Effects of Corporate Governance Mechanisms on CEO Employment Risk

Abstract

This paper examines the determinants of CEO employment risk from a corporate governance (CG) perspective. Previous studies focused on the effect of CG on firm performance, we investigate the effect of CG on CEO's employment risk. Using Probit model on a panel dataset from UK FTSE 350 non-financial companies, our results reveals that the likelihood of CEO employment risk increases as board size and board independence increases, while CEO network reduces the likelihood. The study advances CG literature by providing fresh insights into how CG mechanisms can enhance effective monitoring of CEO performance. It also offers important insight to policy makers who are interested in providing guidance on the optimal board size and board composition and those interested in the effective monitoring of CEO performance and organisational strategies for firm performance.

Keywords: Corporate governance, agency theory, resource dependency theory, employment risk, CEO, board of directors.

1. Introduction

Corporate governance has become a subject of intense scholarly debate. While some studies have focused on good corporate governance and its determinants (Adegbite, 2015), others have attempted to examine the effect of governance mechanisms on firm outcomes such as performance (Liu, Miletkov, Wei and Yang, 2015), risk taking (Nakano and Nguyen, 2012), investment decisions (Dong and Gou, 2010), financial reporting quality (Marra, Mazzola and Prencipe, 2011) amongst others. The emphasis of the extant literature has been to promote good corporate governance practices, by stressing the link to positive firm outcomes. There is however, the need to go beyond the effects of corporate governance on firm outcomes by examining the effects of corporate governance mechanisms on the personal risk of decision makers, such as company executives. This is important because executives are exposed to an inherent risk, arising from the close association of their compensation package with firm's stock price (both the return and volatility). They are also exposed to diversification risk because of the huge amount of their firm based wealth. However, while the analysis of compensation risks is beginning to gain scholarly attention (Guay, 1999; Hayes, Lemmon and Qiu, 2012; Ju, Leland and Senbet, 2014), personal risks like employment risk that executives, such as CEOs, are exposed to, and their impact on firm outcomes have been almost neglected in the extant literature. We address this gap in this paper. This study therefore is the first to empirically examine how corporate governance mechanisms determine CEO employment risk.

The corporate governance systems in an organisation are expected to play a role in determining the level of personal risk affecting the CEO. This is because the provisions of the system indirectly guide the decisions of the CEO. Thus, given the relationship between good corporate governance and firms' decisions and outcomes, it is important to examine the

determinants of CEO's personal risk and the impact on firms' decisions made and outcomes from a corporate governance perspective. In order to do this, we examine CEO employment risk. Gibbons and Murphy (1992) & Cruz, Gómez-Mejia, and Becerra (2010) note that employment risk is of great concern to executives. The employment risk of the CEO also has potential consequences for other firm outcomes such as risk taking and firm performance. For example, Chakraborty, Sheikh and Subramanian (2007) show that CEOs facing high termination risk engage in less risk taking activities. Whereas shareholders would prefer more risk taking which would improve firm performance. Similarly, Fiordelisi and Ricci (2014) find strong negative relationship between firm performance and CEO turnover.

CEO employment risk refers to the possibility or likelihood of being dismissed from office before the expiration of the employment contract (Chakraborty et al., 2007). The actual removal of the CEO can result in serious consequences for the CEO such as loss of reputation, inability to find another job, and loss of future income (Larraza-Kintana, Wiseman, Gomez-Mejia and Welbourne, 2007). While the existing empirical literature points to firm performance as a major determinant of CEO dismissal (Kaplan and Mitton, 2012), the literature has failed to provide evidence of other determinants of CEO employment risk. Adopting agency theory and resource dependency theory as our conceptual framework, this paper contributes to existing corporate governance literature by examining relevant corporate governance mechanisms as determinants of CEO employment risk. Specifically, this study aims to answer the question; does the structure of the board and the size of the CEO network/connections determine the CEO employment risk? To answer this question, we use data from BoardEx database and Datastream with a focus on non-financial firms in the FTSE 350 index. We focus on the UK because corporate governance in the UK employs a prescriptive approach, where compliance with the codes of best practice is

recommended with a requirement to disclose reasons for non-compliance. The FTSE 350 is a developed market with assessable information and as a result, findings of this study obtained can be compared with similar markets in the world. The remainder of this paper is organised as follows; section 2 presents the literature review and hypotheses development. Sections 3 and 4 present the data and model specification respectively. To confirm the validity of results we perform a robustness check and present the results in section 5. The last section, 6 discusses and concludes the paper.

2. Literature and Hypotheses Development

2.1. Theoretical Framework

The agency theory suggests that due to the separation of the ownership of the firm from its control, there is the likelihood of a conflict of interest between owners and managers to the extent that the decisions of managers become self-serving, rather than for the interest of shareholders (Jensen and Meckling, 1976). To overcome this conflict of interest, agency theory perspectives suggest providing a monitoring mechanism to protect the interest of shareholders. One of such mechanism is the setting up of a board of directors. The board of directors is the highest decision making body of any corporate establishment. The board is charged with the responsibility to hire and fire CEOs as well as other executives. It is also the responsibility of the board to set the remuneration of the CEO. It is therefore expected that the board should be able to assess the performance of the CEO in relation to the firm's performance. Hence going by the supposition of agency theory, an effective board should be one that is able to discipline CEOs if and when there is need to do so. Executives can be disciplined either by warning, pay-cut or outright dismissal.

