committee independence is negatively associated with total risk and idiosyncratic risk. This component captures firms’ level of compliance with UK CGC’s requirement in relation to the chairs of audit, nomination and remuneration committees. Contrary to our hypothesis, the results imply that firms that choose not to comply with the recommendations of the UK CGC and provide explanations for their non-compliance are perceived to be less risky. In other words, for the sample firms it is beneficial that board sub-committees are chaired by directors who do not fulfil the code’s strict requirement of independence. This finding implies that the flexibility offered by the UK CGC is beneficial and in certain situations it is well justified to deviate from the recommendations of the code. Indeed, this is the very purpose of the ‘comply or explain principle’, that is, firms provide justification for their non-compliance when needed rather than rigidly following the code’s recommendations.

Existing literature also documents that financial expertise on audit committees reduces liquidity risk and is associated with increased trading volume and greater analyst following (Farber, Huang, & Mauldin, 2018). Additionally, audit committee composition also affects audit fee level and going concern opinion (Ghafran & O'Sullivan, 2017; Wu, Hsu, & Haslam, 2016). Therefore, non-compliance with the UK CGC’s provisions in relation to audit committees could be very important for risk. Consequently, we construct a principal component taking into account only the provisions in relation to audit committees from the UK CGC. Results reported in Table 8 clearly shows that non-compliance with provisions in relations to audit committees is significantly positively associated with all measures of risk.

[Insert Table 7 about here]

[Insert Table 8 about here]

In addition to the PCA we also regressed individual provisions on risk-taking. The individual provisions considered were P2, P3, P4, P8, P11, P15 and P18 since most firms in our sample were frequently non-compliant with these provisions. In order to conduct the required analysis in this section, we estimate the following model:

$Risk\_{it}=αRisk\_{i,t-1}+β\_{1}P2\_{it}+ β\_{2}P3\_{it}+ β\_{3}P4\_{it}+ β\_{4}P8+ β\_{5}P11+ β\_{6}P15+ β\_{7}P18 +\sum\_{n}^{N}β\_{1n}CONTROLS +u\_{i}+ω\_{it}$ (4)

The results reported in Table 9 reveal that non-compliance with P2, P11 and P15 is positively associated with risk-taking. P2 measures whether the chairman on appointment was independent as set out by the UK CGC. P11 measures if the performance of chairman was evaluated in accordance with the code’s requirement, and P15 stipulates that remuneration committee should entirely be composed of independent NEDs. These findings imply that non-compliance with these requirements of the code may indicate that such firms are weakly governed. All the provisions mentioned above measure the role of independent NEDs within firms in one way or another. Therefore, the UK CGC provisions discussed above are important mechanisms for increasing transparency, accountability and monitoring of firms.

Evidence in the existing literature suggests that the presence of NEDs is associated with lower risk-taking (Akbar et al., 2017; McNulty et al., 2013). Extending the argument, non-compliance with the NEDs independence requirements is perceived negatively by investors as it could lead to increased risk-taking. Contrarily, the firms choose non-compliance in order to remain unrestricted by the requirements of the code and to be able to invest in value enhancing risky projects. In this case, although, risk-taking will increase but such firms may be more profitable. Indeed, results of this study reported in Table 5 point in this direction as profitability moderates the positive relationship between non-compliance and risk-taking.

In addition, non-compliance with P3 and P8 is negatively associated with risk-taking. P3 measures the UK CGC’s requirement in relation to the appointment of a Senior Independent Director whilst P8 measures whether or not audit, nomination and remuneration committees are headed by an independent non-executive director. The findings highlight the importance of the flexibility offered by the UK CGC. The results imply that in certain situations explanations for non-compliance are acceptable to investors and non-compliant firms may not be perceived as risky investments. In this regard, Hawas and Tse (2016) document that different classes of major shareholders perceive compliance with the various provisions of the UK CGC differently. It is, therefore, argued that non-compliance with P3 and P8 of the UK CGC is not deemed to increase risk-taking.

[Insert Table 9 about here]

## Robustness tests

In order to check the robustness of the results various tests have been carried out. First, there are a number of provisions included in the NCI which captures independence of the board members. However, the NED ratio is also included in the model as a proxy for board independence which could result in board independence being counted twice. Therefore, the model is run again excluding NEDs and the results are reported in Table 10, which still shows that NCI is significantly positively associated with the various measures of risk (Total Risk, β=0.0479, Systematic Risk β= 0.7501 and Idiosyncratic Risk β= 0.0482, p<0.01 for all models).

[Insert Tables 10 about here]

In addition to this, we use two alternative measures of risk-taking to check the robustness of the results. Following Boubakri, Mansi, and Saffar (2013), we use ROA volatility as an alternative measure of risk. We use the difference between maximum and minimum ROA reported over the 5–year interval to capture volatility in a firm’s ROA. Additionally, following (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007), we use performance hazard risk (PHE), which measures the negative consequences associated with the outcome of a decision - e.g., probability of organizational failure, threats to survival or below-target performance in comparison to other firms in the industry. Following Poletti-Hughes and Briano-Turrent (2019), PHE is measured as the natural logarithm of *salest+1*divided by *salest*. This measure conceptualizes the possibility of negative outcomes indicating decreasing performance, represented by sales, whilst positive ones are representative of increasing performance. Finally, research and development (R&D) expenditure is shown to be linked to risk-taking as it reflects a firm’s level of innovative investments and has been widely used in the literature on risk-taking (Bargeron et al., 2010; Koirala et al., 2020). Therefore, R&D expenditure, measured as the total monetary value of R&D divided by total assets is also used as an alternative measure of risk-taking in this study. Results for these alternative measures of risk are reported in Table 11 and show that NCI is still positively associated with all three alternative measures of risk-taking. This suggests that our results are robust when alternative measures of risk-taking are used.

Moreover, to better estimate the causal relationship we use Propensity Score Matching (PSM) as an additional robustness test. In our PSM approach we divide the sample into compliant (control firms) and non-compliant (treatment firms) groups. For treatment firms the NCI is greater than 0 while for control firms the NCI is equal to 0. We match each treatment firm with a control firm based on the proximity of variables[[9]](#footnote-9) that will affect the outcome variables (Caliendo & Kopeinig, 2008; Hu, Karim, Lin, & Tan, 2020). Table 12 reports the results based on the PSM approach and shows that the treatment effect (non-compliance) is significantly positively associated with risk.

To further check the robustness of our results, we apply the Instrumental Variables approach, which is commonly used to control for endogeneity (Wooldridge, 2002). In this study, median industry non-compliance is used as an instrument for NCI. It is reasonable to expect that a firm’s non-compliance would be highly correlated with non-compliance in that industry. However, there is no direct relationship between non-compliance in industry and a firm’s riskiness. Therefore, this could be considered as a valid instrument as it satisfy the necessary conditions before a variable could be used as an instrument (Gujarati, 2003). Indeed, we perform post-estimation diagnosis to test the validity and strength of this IV variable. The results are reported in Table 13, which shows that it is a valid instrument. Table 13 also shows that after implement IV approach, the relationship between NCI and all measures of risk is still significantly positive.

Finally, as a further robustness test and to alleviate reverse causality concerns we use one-year lag of NCI and regress it on the different measures of risk. These results are reported in Table 14 and show that the relationship between lagged NCI and risk is still significantly positive. Therefore, this shows that results of this study are robust when alternative specification is used.

[Insert Tables 10, 11, 12, 13 and 14 about here]

# Conclusion

The level of risk and its management are some of the most important considerations for investors, regulators and managers alike. Consequently, it is important to investigate and improve our understanding of the factors associated with firms’ risk taking. The present study provides evidence on the impact of non-compliance with non-mandatory corporate governance prescriptions on risk-taking. Using a sample of 158 FTSE 350 listed firms, we document that non-compliance with the UK CGC is positively associated with total, systematic and idiosyncratic risk. This finding implies that although firms have the flexibility to either comply with the recommendations of the UK CGC or provide explanations for non-compliance but with regard to risk, it is beneficial for companies to comply. Furthermore, findings of the study also reveal that the impact of non-compliance with different provisions of the UK CGC is not uniform. On the one hand, non-compliance with the requirement in relation to board independence provisions is associated with higher risk-taking. On the other hand, non-compliance with committees’ chair independence is associated with lower risk-taking. Additional analysis provides evidence that although non-compliance with the UK CGC is positively associated with risk-taking, the magnitude of this affect is dependent on the profitability of firms. We, therefore, conclude that the impact of non-compliance on risk-taking decreases when firms’ profitability increases.

These findings have a number of implications. First, consistent with the predications of agency theory, we provide evidence that non-compliance is positively associated with risk-taking. We argue that non-compliant firms may be perceived as weakly governed. This is because recommendations of the UK CGC aim to improve transparency, monitoring and accountability with a view to improve investor protection and long-term viability of firms. Therefore, when firms choose not to comply with recommendations of the UK CGC, investors’ fear of managerial expropriation may increase which affects their perception of the firm’s riskiness.

