

The Relationship between Capital Structure, Performance and Replacement of CEO in Firms Listed on the Nairobi Securities Exchange

By

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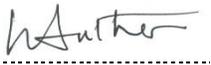
Dedication

This research is dedicated to my late father Zephania Odhiambo Olewo, a great believer in education. During my childhood, he supported me in everything about education. I dedicate this research to my son, William Ochieng Otieno, a super brain which due to health, challenges could not realise his academic dreams. I dedicate this research to my mother Prisca Aloo. I alsodedicate this research to the doctors who brought me back to life after a fatal road accident just a few months after I registered for this degree. Finally, I dedicate this research to my late grandmother Turphosa Maroko, who took care of me during my earlier years in life.

DECLARATION

Student number: 47266821

I declare that The **relationship between capital structure, performance and replacement of CEO in firms listed on the Nairobi Securities Exchange** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



SIGNATURE

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ABSTRACT

This study investigated the relationship between capital structure, performance and replacement of chief executive officer in firms listed on the Nairobi Securities Exchange (NSE). Data was collected from a sample of 37 firms listed on the NSE over a period of 23 years, from 1990 to 2012. The analysis was conducted at three stages. The canonical correlation technique was employed to investigate the bi-directional relationship between capital structure and performance and to select competing indicators of performance and capital structure. Second, the general linear model (GLM) procedure was used to test the effect of performance and ownership structure and to test the effect of capital structure and ownership structure. Lastly, the generalised estimating equation (GEE) was used to assess effects of performance, capital structure and ownership structure on change in CEO.

The results revealed that a bidirectional relationship exists between capital structure and debt capital. The indicators found to be useful in examining the relationship between performance and capital structure are asset turnover ratio and total debt to the total asset ratio. The findings support the efficiency hypothesis but not the franchise hypothesis. The results also indicated that firms with a low asset turnover are 3.045 times likely to change CEO compared to firms with a high asset turnover. The results also indicated that firms with high leverage (debt) are 3.430 times likely to change CEO compared to firms in low leverage, while the firms with medium leverage are 6.491 times likely to change CEO.

Therefore managers should not be passive when it comes to choosing between equity and debt capital because debt capital played a disciplinary role on firms listed on the NSE.

Keywords: Capital Structure; Performance; Corporate Governance; Efficiency Hypothesis; The Franchise Hypothesis, Canonical Correlation; CEO; GLM; GEE.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The capital providers expect an acceptable return from their investment and that their investments are safe, while the users of capital expect to access finance at a reasonable cost. Reconciling the interest of users of finance and its suppliers is central to financial decision making. From a financial management perspective, the requirement is that managers make only capital structure choices that add value to the firm; that is, maximise the wealth of shareholders.

It is not definite whether it is firm performance that guides capital structure decisions or capital structure that propels performance or whether both propel each other. Furthermore, the debate as to why and how much debt firms should use persists. Therefore, managers need guidance on the “why” and “how much” debt should be used. The “why” is about whether the values of firms that use debt differs from those that do not use debt, which is whether the capital structure decision is relevant or irrelevant? The “how much” is about the optimum amount of debt required to maximise the wealth of the shareholders.

An understanding of the relationship between performance and debt capital enables confirmation of the role debt capital play in corporate governance in firms and clarifies benefits associated with the use of debt, while examining the quality of financial decisions made by managers. In this study, the words' leverage, capital structure and usage of debt will be used interchangeably.

The reality in modern firms is the separation of ownership and control, and the result is a situation where decision agents (managers) do not have a major share of the wealth gained or loss resulting from their decisions. In addition, due to competing interest, a conflict between owners and manager is imminent. Whether a decision is about asset acquisition, or asset financing or management of assets, or profit planning, managers can make optimal or suboptimal choices that impact adversely on both the value of the firm and shareholders. The advantage of

separation to the shareholders is that it allows firms to have access to specialized management contrary to relying on the owner cum managers that lack capacity to drive a firm to success.

The separation of owners and managers translates into risk sharing games between managers and shareholders. In firms, managers take decisions, but don't fully bear the consequences. In businesses, the residual risk is borne by the residual claimants namely, the shareholders. The transfer of risk or lopsided risk sharing between managers and shareholders might encourage managers to be unnecessarily speculative and or involve in activities that are detrimental to investors (agency costs) as explained by Jensen and Meckling (1976). The agency problem or incentive problem is explained in terms of asymmetries in pay offs, horizon and information liability and summarised as separation of decision making by management from risk taking by shareholders and debt holders. The result of this arrangement is serious corporate governance issues if managers do not always behave in the best interest of the investors (Berk & DeMarzo, 2011:523). Therefore, structures must be in place to moderate adverse activities by opportunistic managers. The use of debt capital to contain managerial excesses is a major subject in this study.

1.1.1 Corporate Governance

Corporate governance is the way firms are managed, specifically the set of mechanisms that control a manager's decisions and actions (Bushee, Carter & Gerakos, 2009). It is a mechanism through which investors in corporations assure themselves that their managers select worthwhile investments.

A code of governance is fundamental for any emerging country as it provides a sound management framework and principles that add value to a firm (Young, 2010). Wealth creation by corporations and the sharing of that wealth depends on how productive and efficient management is, efficacious legal contractual arrangements, and the operation of various markets (Adams, Hermalin & Weisbach 2010; Bebchuk, & Weisbach, 2010; Bebchuk, Cohen & Ferrell, 2009).

Studies on the relationships between agent (managers) and principal (shareholders) revealed the need for additional monitoring and control mechanisms (Bonazzi & Islam, 2007). As an example, awareness of corporate governance issues in South Africa, specifically intolerance for

mismanagement saw the need to strengthen corporate governance structures in South Africa (Young, 2010). In Kenya due to laxity in corporate governance, firms such as Uchumi Ltd and Cooper Motor Corporation (CMC)Ltd were suspended from the then Nairobi Stock Exchange(NSE) now Nairobi Securities Stock Exchange. The existence of firms that rate financial securities issued by firms and institutions (for example, Governance Metrics International, Standard and Poor) attests the importance of corporate governance in the sense that poorly rated firms, and institutions will not get capital. They need capital to support their investments (Larcker, Richardson & Tuna, 2005).

Though there are competing corporate governance mechanisms, solutions to corporate woes are modeled around the monitoring role of independent board of directors (Faleye, Hoitash &Hoitash, 2011) and vary from country to country(Aggarwal, Erel, Stulz& Williamson, 2009; Allen, 2005). There is a need for oversight body; when the principal (shareholders) for one reason or another cannot perfectly monitor the agent's (managers') actions (Harris & Raviv, 2010). Effective monitoring is required to protect the interests of other stakeholders; nevertheless, intense monitoring compromises the invaluable director's strategic advising role and could impact adversely on the value of the firm (Faleye, Hoitash &Hoitash, 2011). At times, the board is too friendly to take corrective actions (Adams & Ferreira, 2007); and alternative monitoring mechanisms ought to be identified so that independent directors can spend less time on monitoring and more time on the advisory role. Monitoring is only sensible when wealth is being created, but wealth creation also depends on the quality of advice offered to top managers by independent directors. Mehran, Morrison and Shapiro (2011) and Jensen (1986) asserted that debt capital is good for corporate governance because it attracts lenders' disciplinary actions.

Kenya has its share of corporate governance problems that needs to be addressed, and to safeguard the interest of those who invest in capital markets and firms, which need funds for worthwhile projects the Capital Markets Authority (CMA) developed guidelines on corporate governance practices by publicly listed firms in Kenya (CMA, 2002). To quote CMA, 'Corporate governance has been an important topic of reform and discussion in Kenya for almost 15 years. The corporate Governance Guidelines issued by the Capital Markets Authority have been supported by private sector initiatives, including widespread director training which in turn led to

improved governance across listed companies. Kenya has a strong accounting and auditing culture and has made great strides in introducing international standards in these areas. However, major challenges remain. The country has lagged in many international comparative rankings of governance, anti-corruption, and competitiveness. A number of developments in the markets, in Kenya and abroad, shook investor confidence. Much of the legal framework (particularly the current Companies Act) is outdated and has significant gaps. Fully tapping the potential of capital markets and professionalizing boards and management will require that reform continues. For a number of reasons, it is now important to move corporate governance to the fore of the policy agenda.’ An examination of CMA website shows evidence of corporate governance shortcomings in listed firms. For example, in March 2013, CMA further extended the suspension from trading of shares of CMC Holdings Limited shares for additional period of fifty three (53) trading days from 30 March 2013 to 14 June 2013 on request of the CMC (CMA, 2013). In Kenya, Mulili and Wong (2012) explored the challenges encountered by developing countries during the process of adopting the corporate governance ideals and concluded that there is a need to strengthen corporate governance.

This study addressed four related issues within the context of corporate governance, quality of managerial decisions and the role of debt in corporate governance using data from an emerging economy, Kenya. Firstly, it interrogates the relationship between leverage and performance; secondly, it interrogates the effect of leverage on change of Chief Executive Officer (CEO); thirdly, it interrogates the effect of performance on change of CEO; and finally it interrogates the combined effect of leverage and performance on change of CEO of firms listed at the Nairobi Securities Exchange.

1.1.2 Capital Structure Theories

Theories on capital structure are meant to managers identify the capital structure mixes that maximises both the wealth of shareholders and the market value of the firm. Capital structure theories started from the work of Modigliani and Miller (1958). Modigliani and Miller (1958) thesis were that in a perfect market, a firm's value is independent of its capital structure, or else investors would gainfully sell the shares of the firm with the higher value and buy similar shares in the firm with lower value and earn a riskless return. The action by investors of selling

securities in one firm and buying share in a similar firm to take advantage of price differences is based upon the law of one price and is known as arbitrage (Lumby & Jones, 2011; Stulz, 2000).

Modigliani and Miller (1958) model is unambiguous on conditions that must prevail for debt to be irrelevant. Stulz (2000: 121-122) remark that, "The key assumptions of Modigliani and Miller have been used over and over in our field not because we think they hold, but because we think they allow us to make predictions and that our results ought to be judged not by leading assumptions but by the usefulness of the results in explaining empirical phenomena." These assumptions opened a window for other researchers to challenge Modigliani and Miller (1958) irrelevancy theorem. The challenge is that in the real-world, friction exists (market imperfections) and those frictions make the capital structure relevant (Durand, 1959). Sources of frictions are found in investor behavior that is shaped by contract law, taxes and regulations, and it is these frictions that require managers to make capital structure choices (Li, Whited & Wu, 2014).

Studies that contradicted Modigliani and Miller (1958) irrelevancy theorem mentioned the advantage of debt in a world where corporate taxes and other frictions as important in explaining the use of debt by corporations (Hugonnier, Malamud & Morellec, 2012; Berk, Stanton, & Zechner, 2008). Modigliani and Miller (1963:434) concurred that for even though one may have a probable return after taxes that is twice that of another firm in the same risk equivalent-class, it will not be the case that the actual return after taxes of the first firm will always be twice of the second, if the two firms have a different degree of leverage; and since the distribution of returns after tax of the two firms will not be proportionate, there can be no 'arbitrage' process to force their values to be equivalent to their expected after tax returns." The importance of capital structure is modeled around a number of theories that include: the agency theory and agency costs (Berk & DeMarzo, 2011; Jensen & Meckling, 1976); the pecking order theory and information asymmetry (Leary & Roberts, 2008; Myers, 1984, 1977). There is also capital structure theory based on corporate control (Roberts & Sufi, 2009; Harris & Raviv, 1991); and product market interactions theory (Fosu, 2013; Campello, 2006).

The prediction is that in the presence of incentive conflicts, managers use debt if it fits into their strategy (Roberts & Sufi, 2009). Alternatively, managers should be forced to use debt capital if it is beneficial for the firm. Unfortunately forcing managers to use debt takes away their innovation and might unfairly penalise efficient managers. Managers left on their own can be rational thus choosing the optimum debt level to signal to the capital market the true value to the firm (Berk & DeMarzo, 2011; Loncarski, ter Horst & Veld, 2006; Myers & Majluf, 1984).

1.1.3 Firm Performance

Finance theorist and practitioners have agreed that the objective of the firm is to maximise the wealth of shareholders (Moyer, McGuigan, Rao & Kretlow, 2011; Van Horne & Wachowicz, 2009). Firm efficiency lead indicators such as the book to market value ratio, return on investments, at market and accounting levels, inform investors about whether a firm is achieving its objectives or not.

Poor performance might be traced to earlier decisions made by management and or hostile economic environment. Financial distress, a product of unsatisfactory decisions by management is costly and justifies corrective action. Remedial measures include dismissing top management or sacking employees or reengineering strategy and structure (Chen & Hambrick, 2012), or debt restructuring (Damijan, 2014) instead of winding up the business. In particular, if the poor performance is traced to ineffectiveness of the Chief Executive Officer (CEO) and board of directors, then the CEO and board of directors are debriefed or replaced, and board members even lose seats in other boards (Wermers, Wu & Zechner, 2008: 26).

1.1.4 The Control Rights in Firms

The control right in firms belongs to owners and lenders to the business. This explains why decisions regarding reorganisation, in law and substance, begin by an examination of how control rights are allocated within a firm (Roberts & Sufi, 2009; Tung, 2009; Baird & Rasmussen, 2006). Practically, if firms are to make informed choices on a timely basis, in addition to

motivating the employee's decision should be made where knowledge resides. Equity holders being ultimate bearers of risk enjoy 'unlimited' control rights, compared to other stakeholders. However, from a risk perspective, the debt holders are more risk averse than equity holders. Managers, being the professional should retain operating decision rights. Therefore, debt holders might closely monitor firm risk, and managerial activities than equity holders.

In capturing the capital invested by shareholders relative to capital invested by debt holders, capital structure captures the level of commitment of owners in their firm, and signal show control rights are distributed among investors of a firm. Not surprisingly, managers might issue debt securities to avoid surrendering the rights of existing shareholders (avoid diluting control) to new subscribers (Roberts & Sufi, 2009).

Shareholders that are dispersed and isolated might be powerless in the face of managerial self-interest because they cannot act in unanimity (Kang, 2011; Berle & Means, 1932). Dispersed shareholders find it difficult disciplining managers even when performance is poor. It is possible that when the value of a firm decline substantially due to pitiable performance, dispersed shareholders might become less interested in what management does and in the firm because the decline in the value of a firm instantly erodes their investment, and this is a serious challenge to corporate governance. Where shareholders find it difficult exerting their monitoring role, lenders might play that role. Lenders not only want rates of return commensurate to their risk exposure, but also the power to tilt borrower firm's risk exposure in their favor (Mohamed, 2010).

1.1.5 Influence of capital structure on performance and the influence of performance on capital structure

Since Modigliani and Miller (1958), empirical work has uncovered some conventional facts on capital structure choice, nevertheless, this evidence is largely based on firms in the developed economies, and it is not at all clear how these facts relate to different theoretical models (Margaritis & Psilaki, 2010; Margaritis & Psillaki, 2007). To conclude whether these empirical regularities are merely spurious correlations, or whether they support any theory or not, it is important to test the robustness of these findings outside the environment in which they were uncovered (Margaritis & Psilaki, 2010; Margaritis & Psillaki, 2007; Rajan & Zengales, 1995).

The post Modigliani & Miller (1958) capital structure theories such as the static trade off model, pecking order model and market for corporate control model implies that the use of debt capital depends on performance of the borrowing firm (Graham & Leary, 2011). The static trade off theory suggests that optimum capital structure is determined by balancing corporate tax savings against cost of bankruptcy (Myers, 1984; Barclay & Smith, 1999). The static trade off theory prediction is that profitable firms will use more debt because it is only profitable firms that enjoy tax benefits. It follows those firms with tax savings resulting from good performance and low bankruptcy costs should use more debt and post better performance (Ferrão, 2011, Graham & Harvey, 2001).

The pecking order hypothesis predict that debt is used to finance new investments after exhausting retained earnings and that firms will have no leverage targets (Ferrão, 2011; Mazur, 2007; Myers & Majluf, 1984). The aggregate dynamics of capital structure in Bhamra, Kuehn and Strebulaev (2010) consider time-varying macroeconomic conditions as influencing capital structure choices, while the human capital theory of capital structure in Berk, Stanton and Zechner (2010) implies a potential relationship between capital structure and performance.

The agency theory addresses the relationship between owners and managers and would imply a bidirectional relationship between firm performance and capital structure (Dobbin & Jung, 2010; Hannah, 2007: 404-406; Jensen & Meckling, 1976). These theories, are testable empirically, and predict that performance is a factor that explains the use of debt; and that, efficient and money-making firms will use more debt; however, at the same time profitable firms might use less debt to minimize their exposure to financial distress or to avoid diluting control (Margaritis & Psilaki, 2010).

The counter hypothesis is that debt capital force managers to run their firms profitably, thus generating sufficient cash to meet their debt obligations (Kang, 2011). The assumption is that debt holders are risk averse, and that in the face of poor performance, they will control the firm to preserve their investment. Even when the firm is not in financial difficulties, debt holders might control the propensity of managers to select too risky projects that can adversely impact

on the value to the firm, yet shareholders will be willing to take a bet on risky projects (La Rocca, La Rocca, & Gerace, 2008).

The monitoring role of debt holders is enabled through debt covenants (Mustapha & Ahmad, 2011). Debt covenants, allow debt holders the right to more detailed information useful in controlling manager's taste for risk that is not beneficial to shareholders. Bennett, Güntay and Unal (2014) presented finding that support monitoring role by debt holders when they assert that banks with higher inside debt ratios have superior supervisory ratings, that indicate, stronger capital positions, better management, stronger earnings, and the capacity to withstand market jolts in the future; they conclude that such ex ante evidence can explain the observed relationship between inside debt, default risk, and performance during the crisis.

1.1.6 Firm Performance and Change of Chief Executive Officer

In the face of poor performance, shareholders, bidders in takeover, nonexecutive directors and investors (shareholders and debt holders) can recommend a corrective. The corrective action might include a change in top management (Chen & Hambrick, 2012; Firth, Fung & Rui, 2006). 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 & Farrell, 2007). The poor performance hypothesis states that CEO is replaced when performance is poor (Chen & Hambrick, 2012).

Blackwell, Dudney and Farrell (2007) finding are 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) present a model in which weak governance protects mediocre CEOs from dismissal, while shielding the board. Critical to this study is an observation by Brookman and Thistle (2009:1) that 'whether CEO tenure is determined by performance or by other, consideration is an important issue in corporate governance. If corporate governance structures function correctly, then CEOs will be retained when they perform well and replaced when they perform poorly. Conversely, if governance structures function poorly, CEOs will not be replaced even if firm performance is poor. One approach to examining whether governance functions well is to analyse the CEO's risk of

termination. Furthermore, previous studies have used CEO turnover to test effectiveness of corporate governance (Brookman & Thistle, 2009; Parrino, Sias, & Starks, 2004).

1.1.7 Capital structure and change of chief executive officer

CEOs have a say on capital structure decisions and are therefore held accountable. In addition, 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, organized, monitored and controlled to ensure coordination of human efforts to achieve organizational objectives (Taylor, 2013; Daft, 2010; Mintzberg, 1988).

Cao and Mauer (2010) concluded that the leverage of the replaced CEO's former company tends to be consistent in the direction of the debt policy change and that the frequency of CEO turnover is much less when the firm never changes its debt policy. 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 & Wall, 2000).

The role of debt in disciplining managers is yet to be explored and is an unresolved issue. The nearest study on debt-based discipline is by Blum (2002), who asserted that benefits of market discipline associated with debt capital depend on the ability of banks to credibly commit to a given level of risk. 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 minimizing 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 (Tirole, 2006).

The presence of debt in capital structure increases the risk of liquidation if a decline in a firm's performance hampers the profitability, and liquidity needed to pay interest and the principal amount on maturity (Anderson & 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 theory. If the data is consistent with the prediction, then a theory emerges. To quote Zwiebel(1996: 1197) "Indeed, debt is useful precisely because it can ex-ante restrict managerial decisions later when the discipliner is no longer in a position to exert pressure, "while, Tung (2009:117 - 123), refer to leverage in the board room as the unsung influence of private lenders in corporate governance, "The dearth (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, 2009:117 - 123).

1.1.8 Combined effect of capital structure and performance on change of chief executive officer

From the arguments in sections 1.1.7 and 1.1.8, it is possible that performance on its own or leverage on its own might not explain changes in CEOs; however, there could be a joint effect. Therefore, interaction effect of leverage and performance on change of CEO is not unlikely. There is a case in establishing the joint effect of leverage and performance on change of CEO.

The argument implied by the effect of interaction is more complex than that of a relation of dependency (Tacq, 1997). An effect of interaction is not merely the effect of performance in itself, or of capital structure, but it expresses the effect of combination of performance and capital structure that is, the product of performance and capital structure is used as the independent variable. The proposition is that capital structure and poor performance reinforce

each other to influence change in CEO; in which case multiplicative model and not weighted sum model is appropriate (Tacq, 1997).

1.1.9 Capital structure and performance of firms after change in CEO

The relationship between strategic change such as replacing CEO and post CEO change firm performance divulged ambivalent findings. Some studies report improvement in performance after such a major decisive change (Cornelli, Kominek & Ljungqvist, 2013; Huson, Malatesta & Parrino 2004). Other reported a decline in performance after change in CEOs (Chen&Thompson, 2012). Kelly and Amburgey (1991) found no relationship between change in CEO and firm performance. In China, Pessarossi and Laurent (2012) found that CEO turnover typically produces a positive stock market reaction, but the reaction is significantly positive only for enterprises owned by the central government, and not significant for enterprises owned by local governments or privately owned enterprises.

There are three competing hypothesis that predict post CEO change performance. These are strategy hypotheses, the ability hypothesis and scapegoat hypothesis (Pessarossi& Weill, 2012:3; Clayton, Hartzell & Rosenberg, 2005).The ability and strategy hypothesis are associated with change in operating and financial strategies that improve performance. The scapegoat hypothesis would predict no change in performance because there was no merit in replacing the manager.

In the past models that predict use of debt tended to ignore CEO characteristics (Frank & Goyal, 2007). Even Modigliani and Miller (1958) proposition would predict no cause and effect between change in CEO and change in leverage because capital structure decisions are irrelevant. This prediction will hold if fixed firm effect is independent of managerial fixed effect. Bertrand and Schoar (2003) found that managerial fixed effect matter for a wide range of corporate decisions.However, Adams and Sattar (2009) found that CEO turnover events while is value enhancing to stockholders, are values decreasing to bondholders, and overall have an insignificant impact on firm value, evidence, which is consistent with the wealth transfer hypothesis but inconsistent with the signaling hypothesis.

1.1.10 Nairobi securities exchange (NSE)

The Nairobi Securities Exchange (NSE) on which this study focuses on is the largest stock exchange in East Africa and ranked fifth in Africa in terms of market capitalization (NSE, 2014). Corporate governance is a topical issue in Kenya largely because most firms listed on the Nairobi Stock Exchange (NSE) fail to earn adequate returns for their shareholders. The NSE 20 share index that stood at 4000 points in 1994, declined to 3000 points in 1997 and then dropped to 1420 points in 2001. As in May 2011 the index stood at 3993, which is just a few points below the level of 4000 points in 1994, thus a negative growth. On 8th November 2011, the index stood at a low 3459.51 point. The average earnings, after tax, of firms listed on the NSE declined by almost 51 percent, even before adjusting for inflation, between 1994 and 1999. This is against an increase of 86 percent in average total assets of firms listed at the NSE. At the same time, more than one-half of the firms reduced or has been skipping dividends without realization of capital gains.

There are firms in this market (for example, National Bank of Kenya) that has not either paid dividends or reported significant capital gains over the past 15 years, a period from 1994 to 2010. With such performance indicators, one would expect to see changes in both the board of directors and chief executive officer's (CEO's). These lackluster performances have an implication as to the effectiveness of corporate governance in Kenya.

Firm's stakeholders are aware that continuous poor performance is a threat to a firm's very existence and, not surprisingly these poor performances has garnered considerable attention in public debates amongst investors, policy makers and investment advisors who seek redress. It is imperative that models that forestall and address poor performance and thus reduce firm failure are identified.

1.2 Statement of the Problem

Capital structure describes the mix of securities used by firms to finance real investments. Determining the right balance between debt and equity financing means weighing the costs and

benefits of debt and equity, to make sure that the firm does not have debt it cannot repay and at the same time, the combination of debt and equity must minimize the cost of capital. Choosing debt forces managers to manage cash flow to be able to meet the firm's debt obligations; therefore, debt holders have the potential to play a disciplinary role.

The importance of debt capital to issuing firms is debatable from the time Modigliani and Miller (M&M) (1958) made it clear that in perfect markets, and based on the law of one price. Capital structure does not matter because it does not add value (Modigliani & Miller, 1958). The law of one price implies that a good must sell for the same price in all locations (Mankiw, 2011:685-686; Lamont & Thaler, 2003; Kenneth & Kenneth, 1983) otherwise arbitrageurs will come into the market and eliminate differences in prices of identical assets. The finance manager's interpretation would be that in perfect capital markets, all financial decisions will not impact upon the value to the firm, and in finality irrelevant. The then M&M proposition worked well with the proof that while leverage increases the risk and cost of equity, the firms weighted average cost of capital (WACC), and total value is not changed (Van Horne & Wachowicz, 2009).

However, the conclusion that a firm's choice of capital structure is inconsequential is inconsistent with the observation that firms invest significant resources both in terms of managerial time and effort, legal fee and investment banking fees, to manage their capital structures (Berk & DeMarzo, 2011). The main justification of the deployment of such resources is that the choice of leverage is of critical importance to a firm's value; and that individual firms have an optimum capital structure (Berk & DeMarzo, 2011). The proposition is that capital structure decisions are relevant and not irrelevant as stated in MM. On the NSE, there are large differences in leverage ratios (see Table 6.1 in chapter 6 specifically, the high standard deviations); and the question then is, if the capital structure decision is not important, how does one explain variations in leverage ratios?

This study gravitates around the relevancy and irrelevancy of capital structure decisions; specifically the effect of debt capital on the value of the firm. The argument by O'Brien, Parthiban, Toru and Andrew (2014:1013) suggested that debt capital impacted on firm

performance and to quote them ‘While agency theory predicts that debt should lead to higher performance for diversifying firms, transaction cost economics (TCE) predicts that more debt will lead to lower performance for firms expanding to new markets.’

Because firms do not operate in a perfect market, there are limits to arbitrage process; therefore, there is a need examining capital structure choices in imperfect markets. In support of the relevancy of capital structure, the debate then progressed as presented by Myers (2001:81): “There is no universal theory of the debt-equity choice, and no reason to expect one. There are several useful conditional theories, however. For example, the *tradeoff theory* says that firms seek debt levels that balance the tax advantages of additional debt against the costs of possible financial distress. The tradeoff theory predicts moderate borrowing by tax-paying firms. The *pecking order theory* says that the firm will borrow, rather than issuing equity, when internal cash flow is not sufficient to fund capital expenditures. Thus the amount of debt will reflect the firm's cumulative need for external funds. The *free cash flow theory* states that dangerously high debt levels will increase the value to the firm, despite the threat of financial distress, when a firm's operating cash flow significantly exceeds its profitable investment opportunities. The free cash flow theory is designed for mature firms that are prone to over invest". Myers (2001:82) adds that the tradeoff theory emphasizes taxes, the pecking order theory emphasizes differences in information, and the free cash flow theory emphasizes agency costs, and in this study, the disciplinary role of debt is examined.

There are competing approaches that investors can choose from to avoid a decline in the value of their firms. The first approach is diversification (Elton & Gruber, 1997; Markowitz, 1952). The second is disposal of shares to force incompetent managers out to forget about how a firm is managed (McCahery, Sautner, & Starks, 2011; Bharath, Jayaraman & Nagar, 2010; Admati & Pfleiderer, 2009). The third option requires carefully thought-out corporate governance mechanisms that maximise the wealth of shareholders. In this study, this third option is examined to establish the role of debt as a noticeable aspect of corporate governance, specifically replacement of CEO's in poorly performing firms.

The hypothesis is that debt capital is an alternative corporate governance mechanism if shareholders fail to take action against non-performing managers. A survey by Bebchuk and Weisbach (2010) on shareholders and shareholder activism, confirms that corporate governance focus on the actions by shareholders and not by debt holders.

First, debt capital, one would argue reduces agency costs; however, it can also induce agency benefits, if there are visible differences in performance across different levels of capital structure; and visible differences in capital structure across different levels of performance. Thus managers would look at performance in managing debt levels and vice versa; that is, look at debt levels in managing performance. However, researchers are not in consensus, whether it is the capital structure that influences performance or performance that influences capital structure or both (Margaritis & Psillaki, 2010; Margaritis & Psillaki, 2007). This study establishes which of these possibilities prevail on the NSE.

Second debt capital becomes a relevant corporate governance mechanism, only if it has a noticeable effect on corporate governance, namely replacement of CEO's in poorly performing firms. This requires a close examination of changes of CEO to establish how much of the change is explained by poor performance; how much of the change is attributed to debt capital; and how much change is attributed to joint effect of capital structure and performance. This is to recognize the lack of consensus as to whether managers are replaced as a result of poor performance or not or as a result of sub optimal capital structure decisions. Studies that point out failure of shareholders to replace non performing CEOs, implies the need to strengthen corporate governance in firms.

It is mentioned above that Kenya has its share of corporate governance problems that need solution. However, there is no study on the role of debt capital as a disciplinary mechanism. Furthermore, similar studies in Kenya have looked at determinants of capital structure but ignored the bidirectional relationship between capital structure and performance (Gwatidzo & Ojah, 2009, Ngungi 2008; Odinga, 2003; Omondi, 1996). The studies in Kenya equally ignored levels of performance and level's capital structure when contributing to capital structure debate. This study is an attempt to close such a gap.

Methodological issues arise in relation to studies on capital structure choices. Different methodologies result into different interpretation of factors that explain capital structure decisions. Some previous studies employed statistical techniques that make it difficult establishing whether, the effect of capital structure on performance responds to different capital choices or whether the effect of performance on capital structure responds to different performance levels. In any case, most of the studies employed one statistical method 'while more than one statistical method should be used as part of a validation process to help ensure that variance explained culminates from the underlying phenomena or trait and is not a function of method' (Onwuegbuzie, Johnson & Coluns, 2009: 115).

Fisman, Khurana, and Rhodes (2010) and Firth, Fung and Rui (2006) are examples of studies that use ordinary least regression analysis to know whether performance explains the change in CEO. However, of equal significance to managers would be whether poor performance is explained in terms of sub optimal capital structure choices. Managers would want to know whether performance is a decision variable in making capital choices; and the extent to which change in CEO is sensitive to level of performance and capital structure levels. This kind of analysis would require grouped data.

This study addressed methodological issue by employing canonical correlation technique to identify and cross match appropriate measures of capital structure and performance. It also employed generalised linear model (GLM) as an improvement on ordinary least regression (OLS). OLS based studies focus only on the test of significance of predictor coefficients but do not use levels of performance to predict levels of leverage and vice versa. The other improvement is that both levels of leverage and performance are subjected to generalised estimating equations (GEE) model to predict change in CEOs; and in that, respect identifies a target overall debt level.

Earlier studies do not explain their selection of performance and capital structure indicators, but go by tradition; to address the issue of variable selection, this study employs canonical correlation analysis in choosing the indicators of performance and capital structure from a list of

potential indicators. Kenya provides an ideal case for such investigation as it has undergone political and economic adjustment that included introduction of multi-party politics, reluctance by donor agencies such as World Bank to extend credit, restructuring on the NSE and participation of a substantial number of firms in the capital market. Therefore this study seeks answers to the following research questions:

- i. Does leverage have effect on firm performance?
- ii. Does performance have effect on firm leverage?
- iii. Does performance have effect on change of CEO?
- iv. Does leverage have effect on change of CEO?
- v. Does leverage and performance (interaction effect) have effect on change of CEO?

1.3 Objectives of the Study

1.3.1 Primary Objective

The primary objective of this study is to investigate the relationship between capital structure, performance and change in CEO in firms listed on the Nairobi Securities Exchange.

1.3.2. Secondary objectives

In order to achieve the primary objective, the secondary objectives of the study are:

- To establish if firm performance has an effect on leverage.
- To establish if leverage has an effect on firm performance.
- To establish if firm performance causes changes of CEO.
- To establish if leverage cause change of CEO.
- To establish if leverage and firm performance (interaction effect) causes change of CEO.

1.4 Hypotheses for the Study

In order to investigate the relationship between variables, five null hypotheses were tested. The null hypotheses and alternative hypotheses tested in this study were as follows:

H₀₁: Firm performance does not have a significant effect on leverage, and alternative

H₁₁: Firm performance has a significant effect on leverage.

H₀₂: Leverage does not have a significant effect on firm performance; and the alternative hypothesis:

H₁₂: Leverage has a significant effect on firm performance.

H₀₃: Firm performance does not have a significant effect on Change of CEO

H₁₃: Firm performance has a significant effect on Change of CEO.

H₀₄: Leverage does not have a significant effect on change of CEO.