The literature on effective boards has taken different dimensions ranging from size (Adams and Mehran, 2005; Nakano and Nguyen, 2012), independence (O'Connell and Cramer, 2010; Chen, 2015), networks (Cashman, Gillan and Jun, 2012; Engelberg, Gao and Parsons, 2013), diversity (Adams, Terjesen, and Ees, 2015), busyness (Ferris, Jagannathan, and Pritchard, 2003; Fich and Shivdasani, 2006) amongst others. While there is a vast literature on board size and independence, there is also a burgeoning research on board networks. Resource dependency theory highlights the importance of networks as a means to garner external resources that is beneficial to the firm, which otherwise would be difficult or costly to obtain. The implication of this is that such resources would lead to better firm performance which translates to low employment risk for executives. For instance, Jackling and Johl (2009) argue that large board's increases performance because of the greater exposure to external recourses provided by the different board members. Similarly, Jermias and Gani (2014) provide evidence that outside directors are important source of external resources to the firm through human capital. They provide strong evidence that the positive relationship between managerial share ownership and performance is reinforced by the presence of outside directors. From gender diversity perspective, Luckerath-Rovers (2013) argues that firms with women on the board provide important resources by having better connections with important stakeholders, which results in better firm performance.

While there is a general consensus that the main cause of CEO employment risk or actual dismissal is poor firm performance[1], prior studies have failed to examine other determinants of CEO employment risk. It is against this backdrop that this study considers the effect of three governance mechanisms (board size, board independence and CEO network) on the CEO employment risk. As good corporate governance is beneficial to both shareholders and other stakeholders, there is therefore a strong reason to examine how the prescription of good

governance visible in the form of board effectiveness in terms of structure and networks determine CEO employment risk. This is because these mechanisms may affect CEO employment risk which in turn may affect firm outcomes.

2.2. Board Size

The existing literature on the effectiveness of boards of directors and corporate governance codes of conduct do not provide a particular board number that is appropriate for any particular firm. For example, while some studies, (Adams and Mehran, 2005; Nakano and Nguyen, 2012) find that large boards have a positive effect on firms, some others (Yermack, 1996; Guest, 2009) find a negative effect. However, Jensen (1993) argues that an optimal board is one comprised of seven to eight members. Lipton and Lorsch (1992) suggest that smaller boards are more effective as decision making takes shorter time. Hence, Raheja (2005) suggest that an optimal board size is dependent on the functions of the directors as well as the firm specific features and needs.

A significant body of research has examined the determinants of board size as well as its effect on firm outcomes. However, the implication of board size for the CEO employment risk has remained largely unexplored. For example, Chen and Al-Najjar (2012) in a recent study of Chinese firms observe that board size is mainly driven by the complexity of the firm. In the UK, Guest (2008) provides evidence that it is the advising needs of the firm that determine the size of the board. While for US firms, Linck, Netter and Yang (2008) observe that the structure of the board is determined by the anticipated cost and benefits of the monitoring and advising roles that boards tend to provide. Another dimension of the analysis of corporate board size is its implication for firm performance. This has resulted in divergent results. For instance, Yermack (1996) provides evidence of a negative relationship between board size and firm performance. The study reveals

that large boards are usually plagued with communication and coordination problems as well as increased agency problems which results in lower firm performance.

In examining a sample of small and medium size firms, Eisenberg, Sundgren and Wells (1998) reveal that there is a significant negative relationship between board size and profitability. Similarly, Liang, Xu and Jirapon (2013), find that in a sample of the fifty largest banks in China, board size has a significant negative impact on firm performance. In the UK, Guest (2009) find that board size has negative effect on profitability, tobin's Q and share returns. On the contrary, Adams and Mehran (2012) study the consequence of board structure on bank holding companies in the light of the latest financial crisis. The study shows that board size is positively associated with bank performance. Cheng (2008) examines the association between board size and the variability of corporate performance for US companies. The study provides evidence that larger boards have lower performance variability. The findings are linked to the idea that it takes much negotiation to reach an agreement within large boards. Hence, decisions made are less likely to be extreme, therefore lower performance variability. Similarly, Nakano and Nguyen (2012) find that Japanese firms with large boards, exhibit low performance variability as well as reduced risk of corporate failure. This is attributed to low cross-sectional variation in risk taking among Japanese firms. However, they note that this effect is not so significant for firms with huge investment prospects.

Although most of the above studies concentrate mainly on the effect of board size on firm performance and the determinants of board size, an important, yet unexplored, consequence of board size is its effect on the CEO's employment risk. We address this issue because the outcome of the firm (whether in terms of performance, mergers or acquisition, shareholders returns etc.), have potential effect on the employment of CEO. This is especially so in the case of large

companies such as those in the FTSE 350 index. Also, we examine board size as a determinant of CEO employment risk because of the power vested on the board as the apex body in the firm. The board is saddled with the responsibility to hire and fire the executives of the firm which includes the CEO, (Biondi and Reberioux, 2012). The board of directors are also charged with the responsibility of monitoring and advising managers on behalf of shareholders, (Jensen and Meckling 1976). We therefore argue that the structure of the board may have strong consequences for the job security of the CEO. In line with Yamack (1996) who suggests that large boards suffer from communication and coordination problems which intensifies agency costs and results in poor firm performance, we argue that this lower firm performance resulting from large boards will increase CEO employment risk. We propose that;

Hypothesis 1: The likelihood of CEO employment risk increases with firm's board size

2.3. Board Independence

A second aspect of the board structure that has been frequently examined in the literature is the composition of the board. Although some studies have analysed the structure of the board with regards to its diversity in terms of culture and expertise, age, and gender, a vast majority have concentrated on the board independence as a determining factor in the functioning and performance of the firm. This is due to the increased call for better corporate governance mechanisms in corporations following incessant corporate governance crises. For example, in the UK, the Hampel report (1998) and Higgs report (2003) recommend that at least fifty percent of the company's board be comprised of independent non- executive directors. In the US, the Sarbanes- Oxley Act of 2002 requires that majority of board members be comprised of independent directors and all audit committee members be independent directors. Also the Dodd-Frank Act 2010 requires all members of the compensation committee be independent directors.