Second, results of this study imply that when firms are profitable, the positive affect of non-compliance on risk-taking decreases. On the one hand, this would indicate that perhaps non-compliance allows managers more flexibility to invest in risky but value enhancing projects without the need to abide by the requirements of the code. In this case, the increased profitability would be perceived as good news by investors and risk of such firms will be lowered. Indeed, Cohen et al. (2013) document that the implementation of SOX limited the flexibility of managers which lead to a decrease in risk-taking. Furthermore, Bargeron et al. (2010) also document that the implementation of SOX meant firms were required to spend resources and engage in more testing of internal controls to ensure compliance, it therefore, discouraged managers to invest in risky projects. In the context of this study, however, we argue that the non-mandatory nature of the UK CGC allows managers flexibility to deviate from the recommendations of the code if they wish to do so. This could mean investing in risky but value enhancing projects. When this increased risk-taking pays off in the form of higher profits, investors’ perception of the firms may change. On the other hand, the increased profitability may mean that investors do not pay attention to non-compliance and will not incorporate this into the cost of capital. This corroborates the findings of MacNeil and Li (2006), who document that shareholders tolerate non-compliance and ignore the quality of explanations as long as firms are profitable.

Third, this study documents that non-compliance with different provisions is not perceived in the same way by investors. This finding has two implications, first, when firms are non-compliant with the NEDs’ independence requirement as stipulated by the UK CGC, it is perceived negatively by investors as this may indicate weaknesses in the corporate governance of such firms. In line with this, Ashbaugh-Skaife et al. (2009) argue that firms that have internal control deficiencies as per the requirements of SOX have significantly higher idiosyncratic and systematic risk. Second, it is equally possible that the presence of NEDs may lead to increased monitoring and if certain projects are likely to be risky, they may not be pursued. Therefore, when firms do not comply with this requirement of the UK CGC, executive directors may have more flexibility to invest in risky project. This eventually will lead to the positive impact of non-compliance on risk-taking.

Fourth, we document that non-compliance with the requirement of the UK CGC to appoint a *Senior Independent Director* and that independent NEDs chair audit, nomination and remuneration committees, is negatively associated with risk-taking. This finding implies that not all provisions of the UK CGC are considered equally important by investors. Therefore, non-compliance with such provisions may not be perceived as a sign of weak governance. Furthermore, it also highlights the importance of the ‘comply or explain’ principle adopted in the UK CGC. This suggests that providing explanations in certain situations may be necessary and beneficial for firms. In such circumstances, investors would consider deviations from the code as justified and their perception of the firm will not be negatively affected.

Despite its contributions, this research has a number of limitations. First, while looking at the findings, one may argue that these are country specific and may not be generalisable to other contexts due to institutional differences among countries. Therefore, a cross-country comparison covering the ‘comply or explain’ regimes will be beneficial for understanding the role of cross-country differences in rule of law, regulation quality, investor protection, judicial efficiency and its interaction with internal governance mechanisms and risk-taking of firms. Second, we have only employed quantitative research methods in this paper. In this regard, a questionnaire-based research design or conducting interviews of investors to ascertain elements of the UK CGC that they consider as most important for firms’ risk can also be explored. Despite recognising these limitations, conducting all such investigations are beyond the scope of this paper and are, therefore, left for future research.

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Table 1. Definition of variables used in the study

|  |  |
| --- | --- |
| Variable name and symbol | Definition |
| **Dependent variables** |   |
| *Total risk* | Logarithm of square root of 250 times daily return standard deviation. |
| *Systematic risk* | Coefficients of the stock market portfolio return from a market model of regression.  |
| *Idiosyncratic Risk* | Logarithm of the square root of 250 times the residuals from the market model regression. |
| **Independent variable** |  |
| Non-compliance index (NCI) | A score ranging between 0 and 22. Showing the level of non-compliance with the UK Corporate Governance Code |
| **Control variables** |  |
| *Board Size*  | The total number of directors on board |
| *Gender Diversity* | Percentage of women on the board of directors |
| *Board Independence*  | The ratio of NEDs to total board size |
| *Board ownership*  | The total percentage of equity shares held by all board members |
| Risk Committee | RC is a binary variable that takes the value of 1 if risk committee is present and 0 otherwise |
| *Board Meetings* | The number of board meetings during a year |
| *Extra Committees* | The number of extra committees in addition to audit, remuneration, and nomination committee |
| *Liquidity*  | The ratio of a firm’s current assets to current liabilities. |
| *Capital*  | The percentage of total equity to total assets. |
| *Return on Assets (ROA)* | ROA measured as earnings before interest and taxes (EBIT) divided by the total assets. |
| *Firm size*  | Natural log of total assets. |
| *Leverage*  | The percentage of total debt to assets. |

Table 2 Descriptive statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable |  Obs. | Mean | Std.Dev. | Min | Max |
| Total Risk | 1266 | 5.73 | 2.27 | 1.74 | 10.03 |
| Systematic Risk | 1266 | 8.16 | 15.23 | -0.07 | 55.24 |
| Idiosyncratic Risk | 1266 | 5.28 | 2.26 | 1.43 | 9.59 |
| NCI | 1266 | 2.36 | 2.35 | 0 | 13.00 |
| Board Size | 1266 | 8.44 | 2.31 | 4.00 | 20.00 |
| Gender Diversity | 1081 | 0.07 | 0.09 | 0 | 0.63 |
| Board Independence | 1266 | 0.62 | 0.15 | 0 | 1.00 |
| Remuneration | 1266 | 2.81 | 2.15 | 0.13 | 24.70 |
| Board Ownership | 1266 | 4.37 | 11.91 | 0 | 90.50 |
| Extra Committees | 1266 | 1.34 | 1.38 | 0 | 8.00 |
| Internal Controls | 1266 | 9.63 | 2.62 | 0 | 15.00 |
| Board Meetings | 1044 | 8.92 | 3.03 | 2.00 | 30.00 |
| Risk Committee | 1266 | 0.22 | 0.41 | 0 | 1.00 |
| ROA | 1266 | 10.55 | 7.22 | -2.70 | 25.62 |
| Leverage | 1266 | 25.61 | 19.69 | 0 | 136.91 |
| Firm Size | 1262 | 7.23 | 1.54 | 2.55 | 12.12 |
| Liquidity | 1266 | 1.57 | 1.11 | 0 | 12.19 |
| Capital | 1266 | 43.89 | 25.20 | -37.76 | 158.35 |

Table 3 Correlations Matrix

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
| (1) NCI | 1 |
| (2) Board Size |  0.01 | 1 |
| (3) Gender Diversity | -0.09\* | 0.12\* | 1 |
| (4) Board Independence | -0.16\* | -0.01 | 0.09\* | 1 |
| (5) Remuneration | -0.05 | 0.52\* | 0.19\* | -0.14\* | 1 |
| (6) Board Ownership | 0.29\* | 0.02 | -0.09\* | -0.05 | -0.02 | 1 |
| (7) Extra Committees | -0.20\* | 0.22\* | 0.16\* | 0.13\* | 0.18\* | -0.06 | 1 |
| (8) Internal Controls | -0.03 | 0.13\* | -0.03 | 0.04 | 0.05 | 0.03 | 0.24\* | 1 |
| (9) Board Meetings | -0.12\* | -0.16\* | -0.05 | 0.05 | -0.11\* | -0.16\* | 0.04 | -0.05 | 1 |
| (10) Risk Committee | 0.04 | 0.03 | -0.02 | 0.04 | -0.04 | 0.10\* | 0.31\* | 0.25\* | -0.07 | 1 |
| (11) ROA | 0.04 | 0.01 | 0.01 | -0.00 | 0.02 | 0.02 | 0.05 | 0.16\* | -0.15\* | 0.13\* | 1 |
| (12) Leverage | -0.11\* | 0.08\* | 0.03 | 0.14\* | 0.06 | -0.04 | 0.10\* | 0.02 | 0.11\* | -0.01 | 0.02 | 1 |
| (13) Firm Size | -0.30\* | 0.44\* | 0.26\* | 0.26\* | 0.44\* | -0.12\* | 0.32\* | -0.01 | 0.05 | -0.07\* | -0.12\* | 0.26\* | 1 |
| (14) Liquidity | 0.07 | -0.16\* | -0.17\* | -0.07 | -0.12\* | 0.14\* | -0.11\* | 0.11\* | -0.12\* | 0.01 | 0.09\* | -0.28\* | -0.24\* | 1 |
| (15) Capital | 0.14\* | -0.04 | -0.11\* | -0.09\* | -0.02 | 0.02 | -0.07 | 0.03 | -0.14\* | -0.04 | 0.15\* | -0.42\* | -0.23\* | 0.44\* | 1 |
|  |
| \* shows significance at the .01 level  |

