

# DEBT CAPITAL, FIRM PERFORMANCE AND CHANGE OF CEO IN FIRMS LISTED ON THE NAIROBI SECURITIES EXCHANGE

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## Abstract

It is generally accepted that boards of directors play a fundamental role in corporate governance and the structure of the board plays a significant role in the functioning of a company (Jensen, 1993). The main objective of this study was to investigate the relationship between debt capital, firm performance, and change of CEO in firms listed on the NSE. The results of the study revealed that firms in which an individual shareholder has influence or controlling interest are reluctant to replace their CEO even when performance is below average. The results also revealed that the replacement of the CEO is not performance driven, but is debt capital driven. Specifically, the results suggest that medium leverage ratio is associated with change in CEOs on firms listed on the NSE.

**Key terms:** Debt Capital; Firm Performance; Change of CEO; NSE

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## 1 Introduction

It is generally accepted that boards of directors play a fundamental role in corporate governance and the structure of the board plays a significant role in the functioning of a company (Jensen, 1993). Without proper governance control, managers are more likely to deviate from the interest of shareholders. The board, however, with its legal authority to hire, fire, and compensate top management teams, can set the premises of managerial decision-making, monitor managerial behaviour, and safeguard invested capital (Liang and Li, 1999; Fama and Jensen, 1983).

One way to evaluate corporate governance is to assess the extent to which inefficient managers are replaced. Firm performance is a critical variable in the evaluation of corporate governance because it impacts on the firm's market value and shareholders' wealth. Investors and regulators may not be able to directly observe whether the performance of the CEO results in shareholder's wealth and profit maximisation, but may observe the CEO's ability to perform from the firm's annual reports. This makes performance a critical corporate governance variable. The study conducted by Fisman, Khurana and Rhodes (2010) revealed that weak corporate governance protects mediocre CEOs from dismissal, and also shields the board of directors from taking accountability. Other studies suggested that a link between management turnovers to poor performance confirms inadequacy in corporate governance (Firth, Fung and Rui, 2005; DeFond and Mingyi, 2004).

Bechmann and Raaballe (2010) discussed in detail bad corporate governance in the board room and proceeded to establish a link between powerful CEO and board performance. A study conducted by Blackwell, Dudney and Farrell (2007) revealed that the probability of replacement of CEO is inversely related to the firm's performance, that is, managers of firms with poor performance are likely to be replaced. Critical to this study is an observation by Brookman and Thistle (2009) who argues that whether CEO tenure is determined by performance or by other variables, consideration is an important issue in corporate governance. If corporate governance structures function well, then CEOs will be retained if they perform well, and replaced if they perform poorly. Conversely, if corporate governance structures function poorly, CEOs will not be replaced even if firm performance is poor. One approach to examining whether corporate governance structures function well is to analyse the CEO's risk of termination. Previous studies have used CEO turnover to test the effectiveness of corporate governance (Brookman and Thistle, 2009; Parrino, Sias and Starks, 2004).

When firms reporting poor performance fail to replace non performing CEOs, then it is a must that corporate governance is reinforced. Debt capital is suggested as capable of reinforcing corporate governance for the betterment of shareholders. The role of debt in disciplining managers is yet to be explored and largely remains an unresolved issue. The nearest study on debt-based discipline is by Blum

(2002) who, researching on commercial banks asserted that benefits of market discipline associated with debt capital depends on the ability of banks to credibly commit to a given risk level. Chen and Hassan (2011) recommend the use of debt capital by banks because by investing in debt capital, debt holders will receive favorable information useful in monitoring bank managers' investment decisions, thus minimising banks moral hazard problems, and this monitoring could be beneficial to shareholders. It is possible that firms with substantial debt capital, debt monitoring could discourage managers from practicing the bait and switch strategy, because, given that debt holders are technically residual claimants, they could be more intensive in their monitoring role (Tirole, 2006). It is likely that when managers fail to meet their obligations to debt holders, debt holders might attempt to replace such managers. The fact that debt capital plays a disciplinary role is a prediction that needs to be confronted with unknown or unused data as a test of a theory. If the data is consistent with the prediction, then a theory emerges.

Theories are presented to the effect that shareholder can mitigate free rider problems of corporate control, but this can be strengthened by debt holders. Furthermore, it is not clear why CEOs are replaced or replaced on the Nairobi Securities Exchange (NSE). A rational argument is that managers are replaced due to poor performance. However, shareholders may fail to replace managers even in the face of poor performance, in which case we need to reinforce disciplinary

systems in firms. Replacing non performing managers signifies effective corporate governance. A finance theory emerges if it is proved that debt capital propelled replacement of non-performing CEOs at NSE.

Kenya, like other developing countries has its share of corporate governance problems that needs to be addressed. In order to safeguard the interest of those who invest in capital markets and firms, the Capital Markets Authority (CMA) developed guidelines on corporate governance practices of firms listed on the NSE (CMA, 2002). These guidelines have been supported by private sector initiatives, including widespread director training which in turn led to improved governance across listed companies. However, the study conducted by Mulili and Wong (2012) which explored challenges encountered by developing countries during the process of adopting the corporate governance ideals revealed that there is a need to strengthen corporate governance in firms listed on the NSE.

The main objective of this study is to investigate the relationship between debt capital, firm performance, and change of CEO in firms listed on the Nairobi Securities Exchange. In terms of methodology, the researcher is not aware of any study that has employed grouped data from an emerging

economy such as Kenya, and subjected the data to Generalised Estimating Equations (GEE) technique to test the effect of debt capital and performance on change of CEO. Similar studies have employed OLS and were only able to state whether the relationship was significant or not, but by using GEE in this study, we intend to point out whether the change of CEO is significantly attributable to low, medium or above-average capital structure in addition to whether the change depended on levels of performance. The remainder of this study is structured as follows: Firstly, a literature review presents the theoretical foundation of the relationship between debt capital, firm performance, and change of CEO. Secondly, the sample, variables and methodology employed are outlined. Thirdly, the analysis is carried out, and lastly the results of the analysis and the recommendations are outlined.