H₁₄: Leverage has a significant effect on change of CEO.

H₀₅: Leverage and firm performance does not have a significant effect on Change of CEO

H₁₅: Leverage and firm performance has a significant effect on Change of CEO.

The testing of the null and alternate hypotheses is conducted in chapters 5, 6 and 7.

1.5 Value of the Study

The contribution of this study is at methodological, theoretical and practical levels. It contributes to academic literature by exploring the role of debt capital in corporate governance in emerging economy; by establishing the effect firm performance has on debt capital it contributes to the theory of debt management; and contributes to selection of capital structure and performance indicators. It contributes to the theory of change in CEOs by establishing empirically whether organization can change their negative performance by changing the CEO; specifically leverage and performance effect on change of CEOs. The data confirmed the presence of echelon and match theory at the NSE. It raises theoretical issue on finance theory; and whether there is a sound theory about change of management. On the basis of this study researchers can proceed to establish the effect of change of CEO on performance. The study opens a debate about the use of ROA as a performance indicator and the reliability of the book value and the market value of a share as a performance indicator and the cost of relying on mispecified performance indicators.

This study provided out-of-sample evidence. The data used in this study is outside developed economies, that is, in emerging economy that exhibit unique legal and economic factors when compared to developed economies. The analogy is in the assertion that studies on market return anomalies must be subjected to out-of-sample tests if the results are to be credible.

At a practical level, the findings are important to managers in making financial decisions, particularly choice of an optimum capital structure or whether to use debt or not. To shareholders, it confirmed debt capital's monitoring role and shareholders will benefit by having debt capital in their firm. In this market it is like there static trade off theory and not pecking order theory should be preferred.

In terms of methodology, it goes beyond OLS regression and subjected the data to canonical correlation, general linear model (GLM) and generalised estimating equation (GEE). It also questioned the indicators of both performance and capital structure that managers used.

The analysis provides insights into the structure of the different variable sets (capital structure, performance and change of CEO as they relate to dependence in their relationships. The findings are of practical and conceptual significance and opened a window for further studies. For example, it employs the use of multiple variables instead of examining each variable independently.

1.6 Conceptual Frame Work

1.6.1 Financing Choices, Agency Problem and Performance

It is the interaction between human and non-human resources that add value to the firm. However, owners and managers are different, yet owners expect a manager to take actions that add value to the firm. In this study, the assumption is that corporate governance realigns manager's financing, investment, products and or service's choices and even the markets that they position in with the objectives of the firm. It is manager's choice that positively or negatively factor into performance.

The agency theory provides a framework to align managerial and shareholders conflicting interest. The literature presented in chapter 2 suggested that financing choices could alleviate the agency problem (corporate governance) is researchable as illustrated in Figure 1.1. In Figure 1.1 of the two basic competing theories relating to the capital structure decision, that is, whether the capital structure is relevant or irrelevant is illustrated. The bench mark for evaluation of investment, financing and asset-management policy is the impact of that policy on the wealth of the owners of the firm. The relevancy of capital structure implies that managers identify the optimal capital structure to maximise the value of the firm.

The choice of an optimum capital structure is influenced by capital structure theories. The examples of capital structure theories are: pecking order theory, agency theory, contracting theory and information theory. The result of application of a capital structure theory is a set of capital structure choices in respect to the amount of debt capital that a firm can use. The level of usage of debt capital by firms can be classified as high or low and then compared to firm performance to set an optimum capital structure.

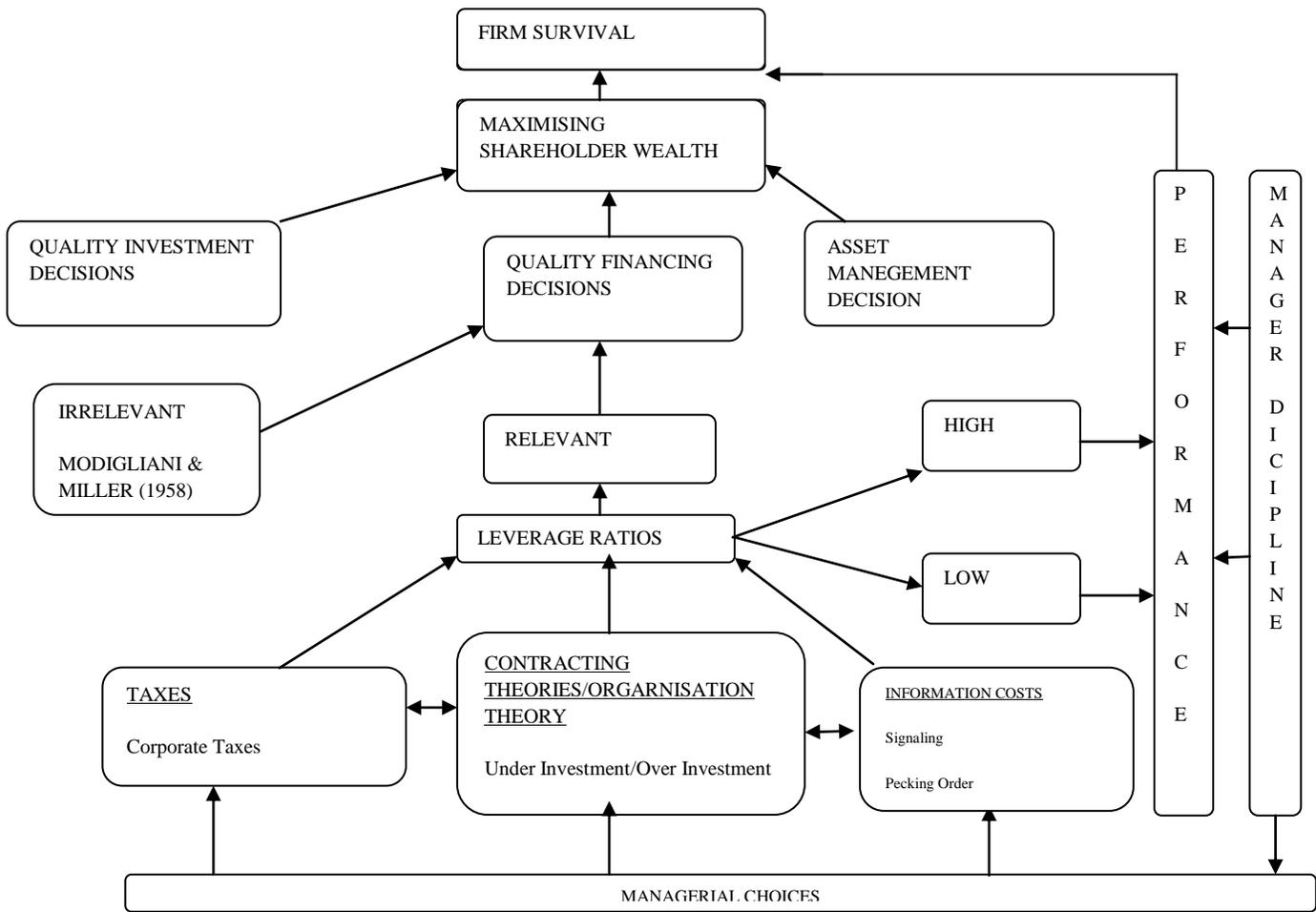


Figure 1.1: Financing Choices, Agency Problems and Performance

Source: Author

1.7 Scope and demarcation of the study

The scope and demarcation of the study is that the study will be category specific and will focus on the disciplinary role of debt capital of firms listed at the NSE, in Kenya (see Figure 1.1). The other aspects such as tax advantage of debt are excluded and the contribution of capital structure to organization theory is the focus.

1.8 Limitations of the Study

This study is limited to Kenya's conditions as a practical approach to strengthening corporate governance mechanism. This study is a baseline study that other researchers can improve on. There has not been sufficient research on the issues to be addressed in this study in Kenya.

The other limitation is that there are other reasons why the shareholders force a CEO to leave by sacking or refusing to renew contract or even the reason why a CEO leaves voluntarily that cannot be captured by secondary data. The other limitations are deduced from the shortcomings inherent in the accounting data, derived from annual reports that form the core of data that will be used in this study. Accounting numbers contained in annual reports are affected by a number of firm-oriented factors; industry and economy factors that make it difficult for the analyst to make intra and inter-firm comparisons. The assumption in this study is that annual reports contain useful information. The other limitation could be due to use of panel data and use of logit regression. The problem of the logistic regression is that serial correlation might exist in the explanatory variables. It might be that lenders favor profitable borrowers, such as that firms with low debt ratios are poor performers.

1.8.1 Delimitations of the Study

The delimitations of the study are items that are not captured in both the statement of the problem and research objectives. For example, the study does not attempt to answer questions such as: Apart from performance, what factors do firms consider before issuing debt?

1.9 Ethical Considerations

The ethical consideration in this study could relate to using unfair means to get the data and misrepresent findings. Fortunately, most of the data to be used in this study is within the public domain.

1.10 Division of Chapters

To ensure a comprehensive coverage of the relevant literature to place the research problem in its correct perspective, existing methods and the proposed goals, this thesis is organized sequentially as follows:

Chapter one presents the background of the study, statement of the problem, objectives of the study, justification and limitations of the study. In this, chapter is presented the key concepts and conceptual frame work of the study.

The **second chapter** is the literature review that focuses on the intervention of debt capital in terms of agency costs and benefits and specifically the impact of debt capital and performance and the impact of performance on debt capital.

Chapter three covered the literature reviewed valuable in understanding the contribution of debt capital to corporate governance; and the role that debt capital, along with firm performance play in forcing a CEO to quit. This is examined in the context of the relationship between debt capital, performance, and change in CEO.

Chapter four provides the link between previous chapters and subsequent chapters. It relies on earlier chapters to select appropriate (optimal) research methods required in addressing research questions, objectives and testing resulting hypothesis as presented in chapters 1, 2 and 3; at the same time, its output informed the findings and conclusion of this study presented in chapters 5, 6, 7 and 8. The highlights of this chapter are the research philosophy; research design; population and sample; data and variables of the study; hypothesis of the study; and the models used in this study, namely canonical correlation, general linear model (GLM) and Generalised estimating equation (GEE).

Chapter five presented the findings from the canonical correlation analysis. The findings addressed the questions: How are the best linear combinations of capital structure variables related to the best linear combinations of the performance variables? Which are the best

indicators of performance and capital structure? The answer to this question helped in choosing relevant indicators that best described the relationship between capital structure and performance from a list of competing indicators. In addition, the canonical correlation was used as a reconnoiter of the relationship between capital structure and performance, before subjecting the data to additional analysis. Two indicators of performance namely the book to the market ratio and asset turnover, and an indicator of level of borrowing namely, the total debt to the total asset ratio are selected as useful in determining whether a relationship between performance and capital structure existed on the NSE. It reports a bidirectional relationship between performance and capital structure.

In **chapter six** are presented the findings on the relationship between capital structure and performance using general linear models, after subjecting the data to GLM procedure. In relation to the first hypothesis, the data supports the hypothesis that productive and profitable firms employ more debt than comparable firms that are less profitable, possibly because their exposure financial risk is low (propensity to be bankrupt is low). There is no evidence to support the franchise hypothesis that efficient firms use less debt on the NSE. However, the data only show statistically significant relationship if asset turnover ratio and not the book value to the market value ratio is used as a performance indicator to predict usage of debt capital. In relation to the second hypothesis, that is, on the influence of debt on performance, the finding is that after controlling for equity capital, firms using more debt outperform those using less debt. Therefore, the data on the NSE support the efficiency hypothesis that the use of debt capital alleviates agency costs that led to be improved in firm performance.

Chapter seven presented the findings on the relationship between debt capital, performance, and change in CEO using generalised estimating equations (GEE). When the book to market ratio (BV/MV) is employed as a performance indicator, we conclude no association between performance and change in CEO; and that the change in CEO in all groups that is, firms with positive growth, negative growth and no growth are not different. However, when the asset turnover ratio is used as the performance indicator, we see positive association; and confirm that those firms with a low asset turnover are 3.045 times likely to change CEO compared to firms

with a high asset turnover while the change in CEO in the firms with a medium asset turnover this group is not different from the firms with a high asset turnover. In relation to the influence of debt capital on change in CEO, a positive association is visible and the data confirm that firms with high are 3.430 times likely to change CEO compared to firms in low leverage, while the firms with medium leverage are 6.491 times likely to change CEO compared to firms in the reference group, that is low leverage. The propensity to replace CEO is higher in a medium leveraged than high leveraged, suggesting that by insisting on replacing non performing CEO's debt holders in medium leverage firms could be more risk averse than those in high leveraged firms.

Chapter eight is the summary of findings, conclusion, and recommendations and areas for future research from this study, and contribution of the study to knowledge. The basic conclusion in first part of this study related to choice of performance and capital structure variables to be employed in this study, and the conclusion is that asset turnover ratio is a better performance indicator to relate borrowing levels, while the total debt to the total asset ratio is a best capital structure indicator to relate to performance. The existence of a bi-directional relationship between performance and capital structure is confirmed.

It might be that the choice of performance and capital structure variables required to evaluate the relationship between the two variables is contingent on the data set employed. In relation to replacement of CEO, the tendency to replace CEO was higher in firms where there is dispersed ownership contrary to concentrated ownership; corporate governance tended to be strengthened in such firms. In some cases, some cases, managers that performed poorly were replaced and, specifically the power of asset turnover as a performance indicator to predict change in CEO supported the data. The evidence to support the prediction that firms in which corporate governance is strengthened, poor performance preceded replacement of CEOs. In relation to debt capital, the conclusion is that debt capital alleviates managerial excesses by propelling replacement of non-performing CEOs.

The contribution of this study was at methodological, theoretical and practical levels. Using canonical correlation, the data identified asset turnover ratio and book value to market values as measures of performance and total debt to total asset as a measure of level of borrowing useful in structuring the relationship between performance and leverage. Using GLM, it used group data to examine the relevancy and irrelevance of capital structure decisions. It used GEE to examine CEOs' survival in the face of poor performance and debt capital. In terms of theory, it contributes to the debate and therefore, literature on bi-directional relationship between capital structure and performance and the role of debt capital in respect to corporate governance. From a practical perspective, in addition from this research, the advice to managers would be that the range of optimum capital structure is medium debt ratio 0.3515 to 0.44781 or in percentage terms from 35.15 percent to 44.78percent. There are methodologies that may be used to validate the study that was not employed here. An example is for those firms that replace CEOs, how long do they take to recognize that the CEO should be replaced? Such analysis uses duration data analysis often called hazard models. The other alternative is to look at the duration (23 years) and examine what influences the number of CEOs at each firm; that is, CEO turnover per company.

1.11 Summary of the chapter

The primary objective of this study is to investigate the relationship between capital structure, performance and change in CEO in firms listed on the Nairobi Securities Exchange. This chapter presented the background to this study. The aim of the study is the examination of management and justification of use of debt capital by establishing bi-relationships between leverage, performance and change of CEO. The specific sections presented in this study are the statement of the problem, the objectives of the study, the hypothesis, limitations of the study, conceptual frame work and finally the structure of the thesis. The next chapter is a review of literature on the relationship between capital structure and performance.

CHAPTER TWO

CAPITAL STRUCTURE AND FIRM PERFORMANCE

2.1 Introduction

In chapter one, the three aims of this study are stated as the examination of moderating effect of debt capital on managerial behaviour, the impact of performance on manager's decision on the amount of debt to use and the extent to which performance and capital structure influence change of CEO. The objective of this chapter is to anchor three key research objectives through analysis of literature, namely refinement of the research problem, set a platform for selection of research design and identification of theories to be relied on in interpreting the findings and support to the conclusions of this study. It reviewed previous studies on capital structure, performance, corporate governance and their interaction. The focus was on the intervention of debt capital to contain agency problems (costs) between managers and shareholders and between debt holders and shareholders (Becker & Strömberg, 2011:2). In addition, it reviews studies on the effect firm performance has on usage of debt.

The order of the review is as follows: section 2.2 is the impact of corporate governance on performance, to establish agreement or lack of agreement among researchers on this issue; the review is extended to the success or failure of agency theory in solving corporate governance problems to enhance performance, and the monitoring role by stakeholders. This provides answers to what would face firms that are lacking on corporate governance and in addition interrogates agency theory. Section 2.3 is divided into two parts namely, capital structure theories and debt monitoring role. It captures the relevancy and irrelevancy of capital structure decision; that is, whether financing decisions impact on the value of the firm or not. The two theorist prescriptions relevant to this study, namely the use of debt capital to alleviate agency costs and subsequent improvement in performance; and the theory of using debt capital to tame managers so as to enhance firm performance, are reviewed. The role risk theory plays in enhancing debt holders' monitoring role was also explored. In section 2.4, is a review of the link between capital structure and performance. This is a bi-directional review of studies that assert that the amount that firms borrow is influenced by the firm's level of performance; and

research that asserts that having debt as part of capital structure can improve corporate governance thus enhancing firm performances discussed. In section 2.5 measures of capital structure and performances are discussed. Section 2.6 presented the results of the review; that is, hypotheses of the study. Section 2.7 is a summary of the chapter and the chapter's link to chapters 3 and 4.

2.2 Corporate Governance and Performance

Corporate governance is about how firms are managed; and that firms must generate benefits to the owners. The literature on the classic economic theory is emphatic that businesses exist to make choices that maximise wealth of the owners. Therefore, firms that do not maximise the wealth of the owners are either denied capital by investors or forced into bankruptcy or taken over by new owners. In addition, as a result of poor performance management is replaced. In finance literature, it hypothesised that managers which are not owners might not be as committed as owners would want them to be (Crawford, 2007; Mark, 2004; Jensen & Meckling, 1976: 307; Berle & Means 1932:8). The challenge then is to come up with organization structures that maximise the value of the firm. The question normally asked is of what importance is corporate governance to investors?

Investors are interested in corporations that are financially sound, profitable and exhibit adequate growth prospects. To achieve economic development, the high level approach is to manage macroeconomic factors that impact on all firms' performance, but at a lower level, and equally important are the microeconomic policies that power firm level performance. The proposition is that the economy as a whole benefit from well managed micro units, in line with the structure-conduct-performance approach, which states that industry's performance and by extension, the economy depends on the conduct of firms within the economy (Edwards, Allen & Shaik, 2009; Carlton & Perloff, 2004: 2-3; Scherer & Ross, 1990). In the corporate world, the belief is that corporate governance weaknesses translate into financial crisis in firms, consequently having an adverse impact on the economy as a whole (Organization for Economic Co-operation and Development (OECD), 2009).

The corporate governance structure is to protect investors in cognisance of investor's objectives. It is the way in which suppliers of finance assure themselves a return on their investment. It requires rules, procedures, and administration of the firm's contracts with its shareholders, creditors, employees, suppliers, customers, and regulators (Becht, Bolton & Roell, 2005).

Studies on the relationship between corporate governance, firm valuation and operating performance show mixed results. Black, Jang and Kim (2006) find significant relationship for Korean firms, but offer evidence consistent with a causal relationship between an overall governance index and higher share prices. In Mexico Chong and Lopez-de-Silanes (2006) using firm-level data set on corporate governance and firm performance, show that better firm-level corporate governance practices are linked to higher valuations, best performance and more dividends disbursed to investors. Black, Jang, and Kim (2006) find it difficult predicting firm-level governance choices and relate governance to performance, concluding that more work is needed to identify firm-level factors that predict governance across emerging markets; they recommend a corporate governance index for each country. Durnev and Kim (2005) reported no relationship between corporate governance and performance.

In US, Kose, Lubomir and Yeung (2008:1725), using a cross-country panel sample data to determine whether better investor protection could lead corporations to undertake riskier but value-enhancing investments, found that corporate risk-taking and firm growth rates are positively related to the quality of investor protection. In Australia, Thomson and Jain (2006:47) analysed the impact of corporate governance failure by management and board of directors on National Australia Bank's performance over the period 2001 to 2005 and found that corporate governance failure led to the company's poor results. Liu, Zeng, Wang, Sun and Feng (2012) after studying corporate governance characteristics and performance of high-tech corporations, conclude that to improve corporate performance, effective corporate governance is a must. The link to performance is explained in terms of corporate governance theories that gravitate around sources of agency conflicts, namely moral hazard, earnings retention, risk aversion, horizon problem- ex-post settling-up costs, moral hazard problem, and adverse selection problem (Andres, Betzer, Geogern & Metzger, 2010:44; Riaz, 2008).

Charreaux (2004) conducted an elaborate survey of corporate governance theories that can guide practitioners in making corporate governance choices. The corporate governance theories suggested by Charreaux (2004) are: the macro theories of corporate governance; disciplinary view; knowledge-based view; law and finance view; and political theory. In addition, Charreaux (2004) separated the theories based on appropriation of the organizational rent from those attributing a dominant role to production and highlighted the financial view of corporate governance. This study is based on law and finance view.

While a review of literature indicates that the ideals of good corporate governance have been adopted by developing countries since the 1980s, developing countries need to develop their own corporate governance models that incorporate the cultural, political and technological conditions found in each of these countries (Mulili & Wong, 2012). The assumption is that valid corporate governance eliminates inefficiencies and unethical business practices that undermine economic prosperity, especially for the emerging economies.

The corporate frauds that came to light in recent times have brought about a change and necessitated substantial external regulations apart from internal controls and regulations (Mutyalu & Dasaraju, 2011). Business failures and frauds in the USA, several scandals in Russia and the Asian crisis (1997) brought corporate governance issues to the forefront in the transition economies (Mutyalu & Dasaraju, 2011). These scandals have adverse effects on firm performance and wealth of shareholders.

Chen, Chen and Wei (2009) tell us that investors are more willing to offer valuable financing or pay a higher equity price for firms with better governance, while Black, Jang, and Kim (2006) concluded that higher corporate governance ratings are causally related to higher firm value. In conclusion, corporate governance is important in emerging economies where firms are forced to rely on outside investors to help finance growth opportunities.

Hugilland Siegel (2013) find that firm characteristics explain 37.3-50.3% of the corporate governance ratings' variance, and country characteristics explain roughly 11-28.5% of the variance. In developed economies, a different pattern is found. Observable and unobservable

firm characteristics explain only 15.3-19.1% of governance rating's variance in developed economies while country characteristics explain 45.9-57.3% (Hugill&Siegel, 2013). In emerging economies, firm variables explain roughly the same amount and often more of the governance variance than do country variables; while in developed economies, country variables explain significantly more of the corporate governance rating than do firm variables (Hugill&Siegel, 2013).

Kenya had its share of corporate governance problems; and it is not a surprise that Capital Markets Authority (CMA) has developed guidelines for good corporate governance practices by public listed firms in Kenya in response to governance shortcomings; this is to safeguard the interest of those who invest in capital markets and firms that rely on capital markets to raise funds for worthwhile projects (CMA, 2002). Nevertheless, even with these guidelines, an examination of CMA website shows evidence of corporate governance shortcomings in listed firms. As an example, in March 2013, CMA further extended the suspension from trading of shares of CMC Holdings Limited (CMC) shares for a further period of 53 (fifty three) trading days from 30 March 2013 to 14 June 2013 on request of the Company (CMA, 2013).

Suspensions of trading the shares' inconvenience's investors and therefore, dilute investors' confidence in the market thus adversely impact on borrowings firms' cost of capital. On Thursday 30th May 2013 Herbling in Business Daily, Nairobi reported that 'operation at Kenya Meat Commission risked grounding to a halt following the sacking of its entire leadership over poor management, which has left the corporation in huge debts.' In addition an examination of firms listed on at the Nairobi securities Exchange (NSE) indicates a mixture of firms that post good returns and others that perform poorly over the past 10 years. A report in a daily newspaper showed that Kenya's ranking in the Corruption Perception Index 2012 improved to 139 out of 174 economies while the 2011 index ranked the country at 154 out of 183 economies included in the survey (Mugwe, 2012). Such signals necessitate re-examination of corporate governance standards.

The world has its share of mega corporate governance failures. Examples of corporate governance failures included Enron, Tyco, and WorldCom in US and the subprime financial crisis in US. The corporate scandals and bankruptcies of the past decade highlighted laxities in

corporate governance (Heremans, 2007:2). In any case, a report by PwC (2012) pointed out the importance of corporate governance to private companies by asserting that though it is not a regulatory requirement for most private businesses, in the USA, a large majority of private companies (80%) are adopting specific corporate governance practices. The firms in USA adopting corporate governance practices believe it helps them successfully navigate an increasingly complex and volatile business landscape (PwC, 2012). PwC (2012) concluded that private companies are embracing corporate governance primarily because it makes good business sense as they look forward to increasing value for their stakeholders and keep pace with new business realities.

2.2.1 Agency Theory and Performance

Manager's investment decisions impact a firm's growth rate, risk, and market value; thus the returns to owners depend on the quality of managerial decision (Fontaine, Haarman & Schmid, 2006:3). Managers that become slaves of self-interest adopt management practices that exhibit value destroying ways (Ghoshal, 2005; Yermack, 2004a: 212 -213).

In chapter one, it is stated that in modern corporations, managers are separated from owners, an arrangement that results into agency costs (Hannah, 2007: 404-406; Jensen & Meckling, 1976). Agency model could have a positive or negative impact on performance of the firm, and like any model, the justification lie on whether the benefits exceed the costs of the models (Dobbin & Jung, 2010). Agency cost includes excessive consumption of perquisites, exerting sub optimal effort; empire building that includes hiring relatives who are not qualified and above all making poor investment decisions.

The principal-agent problem discourses the problems that arise under conditions of incomplete and asymmetric information under a principal, and the loss of market value of a firm when original owners sell part of the firm to outsiders and recruit managers that are not owners to manage the firm (Jensen & Meckling, 1976: 308). This occurs when managers hired as agents of shareholders, put their own interest ahead of those they work for. The owner incurs additional costs that include monitoring cost, bonding costs and residual loss (Fabozzi & Drake, 2009; Fama & Jensen, 1983:332).

Japanese domination of auto and electronics industry, and the worry of losing dominance as the leader in technology, forced the western world to question the then management models and techniques (Dobbin & Jung, 2010:30). Agency theory was then recommended as treatment to corporate woes (Dobbin & Jung 2010:30; Jensen & Meckling 1976: 305-306). In rebuke to the gospel truth status attached to agency theory, is an observation that managerial behaviors associated with the agency theory could be destroying rather than building corporations (Ghoshal, 2005:86). In US when businesses were not doing well in the 1970's agency theory based solutions were advanced and faithfully adopted by corporations. The response inherent in the agency theory was that firm performance was to be improved by: offering incentives to managers; emphasis on core business and reengineering business's financing. However, the feeling now is that the agency based prescriptions set stage for corporate failures in US (Dobbin & Jung, 2010:30).

The agency problem also refers to a situation where shareholders take actions that impact adversely on other stakeholders. As an example, managers and shareholders might invest in marginal project with expected high returns but of high risk to the detriment of other stakeholders (Becht, Bolton & Röell, 2005: 21 - 22). Agency theory can be used to justify the use of debt by firms. Debt capital can control managers that waste free cash on perquisites and bad investments (Yordying, 2011:53; Fama & French 2002:5- 6). Such behaviors are rampant in Kenya where external control mechanisms, such as free flow of information, efficient labor market required to support corporate governance is weak as in the case of CMC whose share is still suspended from trading at the Nairobi Stock Exchange, making shareholders pay dearly for the boardroom wars that have dogged the company (Wafula, 2012).

The link between agency cost and performance is critical to current and potential investor's because investors must be discouraged from investing in poorly governed firms (Giannetti & Simonov, 2006). Intuitively investors will ignore poorly managed firms with in adequate returns, unless they can turn them around (Christian, Karl & Francis, 2009:3246). A study on the importance of corporate governance to investors' show that over sixty percent of investors sampled might avoid individual firms with poor governance (McKinsey & Company, 2002).

However, there is a class of investors who would identify and acquire poorly managed firms to turn them around.

2.2.2 Monitoring by stakeholders

Managers might have goals and risk preferences that conflict with preferences of other stakeholders. The conflicting preferences need to be realigned so that the firm can operate optimally. For example, in a bank there is a need to efficiently align the investment decisions of managers in a bank to the risk/return goals of the shareholders (Ford & Sundmacher, 2006). Achieving goal congruence between managers and owners requires that shareholders have the capacity to monitor managers. Manager's motivation to self-interest requires an appropriate disciplinary device and effective positive incentives.

The first-level managerial control is monitoring by the firm's shareholders and board members. This they do by recruiting quality managers and through subsequent advice and by interrogating managerial actions reported internally, and in audited financial statements presented to shareholders or as special reports. Simultaneously, firm managers are aware that shareholder's ability to discipline them is limited; and business judgment rule encourages managers to make business decisions thus limiting shareholder's involvement in operating decisions (Smith, 2013:7). Now and again, shareholders are dispersed and too weak to have unified stand against blundering management; alternatively, that shareholders might lack the sophistication and resources to monitor what managers are doing in their firm (Low, Makhija & Sanders, 2007:2).

Financial and non-financial incentives are used to motivate managers to exert optimum effort (Kupiec, 2013; Peterson & Luthans, 2006:1). Kupiec (2013:1) conclusion is that 'In a stylized model; financial intermediary risk managers can expend effort reducing a loan probability of default (PD) and loss given default (LGD), but that effort is costly and unobservable'. The other forms of managerial discipline include, market for corporate managers and labor market, that emphasize the desirability of the manager maintaining a reputation for high standards of business conduct in order to avoid sanctioning by holders of large debt and equity stakes; that is, institutional investors (Deakin & Singh, 2008:10 – 22; Commission, SEC, 2007;Milhaupt,

2006:200) and product markets, that is, product competition drives inefficient firms out of business (Pant, 2010: 348 -349).

Though a manager may seek self-interest, the same manager has an incentive to behave prudently to preserve his or her special interest. The incentive to behave sensibly and act in the best interest of shareholders is anchored by stewardship theory (Caldwell, Hayes, Karri & Bernal, 2008:153 - 155). The stewardship theory asserts that managers will truly act as a responsible agent of the shareholders when managing corporations, because this will benefit the shareholders (Barney & Hesterly, 2010). The stewardship theory emphasizes psychological ownership contrary to capital ownership that suggests a self-interested manager. The argument is that managers can psychologically feel as owners, thus maximising the value of the firm (Pierce, Kostova, & Dirks, 2002:299; Martynov 2009:240).

Smart managers are aware that by satisfying the economic goals of the shareholders, they maximise their personal self-interest (Podrug, 2008:2). Managers would want to develop a reputation in order to cultivate an image of a manager free from moral hazard to extend their tenure at the firm. Management on their own might control their appetite for excessive risk if they realize that shareholders have the power to discipline them. Such managers are aware that it is shareholders and debt holders who bear significant losses when an investment fails and has the power to sack them (Zandi, 2009:3).

Board of Directors might find it difficult controlling entrenched managers, even if entrenchment has a negative impact on a firm's performance (Kose & Litov, 2008). Managerial entrenchment is found in director primacy theory espoused by Bainbridge (2003). Bainbridge (2003) suggests that while the board is appointed by the owners, the power to be exercised is not under the control of the shareholders. The board defines their own role encompassing monitoring, advisory and networking. It is the conflicts and contradiction in these roles that precede board failure to propel their firm to good performance (Faleye, Hoitash & Hoitash, 2011; Jiraporn, Singh, & Lee, 2009). The director primacy theory requires directors to act on behalf of the firm and not as agents of shareholders (Asher, Mahoney & Mahoney, 2005). As early as in 1930's Dodd

(1932:1148) from Harvard Law School proposes the entity view contrary to property view, that is, ‘a view of the business corporation as an economic institution which has a social service as well as a profit-making function’; but not much is done in having debt holders in corporate boards.

The four theories that model board of directors roles are agency theory (Jensen&Meckling, 1976; Eisenberg's, 1976, 1997), monitoring theory (Blair Lynn, 1999), mediating hierarch theory (Bainbridge, 2003), and director primacy theory discussed above. These theories signal lack of agreement on the role of the board. Nevertheless, these controls developed out of these theories have not stopped managers from acting against the interest of investors (Adams, Hermalin, & Weisbach, 2010).

It is mentioned above that primarily corporate governance is vested in shareholders who delegate this responsibility to board of directors who have a fiduciary duty to serve the interests of the corporation rather than interests of the firm's management. But there exists a minimum of self-regulation by managers themselves (Graham & Woods, 2006). Again, economic reasons explain why both CEO and the other membership of the board of directors would want to see their firm succeed. The board and CEO have the discretion to underperform or misappropriate their firm's asset, but that could expose them to an adverse reputation crisis and costs. In addition to dented reputation, the CEO loses benefits if the firm sinks or once replaced.

The effectiveness of board of directors to protect debt holders and shareholders or even protect the firm attract different of opinions. At times, regardless of attendant conflict in interest (when directors are entrenched), the directors can be suppliers of their firms or major customers. However, the catch is that directors are infrequently held accountable for poor decision-making, unless they intentionally acted wrongfully (Davidoff, 2011). The corporate failures rotate around the interdependency of authority relationships between the board and top management, implying the need to explore and develop complementary control models (Ravina & Sapienza, 2010:964; Gordon, 2007).