Table 4 The impact of Non-compliance with the UK CGC on Risk-Taking

|  |  |  |  |
| --- | --- | --- | --- |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| NCI | 0.0432\*\*\* | 0.7170\*\*\* | 0.0443\*\*\* |
|  | (5.2496) | (11.8666) | (3.5049) |
| Board Size | 0.0449\*\*\* | 0.0835\*\* | 0.0309\*\*\* |
|  | (5.2707) | (2.4290) | (3.7024) |
| Gender Diversity | -0.1131 | 6.8565\*\*\* | 0.4381\*\* |
|  | (-0.5987) | (5.4323) | (1.9821) |
| Board Independence | -0.3618\*\*\* | -2.1865\*\*\* | -0.5297\*\*\* |
|  | (-2.7389) | (-4.1295) | (-5.6043) |
| Extra Committees | -0.0649\*\*\* | 1.9325\*\*\* | 0.0129 |
|  | (-3.8507) | (13.8941) | (0.6079) |
| Internal Controls | 0.0205 | -0.4628\*\*\* | -0.0547\* |
|  | (1.4214) | (-3.8587) | (-1.9038) |
| Board Meetings | -0.0546\*\*\* | -0.4318\*\*\* | -0.0357\*\*\* |
|  | (-11.5543) | (-15.1613) | (-8.4548) |
| Risk Committee | -0.0999 | -2.3280\*\*\* | -0.3881\*\*\* |
|  | (-1.4955) | (-5.4338) | (-5.6332) |
| Remuneration | -0.0333\*\*\* | -0.0130 | -0.0336\*\*\* |
|  | (-4.7432) | (-0.8217) | (-4.6378) |
| Board Ownership | -0.0016 | 0.0990\*\*\* | -0.0008 |
|  | (-0.6765) | (6.5877) | (-0.2268) |
| ROA | 0.0298\*\*\* | 0.0575\*\*\* | 0.0130\*\*\* |
|  | (10.5393) | (4.7209) | (6.0976) |
| Leverage | 0.0094\*\*\* | 0.0634\*\*\* | 0.0035\*\*\* |
|  | (10.6140) | (12.6135) | (3.7907) |
| Firm Size | -0.0240 | -0.0849 | -0.2854\*\*\* |
|  | (-0.7685) | (-0.5464) | (-8.1465) |
| Liquidity | 0.0343\*\*\* | -0.1520\*\* | 0.0784\*\*\* |
|  | (2.9021) | (-2.4265) | (4.7667) |
| Capital | -0.0009 | -0.0435\*\*\* | 0.0001 |
|  | (-1.2178) | (-9.2000) | (0.1681) |
| Constant | 0.7805\*\*\* | 7.2170\*\*\* | 4.4682\*\*\* |
|  | (3.0390) | (3.9195) | (10.1001) |
| Observations | 742 | 742 | 742 |
| Number of firms | 158 | 158 | 158 |
| AR1(p-value) | -6.126(0.00) | -2.847(0.00) | -6.060(0.00) |
| AR2 (p-value) | -0.135(0.89) | 0.885(0.37) | 1.245(0.21) |
| J-Test(p-value) | 115.5(0.39) | 120.4(0.28) | 130.4 (0.11) |

Table 4 provides the System GMM results for NCI and risk-taking. In all models, three lags of the dependent variables are used (to preserve space these lagged coefficients are not reported). The definitions and symbols for all independent and control variables are the same as outlined in Table 1. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5 The moderating role of profitability on the relationship between Non-compliance and Risk-Taking

|  |  |  |  |
| --- | --- | --- | --- |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| NCI | 0.0668\*\*\* | 0.8242\*\*\* | 0.0539\*\* |
|  | (6.0074) | (9.3023) | (2.5534) |
| NCIROA | -0.0024\*\*\* | -0.0121\*\* | -0.0010 |
|  | (-2.6083) | (-2.5297) | (-0.7174) |
| Board Size | 0.0499\*\*\* | 0.1035\*\*\* | 0.0310\*\*\* |
|  | (5.4660) | (3.1084) | (3.6905) |
| Gender Diversity | -0.0759 | 7.5955\*\*\* | 0.4328\* |
|  | (-0.3981) | (6.1953) | (1.9394) |
| Board Independence | -0.3562\*\*\* | -2.4008\*\*\* | -0.5235\*\*\* |
|  | (-2.6992) | (-4.5920) | (-5.5355) |
| Extra Committees | -0.0649\*\*\* | 1.8579\*\*\* | 0.0124 |
|  | (-3.7076) | (12.4329) | (0.5873) |
| Internal Controls | 0.0199 | -0.3904\*\*\* | -0.0574\* |
|  | (1.3499) | (-3.0188) | (-1.9497) |
| Board Meetings | -0.0555\*\*\* | -0.4211\*\*\* | -0.0355\*\*\* |
|  | (-11.6026) | (-15.1223) | (-8.2437) |
| Risk Committee | -0.0917 | -2.2481\*\*\* | -0.3861\*\*\* |
|  | (-1.4045) | (-4.7938) | (-5.6016) |
| Remuneration | -0.0322\*\*\* | -0.0383\* | -0.0325\*\*\* |
|  | (-4.5688) | (-1.9107) | (-4.5158) |
| Board Ownership | -0.0015 | 0.1067\*\*\* | -0.0007 |
|  | (-0.6468) | (5.4611) | (-0.1961) |
| ROA | 0.0334\*\*\* | 0.0842\*\*\* | 0.0146\*\*\* |
|  | (10.0886) | (6.4130) | (5.2796) |
| Leverage | 0.0095\*\*\* | 0.0604\*\*\* | 0.0034\*\*\* |
|  | (10.2416) | (11.9077) | (3.5985) |
| Firm Size | -0.0325 | -0.0371 | -0.2909\*\*\* |
|  | (-1.0511) | (-0.2292) | (-7.9174) |
| Liquidity | 0.0389\*\*\* | -0.1275\*\* | 0.0759\*\*\* |
|  | (3.2489) | (-1.9766) | (4.6030) |
| Capital | -0.0010 | -0.0396\*\*\* | 0.0003 |
|  | (-1.4092) | (-8.6720) | (0.3183) |
| Constant | 0.7939\*\*\* | 5.7140\*\*\* | 4.5265\*\*\* |
|  | (3.0581) | (2.8748) | (9.7125) |
| Observations | 742 | 742 | 742 |
| Number of firms | 158 | 158 | 158 |
| AR1(p-value) | -6.177 (0.00) | -2.847 (0.00) | -6.020 (0.00) |
| AR2 (p-value) | -0.137 (0.89) | 0.867 (0.38) | 1.258 (0.20) |
| J-Test(p-value) | 115.7 (0.38) | 118.5 (0.32) | 131.3 (0.10) |

Table 5 provides the System GMM results when NCI & ROA are interacted. In all models, three lags of the dependent variables are used (to preserve space these lagged coefficients are not reported). The definitions and symbols for all independent and control variables are the same as outlined in Table 1. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 6 Financial Crisis and the relationship between NCI and Risk

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| NCI | 0.0405\*\*\* | 0.1498\*\*\* | 0.0357\*\*\* |
|  | (4.9694) | (3.7372) | (4.2023) |
| Crisis | 0.0662\*\*\* | 1.3952\*\*\* | 0.1943\*\*\* |
|  | (2.9433) | (12.3787) | (10.7733) |
| NCI x Crisis | 0.0118 | 0.3286\*\*\* | 0.0204\*\*\* |
|  | (1.2024) | (7.4192) | (2.8363) |
| Board Size | -0.0031 | -0.4589\*\*\* | 0.0185\*\*\* |
|  | (-0.5680) | (-13.8746) | (3.4562) |
| Gender Diversity | 0.8236\*\*\* | 10.7292\*\*\* | 0.7375\*\*\* |
|  | (8.3917) | (14.6401) | (7.1083) |
| Board Independence | -0.1200\* | -2.0010\*\*\* | -0.1130\* |
|  | (-1.9284) | (-9.9031) | (-1.8797) |
| Extra Committees | -0.0920\*\*\* | 1.6890\*\*\* | -0.0607\*\*\* |
|  | (-7.3989) | (26.3370) | (-5.0096) |
| Internal Controls | 0.0444\*\*\* | -0.5362\*\*\* | -0.0369\* |
|  | (4.5045) | (-7.0453) | (-1.7564) |
| Board Meetings | -0.0345\*\*\* | -0.2554\*\*\* | -0.0251\*\*\* |
|  | (-9.2693) | (-16.6892) | (-10.0952) |
| Risk Committee | 0.1962\*\*\* | 1.8944\*\*\* | -0.0125 |
|  | (5.0458) | (9.1042) | (-0.3814) |
| Remuneration | -0.0122\*\*\* | 0.2435\*\*\* | 0.0015 |
|  | (-2.5816) | (16.5099) | (0.4540) |
| Board Ownership | -0.0017 | 0.0764\*\*\* | 0.0084\*\*\* |
|  | (-0.9735) | (12.0163) | (5.3478) |
| ROA | 0.0192\*\*\* | 0.1527\*\*\* | 0.0097\*\*\* |
|  | (14.0179) | (22.9219) | (7.9536) |
| Leverage | 0.0075\*\*\* | 0.0554\*\*\* | 0.0006 |
|  | (10.0212) | (15.4783) | (1.4886) |
| Firm Size | 0.0350\*\* | 0.0359 | -0.0860\*\*\* |
|  | (2.1919) | (0.4798) | (-5.4326) |
| Liquidity | 0.0071 | -0.1059\*\*\* | 0.0088 |
|  | (1.2736) | (-5.6683) | (1.5055) |
| Capital | -0.0011\*\*\* | -0.0687\*\*\* | 0.0025\*\*\* |
|  | (-2.7735) | (-37.2149) | (7.0508) |
| Constant | 0.8234\*\*\* | 14.4705\*\*\* | 2.8168\*\*\* |
|  | (6.7677) | (14.4584) | (11.3763) |
| Observations | 999 | 999 | 999 |
| Number of firms | 158 | 158 | 158 |
| AR1(p-value) | -8.017 (0.00) | -3.678 (0.00) | -7.435 (0.00) |
| AR2 (p-value) | 2.418 (0.15) | -1.130 (0.25) | -1.782 (0.74) |
| J-Test(p-value) | 147.5 (0.20) | 140.2(0.33) | 148.7 (0.18) |