## 2 Literature review

In the face of poor performance, shareholders, bidders in takeover, nonexecutive directors and investors (shareholders and debt holders) can recommend a corrective action that might include a change in top management (Chen and Hambrick, 2012; Firth, Fung and Rui, 2005). The ability of the board of directors to change an incompetent CEO is an important mechanism for controlling conflicts between managers and shareholders (Blackwell, Dudney and Farrell, 2007). The poor performance hypothesis states that the CEO is replaced when performance is poor (Chen and Hambrick, 2012). Blackwell, Dudney and Farrell (2007) findings is that the probability of a CEO change is inversely related to the firm's performance, that is, managers of firms with poor performance are likely to be replaced. However, Fisman, Khurana, and Rhodes (2010) argued that weak governance protects mediocre CEOs from dismissal. Bechmann and Raaballe (2010) discuss in detail bad corporate governance in the board room and proceeded to establish a link between powerful CEO and board performance.

The actual firm performance reflects strategies adopted by management to achieve the objectives of their firm. Firms whose managers selected, and implemented good projects report adequate returns for investors (Boyne, James, John and Petrovsky, 2010; Lumby and Jones, 2011). A commonly held opinion is that corporate failure is a characteristic of deficiencies in management by way of lapses in corporate governance (fraud), deficiency in management skills, inadequate approaches to risk management and hostile environment (OECD, 2009; Kirkpatrick, 2009 a, b).

The matching theory is a mathematical framework attempting to describe the formation of mutually beneficial relationships over time (Shimer, 2005). In matching theory, firm productivity and performance are explained in terms of the match

between CEO and the firm (Cordeiro-Nilsson and Shaw, 2010; Cordeiro, 2010; Allgood and Farrell, 2003). It is logical that whenever a mismatch is located between CEO and the firm, the CEO should be replaced by a manager of quality to reverse the decline (Barney and Herstley, 2010). However studies linking performance to change of firm CEO are not conclusive. A study that split firms into performance deciles showed that while normal or high performance does not lead to the likelihood of the retention of the CEO, the lowest performing firms experienced higher CEO turnover. However, the study conducted by Dimopoulos and Wagner (2012) concluded that the change in turnover in response to a decline in performance is insignificant or even goes against firing underperforming managers. Other studies indicated that if corporate governance is effective, poor performance preceded replacement of management (Mnzava, 2013; Wermers, Wu and Zechner, 2008; DeFond and Mingyi, 2004).

In Ukraine, Muravyev, Talavera, Bilyk and Grechaniuk (2009) found evidence of an inverse relationship between the past performance of firms and the likelihood of managerial turnover. Though other authorities assert that directors that include CEO are held responsible for their poor performance, at times managers only vacate their position when there is a financial crisis as was in the recent financial crisis in US (Eisfeldt and Kuhnen, 2013; Goldman, 2009; Berman, 2008). In some case, it requires a presidential order to remove a CEO as was in the case of General Motors in US when, despite persistent poor performance, the then CEO was removed after President Obama's intervention orders (Grand Rapid Press, 2009). CEOs have a say on capital structure decisions and are therefore held accountable. In addition, default is very costly for the tenure of a CEO. A condition that makes firms efficient and effective is that the managers' actions are planned, organised, monitored and controlled to ensure coordination of human efforts to achieve organisational objectives (Taylor, 2013; Daft, 2010; Mintzberg, 1988).

In thin and illiquid markets like the NSE, where the debt capital market is underdeveloped, debt holders find it difficult and costly disposing their investment on receiving adverse information from the borrowing firm. An illiquid market, apart from being a hindrance to investors' management of risk given reduced diversification opportunities, is an impediment to managerial discipline (Senbet and Otchere, 2008). In addition to difficulty in pricing of assets (securities), transaction costs of disposing security issued by a non performing firm in an illiquid market is prohibitive (Ryan, 2008). Perhaps the other alternative left to debt holders is direct intervention that would include replacing management instead of liquidating assets to settle their claim.

In the US, Congress passed the U.S.A. Financial Services Modernization Act (Gramm-Leach-Bliley Act 1999) which requires the Board of Governors of the Federal Reserve and the Secretary of the Treasury to research on the potential use of subordinated debt to bring market forces to bear on the operations of large financial institutions and to protect the deposit insurance funds (Evanoff and Wall, 2000). The role of debt in disciplining managers is yet to be explored and largely remain an unresolved issue. Blum (2002) asserted that benefits of market discipline associated with debt capital depended upon the ability of banks to credibly signal commitment to a given risk level. Chen and Hassan (2011) and Tirole (2006) states that debt monitoring could discourage managers from practicing the bait and switch strategy, that is to say debt holders could be more intensive in their monitoring.

The presence of debt in capital structure increases the risk of liquidation if a decline in firm's performance hampers the profitability and the ability to pay interest and the principal amount on maturity (Anderson and Carverhill, 2012). It is likely that where managers fail to meet their obligations to debt holders, debt holders might attempt to replace such managers. The fact that debt capital plays a disciplinary role is a prediction that needs to be confronted with unknown or unused data to test a capital structure theory. If the data is consistent with the prediction, then a theory emerges. Zwiebel (1996) states that debt is useful because it can ex-ante restrict managerial decisions later when the discipliner is no longer in a position to exert pressure. Tung (2009) refers to leverage in the board room as the unsung influence of private lenders in corporate governance. Tung (2009) further states that the lack of attention to lender governance is ironic given the dominance of the contractualist view of the corporation within the legal academy and the thick web of contractual commitments that bind the public company.