The imperfections and frictions in capital and money markets and credit risk inherent in lending, is a reason for debt holders (as lenders) to monitor firms that they lend money to. Debt holders are conscious that borrowers can involve in bait and switch strategy; at the same time, shareholders are aware that debt holder's response to bait and switch strategy would be to discount such a possibility in debt issue price, thus transferring such agency cost to shareholders (Jerzemowska, 2007). Institutional shareholders prefer that the firms whose securities they hold post acceptable returns (income and capital gains) as a guarantee to the safety of their investments. Therefore, investors, both debt holders and shareholders, have to monitor managers' actions (Greenwood & Schurz 2009; Gillian & Starks, 2007).

The reasons that explain why dispersed shareholders might not exercise effective corporate governance includes, their reduced incentive to acquire information; their deficient capacity to process information; and that they find it costly hiring financial analysts who can meaningfully process information on their behalf (Marshall, Ramsay & Mitchell, 2008; Mitchell, O'Donnell & Ramsay, 2005; Devriese, Dewatripont, Heremans & Nguyen, 2004:97).

Furthermore, the spontaneous monitoring nature of dispersed shareholders is due to the small amount they invested, and that they can reduce their risk exposure and losses through diversification (Dhillon & Rossetto, 2009). Concentrated ownership has its benefits and costs. Concentrated ownership might bring effective monitoring of management but attracts cost such as low liquidity of shares, low diversification and suppression of minority shareholders. Such costs are negatively discounted in share prices and impact adversely on minority shareholders.

It is apparent that different control mechanisms have advantages and disadvantages. Therefore, the search for competing monitoring mechanisms is still on. Shareholders might consider other control mechanisms such as encouraging a takeover of their firm as was in the case of Phillips and Drew in which "Despite persistent poor performance, the management of some of the firms in which they had large shareholdings, stubbornly remained in place, as a result, Phillips and Drew actively used their holdings to encourage hostile takeovers" (Franks & Mayer (2002:1).

Even if shareholders have the power to sack managers, they rarely do so unless the performance is too woeful (Hamilton & Micklethwait, 2006:196).

Based on the perception held by the Scottish that the fish rots from the head, the board and top management should be held responsible for corporate failures. There is no unanimity on how effective shareholders and board of directors monitoring role are, as evidenced in a battery of studies on the relationship between ownership structures and corporate performance; and that in some studies relationship between ownership and performance is negative while others report positive relationship, yet others find no relationship (Bebchuk & Weisbach, 2010: 940). In some cases, argument that shareholders destroy value is advanced, and the benefits shareholders' activism on firm performance is challenged (Kahan & Rock, 2007: 1022-1024). Except for study by Becht, Franks, Mayer and Rossi (2010) it is uncertain whether shareholder's activism translates into effective monitoring that enhances the firm value (Bebchuk & Weisbach, 2010:941-943).

In summary, the challenge in corporate governance is to design a proficient monitoring structure to reconcile and reinforce monitoring among the stakeholders to enhance the wealth of shareholders. The current governance system that includes an active market for disciplining management, the board of directors acting as a monitoring specialist of management, performance linked contracts to remunerate and motivate management and shareholding activism restoring shareholder's democracy, cited in Heremans (2007:10) has not fully protected investor's wealth.

2.3 Capital structure theories

Capital structure theory is important because it guides managers in their choice of their firm's mix of the amount of equity capital and debt capital that maximise the shareholder's wealth. However, researchers are yet to agree on the impact of debt capital on the value of the firm.

Since Modigliani and Miller's (1958: 263-266, 358) proposition that purely financial transactions do not change the total cash flows and are therefore, zero NPV investments, opposing views emerged. The departures imply that debt capital affects the firm value. This is because debt

capital impacts on a firm's tax obligation, affects contracting costs, influences real investment policy and plays a disciplinary role (Diamond & He, 2011; Myers, 1977:147-148). An example that debt is relevant is in the assessment by Smith and Warner, (1979:118) assertion that 'with risky bonds outstanding, management acting in the stockholders' interest, has incentives to design the firm's operating characteristics and financial structure in ways, which benefit stockholders to the detriment of bondholders.

The known capital structure theories are the static trade off model and the pecking order (Berk & DeMarzo, 2011; Myers, 1984). The static trade off theory suggests that optimum capital structure is determined by balancing corporate tax savings against cost of bankruptcy, and this theory predicts that profitable firms with potential low bankruptcy costs use more debt; the pecking order hypothesis predicts that debt is used to finance new investments after exhausting retained earnings and that firms will have no leverage targets (Berk & DeMarzo, 2011:520- 522, 539-540). The agency costs of free cash flow should act as an incentive to firms to use more debt (Fama & French 2002:5). The existence of pension plans also appears to explain why corporations tend to use less debt because corporations consider pension assets and liabilities in determining their leverage ratios (Shivdasani & Stefanescu, 2010: 1320).

There is no unanimity on these theories as to which of these theories have an impact on capital structure decisions. It is not clear whether it is the trade-off theory or pecking order theory that explains capital structure levels (Leary & Michael, 2010; Korteweg, 2010; Lemmon & Zender, 2008). Fama and French (2002:30) in an attempt to explain the capital structure decision summarises the status of research as follows: 'In sum, we identify one scar on the trade-off model (the negative relation between leverage and profitability), one deep wound on the pecking order (the large equity issues of small low-leverage growth firms), and one area of conflict (the mean reversion of leverage) on which the data speak softly. The many shared predictions of the two models tend to do well in our tests. However, when shared predictions are confirmed, attributing causation is elusive: we cannot tell whether the results are due to trade-off forces, pecking order forces, or indeed other factors overlooked by both'.

In the literature it emerges that the primary factors influence capital structure decisions are: business risk, tax position, financial flexibility, managerial conservatism or aggressiveness and discipline of capital markets. The proposition then is that the optimal capital structure is achieved when there is a balance between risk and return to maximize the price of a firm's share. Therefore, these primary factor's researchers have generated testable hypotheses about capital structure, tested the derived hypothesis and theories emerged. The emerging theories suggested as useful in understanding capital structure decisions include the static trade - off theory, pecking order theory and the organizational theory. There is also Miller's (1977) idea of neutral mutation as a theory that explains capital structure decisions. Under the neutral mutation hypothesis, Miller (1977) suggested that firm's practice financing patterns or habits which have no effect on firm value.

Under the static tradeoff framework, the firm is viewed as setting a target debt-to-value ratio and gradually moving towards it and that there is a refinancing point. In relation to trade off theory and referring to Modigliani and Miller (1958) proposition, Myers (1993:80) words, 'Their practical message is this: if there is an optimal capital structure, it should reflect taxes or some specifically identified market imperfections. Thus, managers are often viewed as trading off the tax savings from debt financing against costs of financial distress, specifically the agency costs generated by issuing risky debt and the deadweight costs of possible liquidation or reorganisation. I call this the "static trade-off" theory of optimal capital structure.'

As mentioned above, the static tradeoff theory suggests that firms choose their optimal capital structure by balancing the corporate tax advantage of debt against bankruptcy and agency costs. Again, Myers (1993:82) argument is that 'Most business people immediately agree that borrowing saves taxes and that too much debt can lead to costly trouble.' Therefore, static tradeoff theory renders itself to empirical hypotheses. Specifically, it predicts reversion of the actual debt ratio towards a target or optimum, in addition it infers a cross-sectional relation between average debt ratios and asset risk, profitability, tax status and asset category. The related question will be whether firms rebalance their capital structure (Leary & Roberts, 2008).

Under pecking order theory, firms prefer internal to external financing and debt to equity if it issues securities (Myers & Majluf, 1984). Therefore, under the pecking order theory, firms have no definite target debt-to-value ratio suggested by the static tradeoff theory. The pecking order theory is explained in terms of information asymmetry that is because outsiders (investors) know little about firms, the outsiders undervalue firms stock, and this could explain the heavy reliance on internal finance and debt as the source of new capital. Therefore, financing decisions are concerned primarily with signaling effects of such decisions; that is, adding more debt to the firm's capital structure can serve as a credible signal of high future cash flows. From a practical perspective, the specific prediction of pecking order theory is that firms with few worthwhile projects and substantial cash flows will have low debt ratios; and that firms with positive net present value projects and lower operating cash flows will have high debt ratios. Pecking order can also be triggered by agency costs between the firm owners/managers and the outside investors (Frank & Goyal, 2007). Equity capital as a source of finance is a last option (Bistrova, 2011; Huang & Ritter, 2009). This is another testable proposition; specifically firms which information asymmetry is large and have no retained earnings should issue debt to avoid selling under -priced stocks (shares) (Myers, 1983).

Chen (2004), Fama and French (2002), Hovakimian, Opler and Titman (2001) and Titman and Wessel (1988), tested the tradeoff theory and found that profitable firms use less debt; this differed from the prediction in tradeoff theory that profitable firms should use more debt. Fama and French (2002) reported that the speed of adjustment towards target leverage is slow. Therefore, Fama and French (2002) questioned managers' commitment to the concept of optimum capital structure (target debt ratio). Hovakimian, (2004); Hovakimian, Hovakimian and Tehranian, (2004), Frank and Goyal (2004) and Korajczyk and Levy (2003) found evidence that supported trade-off theory, thus confirming the existence target debt ratio. However, Flannery and Rangan (2006) report that firm's exhibit rapid adjustment towards the target capital structure.

There have been tests of pecking order theory. Shyam-Sunder and Myers (1999) tested the static tradeoff against pecking order models of capital structure; their test is based upon the prediction

of what type of financing is used to fill the "financing deficit." Shyam-Sunder and Myers (1999) prediction was that external debt financing is driven by the internal financial deficit, has a much greater time series explanatory power than a static tradeoff model; they showed that their tests have the power to reject the pecking order against alternative tradeoff hypotheses and that the statistical power of some usual tests of the tradeoff model is virtually nil.

Fama and French (2005) conclusion are that the managers make financial decisions that controvert the pecking order hypothesis; while Leary and Roberts (2008) study, to some extent, validated the pecking order hypothesis. Leary and Roberts (2008:32) assertion are that, "there remains considerable debate over its usefulness as a conditional model when applied under conditions that match the model's assumptions." Frank and Goyal (2002) test the pecking order theory of corporate leverage on a broad cross-section of publicly traded American firms for 1971 to 1998; they report that contrary to the pecking order theory, net equity issues track the financing deficit more closely than do net debt issues.

Large firms exhibit some aspects of pecking order behavior; the evidence is not robust to the inclusion of conventional leverage factors, nor to the analysis of evidence from the 1990s (Frank & Goyal, 2002). Frank and Goyal (2002) in their analysis do not find support for the hypothesis that financing deficit explains net debt issues over time for firms of all sizes. Fama and French (2005) agree with Frank and Goyal (2002) in disagreeing that these findings contradict the pecking order theory. Lemmon and Zender (2008) after considering firms' debt capacities when testing the pecking order theory concluded that the pecking order theory explained well the financing behavior of a broad cross - section of firms. It is reported by Mazen (2012) that Molay (2005) tested the pecking order theory and the static trade-off theory and concluded that the French data is biased towards the pecking order theory than with the static trade-off theory.

The different capital structure theories propagate competing models for financing decisions, thus confirming how complex the capital structure decision is, and point at the need for further research. The indefiniteness of the relation between capital structure and performance (value of

the firm), made renowned scholars to refer to capital structure theory as a puzzle and a dilemma (Stiglitz, 1989; Myers, 1984).

2.3.1 Debt capital monitoring role

There are two theorist prescriptions relevant to this study, namely the use of debt capital to alleviate agency costs and subsequent improvement in performance under different investor protection environments. These issues are raised in Ellul, Guntay and Lel (2007) while Harvey, Lins and Roper (2004) study the extent debt capital mitigates agency costs to create shareholder value. Gamba and Triantis (2014) examine the effectiveness of debt covenants in alleviating financial agency problems, concluding that the presence of debt capital and enforcement of debt covenants significantly alters dynamic financing and investment policies, and is an important element of structural models. These prescriptions define a new role for debt, and again, presented testable propositions.

Risk theory helps us differentiate shareholders from debt holders. In a market that is in equilibrium, shareholders and debt holders are satisfied because they receive risk-adequate returns from their investment. However, if at any point in time, the assets of a corporation are not able to cover its liabilities, then the amounts realized from the assets are distributed to debt holders, in which case shareholders get nothing. However, when the company assets 'values are much higher than the total amount originally invested by shareholders and debt holders, all the additional value accrues to shareholders and nothing to debt holders. First, this tells us that rational debt holders are a class of investors who are more risk averse than shareholders. Secondly, prior to lending, debt holders might not have full information about borrowers; that is, debt holders face an adverse selection problem (Mishkin, 2010: 174-175). Third, shareholders can adversely transfer some risk to debt holders' that is, moral hazard problem (Mishkin, 2010:180).

The possibility of managers adopting bait and switch strategy put debt holders on the alert mode. The bait and switch strategy is when a firm obtains money by promising one investment policy and then switching to another policy after receiving the money, a strategy that is prevalent in

firms that use debt to fund their operations (Brigham & Daves, 2010:582). In firms where debt capital is substantial, debt monitoring could discourage managers from practicing the bait and switch strategy, because debt holders are technically residual claimants whenever a firm's assets do not fully cover debt holders' claim on the firm's assets (Tirole, 2006).

Apart from credit risk, the lenders other worry is managerial actions that result into asset transformation; that is, the possibility that the borrower replaces a less risky asset with a riskier asset, as this enhances the probability of default. The asset substitution and underinvestment problem places more risk on the debt holders without providing them with additional safety and return (compensation). Again if the high-risk project fails, the firm's chances of defaulting on its debt increases to the detriment of debt holders, but if (for example, levered mergers) it succeeds, then it is shareholders not debt holders who benefit (Bernile, Lyandres & Zhdanov, 2007).

The argument that debt holders should supplement equity holders in monitoring management is based on information asymmetries, and shareholders lack of capacity to monitor management, coupled with debt holders' information advantage. However, the shortcoming with debt holders and to some extent, board of directors monitoring role is that the information they rely on is largely made available by management, who might be selective about the monitoring information supplied (Ravina & Sapienza 2010). Intuitively, management might be reluctant releasing information to those they perceive to be criticizing their actions or directors who audit their actions.

Financial institutions are in a class of debt holders who can demand from the borrowers' information useful in monitoring and controlling the activities of their borrowers. Compared to other stakeholders, financial institutions have professionals with the capacity to process information for the benefit of other less informed stakeholders (Heremans, 2007). After the financial crises experienced in USA and in the rest of the world in the recent past, we expect financial institutions to monitor the behaviour of their corporate clients; an evolution that brings into focus the corporate governance expected of the financial institutions within a rapidly changing economic landscape (Heremans, 2007:2).

2.4 Capital structure and performance

Studies on capital structure in developing countries emphasized the use of debt equity and retained earnings to fund business operations, and on factors that influence capital structure (Lemma & Negash, 2011; Abor & Biekpe, 2009; Abor & Biekpe, 2005; Chen, 2004). The benefits of debt capital are discussed under tax benefits and the capacity of debt holdersto disciplinemanagement. Damodaran (2007: 9 – 12) argument is that “Equity is a cushion; debt is a sword; managements of firms which have high cash flows left over each year are more likely to be complacent and inefficient.”

The research finding on effect of debt capital and financial distress on shareholder’s return is mixed (Myers, 2001). Abor and Biekpe (2009:84) observed that ‘the few empirical studies on the capital structure ofSMEs have tended to concentrate mainly on developed economies with varied and inconclusive results.’ The following assertion in Abor and Biekpe (2009:84) that ‘The differences in institutional arrangements and financial markets between advanced and developing countries actually merit the need to look at the issue from the perspective of developing economies, especially within the context of sub-Saharan Africa such as Ghana’, confirmed that there is no consensus on how firms should manage debt capital.

Garlappi and Yan (2011:819) foundthat “the same hump-shaped relationship between expected returns and default probability predicts that momentum profits should be enhanced among firms with both high default likelihood and strong prospects for shareholder recovery upon financial distress.” Garlappi and Yan (2011:790) hypothesised that the apparently contrasting empirical patterns can be understood within an equity valuation model that clearly accounts for financial leverage. Shareholders can default on their debt, but may recover part of the residual firm value after the resolution of financial distress.

From a risk sharing and insurance perspective, debt capital can hedge shareholder's losses, in which case debt capital is evaluated in terms of its impact on the value of the firm. The value is traced to the debt capital ability to condition managerial choices. This is a shift from the neutral mutation hypothesis that implies that firms adopt habits of financing, which do not impact on the

value of the firm (Anderson & Carverhill, 2012; Miller, 1977). The thesis then is that firms should be required to employ an optimum amount of debt in their capital structure.

From the agency perspective, a conflict exists between shareholders and debt holders in terms of dividends that can be paid, selection of new investments and servicing of debt obligations. Debt covenants contain restrictions on the company's activities that might compromise manager's creativity and innovativeness necessary to add value to the firm. Furthermore, if firms make investment and financing decisions based on their existing capital structure, then a possibility that debt capital can induce debt overhang or underinvestment problems is real (Admati, DeMarzo, Hellwig, & Pfleiderer, 2012:2).

The debt overhang or underinvestment problems can force managers to relinquish beneficial projects, thus undermining profitability, growth and survival of the firms. The debt overhang problem is value and growth destroying, and is witnessed when lenders refuse to advance money to firms (borrowers) with positive NPV projects (Allen, Bhattacharya, Rajan, & Schoar, 2008). From the preceding review, it is apparent that debt has its negative and positive sides that need to be managed and exploited, and the debt effect on firms can be determined by studying the effect of debt capital on firm performance.

2.4.1 Influence of performance on capital structure

It was hinted above that debt capital might augment the probability of a distressed firm being liquidated. Firm distress is costly because it adversely impacts on shareholders and managerial investment decisions (Campbell, Hilscher & Szilagyi, 2008). In this context, the link between capital structure and performance is conceived by way of the direct link between financing and real investment decisions (La Rocca, La Rocca & Gerace, 2008:17).

Debt holders just like any other investors get attracted to profitable and financially sound businesses. The testable theory predicts performance as a factor in explaining the use of debt, the meaning of this is that productive and money-making firms will use more debt (Margaritis & Psilaki, 2010). The reverse of the preceding thesis is that efficient firms may use less debt to minimize their exposure to financial risk (He & Matvos, 2012:2). In addition, the franchise value

hypothesis suggests that the more profitable and liquid the firm is, the lower the leverage (Cheng & Tzeng, 2011; Margaritis & Psillak, 2007; Berger & Bonaccorsi, 2006; Lai, Lin & Wen, 2005).

A study in Ghana by Abor and Biekpe (2005) reported positive associations between the variables' debt ratio (capital structure), firm size and growth; however, they found that asset tangibility, risk, corporate tax and profitability were negatively related to the debt ratio. Abor and Biekpe (2009) reported that variables such as firm's age, size, asset structure, profitability, and growth as influencing the capital structure choices of small and medium enterprise (SMEs) in Ghanaian.

2.4.2 Influence of capital structure on performance

Literature on the debt holders (lenders) influence on the activities by the borrowing firm was presented in section 2.3.2. The implication was that firm performance (efficiency hypothesis) can be influenced by the amount of debt in capital (Margaritis & Psillak, 2007; Cheng & Tzeng, 2011). Abor (2005) reported that in Ghana, profitable firms depended more on debt as their main financing option. In Brazil, the rates of return to shareholders presented a positive correlation with short-term debt and equity, and an inverse correlation with long-term debt (Carvalho, de Mesquit & Lara, 2003).

In India, a study by Azhagaiah and Gavoury (2011) found a strong one-to-one relationship between capital structure variables and profitability variables, return on assets (ROA) and return on capital employed (ROCE) and that capital structure has significant influence on profitability, and increase in use of the debt capital tends to minimize the net profit. Berger and Bonaccorsi di Patti (2006) findings are that higher leverage or a lower equity capital ratio is associated with profit efficiency, while other studies hypothesize a negative relation between profitability and capital structure (Chen & Zhao, 2006; Strebulaev, 2003). These mixed findings need further confirmation in different economies.

In finance theory, the three core variables are time, risk and return. The standard in finance is that the return from an investment must be commensurate with risk in that investment. This explains why, theoretically the beta of equity in unlevered firm is lower than that of a levered

firm, and a possible explanation is that the use of debt capital momentums a firm closer to financial distress. Studies in capital markets show anomalies, as an example, high default probability firms, with low credit rating tend to exhibit lower future stock returns (Campbell, Hilscher & Szilagyi, 2008). This absence of a risk premium for default risk “adds a new dimension to the complex relationship between financial distress (debt induced) and cross-sectional properties of equity returns” that require further research (Garlappi& Yan, 2011: 790).

Welch’s (2010:2) comment that “in the theory of capital structure, one common hypothesis derives directly from the equity-sensitivity channel: a firm with more leverage has both higher-powered incentives and (usually) a higher probability of financial distress. In turn, this means that leverage can influence managerial behavior. A second common hypothesis about leverage arises from the fact that interest payments to creditors are excluded from corporate income tax. These two hypotheses have formed the basis of modern capital structure theory since Robichek and Myers (1966)”;

and there is need to confirm this hypothesis empirically.

2.5 Measures of capital structure and performance

Studies in this area, whether in developed economies or developing economies have common approaches that should be improved on. The source of a common problem is how leverage and performance are operationalised and the statistical methods employed in the studies. The literature captured a battery of measures of both leverage and performance, thus making it difficult pinpointing the correct indicator of performance and capital structure. Incorrigeble choices of a single performance or leverage indicator that assume that the performance indicators tell the same story this might not be the case, if used in establishing a relationship between performance and capital structure lead to misleading results.

The choice of performance and capital structure indicators as variables of this study needs to be confirmed through advanced statistical analysis. It is possible that distinct indicators of performance haveunusual impact on leverage and vice versa; therefore, variable selection varies from one country to another country; therefore, a correct measure of leverage is critical to capital

structure research. As a result, in this study the researcher intended to improve on previous research by using correlation and canonical correlation analysis as in Tacq (1997) to choose representative measures (indicators) of both leverage and performance. The studies above did not adopt this approach yet canonical correlation analysis is appropriate to handling latent variables such as performance and leverage. The importance attached to the choice of indicators of leverage suggests that the strength of existing findings in the literature has to be assessed on a case-by-case basis (Welch, 2010:10).

2.6 Emerging hypothesis

The literature review in this chapter set a frame work for the hypothesis to be tested. The aim is to examine the bi-directional relationship between capital structure and performance and to select appropriate measures of performance. The first hypothesis is the firm performance influence on the amount of debt capital employed by firms. This is based on the proposition that efficient and profitable firms have lower expected bankruptcy costs thus are able to employ more debt than comparable firms that are less profitable. Even so, it is conceivable that profitable firm will employ less debt to protect the firm from potential debt induced liquidation. The second hypothesis is formulated as follows:

H_{01} : Firm performance does not have a significant effect on leverage, and the alternative hypothesis:

H_{11} : Firm performance has a significant effect on leverage.

The second hypothesis is about the influence of debt capital (leverage) employed by firms on the performance of firms. If leverage has an impact on performance, then there are two possible outcomes. The first outcome is that leverage mitigates agency costs and therefore, improves firm performance. Second leverage increase agency costs; therefore, more use of debt will impact negatively on firm performance. Thus the second hypothesis for this study is as follows:

H_{02} : Leverage does not have a significant effect on performance; the alternative hypothesis being:

H₁₂: Leverage has a significant effect on firm performance.

2.7 Conclusion and summary of the chapter

Chong and Lopez-de-Silanes(2006) and Black, Kim, Jang and Park (2006) offered evidence consistent with a cause and effect relationship between an overall governance index and higher share prices in emerging markets; and that best firm-level corporate governance practices are linked to higher valuations, satisfactory performance and higher dividends to investors. However, Durnev and Kim (2005) found it hard to predict firm-level governance choices and related it to performance; they suggested that more work was required to identify firm-level factors that explain governance across emerging markets. Due to structural variation in emerging economies, Durnev and Kim (2005) recommend a corporate governance index for each country.

Though the agency theory is relied on in this study, it is important taking note of the recent criticism by Ghoshal (2005:86) that managerial behaviors that upshot from the agency theory could be destroying corporations. It is also possible that, manager is not the manager described in agency theory, a manager laden with self-interest, but could be a manager with a desire to maintain a reputation for high standards of business conduct in order to avoid sanctioning, a manager fascinated in extending his tenure at the firm will make choices to benefit other stakeholders. In addition, it emerges that Kenya has its share of corporate governance problems that needs remedying, and the starting point would be a study such as this one.

The worry and therefore, the need to strengthen the monitoring of firms were derived from the literature review. The argument was that dispersed shareholders are too weak to have unified stand against management; shareholders lack the sophistication, and the resources required to monitor and control their managers; and that they find it costly engaging financial analysts to process information and offer advice. They can also reduce the risk of their investments through diversification; and that they hold small amounts of shares in the firms they invest in.

There is no consensus on capital structure theories, but a substantial amount of research has been done to justify the use and active nature of debt (Berk & DeMarzo, 2011:520- 522, 539-540).

The reality and behaviour at capital markets are that managers cannot be passive when it comes to choosing between equity and debt capital (Berk & DeMarzo, 2011:520-522, 539-540). The research about debt holders monitoring role, has support in the need to identify synergistic, intervening and motivational factors that influence manager's behaviors that are required to improve firm performance. This study was designed to explore if debt capital, is an interactive, intervening and motivational factor that restrains managers' excesses. Further, each capital market has its share of imperfections and frictions that demand for different monitoring and control devices. Managers and shareholders can be shellfish (shareholders can adversely transfer some risk to debt holders) and need monitoring; therefore, debt holders must monitor firms (borrowers) that they lend money to.

The importance of debt capital must be evaluated in terms of its impact on the value to the firm. In the context of this study, we establish whether increasing leverage imposes discipline on management or propels management to exert more effort thereby enhancing the value for the firm by negating the neutral mutation hypothesis. It is possible that debt can magnify financial distress in a firm. Financial distress is costly because it adversely affects shareholders and managerial investment decisions, thus inducing substantial inefficiency in the firm. If debt capital affects firm performance, then the prescription to the managers would be to mix debt and equity capital and that an optimum capital structure is located for each firm. Firm performance (efficiency hypothesis) could be influenced by the amount of debt in capital structure; and this traced to corporate governance. Capital structure decisions will cease to be irrelevant if performance is a factor in deciding on the amount of debt that a firm deployed as part of capital structure.

In some of the studies reviewed the researchers used ordinary least square regression (OLS) model to build a relationship between performance and capital structure (Abor & Biekpe, 2009; Berger & Bonaccorsi di Patti, 2006; Abor & Biekpe, 2005; Chen, 2004). The limitation of regression is that it can only handle on dependent variables at a time, yet for a variable such as performance a number of indicators exist, and a composite index is preferred. The other limitation of OLS is that it cannot handle grouped data, which is a requirement in this study. This

study will improve on methodology. This study used canonical correlation to explore the two theoretical concepts, performance and capital structure and then proceeded to use the general linear model (GLM) to establish the existence of bi-directional relationship between capital structure and performance. The GLM is a flexible statistical model that incorporates normally distributed dependent variables and categorical or continuous independent variables (Dobson, 2002; Horton, 1978).

In the next chapter (3) the literature on debt capital as a corporate governance influencing variable is examined in the framework of the relationship, performance, and change in CEO and capital structure.

CHAPTER 3:

FIRM PERFORMANCE, CAPITAL STRUCTURE AND CHIEF EXECUTIVE OFFICER TURNOVER

3.1 Introduction

The focuses in this chapter are the determination of capital structure choices, specifically the relationship between performance, capital structure and change of CEO. It recognised the need to confirm whether debt capital plays an effective corporate governance role through examination of the existence of relationships between leverage, performance and change in CEO. Chapter 2 was a review of previous studies on capital structure, performance, corporate governance and their interaction. In this, chapter (3) is presented literature helpful in understanding debt capital and performance as corporate governance influencing variables; specifically the role that debt capital along with firm performance play in influencing change of chief executive officers (CEO).

The chapter is arranged as follows: Section 3.2 reviewed the relationship between performance and management turnover; this is the extent to which managers are replaced due to poor firm performance. Section 3.3 is a review on debt capital and change in top management, specifically whether debt capital play monitoring and control role in poorly performing firms. Section 3.4 reviewed studies and theories about change in CEO and firm performance. The emphasis is about debt capital as a resource that would influence behavior and replacement of top management when the firm is managed sub optimally. Section 3.5 presented a view on change of CEO and change in capital structure; this enables a researcher a chance to deduce whether debt capital is relevant or not as discussed in chapter 2, such that the incoming CEO is forced to recommend a revised capital structure. In section, 3.6 are the upshot of the literature review, namely the hypothesis set to test the relationship between performance, capital structure and change in CEO. At the end of this review is a summary and conclusion to this chapter in section 3.7.

3.2 Performance and management turnover

One way to evaluate corporate governance is to assess the extent to which inefficient managers are replaced. Performance is a critical variable in evaluation of corporate governance because of the impact of a firm's performance on the firm's market value and on wealth of shareholders. Investors and regulators cannot observe CEO ability but might infer it from reported firm performance, and this makes performance a critical corporate governance variable. The detailed literature review on the relationship between corporate governance and performance (see chapter 2, section 2.2), and in the same, chapter is presented literature on the bi-directional relationship between performance and capital structure. Fisman, Khurana and Rhodes (2010) presented a model in which weak governance protects mediocre CEOs from dismissal, while shielding the board. Other studies suggested that a link between management turnovers to poor performance confirmed adequacy in corporate governance (Firth, Fung & Rui, 2005; DeFond & Mingyi, 2004). Bechmann and Raaballe (2010) discuss in detail bad corporate governance in the board room and proceed 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 & Petrovsky, 2010; Lumby & 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). From a CEO perspective, failure to match managers to the objectives of the firm is a source of failure, and this assertion has support in match theory.

The matching theory is a mathematical framework attempting to describe the formation of mutually beneficial relationships over time (Shimer, 2005). In match theory, firm productivity and performance are explained in terms of the match between CEO and the firm (Cordeiro-Nilsson & Shaw, 2010; Cordeiro, 2010; Allgood & 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 & Herstley, 2010). In any case managers choosing effective strategies coupled with the efficient strategic management processes build competitive advantage thus adding value to their firm; and such managers are retained through an effective incentive system that includes good salaries and benefits, the prospect of promotion and tenure (Barney & Herstley, 2010). However, a study into the labor market for directors reported negative turnover consequences for outside directors in firms that underperform relative to their peers (Davidoff, Lund & Schonlau, 2013:2).

From the finance perspective, performance is a reflection of a firm's revenue generating capacity after taking into account costs incurred to generate that revenue. Inside cost is the large amount paid to top management, a cost that top management must justify by only choosing projects and activities that add value to the firm (Bebchuk & Grinstein, 2005). In the face of endless corporate scandals, the dispute is whether directors and top management face penalties for poor performance, specifically in emerging economies such as Kenya.

A study that split firms into performance deciles showed that while normal or high performance does not lead to the likelihood of the CEO staying, the lowest performing firms experienced higher CEO turnover. However, 'the change in turnover in response to a decline in performance is insignificant or even goes against firing underperforming managers' (Dimopoulos & Wagner, 2010:2). Studies indicated that if corporate governance was effective, poor performance preceded replacement of management (Mnzava, 2013:28; Wermers, Wu & Zechner, 2008:26; DeFond & Mingyi, 2004; Volpin, 2002).

In Ukraine, Muravyev, Talavera, Bilykand Grechaniuk (2009:21) 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 & Kuhnen, 2013; Goldman, 2009; Berman, 2008). In some case, it requires a presidential order to remove 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).

In many instances, it is difficult solving governance problems without replacing managers, even if replacement of managers would improve performance (Fidrmuc & Fidrmuc, 2007; Fidrmuc & Fidrmuc, 2006). It might be that the link between firm performance and management turnover is fuzzy due to weak laws, weak regulation and underdeveloped capital markets (Strenger, Kleindiek, Schmelzle, & Volynets, 2012). In Finland, Maury (2006:222) found that firms that have a two-tier board structure are more likely to replace poorly performing CEOs than firms with a single tier board structure and that higher turnover of board members is a response to poor stock price performance and operating losses.

In studies, relating performance to management turnover, operationalisation and measurement of the two variables is critical and varies from study to study. The definition of performance is important if it is to be used to evaluate top management. It is important that an accurate, objective and reliable measure of performance is identified. The principle of accountability requires that managers are only held responsible for factors within their control (Jenter & Kanaan, 2010). In Maury (2006) firm performance is captured as the firm's market-adjusted stock return and change in operating profits to total assets, that is, both market and accounting measures of performance are employed. The alternative measures of stock performance used for studies similar to this are: stock performance of the firm relative to the industry, the stock performance within the industry relative to the stock market, and the performance of the overall stock market. This is because some boards respond not only to poor performance relative to the industry, but also to both poor industry performance and to poor market performance (Kaplan & Minton, 2008:2).