No doubt, the recommendation of these corporate governance codes recognises the importance of independent boards, however, the effectiveness of this recommendation is however predicated on some factors. For example, Duchin, Matsusaka, and Ozbas (2010) notes that recent regulation on board independence will only be effective and result in better firm performance when the cost of information acquisition is low. They show that when information acquisition is high, corporate performance declines when more outside directors are added to the board. Similarly, Koerniadi and Tourani-Rad (2012) examine the effect of independent directors on firm value. They argue that in line with stewardship theory and in an environment where managers are active partners with stakeholders, fewer independent directors results in increased firm value. Thus, they conclude that board independence is of negative value to the firm.

Koerniadi and Tourani-Rad (2012), O'Connell and Cramer (2010), Chen (2015), Lu and Wang (2015) and Liu et al., (2015) have all attempted to provide evidence of a relationship between board independence and various aspects of the firm with inconclusive results. For instance, Lu and Wang (2015) examine the influence of board independence on corporate investment decisions in the US. In line with the idea that independent board reduces agency problems, the study reveals that more independent boards have negative relationship with capital investment but positive relationship with investment in research and development. Similarly, Dong and Gou (2008) examine the effect of corporate governance mechanisms on a firms' research and development (R&D) investment decision. They find that the number of independent outside directors has a positive impact on R&D investment (see also O'Connell and Cramer, 2010; Chen, 2015; Liu et al., 2015).

Some studies have toed a different line by investigating how board independence affects firm risk. For instance, Bradley and Chen (2015) analyse the effect of board independence on the

cost of debt. They find that board independence reduces the cost of debt when there are stringent credit conditions and when leverage is low, but the reverse is the case when credit conditions are poor and when leverage is high. They concluded that more independent boards encourage more risk taking which is favourable to shareholders but not favourable to bondholders. In relation to corporate failure, Hsu and Wu (2014) study the effect of board structure on the possibility of corporate collapse in the UK. They particularly differentiated between grey directors and independent directors. The study emphasises the importance of having grey directors[2] on corporate boards. The findings reveal that the possibility of corporate failure is lower for firms with higher proportion of grey directors when compared to independent directors. Hsu and Wu (2014) conclude that strict adherence to "independence" might not be beneficial to the firm. Similar results were observed in Wang and Hsu, (2013) & Chen, (2014).

Recently, there has been an influx of research on earnings management. Executives of poorly performing firms tend to engage in earnings management through the use of accounting practices in order to bolster current profit. In accordance with the rationale for corporate governance codes and practices, it is expected that independent directors would object to such practices, so that there would be a negative relationship between board independence and earnings management. Indeed, Setia-Atmaja, Haman and Tanewski (2011) show that for Australian family controlled firms, a higher fraction of independent directors on the board (that is more independent boards) helps to curtail earnings management, see also Osma (2008). In a similar study, Marra et al., (2011) finds that more independent boards and the existence of the audit committee reduces earnings management after the mandatory adoption of IFRS. They conclude that corporate governance systems such as board independence help to improve earnings quality. Subsequently, Yekini, et al. (2015) examine the relationship between board independence and the quality of

information disclosed in annual reports about community involvement. Their findings reveal that firms with higher board independence are likely to disclose more superior information on their community activities compared to less independent boards. Relatedly, Chen, Cheng and Wang (2015) note that increasing board independence does not necessarily deter earnings management but that a reduction in earnings management influenced by independent directors is conditioned on information acquisition cost.

In relation to CEO turnover, Laux (2008) examines the effect of board independence on the CEO turnover. The study presents evidence that more independent board is positively related to voluntary CEO turnover, more generous severance package and larger stock option grant. Weisbach (1988) finds that there is a strong relationship between previous firm performance and the likelihood of CEO voluntary resignation for firms with more outside directors than for firms with more insiders on the board. They conclude that independent boards are more likely to dismiss poorly performing CEOs than dependent boards.

Notwithstanding the general consensus for more independent boards, the advantage of which has been examined in several studies. The implication of having a more independent board for the CEO employment risk presents a fundamental concern especially for large companies. This study fills the existing gap in current research by examining the effect of board independence on the determinants of CEO employment risk. In line with Fama and Jensen (1983), Weisbach (1988) and Laux (2008), we argue that independent boards are more effective, and independent directors would prefer to preserve their reputation and do what is right to the extent that they are more likely to replace CEOs who are not performing as expected. We therefore propose that;

Hypothesis 2: The likelihood of CEO employment risk increases with increased board independence.

2.4. CEO Network

In any aspect of economic events, connections or networks, whether socially or economically play a major role. This is because networks act as an avenue for information generation. The influence of such social and economic networks has been addressed in the fields of economics and sociology, (Larcker, So and Wang, 2013). The finance and management literature has also examined connections through corporate board membership. The resource dependency theory emphasises the need for firms to have links with important and external resources in order to reduce uncertainty (Pfeffer and Salancik, 1978). One way that firms can benefit from external resources is through directors' networks/connections, the impact of which has been related to firm performance (Larcker et al., 2013), firm operational efficiencies (Saeed, Belghitar and Clark, 2015), CEO compensation (Engelberg et al., 2013), take overs (Renneboog and Zhao, 2014), and acquisitions (Kramarz and Thesmar, 2013). Furthermore, the independent directors' reputation hypothesis (Ferris et.al., 2003; Fich and Shivdasani, 2006; Fama and Jensen, 1983), argue that independent directors will effectively perform their functions of advising and monitoring in order to preserve their reputation. Albeit the findings of existing studies, there is however neglect of how the networks may affect the CEO employment risk. The term CEO connectedness or network refers to the number of boards the CEO has served on or is currently serving on, (Larcker et al., 2013). Although the Higgs report (2003) in the UK corporate governance code places some restrictions on cross directorship, it is still common to find that directors' interlock in the boards of UK listed companies. One might assume that the strength of the CEO network size might pose an advantage to the CEO with respect to experience, information and outside appointments. However, Liu (2014) suggests that connectedness significantly increases CEO turnover probability[3] especially for poorly performing CEOs. As noted by Brickley (2003), there is no consensus with regards to

the effect of corporate governance on CEO turnover which has opened room for more research on the variation and determinants of CEO turnover. Hence, Khurana (2000) suggests that rather than relying on the executive labour market, which could be risky and requires a great deal of discretion, firms would rather rely on the executive's personal networks to assess, suitable nominees. Likewise, Liu (2014) asserts that the market for executives is characterised by imperfections so that the director's network becomes a crucial element. This again emphasises the fact that personal network of the CEO has a strong role to play in determining his employment risk.