Despite the ascendancy of the contractualist view of the corporation within the legal academy, legal scholars have not generally noticed the extent of lender governance or discussed its contours or potential effects (Tung, 2009). However, the reality is that even if a firm violates the terms of debt contract, debt holders are hesitant seizing assets that serve as collateral for their loans to the firm, and they are even unwilling to file bankruptcy proceedings. This is because debt holders need a firm to continue doing business (lending to), therefore debt holders are more likely to opt for preservation of the firm (who is their customer) (Gilson, 2012).

### **3 Research objectives**

The main objective of this study was to investigate the relationship between debt capital, firm performance, and change of CEO in firms listed on the Nairobi

Securities Exchange. Two hypotheses were tested in this study. The first hypothesis tested the effect of performance on change of the CEO and was stated as follows:

H<sub>01</sub>: Firm performance does not have a significant effect on change of CEO

H<sub>11</sub>: Firm performance has a significant effect on change of CEO.

The second hypothesis tested the effect of leverage on change of CEO and was stated as follows:

H<sub>02</sub>: Leverage does not have a significant effect on change of CEO.

H<sub>12</sub>: Leverage has a significant effect on change of CEO.

The hypotheses were operationalised in the following equations:

$$\Delta CEO_i = \alpha_i + \beta_1 Performance_i + \beta_2 CapitalStructure_i + \beta_3 OwnershipStructure_i + \epsilon_i \dots \dots \dots \text{Equation 1}$$

$$\Delta CEO_i = \text{Logit } p = \log(\text{probability of Change in CEO}) / 1 - \text{probability of Change in CEO}$$

Where  $\alpha$ ,  $\beta$  parameters to be estimated and  $\epsilon$  is the error term.

**4 Research methodology**

**4.1 Data collection**

The data used in this study was extracted from annual reports and stock market reports of companies listed on the NSE during the period 1990 to 2012. Due to their unique capital structure, firms classified as financial institutions were left out, leaving a sample of 37 firms that translate into 851 (37x23) possible years, depending on availability of data. The data relied on contains repeated (panel data) binary measures of the change in CEO status and periodic indicators of capital structure and performance for each sampled company, for each year from 1990 to 2012. In addition, industry, along with a fixed recording of whether or not the level of debt capital was high, low or medium or categorised into quartiles, and whether or not the level of performance was good, average or poor were captured.

**4.2 Definition of variables and hypotheses**

The variables used for the analysis is change in CEO as the dependent variable, and the response variables used are: categorised ownership structure, categorised total debt to the total asset ratio as an indicator of

level of borrowing, categorised book to market ratio and asset turnover ratio as indicators of performance.

The categorisation of variables is as follows: for change in CEO, 0 represented no change in CEO, while 1 represented change in CEO. The categorised of ownership structure: shareholdings 20 percent to 50 percent is labeled 1; shareholdings 51 percent to 100 percent is labeled 2, and shareholdings below 20 percent is labeled 3. The classification of total debt to total assets: high leverage (0.45 to 2.03956) is labeled 1; medium leverage (0.3515 to 0.44781) is labeled 2, and low leverage (0 to 0.34278) is labeled 3. The classification of level of book to market ratio: positive growth < 1 is labeled 1, no growth = 1 is labeled 2, and negative growth > 1 is labeled 3; and the classification of the asset turnover ratio: low (0.073 - 0.6882) is labeled 1, medium (0.6926 - 1.1073) is labeled 2, and high (1.114 - 10.1856) is labeled 3.

**4.2.1 Model information**

The model information is presented in Table 1, and depicts a summarised modeling selection which is useful for making sure that the procedure fit the specified model. The event variable change in CEO is a random variable. The model information specifies the distribution of the dependent variable. Year is the variable specifying the number of trial occurring in a subject in each sampled company. The subject effects are company serial number and industry.

**Table 1.** Model information

Events Variable	Change Of CEO
Trials Variable	Year
Probability Distribution	Binomial
Link Function	Logit
Subject	Company Serial Number
Effect	Industry
Working Correlation Matrix Structure	Unstructured

The ability to specify a non-normal distribution and non-identity link function is the essential improvement of the generalised linear model. The choice of the probability distribution is guided by a priori theoretical considerations or which combination seems to fit best. Change of CEO is a Bernoulli random variable with a ‘success’ ( $Y_i = 1$ ) if CEO<sub>i</sub> is replaced and a ‘failure’ ( $Y_i = 0$ ) if CEO<sub>i</sub> is not replaced, therefore, the probability distribution is

binomial. Binomial distribution is appropriate only for variables that represent a binary response or number of events. The link function used is logit link and is proper only with the binomial distribution (Berkson, 1944; Fisher and Yates, 1938). Logit link to predict the probability of change in CEO (used when  $\mu$  is bounded between 0 and 1 as when data are binary) is specified as follows:

$$g(\mu) = \text{logit} \left( \frac{\mu}{1 - \mu} \right) = \Delta CEO = \alpha_i + \beta_1 Performance_i + \beta_2 CapitalStructure_i + \beta_3 OwnershipStructure_i + \varepsilon_i \dots \dots \dots \text{Equation 3}$$

Where  $\alpha, \beta$  parameters to be estimated and  $\varepsilon$  is the error term

There are two subject effects, the company which is captured by company serial number and the industry in which company is operating in. Working correlation matrix structure size is determined by the number of measurements, and thus the combination of values of within-subject variables. The specified structure is unstructured, that is, a completely general correlation matrix, and the other structures appeared less informative.

industry. There are two variables, company serial number and industries that identify the subjects. The minimum and maximum number of measurements per subject does not equal the number of levels of the within-subject effect. This tells us that there is incomplete information for each subject, that is, the variable change in CEO is not recorded for each company, and this is because some firms were either delisted from NSE or were listed after 1990, which is the base year of this study. The dimension of the correlation matrix should equal the product of the levels of the within-subject effects, twenty three (23).