Table 6 provides the System GMM results for ‘Crisis Dummy’ and the interaction between crisis and NCI. In all models, three lags of the dependent variables are used (to preserve space these lagged coefficients are not reported). The definitions and symbols for all independent and control variables are the same as outlined in Table 1. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 7 Principal Component Analysis for Non-compliance and Risk-Taking

|  |  |  |  |
| --- | --- | --- | --- |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| Reward | 0.1633\*\*\* | 0.3732\*\*\* | 0.2427\*\*\* |
|  | (5.3352) | (2.6923) | (6.2873) |
| Committee Independence | -0.0515\*\*\* | 0.1139 | -0.0563\*\*\* |
|  | (-3.3598) | (1.4394) | (-2.7877) |
| Committee establishment | 0.0358\*\* | -0.0878 | 0.0989\*\*\* |
|  | (2.5488) | (-0.9556) | (4.6679) |
| Board Independence | 0.0340\* | 0.6613\*\*\* | -0.0236 |
|  | (1.8763) | (6.3370) | (-1.4766) |
| Performance Evaluation | 0.0623\*\*\* | 0.6406\*\*\* | 0.0791\*\*\* |
|  | (4.5744) | (9.1812) | (4.6202) |
| Board Size | 0.0467\*\*\* | 0.0910\*\* | 0.0209\*\* |
|  | (4.5844) | (2.3840) | (2.3583) |
| Gender Diversity | -0.0827 | 2.6755\*\*\* | 0.5962\*\*\* |
|  | (-0.4091) | (2.7967) | (2.7470) |
| Board Independence | -0.3339\*\* | -1.8263\*\*\* | -0.6333\*\*\* |
|  | (-2.2775) | (-3.9669) | (-6.7446) |
| Extra Committees | -0.0115 | 1.8120\*\*\* | 0.0617\*\*\* |
|  | (-0.6320) | (13.0009) | (2.7117) |
| Internal Controls | 0.0349\*\*\* | -0.4411\*\*\* | -0.0550\* |
|  | (2.8960) | (-4.1937) | (-1.8693) |
| Board Meetings | -0.0480\*\*\* | -0.3857\*\*\* | -0.0326\*\*\* |
|  | (-9.2053) | (-12.8504) | (-10.7669) |
| Risk Committee | -0.2102\*\*\* | -1.8833\*\*\* | -0.4645\*\*\* |
|  | (-3.2292) | (-6.6184) | (-8.3700) |
| Remuneration | -0.0396\*\*\* | -0.1678\*\*\* | -0.0311\*\*\* |
|  | (-4.1788) | (-5.8270) | (-3.5828) |
| Board Ownership | -0.0015 | 0.0576\*\*\* | -0.0042 |
|  | (-0.5182) | (5.2329) | (-1.1127) |
| ROA | 0.0284\*\*\* | 0.0610\*\*\* | 0.0145\*\*\* |
|  | (11.1700) | (5.6312) | (6.9311) |
| Leverage | 0.0093\*\*\* | 0.0582\*\*\* | 0.0030\*\*\* |
|  | (10.4876) | (14.2561) | (3.9612) |
| Firm Size | -0.0528\* | -0.6203\*\*\* | -0.3114\*\*\* |
|  | (-1.8183) | (-3.8296) | (-9.0361) |
| Liquidity | 0.0273\*\* | 0.0053 | 0.0888\*\*\* |
|  | (1.9972) | (0.0746) | (5.6642) |
| Capital | -0.0011 | -0.0468\*\*\* | 0.0003 |
|  | (-1.5872) | (-10.7779) | (0.3092) |
| Constant | 0.9279\*\*\* | 12.7368\*\*\* | 4.9005\*\*\* |
|  | (4.6171) | (7.6186) | (11.1414) |
| Observations | 734 | 734 | 734 |
| Number of firms | 157 | 157 | 157 |
| AR1(p-value) | -6.281 (0.00) | -2.878 (0.00) | -5.769 (0.00) |
| AR2 (p-value) | -0.386 (0.69) | 1.066 (0.28) | 1.314 (0.18) |
| J-Test(p-value) | 118.7 (0.31) | 114.7 (0.41) | 127.4 (0.15) |

Table 7 provides the System GMM PCA results for NCI and risk-taking.

Table 8 Non-compliance and Risk for Audit Committee Sub-Index

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Total Risk | Systemic Risk | Idiosyncratic Risk |
| Audit Sub-Index | 0.1856\*\*\* | 1.0243\*\*\* | 0.1994\*\*\* |
|  | (6.6385) | (7.9337) | (5.7009) |
| Board Size | 0.0477\*\*\* | 0.1037\*\*\* | 0.0343\*\*\* |
|  | (6.2541) | (3.0801) | (4.2591) |
| Gender Diversity | -0.1430 | 8.0000\*\*\* | 0.5026\*\* |
|  | (-0.6620) | (5.3327) | (2.2010) |
| Board Independence | -0.4423\*\*\* | -2.7897\*\*\* | -0.5912\*\*\* |
|  | (-3.5426) | (-6.0450) | (-6.8001) |
| Extra Committees | -0.0889\*\*\* | 1.6383\*\*\* | 0.0035 |
|  | (-5.8357) | (11.8670) | (0.1636) |
| Internal Controls | 0.0345\*\*\* | -0.2687\*\* | -0.0644\*\* |
|  | (4.0987) | (-2.4453) | (-2.1130) |
| Board Meetings | -0.0544\*\*\* | -0.3685\*\*\* | -0.0350\*\*\* |
|  | (-11.1048) | (-12.5647) | (-9.8563) |
| Risk Committee | -0.1136\*\* | -3.1245\*\*\* | -0.4687\*\*\* |
|  | (-2.0687) | (-13.4094) | (-6.8511) |
| Remuneration | -0.0349\*\*\* | -0.0578\*\*\* | -0.0319\*\*\* |
|  | (-5.2352) | (-3.6541) | (-4.5609) |
| Board Ownership | 0.0022 | 0.1328\*\*\* | 0.0021 |
|  | (0.7443) | (8.0339) | (0.6746) |
| ROA | 0.0283\*\*\* | 0.0661\*\*\* | 0.0120\*\*\* |
|  | (10.3143) | (6.0824) | (6.5722) |
| Leverage | 0.0096\*\*\* | 0.0572\*\*\* | 0.0034\*\*\* |
|  | (11.5470) | (12.9565) | (4.1371) |
| Firm Size | -0.0392 | -0.2294\* | -0.3366\*\*\* |
|  | (-1.3138) | (-1.7871) | (-10.3683) |
| Liquidity | 0.0455\*\*\* | -0.2477\*\*\* | 0.0939\*\*\* |
|  | (3.4638) | (-3.7826) | (5.6609) |
| Capital | -0.0011 | -0.0430\*\*\* | -0.0002 |
|  | (-1.4286) | (-10.9563) | (-0.2599) |
| Constant | 0.7056\*\*\* | 8.1000\*\*\* | 4.8700\*\*\* |
|  | (3.5312) | (5.0664) | (10.7921) |
| Observations | 739 | 739 | 739 |
| Number of firms | 158 | 158 | 158 |
| AR1(p-value) | -6.141(0.00) | -2.824 (0.00) | -5.990 (0.00) |
| AR2 (p-value) | -0.0441(0.96) | 0.824 (0.42) | 1.228 (0.22) |
| J-Test(p-value) | 121.1 (0.26) | 115.8 (0.34) | 129.6 (0.12) |