The appropriate performance measure should be discriminative enough as to ensure that CEOs are fired efficiently and justly, and that few CEOs are dismissed in good times, or too many fired in bad times (Jenter & Kanaan, 2010). The use of industry and market measures of performance is appropriate in deciding whether to bring a new CEO to respond to the emerging-market

challenges (Kaplan& Minton, 2008:26). In addition different measures of performance are required to unmask poor managers who erect a defense when performance is poor, but use selective measures of performance to hide behind industry and market booms and declines. The concept of peer performance requires benchmarking firm performance against comparable firms in industry and in some case the market (Jenter& Kanaan, 2010). This ensures that managers are accountable for only those factors within their control.

Accounting measures of performance and leverage are used to determine the relationship between performance, capital structure and management turnover (Muravyev, Talavera, Bilyk & Grechaniuk, 2009; Jenter & Kanaan, 2008:25; Huson, Huson, Parrino & Starks, 2001).Performance indicators provide information to investors about profitability prospects; while capital structure indicators highlight the firms' liquidity and solvency. Investorsuse capital structure and performance information to make investment choices.

Economic and financial performance levels are both measurable in book value and market value. Therefore, the reliability of accounting indicators depends on the adequacy of the accounting standards. The accounting profession agrees that 'The measurement objective of accounting estimates can vary, depending on the applicable financial reporting framework and the financial item being reported' (AICPA 2012:1843).The reliability of market indicators depends on how developed a country's capital market is. As an example, a popular indicator of a company's future growth potential and performance is Tobin's Q ratio (Tobin, 1969; Brainard & Tobin, 1968). However, Tobin's Q ratio reliability as a performance indicator depends how efficient a capital market is in valuing financial assets (Lieven, De Jonghe & Vennet, 2007; Dushnitsky & Lenox, 2006).

Given that the goal of the firm is maximization of shareholder's wealth, the correct indicator to trigger intervention by investors in the affairs of the firm is a decline in the market value of the firm. Unfortunately, in Kenya's market data is limited and researcher have to rely on other measures extracted from audited annual reports such as accounting revenue and earnings, solvency, and liquidity and the resulting ratios as indicators of a firm's performance and

financial strength. Examples of accounting indicators of performance (accounting measures) are return on investment (ROI) which is an indicator of a firm's economic profitability and return on equity (ROE) which is an indicator of a firm's financial profitability (Venanzi, 2012; Venanzi, 2010). The other useful indicator is the book value to the market value as a measure of investors' perception of net asset value of the firm. In terms of decision making, the higher the ROI and ROE the more profitable the firm is.

The starting point to determining management turnover is the definition of management turnover and that when performance is poor the possibility facing the CEO is either retention or voluntary turnover or forced turnover. Management turnover could mean replacement of CEO or replacement of entire top management, including the board of directors. The top management theory suggests that managers are heterogeneous due to variations in their cognitive psychology (Nielsen, 2010; Chen, Ge & Song, 2010; Boeker 1992). Hence, the CEO should be replaced independent of other managers of his or her team. But in practice, as witnessed in a number of top world football clubs, the manager and his entire staff are replaced. This explains why researchers in predicting change in top management at times emphasize replacement of CEO and at times on entire top management. In practical terms, to report turnover, the CEO in a given year, t_0 , is no longer the CEO by the following year t_1 .

In some organizations, some boards are deeply involved in managerial activities, and it will be meaningless changing a CEO without changing such a board (Lawler, 2008). However, However, in organizations where power and authority absolutely belong to the CEO, a change of CEO would indicate a change in management; however, in firms where power and authority are not engrossed on an individual (CEO) there will be an effective change only when the entire management is replaced (Lawler, 2008). There could also be a change without changing the CEO, in such a circumstance; the existing CEO directs a shift in overall priorities and goals of the firm to reverse poor performance.

CEO turnover is engineered either internally or externally. CEO's internal turnover is connected to shareholders or boards of directors' decision to replace a CEO; but CEO's external turnover is

experienced when a firm is taken over or the firm enters into bankruptcy (Jenter & Kanaan, 2010; Kaplan & Minton, 2008:2). Studies showed that firm-specific performance, industry performance, and the performance of the overall market impact on internal CEO turnover; on the other hand, the three performance components did not impact on external CEO turnover (Jenter & Kanaan, 2010). Management dismissal can be either forced or voluntary. Forced dismissal is preceded by significant declines in firm performance, and in some instances are political contests; and this explained why the replacement of CEO is to improve firm performance (Huson, Malatesta & Parrino 2004).

3.3 Debt capital and change in management

Debt holders are major suppliers of capital to corporations; however, debt holders like other creditors have no role in running the company because in tradition and law, corporate governance focuses on shareholders (Baird & Henderson, 2008). Debt holders only get involved in running a firm when that firm is in financial distress to minimize their losses. Intuitively, one would expect debt holders to monitor their borrower's investment, financing, and dividend decisions as to safeguard their investment and to take remedial action.

Debt holders might monitor both shareholders and CEOs to tame shareholder's appetite for excessive risk (Bolton, Mehran & Shapiro, 2010; Jorion, 2007). Debt holders have a choice to secure their loans by designing debt covenants that transfer decision rights in a timely manner. Covenants include restrictions on acquisition (asset substitution) and disposal of assets, payment of dividends and issuing and terms of issuing new capital (claim dilution) (Reisel, 2014; Nikolaev, 2010; Lumby & Jones, 2011). Reisel (2014) suggested that investors viewed bond covenants as important instruments in mitigating agency problems, and increase in the cost of debt to borrowing firms due to agency problems could be substantial.

In thin and illiquid markets like Nairobi Securities Exchange, 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 & Otchere, 2008:23). 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).

The other alternative left to debt holders is direct intervention that would include replacing management instead of liquidating assets to settle their claim. 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 filling bankruptcy proceedings. This is because debt holders need a firm to continue doing business (lending to) with, and therefore, debt holders are more likely to opt for preservation of the firm (who is their customer) (Gilson, 2012: 25).

CEOs excessive risk taking over the watch of board of directors led to a financial crisis of unparalleled magnitude in the world's largest economy, USA (Jickling, 2010; Pinyo, 2008, Sharma, 2008). The USA economic crisis was felt worldwide and epitome's corporate governance failure that requires resolute monitoring of CEOs. In USA the financial crisis put to question the willingness of CEO to be good stewards. The impact from the crisis stressed that in future, firms focus on both the entity and shareholder views on the organization because adverse managerial activity affect not only the shareholders but also other stakeholders who include debt holders, customers and suppliers. The entity view would imply that debt holders be part of the company management.

The immediate response to corporate scandals was to include independent directors in the board of directors. But even after the introduction of independent board members, corporations continue to collapse. One reason advanced to explain the failure of independent directors is that managers provided incomplete information (Ravina & Sapienza, 2010:963). It is possible that some of them are compromised. In terms of information, debt holders are privileged and has the sophistication required to process the information for their benefit and benefit of shareholders. It is also possible that independent directors can be compromised.

Using the dissent- cost to equity loss ratio model, Chemmanur and Fedaseyeu (2012:33) showed that boards were passive in replacing CEOs. They attributed the failure to replace non performing managers to coordination problems, personal interest trade off among board members, and wider shareholders. Given that competing theories translate into different approaches to taming reprobate managers, a convincing conclusion is that board of directors control model requires reinforcement that would consider bringing debt holders on board.

Factors that influence CEO turnover are performance, board size, board composition and ownership structure (Chemmanur & Fedaseyeu, 2012; Adams, Hermalin & Weisbach 2010; Lausten, 2002). In Russia, ownership structure, control changes, and financial performance prompted CEO turnover (Kapelyushnikov & Demina, 2005). From corporate finance perspective, the use of debt capital (borrowed funds) is likely to escalate the probability of bankruptcy, and this clarifies why Reinhart and Rogoff (2011:1702) are emphatic that external debt surges are a precursor to banking crises. The peril of bankruptcy may trigger CEO turnover, specifically forced CEO turnover (Fidrmuc & Fidrmuc, 2007). Even if a firm is not bankrupt, firms with similar business risk, but levered to tend to be closer to default risks how high beta (market risk), when compared to firms that do not use debt capital (Brealey, Myers & Allen, 2010: 485–486; Cohen, 2007).

Wei Ting (2011) concluded that debt capital influenced CEO turnover, and that firms with higher default risk are likely to change their top management in the subsequent accounting period. Therefore, we expect change in CEO in firms with substantial debt in their capital structure, and less change in comparable firms with less debt. Logically, to test this hypothesis, the approach would be to classify firms using leverage, and then establish whether significant variation in change in management is explained by level of leverage.

Though it is suggested in the finance literature that debt capital plays certain disciplining role, the empirical evidence about the debt holder's role in corporate governance is sparse. This explained why in the following comment, Tung (2009:117 - 123) referred to leverage in the board room as the unsung influence of private lenders in corporate governance, 'The dearth 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.’ Creditors, including debt holders can act as effective monitors, especially when there are conflicts of interests such as replacing a manager whose performance is wanting, but for one reason or another cannot be disciplined by shareholders or board of directors (Nini, Amir &Smith, 2011).

In Japan, change in management following poor performance is common in firms that heavily rely on bank debt; however, this is because Japanese firms’ capital structure is dominated by bank debt capital and less reliance on equity capital and corporate bonds (Tokuo, Chiaki & Takefumi, 2011). In Japan, banks as the major supplier of debt capital have seats in the board of directors in the firms that they lend to and are allowed to participate directly in corporate financing and other strategic decisions. Tung (2009:119-220) cited a company where debt holders forced a non performing entrenched CEO to vacate his position, while Shepherd, Tung and Yoon (2008) discussed the aspects of debt capital as a corporate governance mechanism and concluded that bank monitoring added value to shareholders.

Though debt holders are privileged to have access to information about borrowing firms useful in effectively monitor corporations, there are circumstances under which debt holders might not exercise a disciplinary role. The first situation will be where a debt holder and shareholder is the same person. Second is where the firm issued debt in the face of undue influence from debt holders. Save for the business entity concept, the first situation makes nonsense of the meaning and usefulness of capital structure ratios as a measure level of owner’s commitment to the firm or as a measure of leverage for corporate governance purposes. In the second situation, those who take favors rarely complain. The third situation is when lenders, consider their debt covenant, fool proof, or who are fully diversified or who have insured their asset portfolio can become ineffective monitors because they feel their investments are safe, therefore, their contribution to corporate governance will be nonexistence.

If debt capital governance matter, then one way of evaluating a firm is by monitoring changes in corporation's financial risk. Adverse changes in risk acts as a signal to shareholders and regulators to take corrective action that include replacement of top management. Excess financial risk aggravates corporation risk thus reducing the value in the firm. In the absence of debt capital, such a signal will be lacking. Managers knowing that a poor debt-equity ratio downgrades the credit rating of their firm must monitor the ratio for them to take timely corrective action.

3.4 Performance following change in top management

The exits and entries of top management are expected to have an impact on subsequent firm performance. Change of CEO makes sense if a new CEO comes up strategies that add value to shareholders. In developed economies, studies on post-turnover performance assess the quality of the new CEO; other studies evaluate the correctness of the decision to replace the CEO by looking at post CEO change performance. Changes in the top team which lead to higher degrees of dissimilarity between old and new members of a team might result into a negative effect on firm performance(Glunkand Heijltjes, 2003:11).

Firms enter woeful performance due to economic distress; that is, when there is a decline in industry performance and poor management (Damodaran, 2009). If the remedy for reversing the decline in performance is to replace top management, then the CEO replacement must translate into improved performance. This means that the performance before the change of CEO must be lower than that after the change of CEO. This hypothesis has support in the common sense theory (that is, sound and prudent judgment based on a simple perception of the situation or facts: in Merriam-Webster's Online Dictionary, 2011) that assume that the new CEO has the capacity to enhance performance (Dimopoulos & Wagner, 2010). The opposite is the vicious circle theory which suggests that replacement of CEO has detrimental results due to its disruptive nature (Geraldo, Mendoza, Rosas& Tellez, 2013:5; Rowe, Cannella, Rankin& Gorman 2005; Schlesinger& Heskett, 1991; Grusky; 1963).

A number of theories justify the change of management in non performing firms. The upper-echelon theory inference is that demographic diversity of senior management is positively

associated with the diversity within the workforce; therefore, it is important that a CEO's capability is matched to a firm's resources that include the work force (Nishii, Gotte & Raver, 2007). The dependency theory characterizes organization behavior, and proceeds to consider a manager as the critical resource for the success of corporations. Exchange-based power implies that debt capital is a resource that can influence behavior and replacement of top management (Drees & Heugens, 2013; Davis & Cobb, 2010; Casciaro & Piskorski, 2005). Agency and efficiency theory rationalize replacement of underachieving managers (Pan, 2012; Huang, 2008).

The assumption is that after replacing CEOs, there will be an improvement in firm performance. This is because CEO replacement creates space for correction of errors made by the past management. Therefore, CEO turnover and post-turnover engagements address productivity shock perpetuated by the previous management, and post-turnover actions mirror the pre CEO turnover shock (Pan & Wang, 2012).

Well managed firms that are performing poorly because they are in an industry or market on the decline might or might not benefit from corrective management actions or should not change CEO. Improvement in performance is significant when the newly appointed CEO is an outsider instead of an insider (Dimopoulos & Wagner, 2010). The post management change improvement on performance could vary across firms depending on whether the firm was performing poorly or not before the replacement of CEO. Firms with entrenched CEOs exhibit significantly poorer performance during the year prior to forced turnover, and such firms post significant performance improvements during the three years following forced turnover (Cristian Dezs", 2006). Fisman, Khurana and Rhodes (2010:16) find that entrenched firms experience greater improvements in performance after a forced turnover.

After the change in CEO, large improvement in performance is reported by poorly performing firms, while no improved performance is visible in firms that were performing well (Cornelli, Kominek & Ljungqvist, 2012; Huson, Malatesta & Parrino 2004). Adams and Sattar (2009:22) after examining the impact of CEO turnover on investors' wealth, report that CEO turnover is value decreasing to debt holders but value enhancing to stockholder values, thus confirming wealth transfer and signaling hypothesis.

The degree of organizational disruption created by the CEO's departure, whether forced or natural and the subsequent organizational turbulences are important factors affecting subsequent firm performance, to an extent that post CEO replacement can be negative or positive. This was the case in Manchester United Football Club that posted negative performance immediately Sir Alex Ferguson was replaced as a manager. Bas (2011:279 – 289) using sports data on both manager characteristics, decisions and firm outcomes find no statistically significant improvements in performance after the manager is replaced. Firth, Fung and Rui (2006) asked the question, “Will the successor pursue new policies that result in better performance?” They then examined the turnover rates of the chairperson of the board of directors of listed firms in China to identify factors that influence these changes. They found out that poor performance based on accounting numbers is a factor in chairperson turnover and that stock returns are not considered in replacing CEOs. However, they found no evidence that change in top management leads to an improvement in firm performance during the year after replacement; poorly performing firms failed to reverse the decline.

3.5 Change of CEO and change in capital structure

Changes in CEO provided a chance to a researcher to deduce whether the capital structure decisions are relevant or irrelevant, as an approach to confirming or rejecting M&M proposition. Capital structure decision will be relevant if significant changes in capital structure levels are observed after CEO replacement. For example, if the new CEO introduced different capital structure policies, then we assume that capital structure matters. If debt capital is irrelevant, the incoming manager might not change the capital structure policy that existed before the change of CEO. Due to agency conflicts, managers may not always adopt leverage choices that maximise shareholders' value. Firms with dominant CEO are likely to adopt significantly lower leverage, possibly to prevaricate the disciplinary mechanisms associated with debt financing (Jiraporn, Chintrakarn & Liu, 2012).

On empirically examining the influence of CEOs on corporate financial policy, Cao and Mauer, (2010) found that CEO turnover is followed by significant debt policy changes, and this is

pronounced in firm in which the new CEO is an outsider. A new CEO might not change debt if the firm has predetermined debt ratio, and the predetermined ratio is within an acceptable range (Graham & Leary, 2011). In cases where change of CEO is as a result of poor performance, a new CEO who believes in tax advantages and distress effects of debt capital might review usage of debt capital. Poor performance that approached financial distress triggered control rights changes and in a way that might influence financing choices and not much research has been done on this area (Roberts & Sufi, 2009; DeMarzo & Fishman, 2007).

3.6 Emerging hypothesis

The studies into the relationship between performance and replacement of top management lack agreement on the direction in the relationship and therefore, are not conclusive. Fisman, Khurana and Rhodes (2010) showed a model in which weak governance protects mediocre CEOs from dismissal, but shielded the board even when firm performance is poor. In some cases, managers only vacate their position when there is a financial crisis as was witnessed in the recent financial crisis in USA (Eisfeldt & Kuhnen, 2013; Goldman, 2009; Berman, 2008). In some cases, it requires a presidential order to remove CEO; this was in the case of General Motors in US when, despite poor performance, the then CEO was removed on President Obama's orders (Grand Rapid Press, 2009).

Leland Miller (2012) showed that the relation of management turnover to performance is insignificant in the absence of cross border listing. Firth, Fung and Rui (2006), find evidence of very high turnover of company chairpersons in China, and that turnover is related to a firm's profitability but not to its stock returns. After outlining several theoretical arguments on the relationships between a firm's capital structure, performance and CEO turnover, there is meaning to generate the following hypotheses.

The third hypothesis is based on the microeconomic theory that predicts that firm performance depends on the managers' skills, and their efforts; and expectation is that managers whose performance is poor are dismissed. The assumption is that improvement in performance might be unattainable if the management that made the original decision that pushed the firm into

operating and financial difficulties is still part of the management team. Therefore, the third overall hypothesis for this study and its alternative are as follows:

H₀₃: Firm performance does not have significant effect on Change of CEO

H₁₃: Firm performance has significant effect on Change of CEO.

The fourth hypothesis is based on perceived corporate governance or disciplinary role of debt capital. Debt holders just like any other investors prefer firms that are profitable, financially stable and with both survival traits and growth prospects. If debt capital played a disciplinary role, then there should be visible differences in CEO changes between two groups of firms, that is, highly leveraged firms (high pressure) and low leveraged firms (low pressure). At the same time, shareholders, directors, the legal frame and capital market infrastructure might lock out debt holders from decision making, in which case debt holder influence on the borrowing firm collapses. In which case the fourth hypothesis and its alternatives are as follows:

H₀₄: Leverage does not have significant effect on Change of CEO

H₁₄: Leverage has significant effect on Change of CEO.

The fifth hypothesis is the combined and interaction of debt capital and firm performance on the replacement of CEO. The argument is on the possibility that what the debt holders cannot achieve on their own might be strengthened by shareholders if the firm is performing poorly. The fifth hypothesis and its alternative are stated as follows:

H₀₅: Leverage and performance does not have significant effect on Change of CEO

H₁₅: Leverage and performance has significant effect on Change of CEO.

3.7 Chapter summary and conclusion

This chapter is an in-depth knowledge about the meaning, concepts and relationship between the three study concepts, namely firm performance, debt capital and CEO turnover. Performance is a proxy of adequacy in corporate governance in situations where investors and regulators cannot directly observe CEO ability. Proper management of debt capital is equally important to a

corporate governance perspective. In such a set up investors infer adequacy of corporate governance from reported firm performance. To protect firms from a ruinous corporate performance, firm's device a corporate governance system useful in effectively monitoring and correcting the enterprise's operations. The board of directors and shareholders can be passive and captive to management to a point that they cannot dismiss a non performing CEO.

Firm performance results from strategies adopted by management, and firms that selected and implemented successful projects earned adequate returns for their owners. While firms categorised as weak in corporate governance are expected to post poor performance. Initiative must be taken to replace its management (by now assumed to be deficient in skills and other relevant competencies!) in order to reverse poor performance. The supposition is that there are positive links between management turnovers and firm's performance. However, in the face of endless corporate scandals, it is not definite that directors and top management face penalties for poor performance, specifically in emerging economies such as Kenya. Therefore, in instances poor financial performance fails to trigger dismissal of top management. The chapter presented alternative measures of performance and concluded that the shortcoming of market data forced the use of a mixture of market and accounting measures of performance in this study. Alternative measures are identified to inform the variable definition of change in management in chapter 4; that is, at research design stage.

From this review, the conclusion is that the evidence on the link between performance and change in CEO is mixed. Some studies confirmed that where corporate governance was observed, poor performance preceded replacement of management; other researchers presented evidence of an inverse relationship between the past performance of firms and the likelihood of managerial turnover. Another strand of research finds weak or insignificant relationship between performance and management turnover, and traced their findings to weak laws, weak regulation and underdeveloped capital markets.

If it was true that board of director's found it difficult firing non performing CEO, what is the way forward? The immediate response to corporate scandals was the introduction of independent

directors. However, even the introduction of independent directors did not stop the financial difficulties that ultimately lead to firm collapse. Studies reviewed suggested the role of debt holders to effective corporate governance be enhanced to enhance corporate governance.

The tradition is that debt holders have no role in running the company; however, get involved when the company is in financial distress in a way of protecting their investments within the firm. Nevertheless, in Kenya and many other emerging markets, debt capital markets are not developed, and debt holders find it difficult disposing their investments should they want to. Perhaps an alternative to debt holders is direct intervention that requires replacing management instead of liquidating assets. In any case debt, holders need a firm to continue doing business (lending to) with; therefore, debt holders are reluctant opting for bankruptcy proceedings, but might favour realignment of rights as well as replacing CEOs to preserve the value within the firm. The proposal from this behaviour is a debt holder who actively monitors managers.

In successful economy like Japan, the major suppliers of debt capital have seats in the board of directors, to enable them to participate directly in corporate financing and other strategic decisions. Furthermore, adverse change in a firms financial risk is a signal to shareholders to take corrective actions early enough to avoid bankruptcy; however, in the absence of debt capital, such a signal will not be available. The exchange-based power based theory posits potential of debt capital as a resource that would influence behavior and replacement of top management. This study is a movement towards an arrangement where firms are obliged to uphold an amount of debt in their capital structure.

Common sense theory and the vicious circle theory contrast in explaining post CEO replacement as a response to firm performance. The common sense theory stipulates that the new CEO has the capacity to enhance performance; however, the vicious circle theory suggests that replacement of CEO is disruptive. The upper-echelon theory suggests a need to match the CEO with the resources, human and non-human. The dependency theory characterizes organization behaviour concluding that managers are critical resources for the success of firms. Finally is the literature on change in leverage after the change in CEO. This is the case when poor

performance magnifies financial distress that subsequently triggers control rights adjustments; in which case a review of financing choices and decisions is necessary.

This chapter explored studies on whether debt holders impose discipline on top management in the wake of poor performance. The prediction is that debt holders might moderate top management excesses to need to be tested empirically. Even in developed economies the corporate governance models based on boards of directors fail to stop recurring failures that have overwhelmed the corporate world, and there is a need for a search for alternative or supplementing governing mechanisms. Elson, Helms and Moncus (2002: 1926) proposition are that ‘When the board fails to monitor effectively, disaster results—executive enrichment and corporate failure ensue. To curb managerial opportunism and protect against disastrous corporate performance, a firm must implement a corporate governance model capable of effectively monitoring the enterprise’s operations.’ It came out that boards that are passive and captured by management (not objective) find it most difficult replacing non performing managers.

It is evident in the studies that the relationship between performance and replacement of top management lack agreement both at pre and the post CEO replacement direction. It is apparent in the studies that the relationship between debt holders and replacement of top management lacked agreement both at pre and the post CEO replacement direction. Therefore, it is important diagnosing the effect of both performance and debt capital on change of CEO.

Depending on how debt holders relate to management, the influence of debt holders on corporate governance can be positive, negative or nonexistence and is therefore, an empirical issue; specifically whether debt capital governance mechanism is associated with successful turnarounds, that is, succession effect. In the studies reviewed, a number of study report presence or absence of relationship but fail to identify the source or why the relationship persists.

The next chapter describes the methodology that was used to execute the study. It lays focus on research design to address the research questions in Chapter 1 and the hypotheses generated in

Chapters 2 and 3. Chapter four provided a road map for the study and act as a control required to achieve research objectives.

CHAPTER 4:

RESEARCH METHODOLOGY

4.0 Introduction

This chapter presents the research philosophy, approach, design and methods used to address the research problem. The two previous chapters reviewed literature on three concepts namely capital structure, performance and change in CEO. In chapter 2, hypotheses emerged. The first hypothesis is about the effect of performance to the amount borrowed by firms and that the performance coefficient can be negative or positive or zero. The second hypothesis is about the effect of leverage on performance propelled by the perceived corporate governance or disciplinary role of debt capital, and that the leverage coefficient can be negative or positive or zero. In chapter 3, three, testable propositions emerged.

The first, (but the third overall) hypothesis is based on the microeconomic theory that predicts that firm performance depends on the managers' skills and their effort and therefore, managers whose firms perform poorly are replaced to reverse the decline in performance. The second (but the fourth overall) hypothesis is based on perceived corporate governance or disciplinary role of debt capital and that firms with debt capital in their capital structure are more likely to put pressure on the firm to replace non performing managers. The third (but the fifth overall) hypothesis is the combined and interaction of debt capital and firm performance on the replacement of CEO. The argument is on the possibility that what the shareholders cannot achieve, for example, disciplining managers if the firm is performing poorly, might be strengthened by the presence of debt holders in a firm.

This chapter (chapter 4) linked the preceding chapters to subsequent chapters. It relied on theories in earlier chapters to select appropriate (optimal) research methods required to address research questions, objectives and testing resulting hypothesis as presented in chapters 1, 2 and 3. I output informed the findings and conclusion of this study as presented in chapters 5, 6, 7 and 8. The outputs of this chapter are the research philosophy; research design; population and

sample; data and the variables of the study. The other outputs from this chapter were the models' namely canonical correlation, general linear model (GLM) and generalised estimating equation (GEE).

The rest of this chapter is organized as follows: in section, 4.1 is presented the research philosophy; in section, 4.2 are the five hypothesis of the study, as summarised above; section 4.3 are the research design and justification of research design; section 4.4 capture population of the study; section 4.5 is the sample of the study; in section, 4.6 are the data to be collected, validity issues relating to secondary data, data that capture performance, capital structure and change in CEO. Section 4.7 is the variables that capture the three key concepts to be used in testing their relationships. In section 4.8 to 4.9 is presented the method of analysis, and the summary is in section 4.10.

4.1 Research Philosophy

The research philosophies are discussed under the headings' epistemology, ontology, axiology and doxology and quantitative-qualitative dichotomy (Saunders, Lewis & Thornhill, 2009; Easterby-Smith, Thorpe & Jackson, 2008; Ritchie & Lewis, 2003). A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analysed and used; but science is about transforming things believed (doxology) to things known (epistemology) (Saunders, Lewis & Thornhill, 2009; Easterby-Smith, Thorpe & Jackson, 2008; Hussey & Hussey, 1997; Becker, 1996). In this study, the beliefs are that a relationship exists between capital structure and performance that managers in firms posting poor performance are replaced and that debt holders play a monitoring role, but it is only on the conclusion from this study that the truth of these propositions will surface.

In this study, the core philosophy is that research apart from providing the intellectual resources, contributes to an intellectual rigor and discipline of practical significance. Research is about what is not known; therefore, 'research philosophy is an over-arching term relating to the development of knowledge and the nature of that knowledge' (Saunders, Lewis & Thornhill, 2009).

Researchers can be categorised into two, either positivists (positivism) or non-positivism or naturalists (interpretivism) (Saunders, Lewis & Thornhill, 2009; Easterby-Smith, Thorpe & Jackson, 2008). Positivists' uses quantitative tools and techniques that emphasize measuring and counting. Naturalists prefer the qualitative tools of observation, questioning, and description research. The difference between positivism and interpretivism is extended to their assumptions about what is important to study; what can be known? What are the appropriate research tools and designs? What standards do you apply to judge the quality of the research? In Table 4.1, are the two philosophies presented by Easterby-Smith, Thorpe and Jackson (2008) to guide researchers.

Table 4.1: Research paradigms

	Positivists (positivism)	Naturalists (interpretivism)
Basic beliefs	The world is external and objective (objectivism)	The world is socially constructed and subjective (subjectivism)
	Observer is independent	Researcher is part of research process
	Science is value-free	Science is driven by human interests
Researcher should	Focus on facts	Focus on meanings
	Look for causality and fundamental laws	Try to understand what is Happening
	Reduce phenomenon to simplest elements	Look at the totality of each Situation
	Formulate hypotheses and then test them that is, move from theory to data.	Develop ideas through induction from data
Preferred methods Comprise	Operationalizing concepts so that they can be measured	Using multiple methods to establish different views of phenomena
	Taking large samples that is the necessity to take samples of sufficient size in order to generalize conclusions.	Small samples investigated in depth or over time, due to less concern of need to generalize

Source: Adapted from Easterby-Smith, Thorpe and Jackson, 2008

The primary objective of this study is to investigate the relationship between capital structure, performance and replacement of CEO in firms listed on the Nairobi Securities Exchange between the periods 1990-2012. Literature has been used to inform the study, and the study is set to test pre-existing theory relied upon quantitative data, to discover and understand the relationships among the three concepts, performance, capital structure and change of CEO. Therefore, this study adopted a positivist position to address the research problem and research objectives.

4.2 Study hypotheses

In order to investigate the relationship between capital structure, performance and replacement of CEO in firms listed on the Nairobi Stock Exchange, the following five hypotheses have been stipulated:

The first hypotheses test the influence of performance on leverage

H₀₁: Firm performance does not have a significant effect on leverage, and alternative

H₁₁: Firm performance has a significant effect on leverage.

The second hypotheses test the influence of leverage on performance

H₀₂: Leverage does not have a significant effect on firm performance; the alternative hypothesis being:

H₁₂: Leverage has a significant effect on firm performance.

The third hypotheses test the effect of performance on change of CEO

H₀₃: Firm performance does not have a significant effect on Change of CEO

H₁₃: Firm performance has significant effect on Change of CEO.

The fourth hypothesis test the effect of leverage on change of CEO

H₀₄: Leverage does not have a significant effect on change of CEO.

H₁₄: Leverage has significant effect on change of CEO.

The fifth hypotheses test the combined effect of leverage and performance on change of CEO

H₀₅: Leverage and performance has a significant effect on Change of CEO

H₁₅: Leverage and performance do not have significant effect on Change of CEO.

4.3 Research design

Using data in an emerging economy, Kenya, this study established the relationship among three variables namely, capital structure, performance and CEO turnover. This qualified this study to be a correlation (observational) study, which is extended to cause and effect. It is a confirmatory research, to test *a-priori hypotheses* (Creswell, 2012).

Correlational research was used to discover or establish the existence of a relationship among variables in this study; that is, between performance, capital structure and change in CEO. The results of correlation research have implications for decision making within businesses; however, the limitation of correlation research is the interpretation of causal relationships. Observational study provides information on what is happening in the real world (Rosenbaum, 2009). In confirmatory studies, hypotheses are usually derived from theories, and then the predictions about the outcomes are made before the measurement phase began. The result of corroborative research is more meaningful in the sense that it is impossible to claim that a certain result is statistically significant or universal unless it is.

4.4 Population of the study

The population of this study consists of all firms listed on the Nairobi Stock Exchange (NSE) during the period 1990 to 2012. The 2013 data is excluded because at the time the data was collected, some of the firms delayed releasing their annual reports. As on 31st December 2012, sixty one (61) firms were listed on the NSE (see appendix 1). Using panel data the study was to employ approximately 1403 (61x23years) CEO years.

NSE listed companies are established firms with ‘elaborate’ corporate governance procedures, with audited annual report that contained information useful in addressing the objective of this study. The choice of the period 1990 to 2012 is as a result of data availability, taking into account unit of analysis, as a benchmark, in similar studies elsewhere. In Australia, Nielsen and Nielsen, (2013) sampling 146 Swiss listed firms collected data from company annual reports and Web sites on an annual basis for the period 2001–2008; in The Netherlands Glunk and Heijltjes, (2003) studied 60 firms over an 11-year period; in China, though there is no indication of population size, Firth, Fung and Rui (2006) cover a five-year period from 1998 to 2002. In the US based capital structure and performance study, Berger and Bonaccorsi di Patti (2006) employed a sub-sample of 695 banks.

4.5 Sampling and sample design

Though all firms listed on the NSE will be included, sample issues arose. The basic sample should enable identification of firms that exhibit the following characteristics over the period of the study: level of performance at both accounting and stock market levels; change in top management and level of borrowing. Such firms must have disclosed the amount of debt and information on top management in their financial statements for the period of the study.

Purposive sampling is used, and out of the sixty one firms listed on the NSE, firms classified as financial institutions are left out, leaving 44 firms that translate into 1012 (44x23) possible CEO years, but this depended on availability of data. The next section is on the data required to address research objectives. The data included measures (indicators) of performance and capital structure and change in CEO.