Correlated data summary provides information concerning the repeated measures specification is presented in Table 2. There are two variables that identify the subjects, company serial number and

**Table 2.** Correlated data summary

Number of Levels	Subject Effect	Company Serial Number	37
		Industry	3
Number of Subjects			37
Number of Measurements per Subject	Minimum		5
	Maximum		23
Correlation Matrix Dimension			23

**4.2.2 Categorical variable information**

Since this study seek to establish whether a firm with high debt and/or report woeful performance has a higher propensity to replace a CEO, it is necessary categorizing both debt and performance into low, average and high or poor, average and good to create categorical variables (factors). Categorical variable information for the variables is presented in Table.3.

predictor variable for each company over the period of the study. Overall, the propensity to replace CEO on the NSE appears to be low (see Table 3).

**4.2.3 Goodness of Fit**

For predictor variable, the categorisation is created out of interval variable and is therefore, ordinal. The dependent and independent variables are categorical variables. For dependent variable, change in CEO, we see that change in CEO was witnessed 115 times out of a possible 1.38 million times; that is, taking into account individual influence of all the

To achieve robust results, an appropriate model must be selected. The typical concept of the likelihood function does not apply to GEE, therefore it is not meaningful calculating the usual goodness of fit statistics (Hardin and Hilbe, 2003). Accordingly, information criteria based on a generalisation of the likelihood are computed. The Quasi-likelihood under Independence Model Criterion (QIC) can be used to choose between correlation structures, given a set of model terms. The working correlation matrix

represents the within-subject dependencies, and it is possible to specify four possible structures described to include independent structure, autoregressive of first order, AR(1); exchangeable structure; the M-dependent and unstructured structure. The structure that obtains the smaller QIC is "better." The computation of the QIC assumes that the distribution, link function, and working correlation matrix specifications are all "correct" for the dataset. The results are in the bottom of Table 4 (a), and

summarised in table 4 (b) the smallest QIC is the unstructured structure. The result indicated that poor fitting models gave incorrect conclusions about the relationships (not significant – ns), and tend to underestimate or overestimate the standard errors. This justifies the use of the unstructured model to model the relationship because it is the unstructured structure matrix that obtains the smaller QIC value of -1109379.352.

**Table 3.** Categorical variable information

			N	Percent
Dependent Variable	Change of CEO	Events	115	0.0%
		Non-Events	1389231	100.0%
		Total	1389346	100.0%
Factor	Categorised Ownership Structure	Shareholdings 20% to 50%	272	39.2%
		Shareholdings 51% to 100%	407	58.6%
		Shareholdings Below 20%	15	2.2%
		Total	694	100.0%
	Categorised Total Debt to Total Assets	High Leverage 0.45 to 2.03956	253	36.5%
		Medium Leverage 0.3515 to 0.44781	123	17.7%
Factor	Level of Book to Market Ratio	Low Leverage 0 to 0.34278	318	45.8%
		Total	694	100.0%
		Positive Growth <1	197	28.4%
	Lev Asset Turnover Ratio	No Growth =1	282	40.6%
		Negative Growth > 1	215	31.0%
		Total	694	100.0%
	Lev Asset Turnover Ratio	Low 0.073 - 0.6882	234	33.7%
		Medium 0.6926 - 1.1073	228	32.9%
		High 1.114 - 10.1856	232	33.4%
		Total	694	100.0%

a. Trials variable: Year – This is number of times each subject is observed, in this case number of years of observation.

## 5 Results and discussion

### 5.1 Test of model effect

A question of interest would be whether some of the regression parameters are different from zero (0), indicating that the particular year or industry to which they correspond does not differ from the final firms and year. This may be addressed by inspecting the

Wald test statistics corresponding to each element of  $\beta$ . For example, if we were interested in whether 1990 and 2012 were different in terms of change of CEO, we would be interested in the difference  $\beta_1 - \beta_{23}$ . Table 6 depicts the result of testing the global null hypothesis:  $BETA = 0$ , specifically the Wald Chi-Square Test that at least one of the predictors' regression coefficients is not equal to zero in the model.

**Table 4 (a).** Goodness of fit of the model

Parameter	M-dependent			Exchangeable			AR1			Independent			Unstructured		
	$\beta$	Std. Error	Sig.	B	Std. Error	Sig.	$\beta$	Std. Error	Sig.	B	Std. Error	Sig.	$\beta$	Std. Error	Sig.
(Intercept)	-9.705	0.595	*	-9.683	0.504	*	-9.614	0.559	*	-9.654	0.521	*	-9.627	0.566	0.000
[OwnStrCa=1]	0.065	0.539	ns	0.051	0.445	ns	0.008	0.498	ns	0.042	0.459	ns	-2.072	0.721	0.004
[OwnStrCa=2]	0.443	0.524	ns	0.400	0.425	ns	0.368	0.479	ns	0.388	0.438	ns	-0.631	0.462	0.171
[OwnStrCa=3]	0 <sup>a</sup>														
[TDtTaca=1]	0.030	0.182	ns	0.050	0.18	ns	0.036	0.187	ns	0.055	0.190	ns	1.233	0.497	0.013
[TDtTaca=2]	0.049	0.213	ns	-0.040	0.232	ns	-0.007	0.222	ns	0.010	0.233	ns	1.870	0.561	0.001
[TDtTaca=3]	0 <sup>a</sup>														
[LeBtM=1]	0.089	0.197	ns	0.148	0.199	ns	0.086	0.205	ns	0.099	0.212	ns	0.001	0.385	0.998
[LeBtM=2]	0.052	0.199	ns	0.087	0.189	ns	0.091	0.188	ns	0.112	0.185	ns	0.637	0.246	0.010
[LeBtM=3]	0 <sup>a</sup>														
[LeAssTurn=1]	-0.129	0.176	ns	-0.156	0.175	ns	-0.180	0.18	ns	-0.184	0.177	ns	1.114	0.228	0.000
[LeAssTurn=2]	-0.057	0.156	ns	-0.064	0.158	ns	-0.117	0.17	ns	-0.131	0.173	ns	-0.216	0.225	0.336
[LeAssTurn=3]	0 <sup>a</sup>														
(Scale)	1						1			1					
Log likelihood	-819152.695			-819010.087			-818621.308			-818566.875			-1109379.352		