Table 8 provides the System GMM results for NCI with Audit Sub-Index and risk-taking. In all models, three lags of the dependent variables are used (to preserve space these lagged coefficients are not reported). The definitions and symbols for all independent and control variables are the same as outlined in Table 1. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Tale 9 Non-compliance and Risk-Taking using Individual provisions

|  |  |  |  |
| --- | --- | --- | --- |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| P2 | 0.1429\*\*\* | 3.2787\*\*\* | -0.0945\* |
|  | (2.9088) | (11.5176) | (-1.8598) |
| P3 | -0.4137\*\*\* | -1.2619\*\* | -0.5367\*\*\* |
|  | (-3.7378) | (-2.3382) | (-5.7278) |
| P4 | 0.0735 | 0.2118 | 0.1348\*\* |
|  | (1.1515) | (0.7304) | (2.0471) |
| P8 | -0.1363\*\*\* | -2.8127\*\*\* | 0.0673 |
|  | (-2.6615) | (-7.6237) | (1.0069) |
| P11 | 0.2272\*\*\* | 2.3127\*\*\* | 0.5156\*\*\* |
|  | (3.8273) | (6.3421) | (7.8405) |
| P15 | 0.1270\*\* | 2.4163\*\*\* | -0.0877\*\* |
|  | (2.5044) | (6.7809) | (-2.0206) |
| P18 | -0.0404 | 0.0046 | 0.0736 |
|  | (-0.6229) | (0.0110) | (1.2662) |
| Board Size | 0.0458\*\*\* | 0.1312\*\*\* | 0.0256\*\*\* |
|  | (5.1592) | (2.8288) | (2.6359) |
| Gender Diversity | -0.2009 | 5.0960\*\*\* | 0.1769 |
|  | (-1.0326) | (4.4553) | (0.7307) |
| Board Independence | -0.3492\*\* | -2.6231\*\*\* | -0.6133\*\*\* |
|  | (-2.5500) | (-4.8850) | (-6.4961) |
| Extra Committees | -0.0572\*\*\* | 1.8753\*\*\* | 0.0425\*\* |
|  | (-3.5901) | (13.4286) | (2.0890) |
| Internal Controls | 0.0311\*\* | -0.4093\*\*\* | -0.0833\*\* |
|  | (2.1774) | (-2.9862) | (-2.5716) |
| Board Meetings | -0.0524\*\*\* | -0.3868\*\*\* | -0.0339\*\*\* |
|  | (-11.3672) | (-11.7940) | (-9.8127) |
| Risk Committee | -0.1489\*\* | -2.8719\*\*\* | -0.4657\*\*\* |
|  | (-2.2888) | (-7.0968) | (-6.6248) |
| Remuneration | -0.0351\*\*\* | -0.0335 | -0.0307\*\*\* |
|  | (-4.9099) | (-1.5957) | (-4.7076) |
| Board Ownership | 0.0009 | 0.0978\*\*\* | -0.0005 |
|  | (0.3439) | (6.2260) | (-0.1406) |
| ROA | 0.0274\*\*\* | 0.0638\*\*\* | 0.0129\*\*\* |
|  | (9.2604) | (4.4756) | (5.2395) |
| Leverage | 0.0100\*\*\* | 0.0520\*\*\* | 0.0039\*\*\* |
|  | (10.2008) | (9.2470) | (4.3346) |
| Firm Size | -0.0329 | -0.2475 | -0.2881\*\*\* |
|  | (-1.0568) | (-1.2946) | (-6.9816) |
| Liquidity | 0.0390\*\*\* | 0.0215 | 0.0859\*\*\* |
|  | (2.8371) | (0.2678) | (5.2902) |
| Capital | -0.0014\*\* | -0.0495\*\*\* | -0.0005 |
|  | (-1.9906) | (-9.7174) | (-0.5815) |
| Constant | 0.8072\*\*\* | 7.7735\*\*\* | 5.0247\*\*\* |
|  | (3.1063) | (3.4952) | (8.9465) |
| Observations | 739 | 739 | 739 |
| Number of firms | 158 | 158 | 158 |
| AR1(p-value) | -6.346 (0.00) | -2.851(0.00) | -6.280 (0.00) |
| AR2 (p-value) | -0.0909 (0.92) | 0.797 (0.42) | 0.833 (0.40) |
| J-Test(p-value) | 123.2 (0.22) | 112.9 (0.45) | 130 (0.11) |

Table 9 provides the System GMM results for non-compliance with individual provisions and risk-taking. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 10 Non-compliance and Risk-Taking after excluding NEDs as control

|  |  |  |  |
| --- | --- | --- | --- |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| NCI | 0.0479\*\*\* | 0.7501\*\*\* | 0.0482\*\*\* |
|  | (5.8388) | (12.2463) | (3.8944) |
| Board Size | 0.0483\*\*\* | 0.0734\*\* | 0.0305\*\*\* |
|  | (5.6675) | (2.0187) | (3.5753) |
| Gender Diversity | -0.1694 | 6.9216\*\*\* | 0.4268\*\* |
|  | (-0.8629) | (5.0278) | (2.0098) |
| Extra Committees | -0.0533\*\*\* | 1.9311\*\*\* | 0.0135 |
|  | (-3.1413) | (14.4150) | (0.5921) |
| Internal Controls | 0.0266\* | -0.4311\*\*\* | -0.0618\*\* |
|  | (1.8580) | (-3.5882) | (-2.0897) |
| Board Meetings | -0.0543\*\*\* | -0.4459\*\*\* | -0.0359\*\*\* |
|  | (-11.4802) | (-14.9496) | (-7.9468) |
| Risk Committee | -0.1593\*\* | -2.7837\*\*\* | -0.4193\*\*\* |
|  | (-2.3984) | (-6.3697) | (-5.6906) |
| Remuneration | -0.0274\*\*\* | 0.0241 | -0.0211\*\*\* |
|  | (-4.0645) | (1.1495) | (-3.0213) |
| Board Ownership | -0.0031 | 0.0965\*\*\* | -0.0010 |
|  | (-1.3596) | (6.3729) | (-0.3301) |
| ROA | 0.0282\*\*\* | 0.0536\*\*\* | 0.0120\*\*\* |
|  | (10.5626) | (4.4574) | (5.5221) |
| Leverage | 0.0089\*\*\* | 0.0593\*\*\* | 0.0031\*\*\* |
|  | (10.2359) | (12.0332) | (3.2553) |
| Firm Size | -0.0612\*\* | -0.3380\*\* | -0.3292\*\*\* |
|  | (-2.2507) | (-2.1721) | (-8.8290) |
| Liquidity | 0.0355\*\*\* | -0.1133\*\* | 0.0911\*\*\* |
|  | (2.8133) | (-2.0050) | (5.1342) |
| Capital | -0.0013\* | -0.0454\*\*\* | -0.0003 |
|  | (-1.8169) | (-8.9327) | (-0.3348) |
| Constant | 0.7858\*\*\* | 7.7143\*\*\* | 4.5818\*\*\* |
|  | (3.0094) | (3.9116) | (9.7931) |
| Observations | 742 | 742 | 742 |
| Number of firms | 158 | 158 | 158 |
| AR1(p-value) | -6.055 (0.00) | -2.826 (0.00) | -5.971 (0.00) |
| AR2 (p-value) | -0.151 (0.88) | 0.899 (0.36) | 1.183 (0.23) |
| J-Test(p-value) | 118.6 (0.31) | 119.3 (0.30) | 127.6 (0.14) |

Table 10 provides the System GMM results for non-compliance and risk-taking after excluding NEDs. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 11 Non-compliance and Alternative Measures of Risk-Taking