4.6 Data collection

The study relied on secondary data (see Appendices 2 and 3 for data collection instruments). The data, specifically market and accounting data required in this study were obtained from the annual reports, copies of which are obtainable through the individual firms, and share price listing found at the NSE and Capital Markets Authority (CMA). The data was collected over the period 1990 to 2012.

Due to lack of depth and thinness of Kenya Capital Market, there were data limitations, that is, issue of sufficient data required to carry a credible study of this level. Therefore, this study employed panel data; that is, instead of a firm being a unit of observation, each firm (or CEO) year during the sample became an observation as in Faleye, Hoitash and Hoitash (2011). As an example, firm X, with 23 years annual variable provides twenty three observation points and not the expected one observation. Panel data is also known as longitudinal or cross sectional time-series data. It is a data set in which the behaviors of organizations are observed across time. The advantage of panel data is that they capture the trend in the study variables in each firm and across firms, and that it is a better way to study the timing of changes in CEO.

Secondary data have their problems, and it is naive to assume that they are free from errors and flaws (Maxwell, 1996). The main concerns to a researcher relying on secondary data are data validity problems, reliability issues, trustworthiness of data and information, and data source bias. Validity concerns must be addressed because it raises questions on legitimacy of the conclusions that are drawn from data (Trochim, 2006; Maxwell, 1996). Researchers can only defend the use of secondary data when the definitions of a situation by the original data collector match or coincide with that of the theoretical definition of the secondary data user.

Construct validity seeks agreement between concepts expressed by the researcher (constructs) and specific measuring devices or procedures adopted by the researcher. Construct validity is identification of data variables that if manipulated will correctly capture the concepts of performance, capital structure and change in CEO. This was attained through literature search (chapters 2 and 3) and adopting standard definitions of performance, capital structure and change in CEO in authoritative studies. This approach took care of content validity concerns.

The comfort in extracting information from annual reports is that they are subjected to an audit by reputable audit firms while the comfort in using market data is that such data is on public domain and is subjected to public scrutiny. An audit lends credibility to information contained in annual reports. However, where returns per share are to be calculated, there will be a need to adjust share prices for dividends and share splits.

However, trading activity in some share was too low; that is, some shares traded even once a year and lacking in terms of validity constructs in the sense that they were inactive and therefore, did not capture firm performance. This was handled by using a number of performance measures and using canonical correlation to select the appropriate indicators. Finally, the data was subjected to cleaning procedure to identify errors; however, outliers were deliberately retained because the statistical techniques allowed for non-normal distribution. The three major variables of this study are performance, change in CEO and capital structure (leverage). Note that the term leverage, capital structure, debt capital and debt ratio is used interchangeably.

4.6.1 Firm performance

Competing measures of performance were identified and canonical correlation used to select measures of performance used in a further analysis. At a different level, the sample contained firms with superior performance (base year) immediately preceding a year of extreme poor performance (distress year), such that the sample consisted of poorly and not poorly performing firms; this enabled disaggregation of firms into performers and non-performers.

Including firms with poor performance and debt capital in their capital structure, then determining whether there were significant changes in CEO in such a sample enabled the study to establish the effect of debt capital on both CEOs changes and performance. By including all non-financial firms listed on the NSE over the period under the study, such as biases were eliminated. However, there was needed for control firms as in Faleye, Hoitash and Hoitash (2011), in which case the sample should include even firms that performed well but experience change/or no change in management. In addition, performance should be analysed in terms of factors within the control and those not within the control of CEO. This is consistent with the hypothesis that Boards of directors fail entirely to filter exogenous shocks to firm performance from their CEO replacement decisions (Jenter & Kanaan, 2008). The filtering can be done by benchmarking firm performance against market performance and by including all listed firms.

4.6.2 Change in chief executive officer (CEO)

CEO turnover is defined differently by researchers. Coates and Kraakman (2010:2) explored the relationships between CEO tenure and three modes of CEO turnover that they describe as “deal,”

or external turnover triggered by a friendly acquisition of the firm, “fired,” or forced internal turnover initiated by the board, and “retire,” or all other forms of internal turnover. There is a difference between ‘internal’ CEO turnover that is driven by boards of directors, and ‘external’ turnover (Kaplan & Minton, 2008). Allgood and Farrell (2003) focus non-deal-related turnover and ignore deal-related turnover while Fisman, Khurana, and Rhodes (2010) describe and classify CEO departures as “forced” or “voluntary,” based on CEO age and assume that departures of CEOs below 60 are forced. Change in CEO can also arise when a company is delisted (Kaplan & Minton 2008).

Faleye, Hoitash and Hoitash (2011:166) stated that ‘While we painstakingly strive to identify turnovers correctly, we recognize the difficulties involved deciphering the intentions of relevant parties when CEO leaves office. Therefore, we estimate an additional regression for all CEO turnovers as a robustness check’. In this study, we recognize difficulties involved in decoding CEOs and include all CEO changes.

4.6.3 Capital structure

The originality in this study is the reliance on capital structure theoretical framework to assess the effect of debt capital, along with performance on the replacement of CEO as a corporate governance mechanism in firms listed on the NSE during 1990-2012. This enables us to assess the strength of corporate governance in these and whether there is a need to augment shareholder's power. Fisman, Khurana, and Rhodes (2010:1 - 2) report that Facebook, LinkedIn, and Group put up initial public offerings (IPOs) with dual class share structures with super-voting shares retained by insiders and also introduced a new class of nonvoting shares, which are close to debt capital whose holders do not carry voting rights.

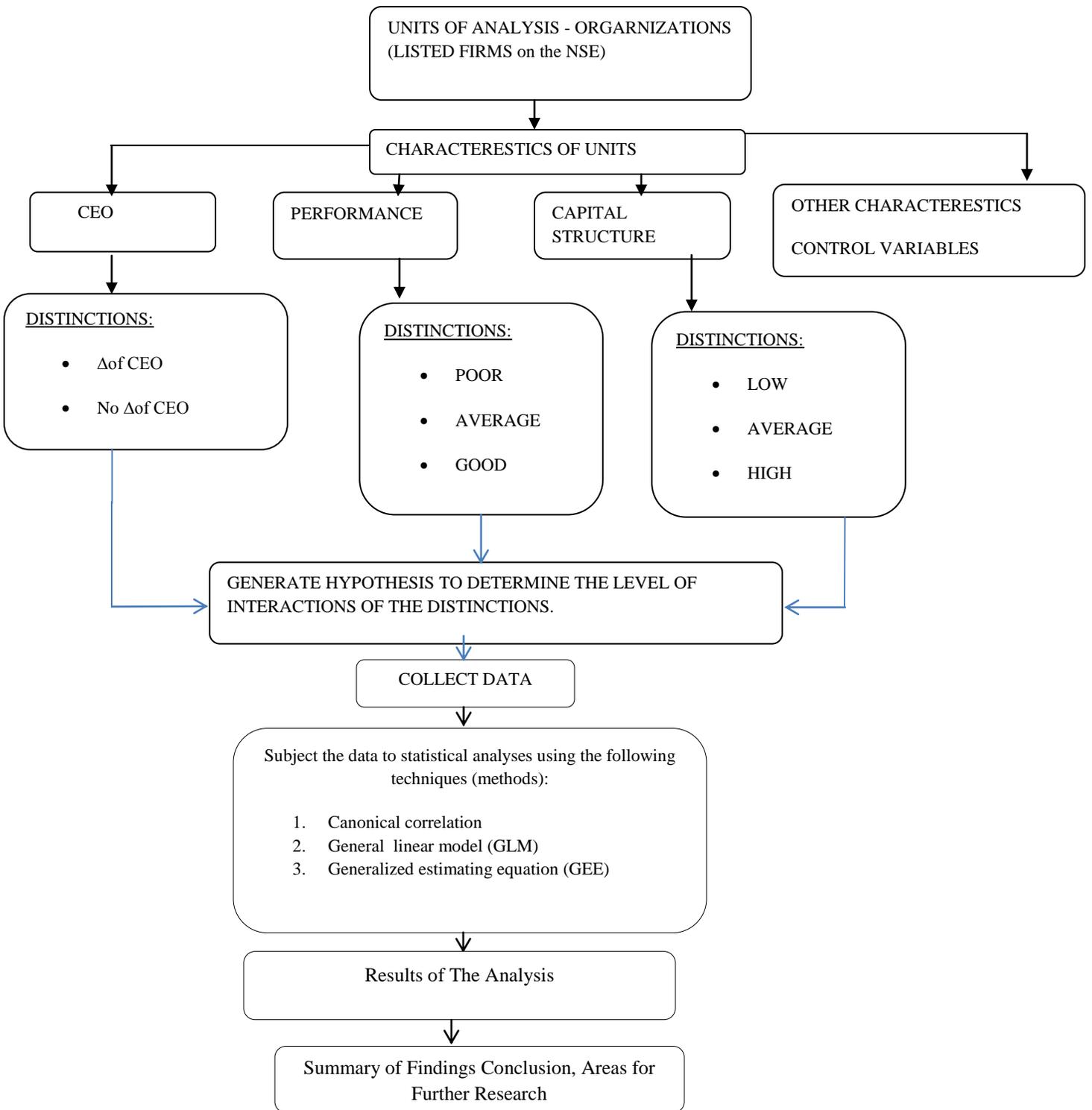


Figure 4.1 Data and Analysis Structure (Unit, Characteristics and Distinctions)
 (Source: Author)

The way in which the units are spread over the characteristics can be presented in a cross tabulation as in Table 4.2 that highlights the level of dispersion.

Table 4.2: Cross tabulation of the change in CEO and predictor variables (Performance and Capital Structure)

	PERFORMANCE			CAPITAL STRUCTURE			TOTAL
	POOR	AVERAGE	GOOD	HIGH	AVERAGE	LOW	
Δ IN CEO							
NO Δ IN CEO							

Where: ΔCEO=CHANGE IN CEO.

(Source: Author)

Again, our interest is on the relationship between performance and capital structure and whether the performance and capital structure impact on a third variable, CEO. The variables of the study and specific measures (indicators) of performance, leverage and change in CEO are presented in the next section.

4.7 Operationalisation and measurements of variables of the study

4.7.1 Measurers of firm performance

This section explains the measures of firm performance indicators used for this study. Similar studies use annual stock returns and accounting returns to differentiate poorly performing firms from those with good returns (Faleye, Hoitash & Hoitash, 2011; Whitaker, 1999; Lai & Sudarsanam, 1997; Ofek, 1993; Wruck 1990; Gilson, John & Lang, 1990). Their choice of performance indicators is informed by the objective that firms exist to benefit owners, and this might justify the choice market price as a superior measure of firm performance. However, the studies use accounting and stock return as a measure of firm performance (Jung, Wong & Zhang, 2014; Faleye, Hoitash & Hoitash, 2011; Keating, Fischer & Gordon, 2005). Annual reports are vehicles useful in monitoring and controlling the actions of board of directors and managers.

Financial distress as a situation where cash flow is insufficient to cover current financial obligations such as the amount payable to employees, rent in arrears, and interest in arrears was operationalised in terms of accounting or cash flow measures of performance. Accounting indicators that can be used in a study such as this one includes; return on equity (ROE), return on

assets (ROA), earnings per share (EPS), and operating cash flow per share (OCFPS), asset turnover ratio (AssTurn); growth sales (GrSales), earnings before interest and tax (EBIT), dividend payout ratios (DPR), and dividend omissions (DOR). These variables assist in identification of the cutoff point between firms with poor and those with good performance; that is, will be used to group firms; and enable standardization of these measures relative to the market. The summaries of performance variables in this study are:

- i. Return on total assets (ROA) – this is the operating profit after depreciation plus interest income and dividend income in relation to total assets.
- ii. Earnings before tax and interest to total assets (EBtTA) - It measures the true productivity of the firm's assets, independent of any tax or leverage factors.
- iii. Return on the market value of equity (RPS) – this is the market assessment of the firm from investor's perspective.
- iv. Return on book value of equity (ROE) - this compares earnings after tax available to equity shareholders to equity shareholders' investment in the firm.
- v. Book value to the market value ratio (BVtMV) this is also the market assessment of the firm from investor's perspective relative to a share's book value.
- vii. Growth in sales (GrSales) – this is the change in sales between conservative years. It gives to investors an idea of which direction a company is headed for in terms of generating revenue and cash.
- viii. Asset turnover ratio (AssTurn) - the asset turnover ratio evaluates how well a company is utilizing its assets to produce revenue.

4.7.2 Capital structure variables

Capital structure variable captured lender's investment in the firm relative to that of shareholders. The capital structure reflects how the capital invested among the assets of the firm, short and long term, is packaged between lenders and owners. This affects risk sharing between shareholders and debt holders; and subsequent sharing of earnings generated from the firm's assets. The capital structure variables to choose from include the ratio of debt to equity; debt to total capital (equity plus debt); current ratio; quick ratio; interest coverage ratio; fixed charge's coverage ratio; cash fixed charges coverage ratio; long-term debt to the total debt ratio; the total

debt to the total asset ratio, public debt to the total debt ratio; private debt to the total debt ratio. However, in this study the following debt ratios were used:

- i. Interest covers ratio(InCovR)- The interest coverage ratio is calculated by dividing a company's earnings before interest and taxes (EBIT) by the company's interest expenses for the same period, and is calculated as follows: Interest coverage ratio = $EBIT / \text{Interest expenses}$.
- ii. Long-term debt to the equity market value ratio (LtD/EQMV) - This book value of long-term debt divided by market value of equity indicates the extent to which the amount contributed by debt holders is protected by the amount contributed by shareholders at market value.
- iii. Long-term debt to the equity book value ratio (LtD/EQBV) -This is the book estimate of the debt ratio, obtained by dividing the book value of debt by the book values of equity plus the book value of debt.
- iv. Total debt to the total asset ratio (TDtTA) – this is a leverage ratio that defines the total amount of debt relative to assets. It allows for the comparisons of leverage to be made across different firms. A higher the degree of leverage signifies the financial risk. This is a broad ratio that includes long-term and short-term debt (borrowings maturing within one year), as well as all assets – tangible and intangible.
- v. Equity book value to the total debt ratio (EQBVtTD) - This is a financial ratio indicating the relative proportion of shareholder's at book value and debt (short and long-term debt used to finance a company's assets. Closely related to leveraging, the ratio is also known as risk or gearing at equity book value.
- vi. Equity market value to the total debt ratio (EQMVtTD) - This is a financial ratio indicating the relative proportion of shareholder's investment at market value and debt (short and long-term debt used to finance a company's assets. Closely related to leveraging, the ratio is also known as risk, gearing at equity market value.

4.7.3 Variable change in CEO

There is a change in CEO when a new CEO takes over. This is categorical variable that capture, both change and no change over the period of the study.

4.7.4 Control variables

Board size is the number of board members expressed in log form. The variable that captures CEO duality, where the CEO chairs board meetings, is a categorical variable. Board composition variable is the ratio between independent and all directors. The other control variables are the firm size which is the log of market value of equity; and industry which is a categorical variable.

The other variables that influence change in CEO and therefore, handled as control variables are ownership structure and ownership type. In this study given the nature of data and that panel data will be employed, the only control variable used is ownership structure to capture concentrated and dispersed ownership (Morck, 2007).

Caixe and Krauter (2013) asserted that the accumulation of shares by the controller(s) can affect corporate performance due to both the alignment (or incentive) effect and the entrenchment effect. The presence of large shareholders enhances the effectiveness of management monitoring. However, very high levels of ownership concentration allow controllers to dominate the corporation's decision-making process, which could result in the expropriation of wealth from minority shareholders.

4.7.5 Classification of variables

Two sets of variables, dependent and independent variables were employed in this study. Independent variable has been potential to influence the dependent variable. Performance can be a dependent variable, such that poor performance requires a response. The response (independent variable) might include asset restructuring i.e. selling and investing in assets; scaling down the level of operations; employee layoff; debt restructuring and changing top management (Panicker & Manimala, 2011: 3 - 4).

The responses are independent variables because they are assumed to be having an influencing effect on the dependent variable. In this study, depending upon the hypothesis being examined, the dependent variables will be performance when the impact of debt capital on performance is being examined; debt capital when the impact of performance on debt capital is being examined; change of CEO, when debt capital and performance are considered as influencing change in

CEO. In the bi-directional analysis of the relationship between capital structure and performance, the variables are both dependent and independent.

4.8 Methods of analysis

4.8.1 Introduction

In the first and second hypothesis, canonical correlation is used to test the bi-directional relationship between capital structure and performance; and to select appropriate indicators of performance and capital structure indicators for use in subsequent hypothesis tests. After selecting the indicators, general linear model (GLM) and Generalised estimating equations (GEE) were used to test the hypotheses. To the researcher's knowledge, canonical correlation, GLM and GEE, model has not been used to address capital structure issues in emerging economies despite their conceptual appeal.

4.8.2 Canonical correlation

Canonical Correlation was used to determine whether capital structure and performance are independent of one another. Studies on capital structure reviewed in chapters 2 and 3 are inconclusive due to their empirical shortcomings: 'Empirically, these theories have experienced both successes and challenges. Each view succeeds in explaining a number of broad patterns in ascertained capital structure. However, neither view has succeeded in explaining much of the observed heterogeneity in capital structures, leverage changes, nor security issuance decisions' (Graham & Leary, 2011). Graham and Leary(2011) add that in some instances, the problem lies not in the models themselves, but in our empirical measures of leverage and proxies for firm characteristics (*such as performance indicators*), or biased estimates of model parameters, and recommends that richer features of financial contracts should be considered.

In determining the relationship between performance and leverage (capital structure), this study identified latent relationships by building composites of variables rather than the individual variables using competing indicators of capital structure and performance. This was to determine whether capital structure and performance are independent of one another. The logic of composite variables is that investors when evaluating firms to make investment decisions

examine both income and balance sheet ratios and not just a single ratio. At the same time, investors rely on a battery of performance indicators that include accounting and market performance indicators. The relevant equations are:

$$Performance_i = \alpha_i + \beta_i CapitalStructure_i + \epsilon_i \dots \dots \dots \text{Equation 4.1}$$

Where:

α is a constant; β is the coefficient generated by regression and ϵ is the error term, and the reverse equation is:

$$Capital Structure_i = \alpha_i + \beta_i Performance_i + \epsilon_i \dots \dots \dots \text{Equation} \dots \dots \dots 4.2$$

Again, α is a constant; β is the coefficient generated by regression and ϵ is the error term

Since the interest in this study is to compute the (simultaneous) relationship between five measures of performance with five measures of capital structure, canonical correlation was the appropriate method of analysis. Canonical correlation is a procedure for assessing the relationship between variables (Huang, Lee & Hsiao, 2009; Wolfgang & Samir, 2007). Canonical correlation allowed us to investigate the relationship between two sets of variables. Canonical correlation is appropriate for it allows for the assessment of the relationship between metric independent variables and multiple dependent measures (Tacq, 1997).

The importance of and sense in the canonical correlation analysis is derived from the regression analysis. In multiple regressions, there is only one dependent variable, and a set of independent variables; in the case of canonical correlation, there is an entire set of dependent and independent variables. Therefore, canonical correlation is an attempt to find a linear combination between dependent and independent variables in such a way that the two are maximally correlated.

The seven performance indicators were: book value to the market value ratio (BtM), earnings before tax and interest to total assets (EBtTA), return on total assets (ROTA); return on book value of equity (ROE), return on the market value of equity or return per share (RPS); growth in

sales (GrSales), return on equity (ROE return), and the asset turnover ratio (AssTurn). The six capital structure indicators were: interest covers - times (InCovR), long-term debt to the equity market value ratio (LtD/EQMV), long-term debt to the equity book value ratio (LtD/EQBV), the total debt to the total asset ratio (TDtTA); equity book value to the total debt ratio (EQBVtTD), and equity market value to the total debt ratio (EQMVtTD).are as presented in Table 4.3.

Table 4.3: Summary of variables used canonical correlation analysis

Capital Structure Variables:	Measurement Level	Variable Type
Interest Cover Ratio (InCovR)	Continuous (Times)	Independent /Dependent Variable
Long term debt to equity market value ratio (LtD/EQMV)	Continuous (Times)	Independent/Dependent Variable
Long term debt to equity book value ratio (LtD/EQBV)	Continuous (Times)	Independent Variable/Dependent
Total debt to total assets ratio (TDtTA)	Continuous (Times)	Independent Variable/Dependent
Equity book value to total debt ratio (EQBVtTD)	Continuous (Times)	Independent Variable/Dependent
Equity market value to total debt ratio (EQMVtTD)	Continuous (Times)	Independent Variable/Dependent
Performance Variables:		
Book value to market value ratio (BtM)	Continuous (Times)	Independent/Dependent Variable
Earnings before tax and interest to total assets (EBtTA)	Continuous (Times)	Independent/Dependent Variable
Return on Total Assets (ROTA)	Continuous (Times)	Independent /Dependent Variable
Return on Book Value of Equity (ROE)	Continuous (Times)	Independent/ Dependent Variable
Return on Market Value of Equity (RPS)	Continuous (Times).	Independent/Dependent Variable
Growth in Sales (GrSales)	Continuous (Times)	Independent/Dependent Variable
Asset turnover ratio (AssTurn)	Continuous (Times)	Independent/Dependent Variable

(Source: Author)

The two theoretical concepts, performance and capital structure are the canonical variables. The correlation between the two is known as canonical correlation. The first canonical variable performance is measured by p = seven (7) indicators, from book value to the market value ratio to the asset turnover ratio, and we consider performance* a linear combination of these seven variables. The idea is to build a composite performance index consisting of seven performance indicators. In comparable mode, capital structure* which is the second canonical variable, is also a linear combination of q = six (6) indicators, interest cover – times to total debt to the total asset ratio. (See the Figure 4.2).

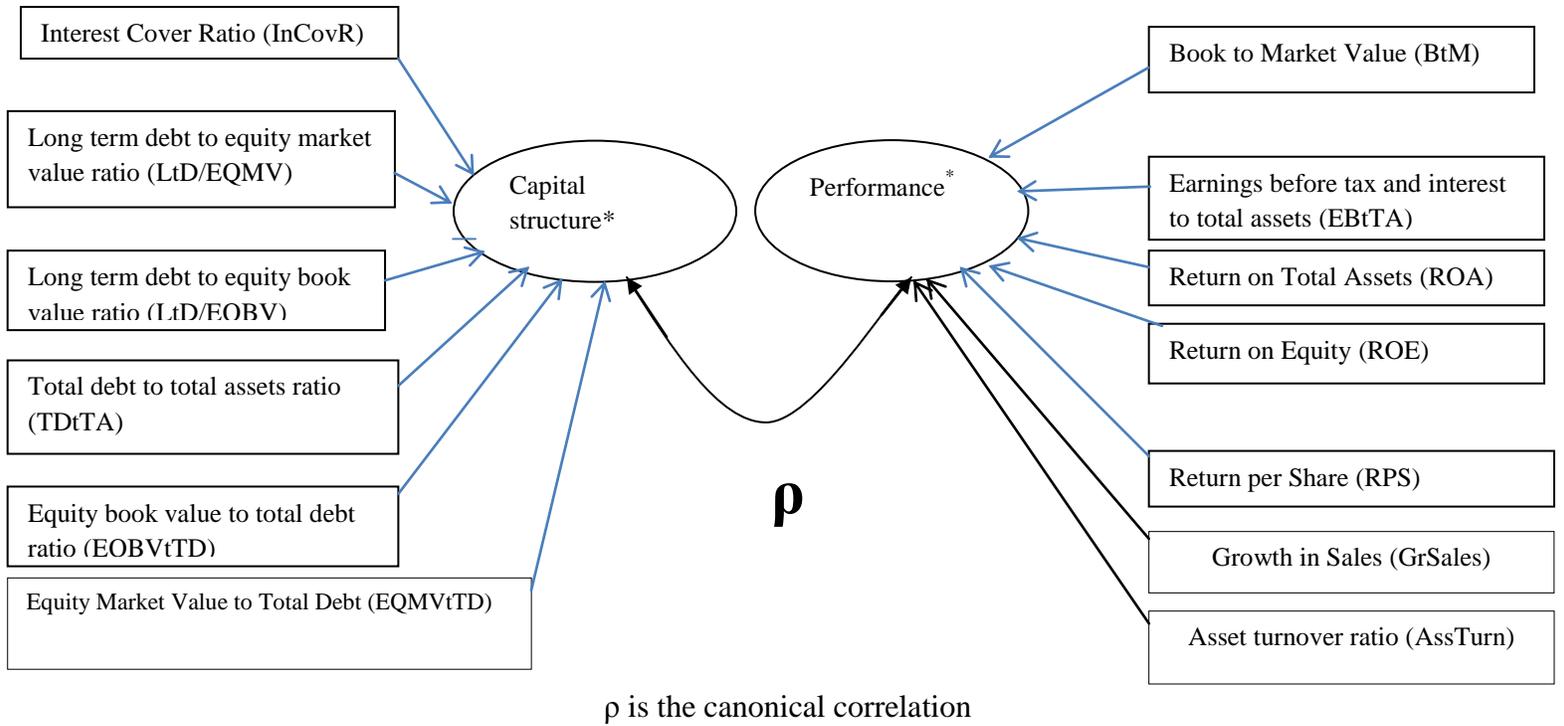


Figure 4.2: Casual canonical correlation - Capital structure and performance variables
 (Source: Author)

The set of two variables too are each presented by a linear combination in the form:

$$\text{Capital Structure}^* = \alpha_1 \text{InCovR} + \alpha_2 \text{LtD/EQMV} + \alpha_3 \text{LtD/EOBV} + \alpha_4 \text{TDtTA} + \alpha_5 \text{EOBVtTD} + \alpha_6 \text{EQMVtTD}$$

$$\text{Performance}^* = \beta_1 \text{BtM} + \beta_2 \text{EBtTA} + \beta_3 \text{ROA} + \beta_4 \text{ROE} + \beta_5 \text{RPS} + \beta_6 \text{GrSales} + \beta_7 \text{AssTurn} \dots \dots \dots \text{Equation} \dots \dots \dots 4.3$$

The two linear combinations (canonical variables) Capital Structure* and Performance* are unknown that is, the question of causality remain an open one, it can be performance influencing capital structure or capital structure influencing performance or both (bidirectional relationship). The parameters, α and β or weights are generated through correlation analysis. Canonical correlation analysis chooses weights in such a way that the canonical correlation (ρ) is maximal (Tacq, 1997). Based on canonical weights, we interpreted the association between capital structure and performance. The correlation between the primary variables and canonical variables (structure correlations) often offers better possibilities for interpretation (Hair,

Anderson, Tatham & Black, 2010). Of interest and important to the researcher is that the structure correlations help in determination of which of the primary variables contribute most to original canonical variables.

In order to confirm the association between capital structure and performance various canonical correlation statistics were computed and interpreted. The statistics interpreted were: level of significance, magnitude of the canonical correlation of the relationship between capital structure and performance, and the redundancy measure of shared variance. In addition, there was a need to interpret the canonical variate, canonical weights (standardised coefficients), canonical loadings (structure correlations), and canonical cross-loadings to support a holistic and credible conclusion (Wolfgang & Léopold, 2007). By default, statistical packages such as statistical analysis system (SAS) and STATA test all the canonical dimensions together, listing four multivariate test statistics and their significance levels. In this study, SAS was used to generate Pearson and canonical correlation coefficients.

Our null hypothesis was that the two sets of variables describing capital structure and performance are not related, i.e. the canonical correlation is not different from zero (0). The outputs of canonical correlation analysis include:

- Canonical correlation's coefficients (raw correlations or canonical variates) – these are Pearson's correlations of the pairs of canonical variates for capital structure and performance variables. These tell us the dimensions that set of variables of performance, and capital structure has in common. These are always nonnegative. The number of canonical dimensions is equal to the number of variables in the smaller set; in our case capital structure, have fewer variables (six) while performance has seven variables; therefore, the result is six canonical dimensions (Shore, 2005).
- Adjusted canonical correlations - are asymptotically less biased than the raw correlations and can be negative. The adjusted canonical correlations might not be computable, and they are displayed as missing values if two canonical correlations are nearly equal or if

some are close to zero. A missing value is shown if an adjusted canonical correlation is larger than a previous adjusted canonical correlation. (Shore, 2005, Lawley, 1959).

- The approximate standard errors of the canonical correlations (Shore, 2005).
- Eigen values of $INV(E) * H$, which are equal to $CanRsq / (1 - CanRsq)$, where $CanRsq$ is the corresponding squared canonical correlation. Additionally, to be displayed for each eigen value is the difference from the next eigen value, the proportion of the sum of the eigen values, and the cumulative proportion (Shore, 2005).
- Likelihood Ratio - this confirms the hypothesis that the current canonical correlation and all smaller ones are zero in the population. The likelihood ratio for all canonical correlations equals Wilks' lambda (Shore, 2005).
- Approx. F statistic is based on Rao's approximation to the distribution of the likelihood ratio (Shore, 2005; Rao, 1973).
- Num DF and Den DF (numerator and denominator degrees of freedom) and $Pr > F$ (probability level) associated with the F statistic (Shore, 2005).
- Multivariate statistics, also known as multivariate tests, are tests for the null hypothesis that all canonical correlations are zero in the population:
 - Wilks' lambda;
 - Pillai's trace;
 - Hotelling-Lawley trace;
 - Roy's greatest root;

and for each multivariate statistic, the following statistics are displayed:

- F approximation or upper bound
- Num DF, the numerator degrees of freedom
- Den DF, the denominator degrees of freedom
- $Pr > F$, the probability level
- Raw (unstandardised) and standardised canonical coefficients normalized to give canonical variables with unit variance.

- Four canonical structure matrices, giving correlations between the canonical variables and the original variables
- The canonical redundancy analysis that include raw (unstandardised) and standardised variance and cumulative proportion of the variance of each set of variables explained by their own canonical variables and explained by the opposite canonical variables (Shore, 2005).

4.8.3 Modeling performance, leverage and change in CEO

The assertion in the statement of this study's problem was that debt capital is said to reduce agency costs or induce agency benefits, only if there are noticeable differences in performance across distinct levels of capital structure. Capital structure is relevant if the difference in capital structure is evident across different levels of performance. Therefore, managers would consider performance in managing debt levels and vice versa.

Debt capital is an effective corporate governance mechanism if it has a noticeable effect on corporate performance and influence on change on CEO. As an example, if debt capital positively influences replacement of CEOs, then firms are advised to have debt as part of capital. To establish the role of debt to corporate governance, both performance variables and capital structure variables are subjected to group analysis. In group analysis, data is sorted by an observable variable and the mean values of the dependent variable in the resulting ranked groups are compared. The test power of group analysis is maximised when the two extreme groups each contained 27 percent over the sample (Lys & Sabino, 1992).

4.8.4 Variables - performance, leverage and change in CEO

In modeling the relationship among performance, leverage and change in CEOs the indicators to be relied on are presented in Table 4.4.

Table 4.4: Summary of Variables for general linear model (GLM) and Generalised estimating equations (GEE).

VARIABLE	MEASUREMENT	COMMENT
Change In Top Management (Δ CEO)	Binary ¹ 1=Yes; 0 = No	Dependent ⁵ Variable
PERFORMANCE AND CAPITAL STRUCTURE MEASUREMENTS		
Book to Market Value (BtM)	Continuous ² ; but converted into ordinal variable/ Categorical ³	Dependent ⁵ Variable / Independent ⁶ variable
Asset turnover ratio (AssTurn)	Continuous ² ; but converted into ordinal variable/ Categorical ³	Dependent ⁵ Variable / Independent ⁶ variable
Total debt to total assets ratio (TDtTA)	Continuous ² ; but converted into ordinal variable/ ” Categorical ³	Dependent ⁵ Variable / Independent ⁶ variable
Control Factors		
Industry indicators (Ind)	Nominal: 1=Agricultural; 2 =Commercial; 3 = Industrials	Independent ⁶ variable / Control ⁷ variable
Firm size (FSize)	Ordinal. Log of Total Assets	Independent ⁶ variable/ Control ⁷ variable
Ownership Structure -state, legal persons (institutions), and domestic individuals	Ordinal. Percentage	Independent ⁶ variable/ Control ⁷ variable
Year	Continuous ²	Independent ⁶ variable/ Control ⁷ variable

(Source: Author)

Continuous² variable is a variable that is not restricted to particular values (other than limited by the accuracy of the measuring instrument).

Categorical³ Variable is usually an independent or predictor variable that contains values indicating membership in one of the several possible categories, for example, gender (male or female). The categories are often assigned numerical values used as labels, for instance, 0 = male; 1 = female; its synonym is nominal variable or a factor.

Nominal⁴ is the synonym for categorical variable.

*Dependent*⁵ variable is the presumed effect in an experimental study. The values of the dependent variable depend upon another variable, the independent variable. Strictly speaking, “dependent variable” should not be used when writing about non experimental designs.

*Independent*⁶ variable is the presumed cause in an experimental study. All other variables that may impact the dependent variable are controlled. The values of the independent variable are under experimenter control.

*Control*⁷ variable is an extraneous variable that an investigator does not wish to examine in a study. Thus the investigator controls this variable.