0<sup>a</sup>- means reference category  
 ns = not significant

**Table 4 (b).** Goodness of Fit<sup>a</sup>

	Value
Quasi Likelihood under Independence Model Criterion (QIC) <sup>b</sup>	1109419.531
Corrected Quasi Likelihood under Independence Model Criterion (QICC) <sup>b</sup>	1109379.352
Events: Change of CEO Trials: Year Model: (Intercept), OwnStrCa, TDtTaca, LeBtM, LeAssTurn (details in table 5a above) a. Information criteria are in small-is-better form. b. Computed using the full log quasi-likelihood function.	

The DF of two (2) for each of the predictor variables in table 5 indicates the three levels for each predictor variable. Typically,  $PR > ChiSq$  is compared to a specified alpha ( $\alpha$ ) level, our willingness to accept a type 1 error, which is typically set at 0.05 or 0.01; a

is 0.05. The small p-value from the tests of four response variables would lead us to conclude that the regression coefficient in the model is not equal to zero and that the response variable influence change in CEO.

**Table 5.** Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	1433.018	1	0.000
OwnStrCa	8.981	2	0.011
TDtTAcA	23.460	2	0.000
LeBtM	10.802	2	0.005
LeAssTurn	27.884	2	0.000

Events: Change of CEO; Trials: Year Model: (Intercept), OwnStrCa, TDtTAcA, LeBtM, LeAssTurn

**5.2 Parameter estimates**

The results in Table 6 do not tell us whether it is firms that performed poorly or whether it is firms that had substantial debt in their capital structure that replaced their CEO, while of interest in this study is whether debt capital reinforces corporate governance in face of poor performance. The interpretation of the parameters in the marginal and random (mixed) effect's model is analogous to the standard logistic regression model, but there are differences in how we adjust for the correlations. Therefore, the comment would be the typical sentence describing strength, direction, and p-value/confidence limit of the association.

$$g(\mu) = \log\left(\frac{\mu}{1-\mu}\right) = \Delta CEO = -9.627 - 2.072 \text{ Shareholdings } 20\% \text{ to } 50\% - 0.631 \text{ Shareholdings } 51\% \text{ to } 100\% + 1.233 \text{ High Leverage} + 1.870 \text{ Medium Leverage} + 0.001 \text{ Positive Growth } < 1(\text{BtM}) + 0.637 \text{ No Growth } = 1(\text{BtM}) + 1.114 \text{ Low } 0.073 \text{ to } 0.6882(\text{Asset Turnover Ratio}) - 0.216 \text{ Medium } 0.6926 \text{ to } 1.1073(\text{Asset Turnover Ratio}) \dots \dots \dots \text{Equation 4}$$

The results in equation four (4) are quite informative in terms of factors that might propel corporate governance on firms listed on the NSE. The constant term of -9.627 is statistically significant, bearing in mind that the constant term is in part estimated by the omission of predictors from a regression analysis. In essence, it serves as a garbage bin for any bias not accounted for by the terms in the model, and it guarantees that the residuals have a mean of zero (Minitab, 2014).

This means that if the predictor variables' coefficients namely, ownership structure, performance and capital structure are all zero, the GEE equation predicts that the probability in change of CEO based on these variables is reduced or zero. There are two performance indicators in equation 4, the book to the market ratio and the asset turnover tell almost the same story, that is, the probability of replacing a CEO is higher when the performance level is average and below. However, the coefficients of book value to market value as a predictor variable are statistically insignificant. A low p-value (< 0.05) indicates that the null hypothesis is rejected. The asset turnover ratio appeared to be more informative and supportive of the hypothesis. At a low asset turnover ratio (poor

The output presented in table 6 was interpreted at two levels. The first section in table 6 shows the log odd ratio (β). The β are the log odd ratio (that is, natural log of (probability of changing CEO/ probability of not changing a CEO)). If p is the probability of changing a CEO the β is the log (p/1-p). When β is positive, then the log odds increase relative to the reference category and if negative, then it declines relative to the reference category. For a given α, β, there could be values of predictor variables that produce estimated probabilities out of range. From this study the coefficients of a model generated as extracted from table 6 is as follows:

performance), the coefficient is + 1.114 and the probability of replacing a non performing CEO are higher, while at medium asset turnover ratio is - 0.216 suggesting that the probability of replacing CEO reduces as performance improves.

The role of debt capital in enhancing corporate governance is tested and the result are captured in equation 4, and the model confirm that debt might be playing a disciplinary role as long debt is judiciously employed. In equation 4, the probability that debt holders influence change of CEO is highest in firms with medium leverage with a coefficient of +1.870, that is, the probability is highest in firms that on average finance 35 percent of their assets with debt.