Advocates of board room connections argue that when there is director inter-lock, there would be better firm performance because it reduces the cost of information acquisition. Recent research like Renneboog and Zhao (2014) study the effect of director networks on takeovers. Their results show that better connected firms are more active bidders and that when bidders and targets have common directors, the takeover process is quicker (reduction in negotiation time) and are more successful. Similarly, Rousseau and Stroup (2015) reveal that bidders tend to approach firms for acquisition where a current director has been a board member. Engelberg et al., (2013) study the effect of connection on the compensation arrangement of CEOs in the US. The study shows that on average, additional connection results in about $17,000 increase in total compensation. They argue that firms most likely to benefit from the CEOs external connection (especially poorly performing firms) pay the highest price for CEO network or connection. In a similar study for UK firms, Renneboog and Zhao (2011) establish a positive relationship between CEO compensation and executive networks. They assert that both direct and indirect networks result in higher compensation. Renneboog and Zhao (2011) however notes that, while networks may provide some advantages like information provision, strong networks lead to busy directors on the board which undermines the monitoring effectiveness of directors to the extent that it results in less CEO pay

for performance sensitivity and higher compensation. They conclude that firms should have the right type of networks to balance the advantages and disadvantages of director networks. Kramarz and Thesmar (2013) observed similar results. In the banking industry, Battistin, Graziano, and Parigi, (2012) finds that boardroom connections negatively affect bank performance. The finding is premised on the assumption that connections increase managers' tenure, which often leads to entrenchment and consequent poor firm performance. In addition, they find that connections reduce the turnover probability for bank managers. Nguyen (2012) examines the impact of social ties on the effectiveness of directors. They find that the likelihood of CEO dismissal due to poor performance is lower for CEOs who have social ties with a number of directors. They conclude that socially connected CEOs are more likely to find new and sometimes better employment after a forced removal.

In light of the forgoing, we can observe that there is no conclusion as to the effect of executive network on various aspects of the firm. By employing a different approach in measuring CEO network[4], we provide evidence on how CEO network affects CEO employment risk. We therefore propose that because director network provides a source of information to the firm and also, a measure of CEO experience, there should be a negative relationship between the size of a CEO's network and his/her employment risk. We propose that;

Hypothesis 3: The likelihood of CEO employment risk reduces with increasing CEO network.

3. Data

3.1.Sample and data source

The data sample consists of firms making up the FTSE 350 index for the period 1997 to 2010, with the exclusion of financial firms. To be included in the sample, firms must have at least two consecutive years of information in order to determine the CEO employment risk. The information relating to board size, board independence and CEO network has been extracted from BoardEx. Firm specific financial information was extracted from Datastream. After deleting financial firms, and firms without corresponding BoardEx and Datastream information, the total number of firms in the sample amounted to157 with an unbalanced panel of 1875 firm year observations. Table 1 below shows the variables extracted from the two data sources and their definitions.

----------Insert Table 1 around here ----------

3.2.Descriptive Statistics and Correlation Analysis

Table 2 below shows the descriptive statistics for the variables used in the estimation process. From the table, we find that on average, the board size of the firms in the sample is 9, with the smallest board comprised of 4 directors and the largest with 25 board members. It is also observed that on average the proportion of independent directors to total directors is 0.49, approximately 50%. This shows that majority of the firms making up the FTSE350 comply with the corporate governance code which recommends that at least 50% of the board is comprised of independent directors. CEOs in the sample have served on at least one other board with a maximum of 10 boards for some CEO. For CEO tenure and age, we find that the longest serving CEO has spent 34 years in the role with an average of 5 years. The average age of CEOs in the sample is 52 years

with the oldest being 77 years and the youngest 34 years. For the sampled period, firms on average have a ROA standing at 8.8, with a minimum negative of -54.8 and a maximum of 75.

The Pearson's correlation matrix presented in Table 3 shows the relationship amongst the variables used in the estimation. We find a positive correlation between board size, board network and firm size. This implies that as board size increases, the group network increases, and board size also increases with the size of the firm. However, we find a negative correlation between board independence and board size. As expected, we find positive correlation between CEO tenure and age and a negative correlation between CEO age and firm risk.

----------Insert Table 2 around here ----------

----------Insert Table 3 around here ----------

4. Model Specification

4.1.Estimation Technique

The data for this study is a combination of time series and cross-sectional data. The dependent variable for the analysis is a dummy variable which takes the value of 1 when employment risk is high and 0 otherwise. The pitfalls of a linear probability mode (LMP) necessitate the use of a more reliable technique. The problem with LPM is that it assumes that the dependent variable is a continuous variable and that the effect of the independent variable on the dependent variable is linear. Therefore, violating the conditions of ordinary least squares (OLS) such as

heteroscedasticity and normal distribution of errors (Guajarati, 2004), any result obtained will not be consistent with the assumptions of OLS. The alternative approach is the use of probit or logit models which are complementary and produce the same results. Previous studies like Gonzalez, Guzman, Pombo, and Trujillo (2015), Fiordelisi and Ricci (2014), Bushman, Dai and Wang (2010) and Brunello, Graziano, and Parigi (2003) have used either probit or logit models where the dependent variable is a dummy variable. Following Fiordelisi and Ricci (2014), we estimate the following Probit model;