|  |  |  |  |
| --- | --- | --- | --- |
| VARIABLES | Difference between Minimum & Maximum ROA(1) | PHR(2) | R&D Expenses(3) |
| NCI | 0.0028\*\* | 0.3593\*\*\* | 0.4343\*\*\* |
|  | (1.9950) | (16.1130) | (3.2178) |
| Board Size | 0.0003 | 0.0211 | -0.3241\*\*\* |
|  | (0.2365) | (1.2758) | (-3.5424) |
| Gender Diversity | 0.0008 | -9.4102\*\*\* | 66.5489\*\*\* |
|  | (0.0210) | (-14.9690) | (7.0801) |
| Board Independence | 0.0187\* | -2.9599\*\*\* | -11.8832\*\*\* |
|  | (1.7905) | (-14.0167) | (-7.1039) |
| Extra Committees | -0.0191\*\*\* | -0.6796\*\*\* | -2.2950\*\*\* |
|  | (-3.7679) | (-10.8787) | (-4.6172) |
| Internal Controls | 0.0216\*\*\* | -0.3150\*\*\* | 0.7011\* |
|  | (6.4752) | (-9.2798) | (1.7438) |
| Board Meetings | 0.0045\*\*\* | -0.1589\*\*\* | 0.5264\*\*\* |
|  | (5.5128) | (-16.5658) | (4.9520) |
| Risk Committee | 0.0353\*\*\* | 4.5059\*\*\* | -33.5571\*\*\* |
|  | (3.1478) | (22.3444) | (-7.4172) |
| Remuneration | -0.0006 | 0.1668\*\*\* | 0.8511\*\*\* |
|  | (-1.0178) | (10.6840) | (9.1204) |
| Board Ownership | 0.0022\*\*\* | -0.0624\*\*\* | 0.3945\*\*\* |
|  | (4.8685) | (-16.3031) | (7.4444) |
| ROA | 0.0004 | -0.0121\*\*\* | 0.4596\*\*\* |
|  | (1.4509) | (-3.4648) | (15.7666) |
| Leverage | 0.0002 | 0.0348\*\*\* | 0.0464\*\*\* |
|  | (1.3719) | (16.8328) | (2.7855) |
| Firm Size | 0.0053 | 0.9898\*\*\* | -14.6386\*\*\* |
|  | (0.8775) | (13.6185) | (-26.3215) |
| Liquidity | -0.0289\*\*\* | 0.4057\*\*\* | -3.9431\*\*\* |
|  | (-11.7736) | (22.3804) | (-29.3907) |
| Capital | -0.0007\*\*\* | -0.0226\*\*\* | 0.1533\*\*\* |
|  | (-6.4520) | (-18.3941) | (38.5236) |
| Constant | -0.1400\*\* | -1.2127\*\* | 128.1112\*\*\* |
|  | (-2.3389) | (-2.0937) | (23.5680) |
| Observations | 593 | 883 | 448 |
| Number of firms | 158 | 158 | 78 |
| AR1(p-value) | -2.796 (0.00) | -1.116 (0.26) | -2.274 (0.023) |
| AR2 (p-value) | 1.223 (0.22) | -0.739 (0.45) | -0.812 (0.42) |
| J-Test(p-value) | 93.81 (0.37) | 128.5 (0.32) | 69.09 (0.42) |

Table 11 provides the System GMM results for non-compliance and risk-taking using alternative measures. In models, 1 & 2 three, while in Model 3, one lags of the dependent variables are used. The definitions and symbols for all independent and control variables are the same as outlined in Table 1. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 12 Propensity Score Matching Treatment Effects

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
|  |  |  |  |
| Non-compliant vs compliant | 0.450\*\* | 0.557 | 0.400\*\* |
|  | (0.186) | (1.269) | (0.188) |
| Controls | Yes | Yes | Yes |
| Observations | 1,044 | 1,044 | 1,044 |

Table 12 reports the results using PSM. Non-compliance with the UK CGC is the treatment effect. Compliant is the control group and non-compliant is the treatment group. Ccontrol variables are the same as outlined in Table 1. Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 13 Instrumental Variable (IV) Regression Results for Non-compliance and Risk-taking

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| NCI | 0.6040\*\* | 1.5854 | 0.6064\*\* |
|  | (2.4202) | (1.0112) | (2.4244) |
| Gender Diversity | -2.6736\*\*\* | -21.6187\*\*\* | -2.2342\*\* |
|  | (-2.9734) | (-3.8270) | (-2.4792) |
| Liquidity | 0.1121 | 1.3440\*\* | 0.1340 |
|  | (1.3423) | (2.5610) | (1.6003) |
| Internal Controls | -0.0522 | -0.6053\*\*\* | -0.0530 |
|  | (-1.4133) | (-2.6076) | (-1.4307) |
| Extra Committees | 0.0677 | 0.4787 | 0.0680 |
|  | (0.9174) | (1.0327) | (0.9193) |
| Board Size | 0.1033 | 0.4737 | 0.1094\* |
|  | (1.6147) | (1.1782) | (1.7052) |
| Board Independence | -0.6023 | -2.5725 | -0.6605 |
|  | (-1.0082) | (-0.6855) | (-1.1031) |
| Remuneration | 0.1152\*\*\* | 0.6852\*\* | 0.1135\*\*\* |
|  | (2.6481) | (2.5061) | (2.6012) |
| Board Ownership | 0.0304\*\* | 0.1380 | 0.0306\*\* |
|  | (2.1258) | (1.5376) | (2.1388) |
| Board Meetings | 0.0029 | 0.0217 | 0.0107 |
|  | (0.1091) | (0.1289) | (0.4000) |
| Risk Committee | 0.3547\* | 2.9934\*\* | 0.3663\* |
|  | (1.6690) | (2.2419) | (1.7195) |
| ROA | 0.0343\*\*\* | 0.3237\*\*\* | 0.0348\*\*\* |
|  | (3.0663) | (4.6099) | (3.1110) |
| Leverage | 0.0002 | 0.0315 | 0.0009 |
|  | (0.0494) | (1.1643) | (0.2088) |
| Firm Size | -0.0521 | 0.3315 | -0.0773 |
|  | (-0.4068) | (0.4118) | (-0.6023) |
| Capital | -0.0013 | -0.0122 | -0.0014 |
|  | (-0.3210) | (-0.4808) | (-0.3392) |
| Constant | 6.6400\*\*\* | 4.6136 | 6.2260\*\*\* |
|  | (4.9144) | (0.5435) | (4.5977) |
| Observations | 1,044 | 1,044 | 1,044 |
| Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Endogeneity test for NCI** |   |   |   |   |
| Durbin (score) chi2(1) | = 8.22926 (p =0.0041) |
| Wu-Hausman F (1,1027) | = 8.15957 (p=0.0044) |
| **Strength of the Instrument** |  |  |  |  |
| First-stage regression |   | Summary Statistics |
| Variable  | R.sq. | Adjusted R-sq. | Partial R-sq. | F (1,1028) | Prob > F |
| NCI | 0.2427 | 0.2317 | 0.024 | 25.3174 | 0.0000 |

Table 13 provides the results for non-compliance and risk-taking using Instrumental Variable (IV) approach. Median industry NCI is used as an instrument for NCI. The definitions and symbols for all independent and control variables are the same as outlined in Table 1. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 14 System GMM Results for One-year Lag of NCI and Risk-taking

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| Lag 1 NCI | 0.0335\*\*\* | 0.5992\*\*\* | 0.0222 |
|  | (3.3405) | (10.9223) | (1.6315) |
| Board Size | 0.0443\*\*\* | 0.0096 | 0.0318\*\*\* |
|  | (5.0231) | (0.3137) | (3.8630) |
| Gender Diversity | 0.0359 | 9.4296\*\*\* | 0.5559\*\* |
|  | (0.2204) | (10.0404) | (2.4423) |
| Board Independence | -0.3629\*\*\* | -2.8022\*\*\* | -0.5535\*\*\* |
|  | (-2.7078) | (-5.6679) | (-6.4817) |
| Remuneration | -0.0363\*\*\* | -0.0700\*\*\* | -0.0373\*\*\* |
|  | (-5.2383) | (-3.6499) | (-5.3611) |
| Board Ownership | -0.0006 | 0.1318\*\*\* | -0.0006 |
|  | (-0.2359) | (8.3104) | (-0.1866) |
| Extra Committees | -0.0751\*\*\* | 1.9327\*\*\* | 0.0013 |
|  | (-4.3819) | (14.7038) | (0.0643) |
| Board Meetings | -0.0535\*\*\* | -0.3688\*\*\* | -0.0343\*\*\* |
|  | (-10.9386) | (-12.7355) | (-8.5066) |
| Risk Committee | -0.0954 | -2.6581\*\*\* | -0.3772\*\*\* |
|  | (-1.4634) | (-7.5268) | (-5.7059) |
| ROA | 0.0297\*\*\* | 0.0591\*\*\* | 0.0134\*\*\* |
|  | (10.9941) | (6.0149) | (6.3546) |
| Leverage | 0.0091\*\*\* | 0.0648\*\*\* | 0.0041\*\*\* |
|  | (10.2137) | (14.4040) | (4.8807) |
| Firm Size | -0.0167 | 0.1605 | -0.2851\*\*\* |
|  | (-0.5244) | (0.9759) | (-8.7787) |
| Capital | -0.0005 | -0.0349\*\*\* | 0.0003 |
|  | (-0.7054) | (-6.8209) | (0.3334) |
| Internal Controls | 0.0178 | -0.3256\*\* | -0.0541\* |
|  | (1.4834) | (-2.3450) | (-1.8244) |
| Liquidity | 0.0228\* | -0.2721\*\*\* | 0.0816\*\*\* |
|  | (1.8354) | (-3.8315) | (5.1621) |
| Constant | 0.7805\*\*\* | 4.1119\* | 4.5345\*\*\* |
|  | (3.5087) | (1.8973) | (9.8326) |
| Observations | 742 | 742 | 742 |
| Number of firms | 158 | 158 | 158 |
| Control | Yes | Yes | Yes |
| AR1(p-value) | -6.159 (0.00) | -2.875 (0.00) | -6.036 (0.00) |
| AR2 (p-value) | -0.0563 (0.95) | 0.841(0.40) | 1.235 (0.21) |
| J-Test(p-value) | 114.4 (0.41) | 116.8 (0.36) | 129.9 (0.11) |