In terms of ownership, it is apparent in equation 4 that shareholders are less concerned with the replacement of CEO regardless of the level of performance. For example, where an individual shareholder had an influencing interest, that is, hold 20 percent to 50 percent of equity, the coefficient is - 2.072 (negative), implying that the probability of replacing a CEO is reduced. However, even at shareholding of 51 percent to 100 percent with a coefficient of - 0.631, there is a suppressing effect in replacing a CEO. With a p-value of 0.171, the result is

not statistically significant. The second section (column 8) in Table 6 captures Exp (β), specifically inform the prediction weights. The interpretation is

that,  $e^{\beta}$  represents the change in the odds of the outcome (change in CEO) (multiplicatively) by increasing  $x$  (independent variable) by one unit.

**Table 6.** Parameter Estimates

	Parameter	β	Std. Error	Hypothesis Test			Exp(β)	95% Confidence Interval for Exp(B)	
				Wald Chi-Square	df	Sig.		Lower	Upper
Categorised Ownership Structure	(Intercept)	-9.627	0.5662	289.090	1	0.000	6.593E-05	2.173E-05	.000
	Shareholdings 20% to 50%	-2.072	0.7205	8.272	1	0.004	0.126	0.031	.517
	Shareholdings 51% to 100%	-0.631	0.4616	1.871	1	0.171	0.532	0.215	1.314
	Shareholdings Below 20%	0 <sup>a</sup>					1		
Categorised Total Debt to Total Assets	High Leverage 0.45 to 2.03956	1.233	0.4973	6.143	1	0.013	3.430	1.294	9.091
	Medium Leverage 0.3515 to 0.44781	1.870	0.5613	11.103	1	0.001	6.491	2.160	19.501
	Low Leverage 0 to 0.34278	0 <sup>a</sup>					1		
Level of Book to Market Ratio	Positive Growth <1	0.001	0.3849	.000	1	0.998	1.001	0.471	2.128
	No Growth =1	0.637	0.2461	6.708	1	0.010	1.892	1.168	3.064
	Negative Growth > 1	0 <sup>a</sup>					1		
Lev Asset Turnover Ratio	Low 0.073 - 0.6882	1.114	0.2276	23.932	1	0.000	3.045	1.949	4.757
	Medium 0.6926 - 1.1073	-0.216	0.2248	0.926	1	0.336	0.805	0.518	1.251
	High 1.114 - 10.1856	0 <sup>a</sup>					1		
	(Scale)	1							

Events (Independent Variable) : Change of CEO

Trials: Year. Model: (Intercept), OwnStrCa, TDtTaca, LeBtM, LeAssTurn

### 5.3 Ownership structure and change of CEO

The ownership structure refers to equity ownership, specifically percentage of shares held by one top shareholder. The result of the impact of ownership structure on change of CEOs on the NSE is summarised in Table 6. Ownership structure is used in this study to capture the extent to which shareholding is dispersed or concentrated. Ownership structure is a control variable because the obligation to run the company successfully falls on the shareholders of the company. Primarily corporate governance is vested in shareholders who delegate this responsibility to the board of directors who have a fiduciary duty to serve the interests of the corporation rather than interests of the firm's management (Garvey, 2013). An examination of shareholding in the sampled firms revealed concentrated contrary to corporate governance recommended dispersed ownership structure. In some firms, an individual shareholder holds over 60 percent of the shares. Individual in this case can be an institutional investor.

The categorised shareholding captures the largest percentage of share capital in a company held by an individual investor in each year. For example, shareholdings of category 20 percent to 50 percent represent a company in which the top, individual shareholder has *influence*, that is, and based on a principle of majority rule, his or her vote cannot be ignored in passing company resolutions. It is evident from the sampled firms that ownership was in a few hands, that is, there is concentrated ownership. For instance, in 407 out of 697 cases presented, one shareholder hold above 50 percent of the shares (see Table 3), that is, have total *control* over the company. There is a wide dispersion of ownership in only 15 percent of the cases. One would expect decision making in firms with dispersed ownership to be difficult and political (preference aggregation rule), and this due to existence of non-dictatorship, unrestricted domain and independence of irrelevant alternatives (Arrow, 1950).

If we take the odds ratio related to categorised shareholding variable, firm in which an individual shareholder is classified as belonging to shareholdings of 20 percent to 50 percent (OwnStrCa=1) category, exhibit a  $\beta = -2.072$  (sig. 0.004;  $\alpha = 0.05$ ), indicating that compared to (OwnStrCa=3), firms with one shareholder holding 20 percent to 50 percent of the shares (OwnStrCa=1) are less likely to change CEOs. The same applies to firms in which one shareholder hold 51 percent to 100 percent, in which  $\beta = -0.631$  (sig. 0.171;  $\alpha = 0.05$ , though not statistically significant).

The deduction from the findings is that firms in which an individual shareholder has influence or controlling interest are reluctant to replace their CEO, even when performance is below average. However, the frequency of CEO replacement is higher in firms

where the ownership is dispersed. Given that the performance of a number of firms over the period of the study was dismal, the failure by shareholders with both influence and control to replace non performing CEOs is a dent on corporate governance on firms listed on the NSE. It is possible that it is difficult to replace managers that are appointed by influential shareholder even though there is evidence of non performance. These findings negate the theory that dispersed shareholders are too weak to have unified stand against blundering management (Low, Makhija and Sanders, 2007). The finding suggests the existence of director primacy theory espoused by Bainbridge (2003). The director primacy theory requires directors to act on behalf of the firm and not as agents of shareholders (Asher, Mahoney and Mahoney, 2005), a viewpoint that shareholders are not the only group that are interested in the success of the firm (Financial Times. 2009; Lancaster and Lipsey, 1996).