$$\Pr(Employment\ Risk)_{it} = \beta_0 + \beta_1 BSize_{it-1} + \beta_2 BID_{it-1} + \beta_3 CEONetwork_{it-1} +$$

$$\sum_{k=7}^{n} \beta_4\ Control\ Variables_{itk} + \varepsilon_{it}$$

Where, n= number of control variables, k=1, 2, 3 … 7

Following Martin, Gomez-Mejia and Wiseman (2013) we measure employment risk as a dummy variable taking the value of 1 if there is consecutive two-year decline in ROA corresponding with two-year decline in stock price or 0 otherwise. Unlike Martin et al., we have chosen two years because the job of the CEO has become riskier in recent years. Thus, employment contracts are now for one year, as against three to five years in the nineties, (BIS, 2011). Again, the board of directors might not fire a CEO for poor performance in one year, but a second year decline might lead to decisions for a change in CEO and third year decline might result in actual dismissal. The use of both ROA and stock price is based on the fact that they are the commonly used performance measure in previous research (Core, Holthausen, and Larcker, 1999; Anderson and Reeb, 2003; Larcker et.al., 2013). While ROA is an accounting measure of firm performance, stock price is market based, the combination of both gives validity to our analysis and shows that the decision to fire a CEO is not just based on accounting measures but also on the market

perception of the firm's performance which reflects in the stock price. Board size (BSize) is the number of directors on the board; board independence (BID) is the ratio of non-executive directors on the board; CEO network is the number of boards the CEO has served on. All variables are lagged one year.

4.2.Estimation Results

Table 4 presents the results of the estimation with the Probit model. We begin by including one dependent variable at a time with the last model for each panel, including all three dependent variables for the hypotheses and the control variables. We observe that there is very little collinearity in the results as the independent variables; board size, board independence and CEO network show minimal change in magnitude and retain their significance when included together in Models 3. In line with previous studies, Bushman et al (2010), for the Probit model, we report and interpret the marginal effects at the mean values (i.e. the partial derivative of the probit function with respect to the variable in question, this is analysed at the mean values of all other explanatory variables). We find that the marginal effect of board size on employment risk is positive and statistically significant at 1% across all models. It is observed that the magnitude of the marginal effect increases as we add the other independent variables in Model 2&3. The results provide support for hypothesis 1, suggesting that the likelihood of employment risk increases for a given increase in board size. The results are in tandem with previous research like Yermack (1996) and Liang et al., (2013) which find negative relationship between board size and firm performance. They argue that large boards are plagued with communication and coordination problem and such firms have increased agency cost leading to poor performance. Hence, from our

earlier argument, poor firm performance increases the likelihood of employment risk and subsequent job termination.

Regarding the second hypothesis, we propose that in line with recent corporate governance codes requiring boards to be independent, board independence will increase the likelihood of employment risk. This is because when boards are independent they are able to make objective decisions as regards poorly performing CEOs. But when the board is not sufficiently independent, a decision to fire the CEO is unlikely when he is not performing as expected because the directors share common compensation incentives with the executive directors. From Table 4, Models 2&3 we find that there is a positive significant marginal effect of board independence on CEO employment risk.

----------Insert Table 4 around here ----------

Particularly, from Model 3, we find that for a given level of increase in board independence, the z-score of CEO employment risk increases by 0.248. The results imply that CEO employment risk is more likely for independent boards. The evidence provides support for Hypothesis 2, which is in tandem with previous studies. For example, Laux (2008) shows that there is a positive relationship between board independence and voluntary CEO turnover. Also, Weisbach (1988) shows that there is a strong relationship between prior firm performance and voluntary CEO turnover. He argues that independent boards are more likely to dismiss poorly performing CEO. Taken together, the result of the hypothesis also supports the recent recommendations for more independent boards by various corporate governance codes and stakeholder.

With respect to the third hypothesis, we propose that the CEO network may negatively affect his/her employment risk. We propose this because when CEOs have served in several boards they gather experience and can be a source of information provision to the firm. As argued by resource dependency theory (Pfeffer, and Salancik, 1978), networks serve as an avenue through which valuable information which could be difficult or expensive to obtain can be received From Table 4, although the sign is negative as expected, the results are not significant. Hence we fail to provide evidence for hypothesis 3 in the Probit model. The insignificant results obtained could be an outcome of potential endogeneity problems identified in corporate governance research (Wintoki, Linck, and Netter, 2012). Hence, we address this endogeneity issue in the next section.

4.3.Endogeneity Concerns

Endogeneity appearing in different forms has been a source of major concerns in corporate governance and finance research. Endogeneity can be present in a model in the form of reverse causality, an omitted variable, measurement error or unobserved firm heterogeneity (Pathan and Faff, 2013). For example, Gonzalez et al., (2015) show that on one hand, poor firm performance can lead to CEO turnover, but on the other hand, CEOs having prior information about poor future firm performance may decide to quit their job. Himmelberg, Hubbard and Palia (1999) explain the significance of unobserved firm characteristics and its effect on the relationship between ownership and performance. Hermalin and Weisbach (1998) address endogeneity concerns for board composition. As noted by Roberts and Whited (2012) if endogeneity issues are not addressed they are likely to result in biased and inconsistent estimates, and therefore, it would be wrong to rely on such results. To resolve this issue in our model, we employ the instrumental variable probit estimation technique (IVPROBIT). The use of instrumental variable in probit model, requires that appropriate instrument(s) be added to the model. In the case of our model, we suspect that board

size can affect employment risk through performance, such that large boards result in poor firm performance which makes CEO employment risk more likely. On the other end, employment risk may affect board size through performance so that when performance is poor, board size is likely to change depending on the needs of the firm. Roberts and Whited (2012) suggest that an example of a valid instrument is one that it is correlated with the independent variable. In order to combat this form of endogeneity, we identify a variable which can serve as an instrument for board size but is not related to CEO employment risk. In this case we use the average board group network[5]. We assume that there is a relation between the size of the board and the size of the board network. So that as board size increases, board group network increases. We find a positive correlation between board size and board group network in Table 4.