4.8.5 General linear model (GLM)

The use of GLM and canonical correlation in examining the relationship between capital structure and performance is to make sure that the findings are independent of the model. General linear models (GLM) synthesis and extend familiar regression models such as the linear models (Taylor, 2011; Nelder & Wedderburn, 1972; McCullagh& Nelder, 1989). The GLM provides regression analysis and analysis of variance for one dependent variable by one or more factors and/or variables (Taylor, 2011; Norusis, 2004; Horton, 1978). The factor variables divide the population/sample into groups; and GLM is then used to test null hypotheses about the effects of other variables on the means of various groupings of a single dependent variable.

At this stage of analysis, and in this model, the dependent variable which is either capital structure variable or performance variable, depending on hypothesis being tested, is a covariate; however, the independent variable that defined groups is a factor; that is, dichotomous, nominal, ordinal, or grouped interval. After grouping the variables into different categories, general linear model (GLM) is used to examine the bi-directional relationship between capital structure and performance. The GLM generated the coefficients for the following equations:

$$Performance_i = \alpha_i + \beta_i CapitalStructure_i + \beta_i ControlVariables_i + \mathcal{E}_i \dots \text{Equation} \dots 4.4$$

$$Capital Structure_i = \alpha_i + \beta_i Performance_i + \beta_i ControlVariables_i + \mathcal{E}_i \dots \text{Equation} \dots 4.5$$

α is a constant; β is the coefficient generated by GLM regression and \mathcal{E} is the error term.

The control variables are presented in table 4.4. The GLM procedure provided both regression analysis and analysis of variance of categorised variables. The GLM procedure tested the null hypothesis about the effect of capital structure indicator and ownership structure on performance as captured by equation 4.3. The GLM procedure tested the null hypothesis about the effect of performance and ownership structure on capital structure, again this is original to this study as captured in equation 4.4.

To derive the factor's from the variable, groups were formed within each variable. From the indicator of capital structure, we had low, medium and high leverage; and for performance, we had poor, average and above-average or low medium and high turnover. Using this general linear model procedure, the null hypotheses were tested for the effects of grouped independent variables on a single dependent variable. With GLM, you can investigate interactions between factors as well as the effects of individual factors, some of which may be random. In addition, the effects of a covariate and covariate interactions with factors can be included. For regression analysis, the independent (predictor) variables were specified as covariate.

The output of GLM univariate procedure includes (Taylor, 2011; Norusis, 2004; Horton, 1978):

- Descriptive statistics for each combination of factors in the model; test of homogeneity of the variances that tests the null hypothesis that the variance of the error term is constant across the cells defined by the combination of factor levels;
- Post Hoc Tests, which is the tests of between-subjects effects, help you to determine the significance of a factor. They do not indicate how the levels of a factor differ, but show the differences in model-predicted means for each pair of factor levels;
- Estimated marginal means specify the mean response for each factor adjusted for any other variables within the model and is useful for exploring the possible interaction effect between factors. There are also tests of between-subjects effects, that is, analysis of variance, such that each term in the model, plus the model as a whole is tested for its ability to account for variation in the dependent variable.

The statistics used to interpret tests of between-subjects effects were: p-value with a cut of value of 0.05; r – square and adjusted r - square; the partial eta squared statistic that reports the "practical" significance of each term; and the variation left to error. Larger values of partial eta squared indicate a greater amount of variation accounted for by the model term, to a maximum of 1. This is necessary given that individual terms, might be statistically significant, do not have great effect on the value of dependent variable (lack practical value).

A general linear model (GLM) synthesises and extends familiar regression models to include grouped data (Elder & Wedderburn, 1972; McCullagh & Nelder, 1989). The three components in GLM: a random component, specifying the conditional distribution of the response variable; Y_i (for the i th of n independently sampled observations); and the values of the explanatory variables in the model. In the initial formulation of GLMs, the distribution of Y_i is a member of an exponential family, the Gaussian (normal), binomial, Poisson, gamma, or inverse-Gaussian families of distributions.

4.8.6 Generalised estimating equation (GEE)

To quote Cui (2007:1) ‘the generalised estimating equation (GEE) approach is a widely used statistical method in the analysis of longitudinal data in clinical and epidemiological studies. It is an extension of the generalised linear model (GLM) method to correlated data such that valid standard errors of the parameter estimates can be drawn. Unlike the GLM method, which is based on the maximum likelihood theory for independent observations, the GEE method is based on the quasi likelihood theory, and no assumption is made about the distribution of response observations. ‘Based on the results of canonical analysis above and using dominating original variables, hypothesis three, four and five were examined further using GEE.

The next stage was to examine the influence of performance and capital structure on change of CEO. In the statement of the problem, the thesis is that debt capital only becomes a relevant corporate governance mechanism if it has a noticeable effect on corporate governance, namely replacement of CEO’s in poorly performing firms. This requires a close examination of changes of CEO to establish how much of the change is explained by poor performance and how much change is attributed to debt capital, as this provides evidence on strength or deficiency of both

performance and capital structure as corporate governance variables on the NSE. The resulting three hypotheses were:

H₀₃: Firm performance does not have a significant effect on Change of CEO

H₁₃: Firm performance has a significant effect on Change of CEO.

H₀₄: Leverage does not have a significant effect on change of CEO.

H₁₄: Leverage has a significant effect on change of CEO.

H₀₅: Leverage and performance not have a significant effect on Change of CEO

H₁₅: Leverage and performance has a significant effect on Change of CEO.

The hypotheses were operationalised into three equations:

In equation form, the relationship is modeled as follows:

$$\Delta CEO_i = \alpha_i + \beta_i Performance_i + \beta_i CapitalStructure_i + \beta_i Ownership\ Structure_i + \mathcal{E}_i \dots \dots \dots \text{Equation 4.6}$$

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

Where α , β parameters to be estimated and \mathcal{E} is the error term.

$$\Delta CEO_i = \alpha_i + \beta_i Performance_i + \beta_i CapitalStructure_i + \beta_i (Performance \times Capital\ Structure)_i + \beta_i Control\ Variables_i + \mathcal{E}_i \dots \dots \dots \text{Equation 4.7}$$

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

Where α , β and \mathcal{E} the error term, parameters are estimated using GEE.

The GEE model takes the form of convergent causal structure because there are two causes (Sainani, 2010), performance and capital structure, along with a control variable, ownership

structure and one effect, change in CEO. The variable CEO is having two parts, change and no change in CEO. Generalised estimating equation (GEE) model, unlike OLS regression is appropriate at this stage of analysis because it allows for a binary dependent (response) variable; the dependent variable CEO is binary (coded 0 for no change in CEO or 1 for change in CEO).

Where outcomes are binary, 'It is inappropriate to model these outcomes using ordinary least-squares regression because such outcomes are always discrete and in no way mimic the interval-level the dependent variables which OLS analysis requires' (Sanders & Brynin, 2003:15). Studies have employed logistic regression in studies where the dependent variable is binary; logistic regression is based on the impact of an increase in one variable on the probability that the outcome under analysis will occur that is, it predicts the probability of change rather than the amount of probable change (Sanders & Brynin, 2003:15). However, in this study logistic regression is inappropriate because we have repeated measures (panel data) for each firm in the sample.

The use of panel data also referred to as repeated measurement simply multiple responses for each firm sampled. Time as a variable is a factor in the analysis. Panel data is potentially correlated within cluster and require attention during the analysis. Under such circumstances generalised estimating equation (GEE) is considered appropriate in handling correlated data. The GEE procedure extends the generalised linear model to allow for analysis of repeated measurements or other correlated observations, such as clustered data. The GEE specifies how on average a response variable of a subject change with covariate and factors while allowing for the correlation between repeated measurements on the same subject *over time* (Hardin & Hilbe, 2003; Diggle, Heagerty, Liang, & Zeger, 2002; Pan, 2001; McCullagh & Nelder 1989; Liang & Zeger, 1986).

In GEE model, we have within subject variables and subject variables and therefore, repeated measures. The combination of values of the within-subject variables defines the ordering of measurements within subjects; thus, the combination of within-subject and subject variables uniquely defines each measurement. The output of GEE procedure depends on the statistical software used and the researcher's specifications as in Landau and Everitt (2003), but in this study, the selected outputs reported are:

- **Model information**

The model information table summarizes research modeling selections, which is useful for making sure the procedure fit the model that you intended to generate. It shows a summary of the number of levels, number of subjects, and number of measurements per subject and correlation matrix dimension.

- **Correlated data summary**

The correlated data summary provides information concerning the repeated measures' specifications. In the summary, the minimum and maximum number of measurements per subject equals the number of levels of the within-subject effect; this tells you there is complete information for each subject. It shows the correlation matrix dimensions, and the dimension of the correlation matrix should equal the product of the levels of the within-subject effects.

- **Categorical variable information**

This capture the dependent and independent variable at factor levels. The factor variables are covariates turned into factors. CEO is the dependent variable at two levels, change in CEO and no change in CEO. The factors are: categorised ownership structure, which consisted of shareholdings of 20percentto 50percent (associate), shareholdings of 51 percent to 100 percent (subsidiary), and shareholdings below 20percent (trade investment). Next is categorised capital structure, which consisted of high leverage, medium leverage and low leverage. Last is categorized performance, which consisted of a negative, constant and positive or low medium or high. The factors and independent variables are presented in terms of the number of cases.

- **Goodness of fit**

The usual concept of the likelihood function does not apply to generalised estimating equations; thus, the usual goodness of fit statistics cannot be computed. Instead, these information criteria based on a generalization of the likelihood are computed. The Quasi-likelihood Model Criterion (QIC) can be used to choose between two correlation

structures, given a set of model terms. The structure that obtains the smaller QIC is "better" according to this criterion.

- **Working correlation matrix**

This correlation matrix represents the within-subject dependencies. Its size is determined by the number of measurements and thus the combination of values of within-subject variables. You can specify one of the following structures:

- **Independent.** Under this model repeated measurements are uncorrelated.
- **AR (1).** Repeated measurements have a first-order autoregressive relationship. The correlation between any two elements is ρ for adjacent elements, ρ^2 for elements that are separated by a third element, and so on; ρ is constrained so that $-1 < \rho < 1$.
- **Exchangeable.** This structure has homogenous correlations between elements. It is also known as a compound symmetry structure.
- **M-dependent.** Consecutive measurements have a common correlation coefficient, pairs of measurements separated by a third have a common correlation coefficient, and so on, through pairs of measurements separated by $m-1$ other measurements. Measurements with greater separation are assumed to be uncorrelated. When choosing this structure, specify a value of m less than the order of the working correlation matrix.
- **Unstructured.** This is a completely general correlation matrix.

By default, the procedure will adjust the correlation estimates by the number of non-redundant parameters. Removing this adjustment may be desirable if you want the estimates to be invariant to subject-level replication changes in the data. However, in this study the Quasi-likelihood under Independence Model Criterion (QIC) is used to help choose between correlation structures, given a set of model terms (Gosho, 2014; Pan,

2001). The structure that obtains the smaller QIC is "better" according to this criterion and adopted in the study. The computation of the QICC assumes that the distribution, link function, and working correlation matrix specifications are all "correct" for the data set.

- **Parameter estimates**

The GEE generated parameter estimates that are useful in deriving a sense from the model. The focus of GEE method is the estimation of regression parameters that have a population average interpretation together with the correlation structures that are treated as a nuisance (Weiss 2005). The mean and variance of the response variable are specified by one of the distribution functions in the exponential family. The distribution functions were binomial, gamma, inverse gaussian, multinomial, negative binomial, normal, Poisson, and tweedy distribution's (Cui, 2007: 211).

In this study, binomial distribution is assumed. Binomial distribution is appropriate only for variables that represent a binary response or number of events. From this, one can identify the link function and because the binomial distribution is adopted, the link function in this study is logit, $f(x) = \log(x / (1-x))$.

The estimates are the ordered log-odds (logit) regression coefficients. Standard interpretation of the ordered logit coefficient is that for a one-unit increase in the predictor, the response variable level is expected to change by its respective regression coefficient in the ordered log-odds scale, assuming that the other variables in the model are held constant. Interpretation of the ordered logit estimates is not dependent on the ancillary parameters. The ancillary parameters are used to differentiate the adjacent levels of the response variable. The odd's ratios of the predictors are calculated by exponentiation of the estimate.

- **Interpretation of model parameter estimates**

If we take into account the specific group variables used in this study, the parameter estimate is generated for the model below:

$$g(\mu) = \log\left(\frac{\mu}{1-\mu}\right) = \Delta CEO = \alpha + \beta_1 \text{Shareholdings } 20\% \text{ to } 50\% + \beta_2 \text{Shareholdings } 51\% \text{ to } 100\% + \beta_3 \text{Shareholdings below } 20\% + \beta_4 \text{High Leverage} + \beta_5 \text{Medium Leverage} + \beta_6 \text{Low Leverage} + \beta_7 \text{Above Average Performance} + \beta_8 \text{Average Performance} + \beta_9 \text{Below Average Performance} + \varepsilon_1 \dots \dots \dots \text{Equation 4.8}$$

51% to 100% + β_3 Shareholdings below 20% + β_4 High Leverage + β_5 Medium Leverage + β_6 Low Leverage + β_7 Above Average Performance + β_8 Average Performance + β_9 Below Average Performance + ε_1Equation 4.8

Note: the default in GEE is to use the first level, for example, example, below average performance and low leverage as the reference group. However, you can reorder the levels using the re-level command; moreover, reference group will not appear in the generated model.

The estimates are the ordered log-odds (logit) regression coefficients. Standard interpretation of the ordered logit coefficient is that for a one-unit increase in the predictor, the response variable level is expected to change by its respective regression coefficient in the ordered log-odds scale while the other variables in the model are held constant. Interpretation of the ordered logit estimates is not dependent on the ancillary parameters; the ancillary parameters are used to differentiate the adjacent levels of the response variable. The odds' ratios of the predictors are calculated by exponentiating the estimate and the interpretation are that, the change in the odds it represents the outcome (change in CEO) (multiplicatively) by increasing x (independent variable) by one unit. In summary:

- If $\beta = 0$, the odds and probability are the same at all x levels ($e^\beta = 1$)
- If $\beta > 0$, the odds and probability increase as x increases ($e^\beta > 1$)
- If $\beta < 0$, the odds and probability decrease as x increases ($e^\beta < 1$)

GEE observation statistics

The following statistics were requested and provided:

- The estimates are the ordered log-odds (logit) regression coefficients, β and $exp(\beta)$
- Wald chi-square test statistic that tests the null hypothesis that the estimates reported, β and $exp(\beta)$ equals 0.

- The degrees of freedom for each of the tests of the coefficients will be provided. For each parameter estimated in the model, one DF is required, and the DF defines the Chi-Square distribution to test whether the individual regression coefficient is zero given the other variables are in the model.
- Significance Levels - These are the p-values of the coefficients or the probabilities that, within a given model, the null hypothesis states that a particular predictor's regression coefficient is zero after taking into account other predictors in the model. They are based on the Wald test statistics of the predictors. The probability that a particular Wald test statistic is as extreme as or more so, than what has been observed under the null hypothesis is defined by the p-value, and we set our alpha level to 0.05.
- The standard errors of the individual regression coefficients are used in the calculation of the Wald test statistic and the confidence interval of the regression coefficient.
- The Confidence Interval (CI) for an individual regression coefficient given the other predictors is in the model. For a given predictor with a level of 95 percent confidence, that is, we are 95 percent confident that the "true" population regression coefficient lies in between the lower and upper limit of the interval.

Overall, the tests are to determine whether some of the regression parameters are different from 0, any parameter to a value of zero (0) have no information content.

4.9 Chapter summary

Literature has been used to inform the study, and the study set out to test pre-existing theory using a different data set, through the use of a hypothesis; it is to rely upon quantitative data, to discover and understand the role of debt capital and how debt capital levels are set on the NSE. In addition large data is available. Therefore, in terms of research philosophy, this study adopts a positivist position to address the research problem and research objectives. This chapter explained the research philosophy, approach, design and methods used to address the research problem and research objectives. It explained how the bi-directional relationship between capital

structure and performance was examined and reported; and the extent to which poor performance and capital structure influence change in CEO was established.

A total of five (5) hypotheses are tested using a sample of firms listed on the NSE. The appropriate research design to discover or establish the existence of or confirm a relationship between performance, capital structure and change in CEO, is correlation design. The population, and therefore, unit of analysis will be 61 firms listed on the NSE, over the period 1990 to 2012. The 2013 data is excluded because some of these firms delay releasing their annual reports. However, using purposive sampling, financial institutions due to their unique capital structure are dropped, and this leaves a sample of 44 firms. The study used panel data, such that each company appeared 23 times, leaving 44 firms that translate into expected 1012 (44×23) possible CEO years, depending on availability of data.

The practical circumstances and the logical output of literature review in chapters two and three favors the use secondary data collected from audited reports of the firm in the sample and from the official records of the NSE. Construct validity is attained through literature search and adopting standard definitions of performance, capital structure and change in CEO in authoritative studies. This approach takes care of content validity concerns.

In this study, the following capital structure indicators used are interest cover ratio, long-term debt to equity market value, long-term debt to equity book value, long-term debt to equity market value, equity book value to total debt, and equity market value to total debt; while the performance indicators used are return on total assets, earnings before tax and interest to total assets, return on the market value of equity, return on book value of equity, book value to market value ratio, growth in sales, and the asset turnover ratio. Data on these variables are to be collected for the period 1990 to 2012.

The data collected was subjected to statistical analyses using the following three techniques (methods): canonical correlation; general linear model (GLM); and generalised estimating equation (GEE). In testing the bi-directional relationship between capital structure and performance, the interest is to compute the (simultaneous) relationship between seven measures

of performance with six measures of capital structure; canonical correlation would be the appropriate method of analysis. Canonical correlation allowed us to investigate the relationship between *two sets* of variables. However, canonical correlation analysis is only informative to the extent that it informs us that there is a correlation between performance and capital structure; and just like ordinary least regression (OLS), will not enable us to establish whether the effect of capital structure on performance matter between different capital choices or whether the effect of performance on capital structure matter across different performance levels. To examine whether the effect of performance on capital structure or capital structure on performance matter across the different performance levels general linear model (GLM) is employed.

The findings are presented in the next three chapters: chapters 5 are results of canonical correlation analysis from bi-directional relationship between capital structure and performance; and the selection of capital structure variables and performance variables. The selected variables were used for further analysis in chapter 6 and chapter 7. Chapters 6 presented the results of bi-directional relationship between capital structure and performance; and chapter 7 is the result of the model used to predict the change in CEO if performance and capital structure as predictor variables.

CHAPTER 5:

CANONICAL CORRELATION BETWEEN CAPITAL STRUCTURE AND FIRM PERFORMANCE

5.1 Introduction

This chapter examined the relationship between capital structure and performance. It tested the extent to which capital structure might contribute to corporate governance and enhance performance and the extent to which performance influence usage of debt capital by firms. Alternative indicators of both capital structure and performance exist within the literature, but it is important that the choice of performance and capital structure indicators is not arbitrarily chosen. Studies that build a relationship between capital structure, and performance should justify their choice of performance and capital structure indicators (Michel, Oded& Shaked, 2014; Atkinson, Kaplan, Matsumura & Young, 2007; Kaplan, 1994). Similar studies do not come out clear why they prefer the return on assets and not return per share as a performance indicator, or long-term debt to equity and not long-term debt to total assets as a measure of capital structure (Abad & Abu Rub, 2012; Abu Rub, 2012; Azhagaiah and Gavoury, 2011; Ebaid, 2009; Margaritis & Psillak, 2010; Carvalho, de Mesquit & Lara, 2003). An aspect of the originality in this study is that the choice of capital structure and performance indicators using canonical correlation, because it is the first study, the researcher is aware that the choice of performance and capital structure indicator is based on the strength in which that indicator explains the opposite indicator.

This chapter identified best indicators of performance and capital structure from a list of substitute indicators and proceeds to use the identified indicators to explore the bidirectional relationship between performance and capital structure. The data set cover 23 years, for each company, from 1990 to 2012, for the 37 firms listed on the NSE. It employed canonical correlation analysis to simultaneously predict multiple dependent variables from multiple independent variables because canonical correlation is technique available for examining relationships with multiple dependent variables (Hair, Anderson, Tatham & Black,

2010). Canonical correlation helped in answering the following question: How are the best linear combinations of capital structure variables related to the best linear combinations of the performance variables? Which are the best indicators, from original variables, of performance and capital structure? The answers to these questions help select relevant indicators that best describe the relationship between capital structure and performance from a list of competing indicators. The canonical correlation reconnoiters the relationship between capital structure and performance, before subjecting the data to additional analysis.

The hypotheses tested in this chapter are:

H₀₁: Firm performance does not have a significant effect on leverage, and alternative

H₁₁: Firm performance has a significant effect on leverage;

and,

H₀₂: Leverage does not have a significant effect on firm performance; the alternative hypothesis being:

H₁₂: Leverage has a significant effect on firm performance.

Chapter five is organized as follows: In section 5.2, the description of the data and variables used to extract canonical correlations and identify competing capital structure and performance indicators are presented; in section 5.3, the measures of central tendency for capital structure and performance variables are presented; in section 5.4, Pearson's correlation coefficients for capital structure measures and performance are presented; in section 5.5, the canonical correlation analysis are presented; in section 5.6, raw canonical coefficients for the capital structure measurements are presented; in section 5.7, the standardised canonical coefficients for the capital structure measurements are presented; in section 5.8, standardized coefficient for performance measurements are presented; in section 5.9, the canonical loading are presented; in section 5.10 the correlations between the capital structure measurements and the canonical variables of the performance measurements are presented; in section 5.11, the correlations between the performance measurements and the canonical variables of the capital structure measurements are presented; in section 5.12, the results of canonical redundancy analysis are presented; in section 5.13, the validation and diagnosis of findings are presented; in section 5.14, the discussion of

findings are presented; in section 5.15, the theoretical and practical significance of the findings are presented; and section 5.16 is the summary of the chapter.

5.2 Performance and capital structure indicators

The data used throughout this analysis covered a period of 23 years for each company, unless the company was listed after 1990 or suspended in some periods. Assuming data is available for all firms the expected total observations or cases are 851 that is, (23 years *times* 37 firms). However, not all firms were listed in 1990; furthermore, some firms were suspended and the suspension either lifted or the firm is delisted, all these results into missing data. In some cases final accounts of some firms were not available. The analysis of each firm and year is conditional upon the availability of the data. In summary, the number of observations read was 851, number of observations used was 708 and the number of observations with missing values was 143.

The potential performance indicators to choose were: book value to market value ratio, earnings before tax and interest to total asset ratio, return on total asset ratio, return on book value of equity, return on the market value of equity, growth in sales and asset turnover ratio. The of capital structure indicators to choose were: interest covers ratio, long-term debt to equity market value, long-term debt to equity book value, total debt to total assets, equity book value to total debt, and equity market value to the total debt ratio.

Since the alternative capital structure measures and alternative performance measures appear to measure the same thing one may wonder which ratio is preferable and the argument is that ‘actually, each is acceptable. This chapter probed alternative capital structure and performance indicators by subjecting the alternative capital structure measures and alternative performance measures to canonical correlation analysis. At the end of this analysis one or two performance and capital structure indicators are identified for use in a further analysis in chapter six (6) and chapter seven (7).

5.3 Measures of central tendency – Capital structure and performance variables

The measures of central tendency of capital structure and performance variables are presented in Table 5.1. A central tendency is a typical value for a probability distribution. It is referred to as an average or just the center of the distribution, while the dispersion is contrasted with location or central tendency, and together the mean and standard deviation are the most-used properties of distributions. Operationally, the central tendency of a data set is the average value of a data set, as defined by the arithmetic mean, median, and mode.

Table 5.1: Measures of central tendency for Capital Structure and Performance Variables

Variable Name	Variable Label	Mean	Std Dev	Min	Max
Capital Structure Indicators:					
Interest Cover Ratio	InCovR	6.41	11.67	-35.05	86.73
Long Term Debt to Equity Market Value	LtD/EQMV	0.38	1.3	0	17.16
Long Term Debt to Equity Book Value	LtD/EQBV	0.25	0.81	-5.56	11.22
Total Debt to Total Assets	TDtTA	0.41	0.26	0	2.04
Equity Book Value to Total Debt	EQBVtTD	2.91	4.08	-0.22	32.11
Equity Market Value to Total Debt	EQMVtTD	4.45	7.94	0	88.52
Performance Indicators:					
Book value to market value Ratio	BtM	1.7	3.17	-1.69	42.89
Earnings Before Tax and Interest to Total Assets	EBtTA	0.1	0.14	-0.66	0.86
Return on Total Assets	ROTA	0.13	0.42	-6.51	5.71
Return on Book Value of Equity	ROE	0.08	0.43	-4.29	2.8
Return on Market Value of Equity	RPS	0.39	1.28	-0.98	16.84
Growth in Sales	GrSales	0.16	0.55	-0.89	11.38
Asset turnover ratio	AssTurn	1.12	0.92	0	10.19

(Source: Author)

For capital structure, the variables with the highest variation are the interest cover ratios (InCovR) with standard deviation of 11.67 a minimum cover of -35.05 and a maximum cover of 86.73. Equity book value to total debt (EQBVtTP) has a mean of 2.91 and standard deviation of

4.08 a minimum of -0.22 and a maximum of 32.11. Equity market value to total debt (EQMVtTP) has a mean of 4.45; a maximum of 0.00 and a maximum 88.52. The other aspect of capital structure is the ratio of total debt to total asset (TDtTA) with a mean 0.42. This implies that on average 42 percent of assets are financed using borrowed funds, and the rest is financed using equity. In this study, the calculation of total debt to the total asset ratio (TDtTA) includes both long-term debt and short-term debt as a measure of level of borrowing. The rest of capital structure measure showed less variability that is, standard deviation less than 1. This suggests an amount of uniformity in usage of debt by sampled firms.

The performance measures with a standard deviation of more than one (1) are book value to the market value ratio (BTM). The average of BTM ratio is 1.70 indicating that over 23 years that the study covered, market values were less than book values on average and that the market did not grow, despite the market return per share (RPS) boasting an average return of 39 percent. When a company like Safaricom issued its shares, immediately after the issue, the share prices declined from Shs. 5 to Shs. 2 and for a long time, the price was below both the issue price and the book value. The low book value to the market value ratio is an indicator of corporate governance limitations in this market. The other performance measures show a standard deviation of less than one but return per share (RPS) has a standard deviation of 1.28 of variations in market share prices. Some performance's indicators show unusual statistics. The maximum return per share is 16.83 percent while there is one firm with a return on assets of 570 percent and another with a loss of 651 percent. There are some cases in some years when firms show negative capital. However, the few extreme cases (outliers) are smoothed as a result of the large data set. The low standard deviation confirms this, and it appears that there are much fewer variations in these values.

5.4 Pearson correlation coefficients - capital structure measures and performance measures

The correlation coefficient tests the existence of a linear relationship between two variables measured on the same subject. When two variables are of a continuous nature, the measure of association most often used is Pearson's correlation coefficient. The association may be expressed through a number (the correlation coefficient) that range from -1 to +1. The

population correlation is in the form of a Greek letter $\rho(r)$, and the sample statistic (correlation coefficient) is r , while a t-test is utilized to determine if the correlation coefficient is “strong” or “significant” or not.

5.4.1 Pearson correlation coefficients for capital structure variables

The outputs of Pearson correlation coefficients (r) for alternative indicators of capital structure are presented in Table 5.2. The total numbers of cases used for this analysis are 708. For example, the correlation between interest cover ratio (InCovR) and total debt to total asset (TDtTA) is -0.163, or $r = -0.163$. The number under each correlation is a p-value that tests to see if r is statistically significant. In statistical terminology, this is a test of the following hypotheses:

$H_0: \rho = 0$ (the null hypothesis) and $H_a: \rho \neq 0$ (the alternative hypothesis). If the p-value for the test is small (usually less than 0.05), then the conclusion is that ρ is not 0, thus the relationship is *statistically* significant. In the case of the correlation between interest cover ratio (InCovR) and total debt to total asset (TDtTA) the p-value is $<.0001$, the conclusion is that ρ is *not* 0, thus the relationship is *statistically* significant; the interpretation is that as more debt is employed the interest cover ratio declines. It is recommended that a professional judgment is made to determine if the association is significant in terms of the experiment performed.

Table 5.2: Pearson correlation coefficients - Capital structure variables

Test of hypothesis: Prob> r under H0: Rho=0						
	InCovR	LtD_EQMV	LtD_EQBV	TDtTA	EQBVtTD	EQMVtTD
InCovR <i>p-value</i>	1					
LtD_EQMV <i>p-value</i>	-0.067 <i>0.0767</i>	1				
LtD_EQBV <i>p-value</i>	-0.076 <i>0.042</i>	0.359 <i><0.0001</i>	1			
TDtTA <i>p-value</i>	-0.163 <i><.0001</i>	0.326 <i><0.0001</i>	0.255 <i><0.0001</i>	1		
EQBVtTD <i>p-value</i>	0.014 <i>0.7065</i>	-0.164 <i><0.0001</i>	-0.177 <i><0.0001</i>	-0.590 <i><0.0001</i>	1	
EQMVtTD <i>p-value</i>	0.048 <i>0.201</i>	-0.151 <i><0.0001</i>	-0.132 <i><0.0004</i>	-0.400 <i><0.0001</i>	0.535 <i><0.0001</i>	1

In italics are P- values, level of significance. (N = 708)

(Source: Author)

The results presented in Table 5.2, show fewer larger within set correlations between capital structure variables. The correlation between long term debts to equity book value ratio (LtD_EQBV) and long-term debt to equity market value (LtD_EQMV) is 0.326 and statistically significant. The correlation between long-term debt to equity market value ratio (LtD_EQMV) and long-term debt to equity book value (LtD_EQBV) is 0.359 and statistically significant. The correlation between the equity book value to total debt (EQBVtTD) and total debt to the total asset ratio (TDtTA) is -0.590 and statistically significant. Overall, the correlations between most of capital structure variables are below 40 percent and statistically not significant. The meaning of this is that knowing the values in one of the capital structure measures might not tell much about the other alternative capital structure measures. Therefore, at this stage, the safe observation is that one can use each capital structure variable independent of the other.

5.4.2 Pearson correlation coefficients for performance variables

The Pearson product-moment correlation coefficients between each pair of performance variables are as presented in Table 5.3. The results indicate that there are fewer larger within set's correlations between performance measurement variables.

Table 5.3: Pearson correlation coefficients- Performance variables

Pearson Correlation Coefficients							
Prob > r under H0: Rho=0							
Number of Observations 708							
	BtM	EBtTA	ROTA_	ROE	RPS	GrSales	AssTurn
BtM	1						
<i>p-value</i>							
EBtTA	-0.1953	1					
<i>p-value</i>	<0.0001						
ROTA_	-0.069	0.533	1				
<i>p-value</i>	0.0681	<0.0001					
ROE	-0.231	0.379	0.158	1			
<i>p-value</i>	<.0001	<.0001	<0.0001				
RPS	0.178	0.041	0.061	0.200	1		
<i>p-value</i>	<0.0001	0.2808	0.1041	<0.0001			
GrSales	0.032	0.081	0.070	0.075	0.050	1	
<i>p-value</i>	0.3951	0.0307	0.0621	0.046	0.1838		
AssTurn	-0.073	0.067	-0.006	-0.044	0.014	-0.036	1
<i>p-value</i>	0.0531	0.0757	0.8824	0.2383	0.7045	0.3426	

In italics are P- values, level of significance. For the pairs with the p-values that are smaller than 0.01 there is sufficient evidence that at alpha=0.01 the correlation are not zero

(Source: Author)

The correlation between earnings before total tax to total assets (EBtTA) and book value to the market value ratio (BtM) is negative and significantly different from zero (-0.195; p-value=0.0001), therefore, as earnings before tax to total assets increase the book value to the market value ratio decreases. The correlation between EBtTA and return on total assets (ROTA) (0.533) is positive and statistically significant; therefore, the two variables seem to tell a common story. ROE and EBtTA are also positively correlated. The correlation between return on equity (ROE) and book value to the market value ratio (BTM) is 0.238 and that of earnings before tax to total asset ratios to ROE is 0.3786. The correlation between the book value to market value ratio (BTM) and asset turnover ratio is not different from zero (-0.073, p-value=0.05), suggesting variation in information in these two variables.

5.4.3 Pearson correlation coefficients for performance and capital structure variables

The correlations between capital structure variables and performance variables are presented in form of a matrix in Table 5.4; it is a matrix that presents performance measurements in columns and capital structure variables in rows. This highlights the correlation between all combinations of variables in different groups. Because we have seven performance variables and six capital structure variables, the matrix is 6 multiply by 7, resulting into forty two (42) such correlations exist.

The correlations between these variables are moderate for a few variables. The data show that for the variables, the correlation between performance variables and capital structure variables is low. The highest correlation is between the asset turnover ratio as an indicator of performance and total debt to total asset as an indicator of capital structure, ($r=0.4401$). The correlation between long-term debt to equity market value (LtD_EQMV) and book value to the market value (BtM) ratio is 0.3597; and between long-term debt to equity market value (LtD_EQMV) ratio and earnings before interest and tax to the total asset ratio (EBtTA) are -0.187.