### 5.4 Performance and Change of CEO

The result of the impact of performance on change of CEOs of firms listed on the NSE is presented in table 6. Two measures of performance, namely the book to the market value ratio and asset turnover ratio are used to group firms before predicting change in CEO. We start with the predictive power of the book value to the market value ratio as an indicator of performance, and then use asset turnover ratio as the performance indicator to predict change of CEO. The book value to the market value ratio (BV/MV or BtM) is the book value of shareholder's equity divided by the market value of equity. Fama and French (1992) examined the relationship between BV/MV ratio and stock return and found that on average the larger the BV/MV ratio the larger the market ratio. In South Africa, Auret and Sinclair (2006) in their reflection on the importance of BV/MV stated that the ratio of book-to-market equity can be interpreted as a proxy for some underlying risk relating to a particular stock. As such, it is expected to be related to returns on a share according to a risk/return framework. It turns out that this is the case, and a significant positive relationship is found between BTM and stock returns, as predicted'. Therefore, one would expect investors to rely on this ratio when monitoring their firm's performance.

Using the book to market ratio (BV/MV or BtM) the 694 cases are grouped into positive growth  $< 1$  (LeBtM = 1) no growth = 1 (LeBtM=2) and negative growth  $> 1$  (LeBtM = 3) (see table 4). The negative growth  $> 1$  (LeBtM=3) is used as a reference group. For this variable, if we take the odds ratio, positive growth  $< 1$  (LeBtM=1) firms  $\beta = +.001$  (sig. 0.998;  $\alpha = 0.05$ ), and with the lower Wald interval at 95 percent confidence level not above 1, we conclude no association; and that the changes in CEO in this group are not different from the reference group (negative

growth  $> 1$  (LeBtM=3)), while the growth = 1 (LeBtM=2) firms  $\beta = +0.637$  (sig. 0.010;  $\alpha = 0.05$ ), are 1.892 times likely to change CEO compared to firms in the reference group (negative growth  $> 1$  (LeBtM=3)).

Using the book value to the market value ratio variable as a performance indicator, positive growth signifies (BtM  $< 1$ ) well managed firm and there will be no need to replace managers in such firms, yet the data analysis tells us that the change in CEO in this group is not different from those with negative growth (the reference category). Given that the shareholders are the group used in this ratio, the finding supported the assertion that (see ownership structure and change of CEO above) that shareholders are less likely to change CEO.

Given the importance of this ratio as a predictor of returns in the finance literature (Pratt and Grabowski, 2010; Auret and Sinclair, 2006; Fama and French; 1992) it is surprising that with 71.6 percent of cases showing no growth and below, few (only 0.05 percent) managers were replaced and one would have expected shareholders to rely on this ratio to sack a higher number of CEO, but that appear not to be the case. We justify the use of this ratio because it captures fundamental index of firm value, namely the value the capital market attaches to a firm's net assets as was used by Fama and French (1992) to construct a value index for asset pricing. Furthermore, we expect debt holders to look at this ratio as an indicator of default risk, given that it is shareholder investment that acts as security for debt holders (Li, Lajbcygier, Guo and Chen, 2007; Vassalou and Xing, 2004). The data confirm that as far as this indicator is concerned the replacement of CEO is not performance driven, and the hypothesis that firm performance has a significant effect on change of CEO is rejected. It could also mean that those responsible for disciplining managers do not look at correct indicators that include the book value to the market value ratio.

The result of the impact of the asset turnover on change of CEOs on firms listed on the NSE is summarised and presented in Table 6. The asset turnover ratio is an efficiency ratio that measures a company's ability to generate sales from its assets (Palepu and Healy, 2013). In other words, this ratio shows how efficiently a company can use its assets to generate sales. A higher ratio is preferable to a lower ratio, nevertheless, it has been observed that firms with high asset turnover ratios might report low profit margins (Li and Nissim, 2014; Penman, 2013; Palepu and Healy, 2013). Therefore, one would expect CEOs whose firms post lower asset turnover ratio to be replaced, but that might not be the case if the shareholders fail to act.

The asset turnover ratio is grouped into three classes (levels (Le)), namely: Low 0.073 - 0.688 (LeAssTurn=1); Medium 0.6926 - 1.1073 (LeAssTurn=2) and High 1.114 - 10.1856 (LeAssTurn=3). For this variable, if you take the odds

ratio, low asset turnover ratio (LeAssTurn=1) firms  $\beta = + 1.114$  (sig. 0.000;  $\alpha = 0.05$ ), with the positive sign and entire Wald interval at 95 percent confidence level above 1, we conclude positive association, and confirm that those firms in this group (see  $\text{ex}(\beta)$  in table 6)) are 3.045 times likely to change CEO compared to firms in reference group (High asset turnover (LeAssTurn=3)). While the medium asset turnover ratios (LeAssTurn=2) firms  $\beta = -0.216$  (sig. 0.336;  $\alpha = 0.05$ ), and therefore, the change in CEO in this group is not different from the reference group (high asset turnover (LeAssTurn=3)).

The data confirm that as far as the asset turnover ratio as an indicator of performance is concerned, replacement of CEO is performance driven and the hypothesis that firm performance has a significant effect on change of CEO is accepted. Specifically, the data supports the hypothesis that low asset turnover ratio is associated with change in CEOs on the NSE.

A close examination of this ratio suggests that it is a measure of the productivity of a company's assets with respect to generating sales, that is, total asset is the input while sale is the output. It is the CEO that packages use of firm's assets and therefore, responsible to low asset turnover ratios. Studies have verified the explanatory power of asset turnover and profit margin for forecasting profits (Amir, Kama and Livnat, 2011; Soliman, 2008).