Table 14 provides the results for non-compliance and risk-taking using one-year lags of NCI. The definitions and symbols for all independent and control variables are the same as outlined in Table 1. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Appendices

Appendix 1. Provisions from the UK Corporate Governance Code, which are used in developing the non-compliance Index (NCI).

|  |  |
| --- | --- |
| P1 | Principle A.2: There should be a clear division of responsibilities at the head of the company between the running of the board and the executive responsibility for the running of the company’s business. No one individual should have unfettered powers of decision. |
| P2 | Principle A.2.2: The chairman should, on appointment, meet the independence criteria set out in Section A.3.1 of the UK Corporate Governance Code. |
| P3 | Principle A.3.3: The board should appoint one of the independent non-executive directors to be the senior independent director.  |
| P4 | Principle A.3.2: Except for smaller companies at least half of the board excluding the chairman should be Independent non-executive directors (INEDs). |
| P5 | Principle A.3.2: The majority of non-executive directors (NEDs) should be Independent. |
| P6 | Principles A.4.1, C.3.1, and B.2.1: The board should establish nomination, audit and remuneration committees. |
| P7 | Principle A.4.6: A separate section of the annual report should describe the work of the nomination committee, including the process it has used in relation to board appointments. |
| P8 | Principles A.4.1, C.3.1, and B.2: The audit, nomination, and remuneration committees should be headed by independent non-executive directors (INEDS). |
| P9 | Principle A.4.5: Executive directors should not take more than one non-executive directorship in a FTSE 100 company nor the chairmanship of such a company. |
| P10 | Principle A.6.1: The board should report in the annual report how performance evaluation of the board, its committees and its individual directors has been conducted.  |
| P11 | Principle A.6.1: Independent non-executive directors led by senior independent director should be responsible for performance evaluation of the chairman, taking into account the views of executive directors. |
| P12 | Principle A.7.1: All directors should be subject to election at their first AGM, and re-election every three years. |
| P13 | Principle B.1.1: Performance-related elements of remuneration should form a significant proportion of the total remuneration package of executive directors and should be designed to align their interests with those of shareholders and to give these directors keen incentives to perform at the highest levels.  |
| P14 | Principle B.1.2: Remuneration for NEDs should not include share options. |
| P15 | Principle B.2.1: Remuneration committee should be entirely composed of independent non-executive directors. |
| P16 | Principle C.2: The board should maintain a sound system of internal controls to safeguard shareholders’ investments and the company’s assets. |
| P17 | Principle C.2.1: The board should, at least annually, conduct a review of the effectiveness of the company’s system of internal controls and should report to shareholders that they have done so. |
| P18 | Principle C.3.1: At least three members of the audit committee should be independent non-executive directors. |
| P19 | Principle C.3.1: The board should satisfy itself that at least one member of the audit committee has recent and relevant financial experience. |
| P20 | Principle D.1.2: The board should report in the annual report the steps taken to ensure that the board, including the NEDs, has developed an understanding of the views of major shareholders of the company. |
| P21 | Principle B.1.6: Notice or contract periods should be set at one year or less. |
| P22 | Principle C.3.2: The main role and responsibilities of the audit committee should be set out in written terms of reference. |

|  |
| --- |
| Appendix 2: Variance Inflation Factor Test for Multicollinearity |
| Variable | VIF | 1/VIF  |
| NCI | 1.23 | 0.81 |
| Board Size | 1.62 | 0.62 |
| Remuneration | 1.55 | 0.64 |
| Capital | 1.46 | 0.69 |
| Extra Committees | 1.44 | 0.69 |
| Risk Committee | 1.25 | 0.80 |
| Firm Size | 2.28 | 0.44 |
| ROA | 1.19 | 0.84 |
| Internal Controls | 1.19 | 0.84 |
| Liquidity | 1.17 | 0.85 |
| Board Independence | 1.15 | 0.87 |
| Leverage | 1.13 | 0.88 |
| Board Ownership | 1.13 | 0.88 |
| Gender Diversity | 1.11 | 0.90 |
| Board Meetings | 1.09 | 0.92 |
| Mean VIF | 1.33 |   |

Appendix 3 OLS Regression Results for Non-compliance and Risk-taking

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| NCI | 0.0462 | 0.0320 | 0.0412 |
|  | (1.3518) | (0.1317) | (1.2039) |
| Board Size | 0.0065 | 0.2456 | 0.0116 |
|  | (0.1757) | (0.9292) | (0.3127) |
| Gender Diversity | -1.9944\*\* | -19.9197\*\*\* | -1.6973\*\* |
|  | (-2.4293) | (-3.4078) | (-2.0629) |
| Board Independence | -0.2818 | -1.6686 | -0.3281 |
|  | (-0.5549) | (-0.4615) | (-0.6446) |
| Remuneration | 0.0770\*\* | 0.6293\*\* | 0.0711\* |
|  | (1.9919) | (2.2859) | (1.8349) |
| Board Ownership | -0.0001 | 0.0322 | 0.0005 |
|  | (-0.0106) | (0.7446) | (0.0852) |
| Extra Committees | 0.1423\*\* | 0.5894 | 0.1487\*\*\* |
|  | (2.5678) | (1.4932) | (2.6773) |
| Internal Controls | 0.0087 | -0.4865\*\* | 0.0080 |
|  | (0.3039) | (-2.3939) | (0.2782) |
| Board Meetings | 0.0059 | 0.0361 | 0.0160 |
|  | (0.2566) | (0.2187) | (0.6891) |
| Risk Committee | 0.1605 | 2.6283\*\* | 0.1841 |
|  | (0.9143) | (2.1023) | (1.0464) |
| ROA | 0.0279\*\*\* | 0.2959\*\*\* | 0.0296\*\*\* |
|  | (2.6683) | (3.9754) | (2.8240) |
| Leverage | -0.0011 | 0.0246 | -0.0010 |
|  | (-0.2917) | (0.9087) | (-0.2546) |
| YEAR | -0.0135 | -0.2881 | 0.0705 |
|  | (-0.2393) | (-0.7193) | (1.2495) |
| Firm Size | 0.2815\*\*\* | 0.9149\* | 0.2667\*\*\* |
|  | (4.0112) | (1.8311) | (3.7923) |
| Liquidity | 0.1218\* | 1.2825\*\* | 0.1467\*\* |
|  | (1.6476) | (2.4376) | (1.9813) |
| Capital | -0.0026 | -0.0019 | -0.0030 |
|  | (-0.7549) | (-0.0770) | (-0.8744) |
| Constant | 2.6140\*\*\* | -6.0305 | 1.5883\* |
|  | (3.0332) | (-0.9828) | (1.8389) |
| Observations | 1,044 | 1,044 | 1,044 |
| R-squared | 0.1171 | 0.1074 | 0.1143 |
| Industry FE | Yes | Yes | Yes |
| Year Controls | Yes | Yes | Yes |

Appendix 3 provides the results for non-compliance and risk-taking using OLS estimation. The definitions and symbols for all independent and control variables are the same as outlined in Table 1. t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Appendix 4: OLS Regression Results for NCI and ROA Interaction and Risk-taking

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| NCI | 0.0642 | 0.0486 | 0.0562 |
|  | (1.1305) | (0.1202) | (0.9880) |
| ROA | 0.0313\*\* | 0.2805\*\*\* | 0.0324\*\* |
|  | (2.3089) | (2.9037) | (2.3861) |
| NCI x ROA | -0.0016 | -0.0073 | -0.0014 |
|  | (-0.3970) | (-0.2498) | (-0.3300) |
| Board Size | 0.0066 | 0.2451 | 0.0117 |
|  | (0.1787) | (0.9268) | (0.3151) |
| Gender Diversity | -1.9747\*\* | -20.0080\*\*\* | -1.6808\*\* |
|  | (-2.3999) | (-3.4151) | (-2.0383) |
| Board Independence | -0.2771 | -1.6894 | -0.3242 |
|  | (-0.5453) | (-0.4669) | (-0.6366) |
| Remuneration | 0.0766\*\* | 0.6313\*\* | 0.0707\* |
|  | (1.9786) | (2.2912) | (1.8238) |
| Board Ownership | -0.0003 | 0.0334 | 0.0003 |
|  | (-0.0560) | (0.7680) | (0.0468) |
| Extra Committees | 0.1422\*\* | 0.5899 | 0.1487\*\*\* |
|  | (2.5646) | (1.4938) | (2.6744) |
| Internal Controls | 0.0085 | -0.4857\*\* | 0.0078 |
|  | (0.2974) | (-2.3885) | (0.2727) |
| Board Meetings | 0.0050 | 0.0405 | 0.0152 |
|  | (0.2131) | (0.2437) | (0.6501) |
| Risk Committee | 0.1615 | 2.6241\*\* | 0.1849 |
|  | (0.9192) | (2.0977) | (1.0503) |
| Leverage | -0.0012 | 0.0250 | -0.0010 |
|  | (-0.3142) | (0.9213) | (-0.2733) |
| Firm Size | 0.2793\*\*\* | 0.9245\* | 0.2649\*\*\* |
|  | (3.9672) | (1.8440) | (3.7541) |
| Liquidity | 0.1236\* | 1.2745\*\* | 0.1482\*\* |
|  | (1.6681) | (2.4166) | (1.9969) |
| Capital | -0.0025 | -0.0025 | -0.0029 |
|  | (-0.7142) | (-0.0999) | (-0.8394) |
| Constant | 2.5800\*\*\* | -6.2266 | 1.6416\* |
|  | (3.0721) | (-1.0413) | (1.9504) |
| Observations | 1,044 | 1,044 | 1,044 |
| R-squared | 0.1173 | 0.1074 | 0.1144 |
| Industry FE | Yes | Yes | Yes |
| Year Controls | Yes | Yes | Yes |