Table 5.4: Pearson Correlation Coefficients between Capital Structure Variables and the Performance Variables

Pearson Correlation Coefficients Prob> r under H0: Rho=0 Number of Observations 708							
	BtM	EBtTA	ROT A_	ROE	RPS	GrSales	AssTurn
InCovR	-0.0646	0.3529*	0.0931	0.2079	0.0973	0.0719	0.0268
LtD_EQMV	0.3597*	-0.187	-0.0601	-0.0749	0.2014	0.017	-0.0173
LtD_EQBV	-0.0179	-0.2229*	-0.1995	-0.1363	0.0429	-0.0428	-0.0388
TDtTA	-0.0398	-0.1905	0.0543	-0.0735*	0.0246	-0.007	0.4401*
EQBVtTD	-0.0075*	0.1118	-0.0001	0.0244	-0.0254	0.0026	-0.3106*
EQMVtTD	-0.188	0.2923*	0.0672	-0.007	-0.0867	0.003	-0.1115

*Correlation is significant at the 0.05 level (2-tailed)

(Source: Author)

The correlation between interest cover ratio (InCovR) and earnings before interest and tax to the total asset ratio (EBtTA) ratio is 0.3529. If we stop the analysis at this point, then it appears that good proxies to use to relate the capital structure to performance are total debt to total asset

ratio(capital structure) and asset turnover ratio (performance). Next in line is long-term debt to the equity market value ratio (as measure of capital structure) versus book value to the market value ratio (as measure of performance), and last is the interest cover ratio (as a measure of capital structure) versus earnings before interest and tax to the total asset ratio (EBtTA)as a measure of performance.

5.5 Canonical correlation analysis

It was mentioned in chapters two, three and four that there are competing measures of performance and capital structure but researchers, do not come out clear on their choice of measures used in building the relationship between capital structure and performance. In addition, a good number of studies avoided using more than one dependent variable in determining the relationship between capital structure and performance even when it was necessary (Lemma & Manga, 2011; Abor&Biekpe, 2009; Abor &Biekpe, 2005; Chen, 2004; Al-Saran, 2001); in this study by building simultaneous relationships between various indicators of both capital structure and performance, canonical correlation help overcomes such limitation by allowing for multiple dependent variables.

The canonical correlation is a technique for analysing the relationship between two sets of variables, with each set containing more than one variable. Canonical correlation is a variation of multiple regressions and correlation analysis in that canonical correlation simultaneously predicts multiple dependent variables from multiple independent variables (Wrench, 2013; Tack, 1997; Cooley &Lines, 1971). In this study, canonical correlation was used to explain the nature of whatever relationships exist between the sets of dependent (capital structure) and independent (performance) variables, generally by *measuring the relative contribution of each variable to the canonical functions (relationships) extracted*. At this stage of analysis, the critical assumption is that researcher has little a-prior knowledge about relationships among the sets of variables. The canonical correlation as a statistical tool was developed to handle multiple dependent variables by Hotelling (1935, 1936). The application of canonical correlation in research is found in Garson (2014), Wolfgangand Léopold (2007), Cooley and Lohnes (1971), and Mardia, Kent&Bibby (1979), and the theoretical underpinnings are in Kshirsagar (1972).

The canonical correlation analysis as a statistical tool was used to determine the extent to which a set of the capital structure indicators was related through a set of performance indicators (Garson, 2014; Wolfgang& Léopold, 2007; Afifi, Clark & May, 2004; Tacq, 1997). There were six capital structure indicators and seven performance indicators employed to generate canonical correlation coefficients.

5.5.1 Canonical correlations – capital structure and performance

Canonical correlation captures canonical dimensions of the study variables, and the analysis generated coefficients to the following model:

$$\text{Capital Structure}^* = \alpha_1 \text{InCovR} + \alpha_2 \text{LtD/EQMV} + \alpha_3 \text{LtD/EQBV} + \alpha_4 \text{TDtTA} + \alpha_5 \text{EQBVtTD} + \alpha_6 \text{EQMVtTD} \dots \text{Equation 5.1,}$$

and,

$$\text{Performance}^* = \beta_1 \text{BtM} + \beta_2 \text{EBtTA} + \beta_3 \text{ROA} + \beta_4 \text{ROE} + \beta_5 \text{RPS} + \beta_6 \text{GrSales} + \beta_7 \text{AssTurn} \dots \text{Equation 5.2}$$

The coefficients α and β are generated through the canonical correlation analysis.

Where:

For *capital structure variables*: InCovR is the interest cover ratio; LtD/EQMV is long-term debt to the equity market value ratio; LtD/EQBV is long-term debt to the equity book value ratio; TDtTA is total debt to total asset ratio; EQBVtTD is the equity book value to the total debt ratio; and EQMVtTD is the equity market value to total debt; for *performance variables*: BtM is the book to market value; EBtTA is earnings before tax and interest to total assets; ROA is the return on total assets; ROE is return on equity; RPS is the return per share; GrSales is growth in sales; and AssTurn is the asset turnover ratio.

The canonical correlations from capital structure and performance indicators are presented in Table 5.5. The first canonical variates and their correlation are the sample canonical

correlation coefficient for the first pair of canonical variates. The residuals are then analysed to find a second pair of canonical variates whose weights are chosen to maximise the correlation between second pair of canonical variates, using only the variance remaining after the variance due to the first pair of canonical variates has been removed from the original variables. This continues until a "significance" cutoff is reached or the maximum number of pairs (which equals the smaller of m and p , in this case six (6), the number of capital structure variables) is reached (Wuensch, 2013).

Canonical correlation is Pearson's correlations of the pairs of canonical variates. The number of canonical dimensions is equal to the number of variables in the smaller set; in our case, capital structure has fewer variables (six) against performance seven variables; therefore, the result is six canonical dimensions. Presented in Table 5.5 are eigen value of $INV(E)*H$, which are equal to $CanRsq/(1-CanRsq)$, where $CanRsq$ is the corresponding squared canonical correlation; and for each eigen value is the difference from the next eigen value, the proportion of the sum of the eigen values, and the cumulative proportion are computed.

The first canonical correlation is the greatest possible multiple correlations with the classes that can be achieved using a linear combination of the quantitative variables of performance and capital structure. The first pair of variates, a linear combination of the capital structure measurements and a linear combination of the performance measurements, has a correlation coefficient of 0.583528, almost 60 percent; and this value represents the highest possible correlation between any linear combination of capital structure measurements and performance measurements. This correlation is associated with a Wilks' Lambda of $p < 0.0001$ and therefore, statistically significant. The second pair has a correlation coefficient of 0.5459910, the third pair 0.395833, almost 40 percent, the fourth pair 0.182562, the fifth pair 0.142839 and the sixth pair 0.063478. The first canonical correlation in this case, 0.583528 are always of most interest, and normally the highest value.

Table 5.5: Canonical Correlation Analysis – Capital Structure and Performance Variables

	Canonical Correlation	Adjusted Canonical Correlation	Approximate Standard Error	Squared Canonical Correlation	Eigen values of $\text{Inv}(E)^*H$ = $\text{CanRs}q/(1-\text{CanRs}q)$				Test of H_0 : The canonical correlations in the current row and all that follow are zero				
					Eigen-value	Difference	Proportion	Cumulative	Likelihood Ratio	Approximate F Value	Num DF	Den D F	Pr > F
1	0.583528	0.566502	0.0248	0.340504	0.5163	0.0916	0.4353	0.4353	0.368168	18.45	42	3263.3	<.0001
2	0.545991	0.544825	0.0264	0.298106	0.4247	0.2389	0.3581	0.7933	0.558257	14.57	30	2786	<.0001
3	0.395833	0.388425	0.03172	0.156684	0.1858	0.1513	0.1566	0.95	0.795359	8.26	20	2312.6	<.0001
4	0.182562	.	0.03636	0.033329	0.0345	0.0137	0.0291	0.979	0.943133	3.44	12	1847	<.0001
5	0.142839	.	0.03684	0.020403	0.0208	0.0168	0.0176	0.9966	0.97565	2.89	6	1398	0.008
6	0.063478	.	0.03746	0.004029	0.004		0.0034	1	0.995971	1.42	2	700	0.243

(Source: Author)

5.5.2 Adjusted canonical correlation

Adjusted canonical correlations are asymptotically less biased than the raw correlations and may be negative (Lawley, 1959). The adjusted canonical correlations are presented in Table 5.5. If an adjusted canonical correlation is close to zero, or if it is greater than the previous adjusted canonical correlation, as in the case of canonical correlation number 4, 5 and 6, then it is reported as missing. A missing value is also displayed if an adjusted canonical correlation is larger than a previous adjusted canonical correlation. In this study, the first three adjusted canonical correlations appear to have information.

5.5.3 Squared canonical correlation

The squared canonical correlations are the proportion of the variance in the canonical variate of one set of variables (capital structure measurements) explained by the canonical variate of the other set of variables (performance measurements). The squared canonical correlations are presented in Table 5.5. Squared canonical correlation is squares of canonical correlation such that in the case of the first canonical correlations, the squared canonical correlation is $(0.583528 \times 0.583328)$ or 0.340504.

5.5.4 Tests of overall information content of the six canonical correlation

Multivariate tests evaluate the significance of canonical roots (Rao, 1973). To confirm the overall information content of the six canonical correlations, the null hypothesis is that the canonical correlations in the current row and all that follow are zero. The resulting statistics reported and interpreted are: Eigen value, Likelihood Ratio, Approximate F Value and $Pr > F$. In addition, the following multivariate statistics and F Approximations are reported: Wilks' Lambda, Pillai's Trace, Hotelling-Lawley Trace, and Roy's Greatest Root (see Table 5.6).

5.5.5 Eigen values

Eigen values referred to as canonical roots or squared canonical correlation coefficients provide an estimate of the amount of shared variance between the respective canonical variates of dependent and independent variables. Therefore, an Eigen value is the proportion of variance accounted for by the correlation between the respective canonical variates. Eigen values of $E^{-1} H$, is equal to $\rho^2 / (1 - \rho^2)$, and ρ^2 are the corresponding squared canonical

correlation and are interpreted as the ratio of between-class variations to pooled within-class variation for the corresponding canonical variable are reported and presented in Table 5.5. The sizes of the eigen values are related to the tests of the correlations. The largest Eigen value is equal to (largest squared canonical correlation)/ (1-largest squared canonical correlation; that is, $(0.340504)/(1 - 0.340504) = 0.5163$ almost 52 percent. Largest Eigen values are associated with lower p-values; the interpretation is that large Eigen values are more likely to be different from zero.

5.5.6 Likelihood ratio

The likelihood ratio tests the hypothesis that the current canonical correlation, and all smaller ones are equal to zero in the population; these are reported and presented in Table 5.5. The likelihood ratio for the hypothesis that all canonical correlations equal zero is Wilks' lambda, and is calculated as the product of the values of $(1 - \text{canonical correlation}^2)$. In this case

$$(1 - 0.583528^2) * (1 - 0.545991^2) * (1 - 0.395833^2) * (1 - 0.182562^2) * (1 - 0.1428392^2) * (1 - 0.0634782) = 0.368168.$$

The rests of the likelihood ratios are second, which is 0.55825737; the third is 0.79535899; the fourth is 0.94313251; the fifth is 0.97564981, and the sixth is 0.99597055. The lower the canonical correlation (see the sixth) the higher the chance that it is zero.

5.5.7 Approximate F – value

The approximate F - value is associated with the various tests, such as likelihood ratio or one of the four multivariate tests; these are reported and presented in Table 5.5. The first approximate F value of 18.45 corresponds to the test that all six canonical correlations are zero, but since the p-value is small (0.0001), you would reject the null hypothesis at the 0.05 level. The second approximate F value of 14.57 corresponds to the test that both the second, and the third canonical correlations are zero; nevertheless, since the p-value is small (0.0001), the null hypothesis was rejected at the 0.05 level.

The interpretation of this statistic depends on test being taken, such that for the likelihood ratio tests, the F values are approximate. For Roy's Greatest Root, the F value is an upper bound. For the likelihood tests, the F values are testing the hypotheses that the given canonical correlation, and all smaller ones are equal to zero in the population. For the multivariate tests, the F values are testing the hypothesis that all three canonical correlations are equal to zero in the population.

5.5.8 Pr>F

The p-value reported and presented in Table 5.5 is the significance value of the statistic that tested the acceptability of the model, in this case whether the canonical correlation might have information content or not. The null hypothesis that capital structure variables and performance variables are not linearly related is rejected if the p-value is less than the specified alpha which is narrowly 0.05. The p-values associated with the likelihood ratio test of the first second third fourth and fifth canonical correlation, suggests that we reject the hypothesis that they are zero, but the p-value associated the likelihood ratio test of the sixth canonical correlation on its own is 0.2434 (see Table 5.5) fail to reject the hypothesis that the sixth canonical correlation is zero.

5.5.9 Multivariate statistics and F approximations

Multivariate statistics presented in Table 5.6 are from the test that to establish whether the canonical correlation is zero; and whether a linear relationship exists between performance and capital structure. While the six canonical correlations are presented in Table 5, the multivariate statistics are presented in Table 5.6.

The first multivariate statistic presented in Table 5.6 is Wilks Lambda. It is the product of the values of (1- canonical correlation squared) or 0.368168 and is equal to the likelihood ratio (see Table 5.6). The F-value is 18.45 and P-value 0.0001, so we reject the null hypothesis that overall, the canonical correlations are zero.

Table 5.6: Multivariate Statistics and F Approximations – Capital Structure and Performance

Multivariate Statistics and F Approximations					
S=6; M=0; N=346.5					
Statistic	Value	F Value	Num DF	Den DF	Pr > F
Wilks' Lambda	0.36816824	18.45	42	3263.3	<.0001
Pillai's Trace	0.85305588	16.57	42	4200	<.0001
Hotelling-Lawley Trace	1.18617427	19.59	42	2169	<.0001
Roy's Greatest Root	0.51631048	51.63	7	700	<.0001
NOTE: F Statistic for Roy's Greatest Root is an upper bound.					

(Source: Author)

The second, Pillars trace is the sum of the squared of the six canonical correlations:

$$(0.583528^2) + (0.545991^2) + (0.395833^2) + (0.182562^2) + (0.142839^2) + (0.063478^2) = 0.853056.$$

This multivariate statistic has an F value =16.5, p=0.0001 confirm that the canonical correlation are not zero.

Hotelling-Lawley trace is similar to Pillar Trace and also tests whether the canonical correlations are zero. The last statistic in Table 5.6 is Roy's greatest root, and because it is based on maximum values, it reports the largest Eigen values. This statistic F-value of 51.63 is the highest because it is based on maximum value, and p-value is 0.0001. Again, we reject the hypothesis that canonical correlations are zero.

5.6 Raw canonical coefficients

The raw correlation coefficient is the proportion of the canonical variates accounted for by a particular variable. The canonical correlations provided dimensions that performance and capital structure indicators had in common. The first canonical variate in one set of variables is the linear combination of those variables that has the highest multiple correlations among the variate in the other set. The raw canonical coefficients or weights are the linear weights used to produce the canonical variates from the raw scores; and inside canonical variates are

raw canonical coefficients(Garson, 2014; Wolfgang& Léopold, 2007; Afifi, Clark& May, 2004).

5.6.1 Raw canonical coefficients for the capital structure measurements

The canonical variables are “identified” from the original variables. The raw canonical correlations for the capital structure measurements with the original variables are presented in Table 5.7. In Table 5.7 the capital structure canonical variables are defined as: kCapital1, kCapital2, kCapital3, kCapital4, kCapital5 and kCapital6.

The raw and standardised coefficients are used to create the canonical variates. These are provided for each pair of variates created, regardless of the correlation’s size or statistical significance. The raw canonical coefficients define the linear relationship between capital structure variables and capital structure canonical variate. If we assume that the canonical variate is a response variable, then they can be interpreted the same way we interpret regression coefficients; that is, a one-unit increase in the total debt to the total asset ratio (TDtA) leads to 3.8687516129 unit increase in the first variate, kCapital1, and a one unit in long-term debt to equity market value (LtD-EQMV) leads to -0.45545833 (have been suppressing effect) decrease in first variate that is, with other predictors held constant.

Table 5.7: Raw Canonical Coefficients for the Capital Structure Measurements

	kCapital1	kCapital2	kCapital3	kCapital4	kCapital5	kCapital6
InCovR	0.0060622	-0.0378254	0.0529303	0.0348394	-0.0415082	0.0210368
LtD_EQMV	-0.4554583	0.3586378	0.4449917	0.2242054	0.3882595	0.0415637
LtD_EQBV	-0.1115936	-0.1556706	-0.9166719	0.8781786	-0.3530679	0.1225675
TDtTA	3.8687516	0.7941498	0.4787701	0.0971854	0.2598198	3.1057248
EQBVtTD	-0.0359823	0.0377962	-0.0340007	-0.0819363	-0.0686235	0.3105754
EQMVtTD	0.0400763	-0.0806187	-0.0000690	0.0399870	0.1125196	-0.0155947

(Source: Author)

In summary, the capital structure measurement coefficients for equation 5.1 used to calculate the first canonical correlation coefficients as presented in table 5.7 are as follows:

$$\text{Capital Structure}^* = 0.0060622\text{InCovR} - 0.4554583\text{LtD/EQMV} - 0.1115936\text{LtD/EQBV} + 3.8687516\text{TDtTA} - 0.0359823\text{EQBVtTD} + 0.0400763\text{EQMVtTD} \dots\dots\dots\text{equation 5.3}$$

5.6.2 Raw canonical coefficients for the performance measurements

The raw canonical coefficients for performance measurements variables are presented in Table 5.8. The results in Table 5.8 indicated that a one-unit in the earnings before the tax to total assets (EBtTA) leads to -1.82911 changes in the first performance variate performance1, but one-unit in asset turnover (AssTurn) leads to 0.862746474 increase in the first variate.

Table 5.8: Raw Canonical Coefficients for the Performance Measurements

	Performance1	Performance2	Performance3	Performance4	Performance5	Performance6
BtM	-0.155149	0.142737	0.197165	-0.050575	0.072815	-0.149584
EBtTA	-1.829111	-7.078360	3.151180	2.670612	2.532129	-2.430364
ROTA_	0.829710	0.915320	0.432744	-1.720172	0.714421	1.612171
ROE	-0.070157	0.476036	0.845153	-1.073417	-2.160849	-0.385655
RPS	-0.099650	0.061197	0.122737	0.586003	-0.056807	0.533085
GrSales	0.065039	-0.016074	0.223551	0.092800	-0.129110	0.259217
AssTurn	0.862746	0.317774	0.405455	0.267628	-0.000137	-0.348667

(Source: Author)

In summary, the coefficients for equation 5.2 used to calculate the first canonical correlation coefficients as presented in table 5.8 are as follows:

$$\text{Performance}^* = - 0.155149\text{BtM} - 1.829111\text{EBtTA} + 0.829710\text{ROA} - 0.070157\text{ROE} - 0.099650\text{RPS} + 0.065039\text{GrSales} + 0.862746\text{AssTurn} \dots\dots\dots\text{Equation 5.4}$$

5.7 Standardised canonical coefficients for the capital structure measurements

The raw canonical coefficients do not always have equal variance, are not measured in the same units and therefore, cannot be compared. The raw coefficients must be standardised to allow for a meaningful comparison and interpretation. Standardising raw coefficients require multiplying the raw coefficients with the standard deviation of the related variable (Hair, Anderson, Tatham & Black, 2010). The standardised canonical coefficients from the capital

structure measurements showing how one standard deviation increases in a capital structure indicator impacted on the capital structure variate are presented in Table 5.9.

The canonical coefficients are interpreted in a manner analogous to the interpretation of standardised regression coefficients. As an example, for the variable equity market value to total debt (EQMVtTD), an increase of one standard deviation in this variable led to a 0.3182 increase in the first capital structure variate. For the long-term debt to equity market value (LtD_EQMV) an increase of one standard deviation in this variable led to a decrease of -0.5900) therefore, has a suppressing effect on first capital structure variate.

Table 5.9: Standardised canonical coefficients for the capital structure measurements

	kCapital1	kCapital2	kCapital3	kCapital4	kCapital5	kCapital6
InCovR	0.0707	-0.4412	0.6175	0.4064	-0.4842	0.2454
LtD_EQMV	-0.5900	0.4645	0.5764	0.2904	0.5029	0.0538
LtD_EQBV	-0.0907	-0.1266	-0.7453	0.714	-0.287	0.0996
TDtTA	1.0158	0.2085	0.1257	0.0255	0.0682	0.8155
EQBVtTD	-0.1468	0.1542	-0.1387	-0.3343	-0.28	1.2672
EQMVtTD	0.3182	-0.6401	-0.0005	0.3175	0.8934	-0.1238

(Source: Author)

5.8 Standardised canonical coefficient for performance measurements

The standardised canonical coefficients for performance measurements are presented in Table 5.10. A one-unit increase in one standard deviation in book value to market value would lead to a -0.4924 decrease in the first performance1 (see Table 5.10). However, a one-unit increase in one standard deviation in the asset turnover ratio would lead to a 0.7953 increase in the first performance1.

These canonical structure coefficients, measure the simple linear correlation between an original variable in the dependent or independent set and the set's canonical variate; and are interpreted as factor loading in assessing the relative contribution of each variable to each canonical function.

Table 5.10: Standardised Canonical Coefficients for the Performance Measurements

	Performance1	Performance2	Performance3	Performance4	Performance5	Performance6
BtM	-0.4924	0.453	0.6257	-0.1605	0.2311	-0.4747
EBtTA	-0.2571	-0.9948	0.4429	0.3753	0.3559	-0.3416
ROTA_	0.352	0.3883	0.1836	-0.7298	0.3031	0.6839
ROE	-0.0302	0.2051	0.3641	-0.4624	-0.9309	-0.1661
RPS	-0.1272	0.0781	0.1567	0.748	-0.0725	0.6804
GrSales	0.036	-0.0089	0.1237	0.0514	-0.0715	0.1435
AssTurn	0.7953	0.2929	0.3738	0.2467	-0.0001	-0.3214

(Source: Author)

5.9 Canonical loading

Canonical loading are correlations between the variables and their own variate as well as with the other variate. This sheds light on the structure of the coefficients. The two canonical loadings in this study are correlations between the capital structure measurements and their canonical variables and correlations between the performance measurements and their canonical variables.

5.9.1 Correlation between capital structure measurements and their canonical variables

The correlations between each capital structure variable and capital structure canonical variate was relied in deciding whether the variates are combining with the variables (indicators) in a way to represent a particular idea (See Table 5.11). The first variate for capital structure (K Capital 1) is highly positively correlated with the total debts to the total asset ratio (TDTtA) (0.748), but moderately negatively correlated with the equity book value to the total debt ratio (EQBVtTD)(-0.462). The correlation between long-term debt to equity market value (LtD_EQMV) and kCapital1 is -0.320 but uncorrelated or lowly correlated with other variables. Therefore, the first variate captures much of the shared variance between the total debt to the total asset ratio, equity book value to total debt ratio and long-term debt to equity market value.

Table 5.11: Correlations between the capital structure measurements and their canonical variables

	kCapital1	kCapital2	kCapital3	kCapital4	kCapital5	kCapital6
InCovR	-0.036	-0.525	0.614	0.339	-0.468	0.113
LtD_EQMV	-0.320	0.588	0.331	0.535	0.366	0.150
LtD_EQBV	-0.065	0.184	-0.529	0.811	-0.120	0.100
TDtTA	0.748	0.565	0.105	0.306	0.046	0.120
EQBVtTD	-0.462	-0.371	-0.167	-0.348	0.119	0.697
EQMVtTD	-0.062	-0.716	-0.084	0.010	0.655	0.218

(Source: Author)

Using correlation coefficients as a measure of relationship and in a sense effect, the correlation for the equity market value to debt (EQMVtTD) with the second capital structure variate was -0.716; the correlation for long-term debt to equity market value (LtD_EQMV) with the second capital structure variate was 0.588; and the correlation for the interest cover ratio (InCovR) with the second capital structure variate was -0.525. It appears that when a composite index of measures of capital structure is constructed, the dominating variable is the total debt to the total asset ratio. Therefore, the variable used to predict firm performance was the total debt to the total asset ratio.

5.9.2 Correlation between the performance measurements and their canonical variables

The results presented in Table 5.12 show that asset turnover ratio (AssTurn) of 0.8102 and book value to the market value ratio (BtM) of -0.5386 is highly correlated with the first performance variate (Performance1). The correlation between return on total assets (ROTA) correlation with first variate is low (0.2343), yet a number of studies use this ratio as an indicator of performance. The correlation between the second variate with the book value to the market value ratio (BtM) is 0.5654; but its correlation with earnings before tax and interest and tax to total assets is -0.7765. It emerges that BtM is a strong performance indicator. The other variables are not correlated with the variate, and this is not surprising given that a number of these variables are lowly correlated. Therefore, asset turnover ratio and book value to the market value ratio are a useful ratio in predicting the capital structure.

Table 5.12: Correlations between the performance measurements and their canonical variables

	Performance1	Performance2	Performance3	Performance4	Performance5	Performance6
BtM	-0.5386	0.5654	0.4469	0.0398	0.341	-0.2677
EBtTA	0.0662	-0.7765	0.5978	-0.1065	0.1111	0.0707
ROTA_	0.2343	-0.1382	0.4505	-0.5438	0.3203	0.5616
ROE	-0.0159	-0.2130	0.4399	-0.2565	-0.8215	0.0833
RPS	-0.1964	0.1866	0.3811	0.6039	-0.1878	0.5935
GrSales	-0.0130	-0.0391	0.2144	0.0194	-0.0873	0.1816
AssTurn	0.8102	0.1837	0.3385	0.3169	0.048	-0.3015

(Source: Author)

In summary, the results in Tables 5.10, 5.11 and 5.12 show that to build a meaningful relationship between firm performance and capital structure on the NSE researchers should employ the following variables; asset turnover ratio and book value to the market value ratio as indicators of performance and the total debt to the total asset as an indicator of capital structure. The choice of book value to market value is based on its suppressing effect and therefore, as a control variable.

5.10 Correlations between the capital structure measurements and the canonical variables of the performance measurements

The canonical cross-loadings, an alternative to canonical loadings, is a procedure correlating each variable directly with the other canonical variate (Dillon & Goldstein, 1984). As an example, if performance variate is a response variable, then the capital structure indicators are the predictor variables or independent variables. The results from the correlations between each capital structure indicator and canonical variates of performance are presented in Table 5.13.

The first variate is always the most important; in this case, Performance1 is the initial variate. The highest correlation of 0.4365 is between that the total debt to the total asset ratio (TDtTA) and first performance variate (Performance1). The correlation between the equity book value to total debt (EQBVtTD) and the first performance variate (Performance1) is -0.2695; while

the correlation between interest cover ratio (InCovR) and the first performance variate (Performance1) is -0.0209 and has a suppressing effect.

Table 5.13: Correlations between the capital structure measurements and the canonical variables of the performance measurements

	Performance1	Performance2	Performance3	Performance4	Performance5	Performance6
InCovR	-0.0209	-0.2867	0.2428	0.0619	-0.0668	0.0072
LtD_EQMV	-0.1866	0.3208	0.1311	0.0977	0.0522	0.0095
LtD_EQBV	-0.0379	0.1006	-0.2092	0.1481	-0.0171	0.0063
TDtTA	0.4365	0.3084	0.0414	0.0559	0.0066	0.0076
EQBVtTD	-0.2695	-0.2026	-0.0661	-0.0636	0.017	0.0442
EQMVtTD	-0.0362	-0.3907	-0.0333	0.0019	0.0936	0.0139

(Source: Author)

The correlation between long-term debt to equity book value (Ltd-EQBV) and first performance variate (Performance1) is -0.0379; and the correlation between the equity market value to total debt (EQMVtTD) and first performance variate (Performance1) of -0.0362 was almost uncorrelated to first performance variate.

5.11 Correlations between the performance measurements and the canonical variables of the capital structure measurements

The correlations between the performance measurements and the canonical variables of the capital structure measurements allowed for identification of performance indicators that explained the amount of debt used by firms sampled. The correlations between each performance indicator and the opposite canonical variates of the capital structure required to identify performance indicators are as presented in Table 5.14. The highest reported correlation is between the asset turnover ratio (AssTurn) with the first capital structure covariate (kCapital1); that is, 0.4728; therefore, the appropriate indicator to predict usage of debt (capital structure) is the asset turnover ratio.

The book value to the market value ratio has the highest correlation (0.3087) with second capital structure canonical variate. However, the correlation between the book value to the

market value ratio with the first capital structure covariate was -0.3143. The book value to the market value ratio suppressed the relationship between capital structure, and performance used as a control variable is to validate the findings.

Table 5.14: Correlations between the performance measurements and the canonical variables of the capital structure measurements

	kCapital1	kCapital2	kCapital3	kCapital4	kCapital5	kCapital6
BtM	-0.3143	0.3087	0.1769	0.0073	0.0487	-0.017
EBtTA	0.0386	-0.424	0.2366	-0.0194	0.0159	0.0045
ROTA_	0.1367	-0.0754	0.1783	-0.0993	0.0458	0.0356
ROE	-0.0093	-0.1163	0.1741	-0.0468	-0.1173	0.0053
RPS	-0.1146	0.1019	0.1509	0.1103	-0.0268	0.0377
GrSales	-0.0076	-0.0214	0.0849	0.0035	-0.0125	0.0115
AssTurn	0.4728	0.1003	0.134	0.0579	0.0069	-0.0191

(Source: Author)

In Table 5.11, the dominant capital structure indicator is the total debt to the total asset ratio because it has the highest correlation with first capital variate (0.748). Therefore, to establish the relationship between performance and capital structure; the relevant indicators are: the asset turnover ratio and the book value to the market value ratio as indicators of performance; and the debt to the total asset ratio as an indicator of capital structure.

5.12 Canonical redundancy analysis

The canonical redundancy analysis results are presented in Table 5.15 and 5.16. Canonical redundancy measured how redundant one sets of variables are given the other set of variables (Stewart & Love, 1968). Redundancy analysis captured the percentage of variance accounted for from the two sets of variables, capital structure and performance. Therefore, canonical redundancy analysis was conducted to determine standardised variances of the dependent and independent variables that were explained by their own or the opposite canonical variate. Raw variances of capital structure measurement explained by their own canonical variables by their opposite (capital structure) variables are presented in Tables 5.15 and vice versa in Table 5.16. Redundancy analysis addressed the questions: How vigorously did the individual measured variables on capital structure relate to the variate of capital structure? How vigorously did the

individual measured variables on capital structure relate to the opposite variate (performance variate)? Identical questions are raised on performance variables.

Table 5.15: Canonical Redundancy - Capital Structure Measurements

Raw Variance of the Capital Structure Measurements Explained by					
Canonical Variable Number	Their Own Canonical Variables		Canonical R-Square	The Opposite Canonical Variables	
	Proportion	Cumulative Proportion		Proportion	Cumulative Proportion
	1	0.0192		0.0192	0.3405
2	0.3334	0.3525	0.2981	0.0994	0.1059
3	0.2406	0.5932	0.1567	0.0377	0.1436
4	0.0851	0.6783	0.0333	0.0028	0.1464
5	0.2627	0.941	0.0204	0.0054	0.1518
6	0.059	1	0.004	0.0002	0.152

(Source: Author)

Table 5.16: Canonical Redundancy - Performance Measurements

Raw Variance of the Performance Measurements Explained by					
Canonical Variable Number	Their Own Canonical Variables		Canonical R-Square	The Opposite Canonical Variables	
	Proportion	Cumulative Proportion		Proportion	Cumulative Proportion
	1	0.2683		0.2683	0.3405
2	0.2514	0.5197	0.2981	0.075	0.1663
3	0.1842	0.7039	0.1567	0.0289	0.1952
4	0.0575	0.7614	0.0333	0.0019	0.1971
5	0.104	0.8654	0.0204	0.0021	0.1992
6	0.1088	0.9742	0.004	0.0004	0.1996

(Source: Author)

Redundancy analysis showed how much of the average of proportion of variance among the variables of one set may be predicted from the variables from the other set. High redundancy suggests the ability of independent variable to predict the dependent variable. The first and the second canonical covariate for the group explained 1.92 percent and 33.34 percent respectively of variability in capital structure variables; while canonical covariate for the group explained 0.065 percent and 0.994 percent of the opposite canonical variate (See Table 5.15). The first and the second canonical variate explained 26.83 percent and 25.14 percent respectively of the variability in the performance variables (see Table 5.16).

The degree to which the canonical variate of capital structure explained the variability in performance variables and the degree to which canonical variate of performance measure explained the variability in capital structure variables are reported Tables 5.15 and 5.16 respectively.