### 5.5 Debt capital and change in CEO

The central theme in this study was to empirically determine the perceived role of debt as a corporate governance variable. This is achieved by examining the effect of debt capital on change of CEO. This is based on the observation that even with usual organisational controls, managers have acted against the interest of investors, and there is a need to develop additional controls (Adams, Hermlin and Weisbach, 2010; Ravina and Sapienza, 2010; Gordon, 2007).

Leverage ratios were used to investigate the firm's use of debt. The total debt to the total asset ratio measures the proportion of total assets financed by debt. The results of the impact of debt capital on change of CEOs on firms listed on the NSE are presented in Table 6. The 694 cases are grouped using total debt to total asset ratio and presented in Table 3. The categorisation are: high leverage (0.45 to 2.03956) is labeled as TDtTaca=1; medium leverage (0.3515 to 0.44781) is labeled as TDtTaca=2; and low leverage (0 to 0.34278) is labeled as TDtTaca=3. The low leverage labeled as TDtTaca=3 is the reference group. For this variable, if you take the odds ratio, high leverage (TDtTaca=1) firms  $\beta = +1.233$  (sig. 0.013;  $\alpha = 0.05$ ), and that with the positive sign and entire Wald interval at 95 percent confidence level above 1, we conclude positive association and confirm that those firms in this group (see  $\text{ex}(\beta)$  in table 6) are 3.430 times likely to change CEO compared to firms in reference group (low leverage

(TDtTAc=3)); while the medium leverage (TDtTAc=2) firms  $\beta = +1.870$  (sig. 0. . 001;  $\alpha = 0.05$ ), are 6.491 times likely to change CEO compared to firms in the reference group (low leverage (TDtTAc=3)).

The data confirmed that the replacement of CEO is debt capital driven, and the hypothesis that firm debt capital has a significant effect on change of CEO is supported by the data. Specifically, the finding suggests that medium leverage ratio is associated with change in CEOs on firms listed on the NSE. The results are in line with the static trade-off theory (Leary and Roberts, 2008), and the pecking order theory (Myers and Majluf, 1984; Barclay and Smith, 1999), and the organizational theory which states that the use of debt capital alleviates agency costs resulting into improved performance; and the theory of using debt capital to tame managers and in the case the data confirm the proposition that debt capital influence replacement of CEOs.

The implication is that if managers are being replaced as a result of poor corporate performance, then firm that finance their assets with 35 percent and above with debt capital are more likely to replace their CEOs than those that use less than 35 percent of debt capital in financing their assets. The conclusion then is that on the NSE debt play a monitoring role, but only if the amount of debt in capital structure is substantial, that is, above 35 percent of capital used to finance assets. Though high levels of debt are associated with high levels of default probability, the propensity to replace CEO is higher in medium leveraged firms (TDtTAc = 2) than high leveraged firms (TDtTAc = 1), suggesting that by insisting on replacing non performing CEOs' debt holders in medium leverage firms could be more risk averse than those in high leveraged firms. It was possible that in high levered firms, debt holders have technically become owners, the manager is a mere figure head and there is no need to replace non performing CEO (Tirole, 2006). Thus the effect of debt capital on change of CEO is not similar across distinct levels of debt capital (leverage).

## 6 Summary and conclusion

It is generally accepted that boards of directors play a fundamental role in corporate governance and the structure of the board plays a significant role in the functioning of a company (Jensen, 1993). One way to evaluate corporate governance is to assess the extent to which inefficient managers are replaced. Firm performance is a critical variable in the evaluation of corporate governance because it impact on the firm's market value and shareholders wealth. The study conducted by Fisman, Khurana and Rhodes (2010) revealed that weak corporate governance protects mediocre CEOs from dismissal, and also shields the board of directors from taking accountability.

The main objective of this study was to investigate the relationship between debt capital, firm performance, and change of CEO in firms listed on the NSE. The results of the study revealed that firms in which an individual shareholder has influence or controlling interest are reluctant to replace their CEO, even when performance is below average. However, the frequency of CEO replacement is higher in firms where there is dispersed ownership in contrast to concentrated ownership. With regards to performance and change of CEO the study revealed that the replacement of CEO is not performance driven, and the hypothesis that firm performance has a significant effect on change of CEO is rejected. With regard to leverage (debt capital) and change in CEO, the results confirmed that the replacement of CEO is debt capital driven, and the hypothesis that leverage (debt capital) has a significant effect on change of CEO is supported by the data. Specifically, the results suggest that medium leverage ratio is associated with change in CEOs on firms listed on the NSE.

## 7 Managerial implication and recommendations

This study contributes to the debate on large owners' impact on firm performance and their role on replacing non performing CEOs, concluding that large owner's impact adversely on corporate governance because they fail to replace non-performing CEOs. The evidence is that on the NSE, we see more replacement of non-performing CEOs in firms with dispersed ownership, while replacing a CEO is an effective strategy to renew its resource base. The data tell us that large ownership is not beneficial to other stakeholders.

From a practical perspective, the first challenge then is to include a regulation that firms employ a minimum amount of debt in their capital structure. Secondly managers should be made aware that debt capital combined with poor performance could result in the replacement of the CEO. The results of this study present a challenge to researchers' and regulators in the sense that compared to cases where performance was classified as average and below average, replacement of CEOs tended to be low on the NSE; a finding that point to prevalence of poor corporate governance on the NSE. It also confirms the theory that firms in which an individual shareholder has influence or controlling interest are reluctant replacing their CEO.

## 8 Limitations of the study

The limitation of this study is that data was limited to non-financial firms listed on the NSE for the period 1990 to 2012, inclusion of financial firms would allow for generalisation of the findings.

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