Appendix 4 provides the results for non-compliance and ROA interaction and risk-taking using OLS estimation. The definitions and symbols for all independent and control variables are the same as outlined in Table 1. t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Appendix 5 FE Regression Results for Non-compliance and Risk-taking

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| NCI | 0.0159 | 0.0573 | 0.0244\*\* |
|  | (1.2624) | (0.2572) | (2.0485) |
| Board Size | 0.0046 | -0.0230 | 0.0137 |
|  | (0.3686) | (-0.1048) | (1.1625) |
| Gender Diversity | -0.5098 | -0.6794 | -0.2456 |
|  | (-1.4523) | (-0.1091) | (-0.7376) |
| Board Independence | -0.1192 | -3.9816\* | -0.1629 |
|  | (-0.9113) | (-1.7162) | (-1.3127) |
| Remuneration | -0.0018 | 0.0470 | -0.0099 |
|  | (-0.1753) | (0.2616) | (-1.0323) |
| Board Ownership | -0.0031 | 0.0146 | 0.0031 |
|  | (-0.6990) | (0.1830) | (0.7294) |
| Extra Committees | -0.0107 | 1.4372\*\* | -0.0249 |
|  | (-0.2679) | (2.0266) | (-0.6566) |
| Internal Controls | 0.0164 | -0.3577 | -0.0243 |
|  | (0.4876) | (-0.6000) | (-0.7629) |
| Board Meetings | -0.0095 | -0.1789 | 0.0048 |
|  | (-1.2398) | (-1.3152) | (0.6630) |
| Risk Committee | -0.2052 | -10.4065\*\*\* | -0.0629 |
|  | (-1.2131) | (-3.4694) | (-0.3923) |
| ROA | 0.0128\*\*\* | -0.0592 | 0.0153\*\*\* |
|  | (3.6498) | (-0.9522) | (4.5910) |
| Leverage | 0.0039\*\*\* | 0.0374 | 0.0033\*\* |
|  | (2.8617) | (1.5491) | (2.5241) |
| Firm Size | 0.2713\*\*\* | 1.8184\* | 0.3020\*\*\* |
|  | (4.8513) | (1.8335) | (5.6944) |
| Liquidity | 0.0115 | -0.1773 | 0.0201 |
|  | (0.4919) | (-0.4278) | (0.9084) |
| Capital | 0.0036\*\*\* | 0.0550\*\* | 0.0036\*\*\* |
|  | (2.7803) | (2.3711) | (2.9172) |
| Constant | 3.3960\*\*\* | 3.2415 | 2.4739\*\*\* |
|  | (6.3862) | (0.3437) | (4.9048) |
| Observations | 1,044 | 1,044 | 1,044 |
| R-squared | 0.3916 | 0.0461 | 0.4561 |
| Number of Firms | 158 | 158 | 158 |
| Year FE | Yes | Yes | Yes |

Appendix 5 provides the results for non-compliance and risk-taking using FE estimation. The definitions and symbols for all independent and control variables are the same as outlined in Table 1. t-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Appendix 6 Non-compliance and Risk-taking for PCA components after excluding governance variables

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| VARIABLES | Total Risk | Systematic Risk | Idiosyncratic Risk |
| Reward | 0.1819\*\*\* | 0.5158\*\*\* | 0.2143\*\*\* |
|  | (5.8808) | (3.7022) | (5.4821) |
| Committee Independence | -0.0667\*\*\* | 0.2049\*\*\* | -0.0431\*\* |
|  | (-4.4426) | (2.6040) | (-2.2561) |
| Committee establishment | 0.0347\*\*\* | -0.0351 | 0.0854\*\*\* |
|  | (2.7136) | (-0.4538) | (4.2613) |
| Board Independence | 0.0460\*\*\* | 0.8066\*\*\* | -0.0141 |
|  | (2.9874) | (9.0890) | (-0.9167) |
| Performance Evaluation | 0.0619\*\*\* | 0.7502\*\*\* | 0.0910\*\*\* |
|  | (3.6026) | (9.5651) | (4.9869) |
| Gender Diversity | 0.0184 | 4.3967\*\*\* | 0.5998\*\*\* |
|  | (0.0862) | (4.7753) | (2.7253) |
| Extra Committees | 0.0190 | 1.7741\*\*\* | 0.0605\*\*\* |
|  | (0.9186) | (16.5511) | (2.6398) |
| Internal Controls | 0.0469\*\*\* | -0.5370\*\*\* | -0.0469 |
|  | (10.1137) | (-6.3293) | (-1.4079) |
| Risk Committee | -0.1716\*\*\* | -1.6430\*\*\* | -0.4642\*\*\* |
|  | (-2.5766) | (-5.8705) | (-8.4592) |
| ROA | 0.0299\*\*\* | 0.0798\*\*\* | 0.0155\*\*\* |
|  | (12.8685) | (7.6262) | (7.3145) |
| Leverage | 0.0086\*\*\* | 0.0542\*\*\* | 0.0023\*\*\* |
|  | (11.0918) | (12.7379) | (3.0343) |
| Firm Size | -0.0752\*\*\* | -0.6782\*\*\* | -0.3584\*\*\* |
|  | (-3.1548) | (-4.6341) | (-9.4607) |
| Liquidity | 0.0304\* | -0.0996 | 0.0979\*\*\* |
|  | (1.8556) | (-1.3663) | (5.8506) |
| Capital | -0.0016\*\* | -0.0408\*\*\* | 0.0000 |
|  | (-2.4500) | (-8.7359) | (0.0222) |
| Constant | 0.8307\*\*\* | 9.8063\*\*\* | 4.5619\*\*\* |
|  | (4.7934) | (6.5090) | (9.2697) |
| Observations | 736 | 736 | 736 |
| Number of Firms | 157 | 157 | 157 |
| AR1(p-value) | -6.194 (0.00) | -2.844 (0.00) | -5.629 (0.00) |
| AR2 (p-value) | 0.414 (0.67) | 1.062 (0.28) | 1.270 (0.20) |
| J-Test(p-value) | 116.3 (0.37) | 125.5 (0.18) | 129.1 (0.12) |

This table provides the System GMM results for non-compliance and risk-taking after excluding all governance variables. Z-statistics in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

1. Managers and directors are used interchangeably in this study [↑](#footnote-ref-1)
2. We thank an anonymous reviewer for suggesting this argument. [↑](#footnote-ref-2)
3. http://www.ftse.com/Indices/UK\_Indices/index.jsp [↑](#footnote-ref-3)
4. These reports are: (The Greenbury report 1995, The Hampel report 1998, The Turnbull report 1999,The Higgs report 2003, The Tyson report 2003 and The Smith report 2003)[ available at: <https://www.frc.org.uk/directors/corporate-governance-and-stewardship/uk-corporate-governance-code/history-of-the-uk-corporate-governance-code> ] [↑](#footnote-ref-4)
5. For instance, for the 2014 revisions the FRC states that “the Code was revised to enhance the quality of information received by investors about the long-term health and strategy of listed companies. It also updated the remuneration section to ensure executive remuneration is designed to promote the long-term success of the company and to demonstrate how this is being achieved more clearly to shareholders”. Similarly for the 2016 revisions the FRC states that “The Code was revised to reflect the changes needed to implement the EU Audit Regulation and Directive”( <https://www.frc.org.uk/directors/corporate-governance-and-stewardship/uk-corporate-governance-code/history-of-the-uk-corporate-governance-code> ) [↑](#footnote-ref-5)
6. Previously known as Hemscott Guru Database. [↑](#footnote-ref-6)
7. Refer to Appendix 2 [↑](#footnote-ref-7)
8. <http://www.ft.com/cms/s/0/bbfff43e-4b44-11da-aadc-0000779e2340.html> [↑](#footnote-ref-8)
9. These variables are: Board Size, Gender Diversity, Ned Ration, Remuneration, Board Ownership, Extra Committees on Board, Internal Controls, Board Meetings, Risk Committee, ROA, Leverage, Firm Size, Liquidity and Capital [↑](#footnote-ref-9)