4.4.Estimation Results for IVPROBIT

Table 5 presents the results using the instrumental variable probit model. We find that the marginal effects of the variables presented here are larger than the results presented using probit without addressing endogeneity. This shows that there is indeed a causal relationship between board size and CEO employment risk. We examine our first hypothesis that the likelihood of employment risk is increasing in board size. We find that for all three models board size shows a statistically positive significant result at 1%. This implies that for a given change in board size, the likelihood of CEO employment risk increases by about 0.950. The results provide support for hypothesis 1. When boards are large, there is usually communication and coordination problem which results in poor firm performance. As observed in the correlation analysis we find negative correlation between board size and performance (measured by ROA). The results complement previous research (Eisenberg et al, 1998; Yermack, 1996; Liang et al., 2013) which reveals significant negative relationship between board size and profitability. Pathan and Faff (2013) also establish

similar findings for large US banks. As stated earlier poor performance increases the likelihood of employment termination (Kaplan and Mitton, 2012).

Moving on to the second hypothesis; we propose that board independence measured as the proportion of outside directors on the board is likely to result in increased employment risk for the CEO. To the extent that when a board is sufficiently independent, independent directors become effective in monitoring the activities of the executives especially the CEO and are able to discipline poorly performing CEOs. Also reputational concern will motivate independent directors to properly monitor the activities of CEO. From Table 5, we find that there is statistically positive relationship between board independence and CEO employment risk providing support for hypothesis 2 suggesting that the likelihood of employment risk increases by 0.549 for a given increase in the level of board independence. This is consistent with the findings of Laux (2008) that board independence is positively related to voluntary CEO turnover. In addition, Weisbach (1988) reveals that the probability of voluntary resignation of CEOs is higher for more independent boards; (see also Huson, Malatesta, and Parrino, 2004). Taken together, the results for board independence are also in support of the recommendations of corporate governance codes for more independent boards.

The last hypothesis proposes that there will be a negative relationship between CEO network and CEO employment risk. That is for CEOs with large network size, the probability of employment risk is lower. This is based on the premise that having served on different boards, CEOs gather experience, are equipped with more information and are therefore able to deliver better performance results so that it is highly unlikely that he/she would be fired.

----------Insert Table 5 around here ----------

The results presented in Table 5 support this hypothesis. This is particularly interesting because the results for the probit estimation were not significant whereas after controlling for endogeneity using IV probit in Table 5, the results are now significant. As observed there is statistical negative marginal effect. This means that for a given increase in network size, employment risk drops by 0.03. The results are in agreement with those of Renneboog and Zhao (2014) which reveal that the board connections provide information advantage for active bidders and result in successful acquisitions. Also, Engelberg et al., (2013) finds that poorly performing firms pay more to CEOs with more connections. In the same light, Kramarz and Thesmar (2013) establish that highly connected firms are less likely to dismiss poorly performing CEOs. The results also lend support for the resource dependency theory, (Pfeffer and Salancik, 1978).

To examine further the relationship between the likelihood of CEO employment risk and corporate governance mechanisms, we have included in addition to the independent variables in the model, a comprehensive set of control variables to minimise the effect of omitted variables. These control variables are also intended to capture both CEO and firm characteristics. Following previous studies (Gonzalez et al., 2015; Fiordelisi and Ricci, 2014; Bushman et al, 2010) we control for performance (ROA), firm size, CEO tenure, CEO age, firm risk, leverage and CEO total wealth. The definitions of these variables are presented in Table 1. From Table 5, we observe that the effect of ROA and CEO total wealth is negative as expected. As firm performance increases, the likelihood of employment risk reduces. Likewise, it is highly unlikely that CEOs with large firm based wealth be dismissed. Firm size as expected is positive and statistically

significant at 1%. Larger firms have more analysts following them and more media coverage so that employment risk increases for CEOs of large firms. Firm risk measured as the volatility of stock price is positive indicating that employment risk is more likely as firm risk increases. We also find that CEO employment risk increases in leverage, so that firms with more debts are more likely to dismiss poorly performing CEOs. Lastly we find that CEO age even though positive as expected does not determine employment risk while CEO tenure lowers the likelihood of employment risk. Table 5 also presents the results for Wald test of exogeneity; the results are significant showing that the instrument employed is valid.

5. Robustness Tests

To check the validity of our measure of employment risk we use an alternative method. Following Gonzalez et al., (2015) and Fiordelisi and Ricci, (2014) we measure employment risk as a dummy variable taking the value of 1 if a company has changed its CEO with respect to the previous year and 0 otherwise. The result for this new measurement is presented in Table 6. We find that the results are qualitatively the same indicating that the results earlier obtained in Table 5 are not influenced by the way employment risk is measured.

A further robustness test is carried out by eliminating firms in the Industrials and Consumer services sector. We find that the industrial and consumer services sector makes up more than 50 percent of the sample. We therefore eliminate these firms to find out if our results are driven by firms in the two sectors. We find that the results remain qualitatively the same. This suggests that the determinants of employment risk are not specific to a particular sector. Lastly, as a robustness check, we recomputed the average board network without the CEO network as an instrumental variable. This is to investigate if the inclusion of the CEO network in the board average network

would alter the results. The results obtained remain the same; hence we can confirm that the exclusion of the CEO network from the group network does not undermine the results obtained earlier. The results of the last two robustness checks are available on request.

----------Insert Table 6 around here ----------

6. Discussions and Conclusion

In this paper, we examine the determinants of CEO employment risk. We study CEO employment risk because it is a personal risk which has the potential of affecting the decisions made by the CEO. Prior studies suggest that the main cause of CEOs likely or actual dismissal is poor firm performance (Kaplan and Mitton, 2012). However, Brickley (2003) notes that there is need for more research on the variation and determinants of CEO turnover. This study therefore fills the existing gap in current research on the determinants of CEO employment risk. Unlike previous studies which focus on different performance measures, this study is the first to examine how corporate governance mechanisms determine CEO employment risk. Specifically, we find that the likelihood of CEO employment risk increases with increased board size. This supports the view that large boards often have communication and coordination problems which leads to poor firm performance which threatens the CEO's employment. The results for board independence reveal that board independence increases the likelihood of CEO employment risk. This confirms our expectation that independent boards are actually effective and that they discipline poorly performing CEOs. The findings show support for current recommendations for independent boards. The results also support the agency theory for the need of an effective board. Board independence is an attribute of an effective board (Conheady, McIlkenny, Opong, and Pignatel,

2015). Another plausible explanation for the result is based on the reputation hypothesis (Fich, and Shivdasani, 2006; Fama and Jensen, 1983) that independent directors value their reputation to the extent that they would effectively carry out their function as monitoring agents, so as to dismiss or issue warnings to CEOs for poor firm performance. The last hypothesis examines the role CEO networks/connections play in determining the level of employment risk. We find that as expected, better connected CEOs are less likely to be dismissed from their job. This is because well connected CEOs do have and provide needed information combined with experience, so that firm performance is increased and employment risk is less likely. We also show that networks provide important resources for the firm so that CEOs with good networks lead to better performance and reduce the likelihood of CEO dismissal. The results also provide support for the resource dependency theory. Taken together, our paper provides new evidence that apart from performance corporate governance mechanisms determine the CEOs employment risk.

Our study further contributes to corporate governance research and the agency theory literature. The results suggest that effective boards are able to discipline CEOs when there is need to. Also, independent boards are more effective so that they are likely to dismiss poorly performing CEOs. These are also important insights to policy makers on governance mechanisms. For instance, large firm size does not mean boards should be large, rather, boards should comprise of directors who can contribute to the value of the firm. Again, boards should be made up of more independent directors who can effectively monitor the activities of the CEO and other executives for the overall benefit of the firms. Lastly, unlike recent recommendation that place restrictions on cross-directorship, we recommend that networks should be encouraged. As the saying goes "information is power", when CEOs are connected to different organisation they can get valuable information that would be beneficial to the firm. We further recommend that policy makers

alongside board of directors should consider the determinants of CEO employment risk and strengthen them in practice so that CEOs and other executives would focus on advancing the interest of shareholders and other stakeholders.

This study has some limitations. Due to data availability, we have examined only three factors that determine CEO employment risk. Future studies may consider other factors aside from corporate governance that may determine CEO employment risk. Future research should also consider other personal risks that the CEO is confronted with and how they can affect other firm outcomes. This study is also based on FTSE350 non-financial firms. As a starting point of future research, financial firms can be studied and compared with non-financial firms, focusing on a more recent time period. Also, since corporate governance codes apply to mostly listed firms, private firms can be investigated to ascertain if there is any similarity in the determinants of employment risk in both public and private firms.

Notes

1. We do not undermine the effect of firm performance; hence we control for it in the analysis
2. Grey directors are directors who have some form of affiliation with the firm, they are sometimes called affiliated directors
3. Employment risk and turnover probability are used interchangeably
4. CEO network is measured as the number of corporate boards a sitting CEO has served on.
5. Board group network is measured as the sum of the networks of individual board members divided by the total number of board members.

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Table 1: Variable Names, Definition and Source.

Variables		Definition	Source
Employment Risk		This is calculated as a dummy variable indicating 1 for two years' consecutive decline in stock price coinciding with two year decline in ROA and 0 otherwise	Authors' calculation
Employment Risk Measure	**Return on Asset (ROA)**	This is the ratio of net income to total asset	Datastream
	Stock Price	The change in value of the stock price as at fiscal year end	Datastream
Board Size		This is the number of directors on the company's board	Boardex
Board Independence (BID)		This is measured as the ratio of non-executive directors on the board.	Boardex
CEO Network Size (CEO NTW)		This is the number of boards the CEO has served to date	Boardex
Board Network		This is the average number of boards all the directors have served on to date	Boardex
CEO Tenure		The length of time that the CEO has been in the current role measured in years,	Boardex
CEO Age		The age of the CEO in years	Boardex
CEO Total Wealth		This is the sum of equity held, estimated value of options and LTIPs held	Boardex
Firm Size		Measured as market capitalization	Datastream
Leverage		The ratio of long term debt to capital	Datastream
Firm Risk		This is the volatility of the stock price	Datastream

Table 2: Descriptive Statistics.

Variable	Observations	Mean	Std. Dev.	Min	Max
Board Size	1874	9.315	2.698	4	25
BID	1874	0.485	0.149	0	0.929
CEO NTW	1871	2.378	1.763	1	10
Board Network	1874	264.385	365.102	0	3456
ROA	1855	8.802	9.030	-54.820	75.090
Firm Size	1856	14.032	1.612	9.582	19.163
CEO Tenure	1873	5.481	5.525	0	34.400
CEO Age	1867	51.799	6.300	34	77
Firm Risk	1648	27.099	8.462	10.740	71.220
Leverage	1752	25.052	18.483	0.000	171.440
CEO Total wealth	1823	8.179	1.573	2.565	14.069

Note: For variable definitions see Table 1

Table 3: Pearson's Correlation Matrix.

VAR	1	2	3	4	5	6	7	8	9	10	11
Board Size	1										
BID	-0.044	1									
CEO NTW	0.349***	0.154***	1								
Board Network	0.6262***	0.211***	0.476**	1							
ROA	-0.035**	-0.055	-0.070**	-0.083**	1						
Firm Size	0.588***	0.291***	0.443***	0.520***	0.099***	1					
CEO Tenure	0.004	-0.186***	0.014	-0.042	0.061***	-0.115***	1				
CEO Age	0.140***	0.008	0.223***	0.073***	-0.057**	0.104***	0.307***	1			
Firm Risk	-0.201***	0.019	-0.063***	-0.121***	-0.184***	-0.300***	0.052*	-0.089***	1		
Leverage	0.009	-0.053	0.016	-0.002	0.126***	-0.006	-0.012	-0.050*	-0.004	1	
CEO Total wealth	0.063	0.080	0.034	0.092*	0.123***	0.181***	0.206***	-0.048*	0.089**	-0.005	1

Note: For variable definitions see Table 1. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 4: Estimation Results with Probit Model.

Dependent Variable: Employment Risk	Probit Model		
Independent Variables	**(1)**	**(2)**	**(3)**
Board Size	0.193***	0.236***	0.238***
	(0.046)	(0.049)	(0.049)
BID		0.245***	0.248***
		(0.079)	(0.079)
CEO NTW			-0.006
			(0.018)
ROA	-0.071***	-0.067***	-0.068***
	(0.012)	(0.012)	(0.012)
Firm Size	0.016	0.027**	0.026**
	(0.010)	(0.011)	(0.011)
CEO Tenure	-0.026***	-0.022**	-0.021**
	(0.010)	(0.010)	(0.010)
CEO Age	0.122	0.112	0.116
	(0.089)	(0.089)	(0.090)
Firm Risk	0.083**	0.081**	0.083**
	(0.040)	(0.040)	(0.040)
Leverage	0.001**	0.001**	0.001**
	(0.001)	(0.001)	(0.001)
CEO Wealth	-0.015*	-0.015*	-0.015*
	(0.009)	(0.009)	(0.009)
Observations	1197	1197	1197
Pseudo R2	0.092	0.101	0.101

Note: This table reports the results for the Probit model. The dependent variable is employment risk. This is measured as a dummy variable taking the value of 1 when there is employment risk and 0 otherwise. All other variables are defined in Table 1. Robust Standard errors in parenthesis. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 5. Estimation Results with IVProbit.

Dependent Variable: Employment Risk		**IVPROBIT**	
Independent Variable	(1)	(2)	(3)
Board Size	0.919***	0.835***	0.950***
	(0.200)	(0.210)	(0.241)
BID		0.500***	0.549***
		(0.110)	(0.117)
CEO NTW			-0.041*
			(0.022)
ROA	-0.037*	-0.043**	-0.038*
	(0.020)	(0.018)	(0.021)
Firm Size	0.087***	0.091***	0.098***
	(0.022)	(0.025)	(0.025)
CEO Tenure	-0.021**	-0.010	-0.009
	(0.011)	(0.011)	(0.011)
CEO Age	0.697	0.749	0.709
	(1.491)	(1.530)	(1.502)
Firm Risk	0.074*	0.063	0.071*
	(0.038)	(0.039)	(0.039)
Leverage	0.008*	0.001**	0.002**
	(0.002)	(0.001)	(0.001)
CEO Wealth	-0.015*	-0.020**	-0.019**
	(0.009)	(0.008)	(0.008)
Observations	1193	1193	1193
Wald test of exogeneity	7.56***	5.37**	5.12**

Note: The table represents the IVProbit regression of the model. The dependent variable is employment risk. This is dummy variable representing 1 if there is employment risk and 0 otherwise. All other variables are defined in Table 1. The average board network has been used as instrument. The Wald test of exogeneity suggests that the model is endogenous and the instrument is valid. The coefficient represents the marginal effects. Robust Standard errors in parenthesis. *, **, *** represents significant levels of 10%, 5% and 1% respectively.

Table 6: Estimation Results with Alternative Measure of Employment Risk. (Employment risk equal to 1 if the company has changed CEO and 0 otherwise).

Dependent Variable: Employment Risk			
Independent Variables	(1)	(2)	(3)
Board Size	0.523*	0.491*	0.596*
	(0.298)	(0.267)	(0.307)
BID		0.117*	0.265*
		(0.070)	(0.136)
CEO NTW			-0.036*
			(0.021)
ROA	-0.026*	-0.027*	-0.027*
	(0.016)	(0.015)	(0.015)
Firm Size	0.062**	0.065**	0.070**
	(0.031)	(0.032)	(0.032)
CEO Tenure	-0.153***	-0.146***	-0.150***
	(0.013)	(0.014)	(0.008)
CEO Age	0.984	-0.063	-0.058
	(1.103)	(0.073)	(0.072)
Firm Risk	-0.034	-0.033	-0.028
	(0.028)	(0.027)	(0.029)
Leverage	0.042	0.014	0.012
	(0.040)	(0.011)	(0.010)
CEO Wealth	0.012**	0.010*	0.012**
	(0.006)	(0.005)	(0.006)
Year effect	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes
Observations	1287	1287	1287
Wald test of exogeneity	5.42**	5.39**	5.10**

Note: The table represents robustness check using IVProbit regression of the model. The dependent variable is employment risk. This is a dummy variable taking the value of 1 if a company has changed its CEO with respect to the previous year and 0 otherwise. All other variables are defined in Table 1. The average board network has been used as instrument. The Wald test of exogeneity suggests that the model is endogenous and the instrument is valid. The coefficient represents the marginal effects. Robust Standard errors in parenthesis. *, **, *** represents significant levels of 10%, 5% and 1% respectively.