In the case of capital structure measurements, though the first canonical variate for the capital structure explained 0.065 percent of the variability in performance measurements, the cumulative variability explained by all the six canonical variates was 15.2 percent (see Table 5.15). In case of performance measurements, though the first canonical variate explained 9.13 percent of the variability in capital structure, the cumulative variability explained by all the six canonical variates was 19.96 percent. The data tell us that the degree of the influence of performance on capital structure is higher than the degree of influence of capital structure on performance.

5.13 Validation and diagnosis of findings

The last stage involved a validation of the canonical correlation analyses by splitting the sample into estimation and validation samples and the findings between the two samples; no varying result was found between the samples. The detailed analysis was therefore, not reported. The next step of validation was to use the average for each variable in each company in the canonical correlation analysis, and the results were not different from the ones reported throughout this chapter.

5.14 Discussion of findings

The previous studies that investigated into the relationships between capital structure, and performance used OLS regression model as a statistical tool for analysis. However, OLS cannot handle multiple dependent variables. This study used canonical correlation analysis because of its in built capability in handling multiple dependent variables. The canonical correlation analysis was used to establish a bidirectional relationship between capital structure and performance; and to identify the relevant indicators of capital structure and performance.

From the analysis, it appears that both capital structure and performance variables influence each other. Therefore, managers should consider their firms performance in determining the amount of debt to inject in the capital structure; and at the same time shareholder as residual owners should insist that debt capital is deployed in their firms because of the positive effect of debt capital on firm performance.

The result of canonical analysis showed that the dominant capital structure indicator to be used in the subsequent analysis to predict performance is the total debt to the total asset ratio. In the case of performance, the two variables that relate to capital structure are book value to market value ratio and asset turnover ratio. Therefore, to examine the relationship between capital structure and performance, using regression analysis or its variant GEE or its variant GLM, we employed one measure of capital structure, the total debt to the total asset ratio, and two measures of performance namely asset turnover ratio and book value to market value (and ownership structure as a control variably and the model validity indicator). The book value to the market value ratio is used because of its suppressing contribution to first variate, its positive contribution to the second variates and because of its visibility. To calculate book value to the market value ratio, one needs book value and market value of a share, and the two statistics are readily available.

The emergence of book value to market value ratio and asset turnover ratio as indicators of performance though surprising, is what the data used for this study tells us come top as contributing to a composite measure of performance; and is a challenge to studies that employ other indicators of performance such as return on assets (ROA). Intuitively the tentative

finding that market to book value is negatively correlated to amount of debt employed by the firm suggest that investors who think debt adds value to a firm might demand more shares of a firm that have just issued debt, there by pushing the market price of a share up while the book value remained unchanged.

At this stage into this study, the data supported the hypothesis that efficient and profitable firms use more debt (Margaritis & Psilaki, 2010). The hypothesis that capital structure influenced firm performance was marginally supported by the data; and this found support in the arguments advanced by Cheng and Tzeng (2011) and, Margaritis &Psillak (2007; 2010).

5.15 Theoretical and practical implications of the findings

In a number of studies, ROA and ROE are used as measures of performance to assess the relationship between performance and capital structure. The contribution to this study is that, by relying on the power of canonical correlation analysis method, the data employed identifies asset turnover ratio and book value to market values and not return on assets (ROA) or return on equity (ROE) as measures of performance to employ in studying the relationship between capital structure and performance and that the appropriate measure of usage of debt is the total debt to the total asset. It adds to the theory of choice of variables to employ in study of capital structure. The theory is that the choice of indicators of both capital structure and performance is contingent on the data employed and could vary from country to country. Furthermore, in terms of theory, it contributes to the debate on bi-directional relationship between capital structure and performance. However, the degree of the influence of performance on capital structure is more pronounced than the degree of influence of capital structure on performance tells us that firm performance is a critical variable in capital structure choices, yet the debt capital role in moderating manager's excesses as suggested in the literature.

The analysis provides insights into the structure of the different variable sets (capital structure and performance) as they relate to dependence in relationship; this is of practical and conceptual significance and opening a window for further studies. Managers are informed that asset turnover ratio best relate positively to borrowing levels, and that performance and capital

structure are important concepts in managing firms. In addition, book value to market value has a suppressing effect on the level of borrowing. The message to researchers is that future studies into the relationship between capital structure, and performance should be based on their choice of a representative measure of performance and a representative measure of capital structure by applying canonical correlation. This is because the choice of variables is contingent on the data set employed.

In terms of methodology, the study recognized the complex decisions surrounding the relationship between performances and capital structure; and proceeded to use multiple dependent variables instead a single dependent variable to assess the bi-directional relationship between performance and capital structure. The essence of multivariate philosophy is to expose the intrinsic structure and the meaning within, and between capital structure and performance variables set of variables through application and interpretation of various statistical methods.

Finally and of significance to theory of capital structure debate is that, from the data, the degree of the influence of performance on capital structure is higher than the degree of influence of capital structure on performance. The theory then is that the debt holders prefer firms with good performance (pre lending status) contrary to influencing performance of firms (post lending status).

5.16 Summary of the chapter

The hypotheses tested:

H₀₁: Firm performance does not have a significant effect on leverage, and alternative

H₁₁: Firm performance has a significant effect on leverage; and,

H₀₂: Leverage does not a significant effect on firm performance; the alternative hypothesis being:

H₁₂: Leverage has a significant effect on firm performance.

In this chapter, the use of canonical correlation is demonstrated with a finance application, specifically, to identify which performance indicators relate to which capital structure indicators.

The canonical correlation analysis was performed to compute canonical coefficients for variables (canonical weights) and to establish the overall relationships between the canonical variates (canonical correlations). It was also a test to establish if the linear correlations between the dependent and independent variables with their respective canonical variate (canonical loadings) are statistically significant.

In addition, linear correlation of each observed predictor or predicted variable with the opposite canonical variate (canonical cross-loadings) was computed and reported. Squared multiple correlations between dependent variables and canonical variates of the performance and capital structure were estimated, reported and interpreted. Canonical coefficients were normalized to give canonical variables with unit variance to allow meaningful comparison. Canonical redundancy analysis was to determine standardised variance of the dependent and predictor variables as explained by their own and the opposite canonical variate.

The first statistical significance test was for the canonical correlations of each of the six canonical functions. In addition to tests of each canonical function separately, multivariate tests of all functions were performed simultaneously. The test statistics reported included Wilks' lambda; Pillai's trace; Hotelling-Lawley trace, and Roy's greatest root. In terms of variables, seven (7) indicators of performance and six (6) indicators of capital structure are used as input data to assess the relationship between performance and capital structure.

The statistical problem was to identify any relationships between the variates formed for performance and capital structure. All the multivariate test statistics indicated that the first five canonical functions, taken collectively, are statistically significant at the $p < 0.01$ level; the sixth canonical function fails to achieve the significance level at the $p < 0.05$ level.

The redundancy index was calculated for the performance and capital structure variate of the initial function, and the result presented in Table 5.15 and 5.16. The first canonical variate for the capital structure explained 0.065 percent of the variability in performance, but the cumulative/proportion explained by all (6) canonical variates was 15.2percent (table 5.15). In case of performance measurement, the first canonical variate explained the 9.13 percent of the variability in capital structure while the cumulative proportion of measure explained by all the six canonical variate was 19.96 percent. From the data analysis, it appears that the degree at which performance influenced the capital structure is higher than the degree at which capital structure influenced performance.

Canonical correlation generated the three basic statistics' namely canonical weights (standardised coefficients), canonical loadings (structure correlations), and canonical cross-loadings used to understand the relationship between performance and capital structure. The results suggested that to build a meaningful relationship between capital structure and performance the relevant indicators of performance are book value to market value ratio and asset turnover ratio, while the indicator for capital structure is the total debt to the total asset ratio. Though canonical analysis showed substantial relationships of conceptual and practical significance, further analysis involving measures other than (for example, regression analysis) canonical correlation is recommended to determine the amount of the capital structure variable variance accounted for or shared with the performance variables and vice versa.

The conclusion is that capital structure and performance are not independent of one another and that first, the null hypothesis that firm performance does not have effect on leverage is rejected; and second the null hypothesis that leverage does not have effect on firm performance is also rejected. The data supports the conclusion that a bidirectional relationship between capital structure and debt capital exists. However, the degree of the influence of performance on capital structure is more pronounced than the degree of influence of capital structure on performance.

A further analysis on the bi-directional relationship between performance and capital structure was presented in chapter six. The finding in this chapter was that a bi-directional relationship existed between capital structure and performance. An important aspect in chapter six is the proof that the relationship between capital structure and performance is independent of the statistical model employed.

Though bi-directional relationship between capital structure and performance is confirmed by the data, the limitation in this chapter is that it does not tell us whether performance is informed by level of leverage or if leverage is informed by level of performance. In Chapter 6, the generalised linear model (GLM) procedure was used to examine the relationship between capital structure and performance by taking into account the levels of performance and level of leverage.

CHAPTER 6

RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND PERFORMANCE USING GENERAL LINEAR MODEL (GLM)

6.0 Introduction

In chapter 5, canonical correlation derived indicators of capital structure and two indicators of performance are identified as appropriate in building the relationship between performance and capital structure (leverage). The reason for canonical analysis is based on the assumption that choice of performance or capital structure indicator is specific to a data sampled and should not be arbitrary. The two indicators of performance identified are book value to market value and asset turnover and for capital structure or leverage, the indicator is total debt to the total asset ratio (also known as the debt ratio). It is these indicators that are used throughout this chapter to evaluate the relationship between performance and capital structure.

The debate in chapter 5 on whether performance affects capital structure and vice versa, is only informative on two issues: that there is a correlation between performance and capital structure and that there is a restriction on the relationship in terms of the performance and capital structure indicators. In chapter five (5) the data together with the model reject return of assets (ROA) as a performance indicator, but pick the book value to market value and asset turnover as indicators of performance and total debt to total asset as an indicator of capital structure or leverage.

The canonical correlation, just like ordinary least regression (OLS), will not enable us to establish whether, for example, the effect of capital structure on performance matter between different capital choices (or capital structure levels) or whether the effect of performance on capital structure matter across distinct performance levels. Yet of significance to managers would be whether poor performance is explained in terms of capital structure choices (levels) or usage of debt is explained in terms of level of performance. This chapter addresses this issue by employing the general linear model (GLM). GLM is an improvement on OLS studies that focus only on the test of significance of predictor coefficients but do not compare levels of performance to levels of leverage and vice versa.

In this chapter, we present the findings on the bi-directional relationship between capital structure and performance, by taking into consideration levels of performance and levels of capital structure. The two hypotheses to be addressed are: first the influence of performance on capital structure (debt ratio) and two the influence of capital structure on performance in an emerging economy framework. The first hypothesis analyses the effects of performance on capital structure taking into account two competing hypothesis (Berger & Bonaccorsi di Patti, 2006). The two competing hypotheses are profitability (return) – risk hypothesis; and franchise – value hypothesis. The profitability (return) – risk hypothesis stipulates that profitable firms have lower expected bankruptcy costs thus are able to employ more debt than comparable firms that are less profitable. While under the franchise – value hypothesis, the proposition is that profitable firm will employ less debt to protect the firm from debt induced liquidation. The first hypothesis being:

H₀₁: Firm performance does not have a significant effect on leverage, and alternative

H₁₁: Firm performance has a significant effect on leverage.

In the second hypothesis, we assess the role of debt capital on reducing agency costs, and in so doing, improving performance (Dobbin & Jung, 2010:30; Christian, Karl & Francis, 2009:3246; Zwiebel, 1996: 1197; Jensen& Meckling, 1976). If leverage mitigates agency costs, then one expects leverage to improve firm performance. It is also possible that high levels of leverage increase agency cost thus impairing firm performance. It is not clear whether this is the case on the NSE. Therefore, the second hypothesis is:

H₀₂: Leverage does not have a significant effect on firm performance; the alternative hypothesis being:

H₁₂: Leverage has a significant effect on firm performance.

This chapter is organized as follows: in section 6.2, is background information on the generalised linear model(GLM); in section 6.3 is the level of measurement requirement and sample size requirement in section 6.4 is the assumption of normality; in section 6.5 is research questions guiding the analysis; in section 6.6 is the influence of book value to market

value (performance) on the total debt to the total asset ratio (capital structure); in section 6.7 is the influence of the asset turnover ratio (performance) on total debt to total asset ratio (capital structure); in section 6.8 is the influence of the total debt to the total asset ratio (capital structure) on book value to market value (performance) and section 6.9 is the influence of the total debt to the total asset ratio (capital structure) on the asset turnover ratio (performance), in section 6.10 is the discussion of findings; in 6.11 is the theoretical and practical significance of the findings; and in section of 6.12 is the summary of the chapter.

6.1 General linear model

The general linear model (GLM) procedure is used to provide regression analysis and analysis of variance for level measured variables (Rutherford, 2011). For the first hypothesis, the GLM is used to test the null hypothesis about the effect of performance and ownership structure on the means of different groupings of the debt ratio; for the second hypothesis, GLM is used to test the hypothesis regarding the effect of capital structure and ownership structure on the means of various groupings of performance.

The GLM allowed for investigation of interaction between independent variables. In this GLM model, the dependent variable which could be an indicator of capital structure or performance, depending on hypothesis being tested, is a covariate, but the independent variables can be any level that defines groups; that is, dichotomous, nominal, ordinal, or grouped interval. In this study, all independent variables are grouped variables (Rutherford, 2011).

6.2 Level of measurement requirement and sample size requirement

The measurements used in this study are the book value to the market ratio, asset turnover ratio, and the total debt to the total asset ratio; at one level, the variables are continuous and in the next level, the variables are rank-ordered then grouped. Grouping is frequently used for inferring the association between two variables (Kutner, Nachtsheim, Neter & Li, 2005; Lys & Sabino, 1992). However, before using GLM, there are conditions to be met: first is the level

of measurement requirement and sample requirements; and second, is the assumption of normality of the data (Rutherford, 2011; Kutner, Nachtsheim, Neter & Li, 2005).

Under GLM procedure, the dependent variable can be at the interval level or continuous; that is, when the capital structure (the total debt to the total asset ratio) is the predicted variable, it is a covariate but when used as the independent variable it converted into a factor (grouped data of two or more categorical groups) the same applies to performance indicators and ownership structure. The results of grouping for the variables are presented in Table 6.1.

Table 6.1: Descriptive statistics of grouped performance and capital structure indicators

Level of Book to Market Ratio	Mean	StDev.	Number
Positive Growth <1	0.252	0.221	198
No Growth =1	0.931	0.280	288
Negative Growth > 1	3.995	4.913	222
Total	1.702	3.174	708
Ownership Structure			
Shareholdings 20percent to 50percent	34.409	8.772	276
Shareholdings 51percent to 100percent	64.434	11.373	437
Shareholdings Below 20percent	14.821	2.523	15
Total	52.029	18.594	728
Total Debt to Total Assets			
High Debt ratio 0.45 to 2.03956	0.675	0.226	257
Medium Debt ratio 0.3515 to 0.44781	0.399	0.027	125
Low Debt ratio 0 to 0.34278	0.196	0.091	326
Total	0.406	0.263	708
Lev Asset Turnover Ratio			
Low 0.073 - 0.6882	0.4545	0.1513	234
Medium 0.6926 - 1.1073	0.8917	0.1192	234
High 1.114 - 10.1856	2.0581	1.0653	232
Total	1.1321	0.9192	700

(Source: Author)

The information provided in Table 6.1 confirms the adequacy of the sample size. Although the larger your sample size, the better, for GLM, there must be more cases for each group than the number of dependent variables being analysed. The large numbers of cases within each

category of the independent variable ensure a reasonably stable mean for each cell when analysing observational data.

The book value to market value compares the book value to market value of investment in a share that is, and is interpreted in terms of positive growth; no growth and negative growth (see Table 6.1 above). A book value to market value of less than one (1) means the market value is greater than one and indicates growth in a firm share. A book value to market value of less than one suggests that the book value is higher than the market value and interpreted as a decline in growth. The book value to market value mirrors the business condition in firms over a period of time.

Table 6.1 shows that out of total cases of 851, a total of 708 cases are included into the analysis. Out of 708 cases included into the analysis, only 198 cases had market values greater than book values (positive growth), 288 cases report no growth; for 222 cases, the book values are greater than market values (negative growth). Therefore, a total of 510 (288 + 222) had no growth and negative growth; and this does not augur well for the managers of the firms listed on the NSE. However, the average growth factor (positive growth stocks), (book to market value is 0.252) is a high 3.968 or 397 percent.

Ownership structure in this study captures the percentage of shares held by top shareholders, in each firm over the period 1990 to 2012. There is evidence of concentrated ownership in the firms (see Table 6.1), that is, 437 cases out of 728 cases over 23 years, show shareholding of over 51percent, this gives such a single shareholder an absolute control and is evidence of absence of dispersed ownership. The concentration of ownership is confirmed by the structure of ownership where only 15 cases show the ownership below 20 percent and that the average shareholding is 52.029 percent (see Table 6.1).

The grouping of capital structure is presented in Table 6.1 above. For capital structure (the total debt to the total asset ratio)the total ratio, there are three measurement levels, high debt ratio ranging from 0.45 to 2.03956, with a mean of 0.6746 and a standard deviation of 0.2262, relating to 257 cases out of 708 cases; medium debt ratio ranging from 0.3515 to 0.44781, with a mean of 0.3987anda standard deviation of 0.0266, relating to 125 cases out of 708

cases; and low debt ratio ranging from 0 to 0.34278, with a mean of 0.1963 and a standard deviation of 0.0908, relating to 326 cases out of a 708 cases (see Table 1).

The standard deviation showed that the level of dispersion of grouped levels is highest for a high debt ratio, that is, firms classified as using substantial amounts of debt to finance their total assets. The mean of the levels is different from a high 0.6746 to 0.3987 and 0.1963 for high, medium and low use of debt respectively. On average, the firms listed on the NSE use 40.565 percent debt capital to finance their assets. However, the standard deviation of 26.2571 percent showed substantial variation in the use of debt by firms' overtime. The debt ratio is a measure of the relative obligations of shareholders in a company; and debt to the asset ratio of greater than 0.5 indicates that equity position by owners is less than 50 percent; while a debt ratio of one or more mean that the firm is technically insolvent and there were few such cases.

The asset turnover ratio measures the relationship between total assets and total sales, and is calculated as total sales divided by total assets, and the results are presented in Table 6.1 above. This ratio measures the intensity of usage of assets to generate sales. It is sales that generate cash flows that a firm requires for financing operations and investment in assets. The asset turnover indicates the rate at which a firm generates the turnover (sales) from asset base. To group the cases, the indicators are ranked and divided into three equal groups, and this explains why there are almost 234 cases within each group. The average asset turnover ratio is 1.1321, and this ratio emerges from canonical analysis as a superior indicator of performance in building a relationship between performance and capital structure.

6.3 The assumption of normality

Analysis of variance (ANOVA) assumes that the dependent variable is normally distributed within groups. The test of normality is based upon the criteria that the skewness and kurtosis of the dependent variable fall within the range from -1.0 to +1.0. If the dependent variable satisfies these criteria for skewness and kurtosis, then data meets the normality condition. The

results are in Table 6.2 below. However, these tests will not apply to grouped data; and this is by the name of engaging in methodological pluralism (Horton, 1978).

Table 6.2: Test of Normality for Dependent Variables

	N	Min	Max	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Total Debt to Total Assets	708	0.000	2.040	0.40565	0.2626	1.426	0.092	4.168	0.183
Book to Market Ratio	708	-1.690	42.890	1.70161	3.1735	7.873	0.092	81.358	0.183
Asset Turnover Ratio	700	0.073	10.186	1.13213	0.9192	2.933	0.092	16.303	0.185
Valid N (list wise)	700								

(Source: Author)

Skewness is a measure of the asymmetry of a distribution the normal distribution is symmetric and has a skewness value of zero (0). A distribution with a significant positive skewness has a long right tail and lack normal distribution. A distribution with a significant negative skewness has a long left tail. As a guideline, skewness value that is more than twice its standard error is taken to indicate a departure from symmetry. Kurtosis is a measure for the extent to which observations cluster around central point. For a normal distribution, the value of the kurtosis statistic is zero. Positive kurtosis indicates that the observations cluster more and have longer tails than those in the normal distribution, and negative kurtosis indicates that the observations cluster less and have shorter tails.

If the criteria for normality are not satisfied, then we include a statement about the violation of this assumption in the discussion of the results. However, there is general consensus that violations of this assumption do not seriously affect the probabilities needed for statistical decision making, especially when the number of cases for each cell are equal (Horton, 1978). Furthermore, the F test is robust to non-normality, if the non-normality is caused by skewness rather than by outliers. We test for the normality but do remove the outliers to improve the normality of the variable, for fear of loss of information. The total debt to the total asset ratio, the book value to market value ratio and asset turnover ratio is tested for normality at a covariate level.

6.4 Research questions guiding the analysis

Since at one stage of analysis, a variable is dependent variable and in the next stage of analysis, the same variable is an independent variable, the research questions guiding the analysis are put in broad terms. Therefore, in wide terms, the research questions to be answered, using the general linear model (GLM) is:

- i. What are the main effects of the independent variables?
- ii. What are the interactions among the independent variables?

6.5 Influence of performance on capital structure

The first hypothesis is about the influence of performance on capital structure; however, we seek the answer for the questions: “What are the main effects of the performance and ownership structure as independent variables on capital structure as the dependent variable?” and, “What are the interactions among the independent variables, namely performance with ownership structure?”

In answering the questions we established whether members within the dependent variable (capital structure), defined by independent variables (performance and ownership structure), account for a substantial amount of the differences in average within the dependent (capital structure) variable. At this stage of modeling, the dependent variable capital structure (the total debt to the total assets) is a covariate but the independent variables, performance and ownership structures are categorical variables (factors) or grouped variables. The hypothesis and the model to be tested are:

H₀₁: Firm performance does not have a significant effect on leverage, and alternative

H₁₁: Firm performance has a significant effect on leverage.

$$\text{Capital Structure} = \alpha_i + \beta_i \text{Performance}_i + \beta_i \text{ControlVariables}_i + \varepsilon_i$$

Where α , β parameters to be estimated and ε is the error term

6.5.1 Influence of book value to market value on the debt ratio

First, the book value to market value is used as an indicator of performance, it is independent variable. The total debt to the total asset ratio which is the indicator of capital structure is the dependent variable. The question then is, “Does the book value to market value (performance) have an impact on the total debt to the total asset ratio (capital structure)structure?” The test is whether the average of the total debt to the total asset ratio, between the growth firms (the book value to the market value ratio < 1), no-growth firms(the book value to the market value ratio = 1), and negative growth firms (the book value to the market value ratio >1) are significantly (statistically) different. In Table 6.3, the dependent variable is the total debt to the total asset ratio, and the independent variables are book value to market value and ownership structure. The two sub hypotheses are:

The null hypothesis H_0 : $\mu_{\text{positive growth}} \neq \mu_{\text{negative growth}} \neq \mu_{\text{no growth}}$ -the population means for positive growth, negative growth and no growth, with respect to the total debt to the total asset ratio(capital structure) as the dependent variables are not equal taking into account ownership structure.

The alternative hypothesis H_1 : $\mu_{\text{positive growth}} = \mu_{\text{negative growth}} = \mu_{\text{no growth}}$ - the population means for positive growth, negative growth and no growth, with respect to total debt to the total asset ratio(capital structure)as the dependent variables are equal taking into account ownership structure.

The null hypothesis H_0 : $\sigma^2_{\text{positive growth}} \neq \sigma^2_{\text{negative growth}} \neq \sigma^2_{\text{no growth}}$ - the population variances for positive growth, negative growth and no growth, with respect to the total debt to the total assetratio (capital structure) as the dependent variable are not equal.

The alternative hypothesis H_1 : $\sigma^2_{\text{positive growth}} = \sigma^2_{\text{negative growth}} = \sigma^2_{\text{no growth}}$ - the population variances for positive growth, negative growth and no growth, with respect to the total debt to the total asset ratio(capital structure) as the dependent variable are equal.

Table 6.3 provides statistics for each combination of factors in the model, performance (book to market ratio) and ownership structure (shareholdings). The N column in Table 6.3 shows that there are unequal cell sizes. Over the year majority of firms offered is either zero growths

(288) or no growth (222), with those with growth totaling 198. The standard deviation does not appear homogenous if we take interaction into account.

Table 6.3: Performance (Book to Market Ratio) On capital structure - dependent variable: Total debt to total assets

Categorised Ownership Structure	Level of Book Value to Market Value Ratio	Mean	Std. Deviation	N
Shareholdings 20percent to 50percent	Positive Growth <1	0.41626	0.210122	75
	No Growth =1	0.36274	0.268151	129
	Negative Growth > 1	0.32865	0.319771	69
	Total	0.36883	0.269185	273
Shareholdings 51percent to 100percent	Positive Growth <1	0.45341	0.320123	113
	No Growth =1	0.42027	0.223603	154
	Negative Growth > 1	0.42004	0.231942	153
	Total	0.42910	0.255703	420
Shareholdings Below 20percent	Positive Growth <1	0.38884	0.331983	10
	No Growth =1	0.47985	0.060441	5
	Total	0.41918	0.271785	15
Total	Positive Growth <1	0.43608	0.283402	198
	No Growth =1	0.39553	0.244356	288
	Negative Growth > 1	0.39163	0.265067	222
	Total	0.40565	0.262571	708

(Source: Author)

The result showed that firms with positive growth, (where market values exceed book value) on average financed 43.6percent of their assets with debt capital. No-growth firms on average financed 39.55percent of their assets with debt capital; and negative growth firms on average use the least amount, financed 39.16percent of their assets with debt. There appears to be no performance effect on capital structure because for each class of performance, the debt usage is approximately 40 percent (positive $g < 1 = 43.608$ percent; no-growth percent; and negative $g > 1 = 39.163$ percent).

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital on average financed 36.883 percent of their assets with debt capital; firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital on average financed 42.910 percent of their assets with debt capital. Firms in which the largest

shareholder held below 20 percent of the share capital on average financed 41.918 percent of their assets with debt capital.

Ownership structure combined with performance has insignificant influence on capital structure. Firms in which the largest shareholder held 20 percent to 50 percent of the share capital coupled with a positive growth on average financed 41.626 percent of their assets with debt capital; firms in which the largest shareholder held below 20 percent of the share capital coupled with positive growth on average financed 38.884 percent of their assets with debt capital. Firms in which the largest shareholder held more than 51 (51 percent to 100 percent) of the share capital coupled with positive growth financed 45.341 percent of their assets with debt capital.

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital coupled with no-growth financed 36.274 percent of their assets with debt capital; firms in which the largest shareholder held below 20 percent of the share capital coupled with no-growth on average financed 47.985 percent of their assets with debt capital. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital coupled with no-growth on average financed 42.027 percent of their assets with debt capital.

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital coupled with negative growth on average financed 36.883 percent of their assets with debt capital; firms in which the largest shareholder held below 20 percent of the share capital coupled with negative growth appeared not to use debt to finance their assets. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital coupled with negative growth on average financed 42.004 percent of their assets with debt capital.

6.5.2 Homogeneity of variance test – book value to market value on debt ratio

This test confirmed if the differences in capital structure (the total debt to the total asset ratio) by performance (book to market ratio), ownership structure (shareholdings) and interaction term (ownership structure*book to market ratio) are statistically significant. The analysis of variance assumes that the variance of the dependent variable is homogeneous across all the

cells formed by the factors (independent variable). It is important testing the equality of means across groups and equality of variances across groups Levene's (1960) test for equality of variance across groups for meaningful interpretation of the findings. The result is in Table 6.4.

Table 6.4: Levene's test of equality error variances: Department Variable: Total Debt to Total Assets

F	df1	df2	Sig.
1.752	7	700	0.094

(Source: Author)

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Design: Intercept + OwnStrCa + LeBtM + OwnStrCa * LeBtM

The significance result for homogeneity of variance is >0.05 ; that is, 0.094, (see Table 6.4) which shows that the error variance of the dependent variable is equal across the groups.

6.5.3 Interpretation of the relationship – book value to market value ratio on debt ratio

On using GLM, and if the relationship between the predicted variable (debt ratio as a capital structure indicator) and independent variable (grouping variable - the book value to the market value ratio as a performance indicator) is confirmed, is an affirmation that distinct categories of the independent variable (performance, that is, positive growth, no growth, negative growth) are linked to the different average scores on the dependent variable (capital structure). The statement is correct if the relationship is statistically significant in the "Tests of Between-Subjects Effects." The results of tests between subject variables with total debt to the total asset ratio as dependent variable and book value to market value as predictor variable and ownership structure being a control variable are presented in Table 6.5 below. Since there is more than one independent variable for this analysis, the entries for the "Corrected Model" and the variable will not be identical.

The common language effect size is designed to communicate the meaning of an effect size, in plain English, to enable those with little statistic's knowledge understand it's the meaning.

This effect size was proposed and named by McGraw and Wong (1992), and it is used to describe the difference between groups. The core concept of the common language effect size is the notion of a pair, defined as a score in the group one paired with a score in group two (Kerby, 2014; Ken & Kristopher, 2012).

Table 6.5 contains the results from the analysis of variance. It includes the sums of squares, F values, and significance levels and Partial Eta Squared. The intercept term in this ANOVA is a test of whether the grand mean is different from zero. Because all the dependent variable scores are marginally positive, the grand mean is different from zero. Therefore, the test of the intercept is not of interest to us.

$$SS_{\text{corrected model}} = SS_{\text{OwnStrCa}} + SS_{\text{LeBtM}} + SS_{\text{OwnStrCa} * \text{LeBtM}}$$

$$1.008^a = 0.606 + 0.201 + 0.127$$

Table 6.5: Tests of Between-Subjects Effects - Dependent Variable: Total Debt to Total Assets

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.008 ^a	7	.144	2.111	0.040	0.021
Intercept	21.926	1	21.926	321.526	0.0001	0.315
OwnStrCa	0.606	2	0.303	4.444	0.012	0.013
LeBtM	0.201	2	0.100	1.472	0.230	0.004
OwnStrCa * LeBtM	0.127	3	0.042	0.620	0.602	0.003
Error	47.735	700	0.068			
Total	165.245	708				
Corrected Total	48.743	707				

a. R Squared = .021 (Adjusted R Squared = 0.011)

(Source: Author)

The significance value for ownership (OwnStrCa) is 0.012, is significant at <0.05; therefore, affect capital structure, but there is no effect of book value to market value (p = 0.230) on capital structure. The null hypothesis that "the mean total debt to a total asset ratio was not equal across all categories of the book value to market ratio" is rejected. There is also no discriminating effect of interaction term (OwnStrCa * LeBtM) on capital structure. However,

ownership structure (OwnStrCa) has an effect, significance = 0.12; that is, the hypothesis that “the mean total debt to the total asset ratio was not equal across all categories of ownership structure (OwnStrCa)” is not supported by data; and the overall corrected model, F value = 2.11 and p-value of 0.040 are significant. Effect size should only be interpreted if the relationship is significant. However, this does not tell us the component of variables that behaves differently.

In Table 6.5, is presented Partial Eta-squared. This is the ratio of variance explained in the dependent variable by a predictor while controlling for other predictors. This makes Partial Eta-squared analogous to the r -squared (r^2). Partial Eta-squared is a biased estimator of the variance explained by the model for the population. Partial Eta-squared estimates only the effect size in the sample. The Partial Eta Squared as a measure of effect is presented in Table 6.5. Partial Eta Squared is reported as trivial, small, moderate, or large.

Another measure used in power analysis when comparing two independent proportions is Cohen's d (Cohen, 1992). The interpretation of Cohen's criteria for effect size is: less than .01 = trivial; 0.01 up to 0.06 = small; 0.06 up to 0.14 = moderate; 0.14 or greater = large (Field, 2009). On the basis of preceding scale, except for the intercept, all other partial eta squares are either trivial or small. The statement that "membership in categories defined by book value to market value class identification accounts for a reasonable amount of the differences in the total debt to the total asset ratio" is not supported by the data.

6.5.4 Estimated Marginal Means - Book value to market value on debt ratio

Taylor (2011) explained estimated marginal mean as follows, “estimated marginal means are obtained by inserting appropriate values into a regression equation to obtain predicted values, and that they are especially useful for answering questions like 'how would the groups compare if all subjects had the same value on (same covariate).’” Taylor (2011) asserted that because standard errors can be obtained for the predicted values, it is possible to assess the significance of differences between groups, while holding other variables constant. The estimated marginal means is the mean response for each factor, adjusted for any other variables within the model (Ho, 2006). The result from the comparison of estimated marginal means of the total debt to the total asset ratio (as dependent variable) for groups within the

book value to the market value ratio (as the predictor variable) while holding ownership structure constant is presented in Table 6.6.

The results were that firms in which the largest shareholder held between 20 percent to 50 percent of the share capital coupled with a positive growth on average financed 41.6 percent of their assets with debt; firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital coupled with positive growth on average financed 45.3 percent of their assets using debt; and firms in which the largest shareholder held below 20 percent of the share capital coupled with positive growth firms on average financed 45.3 percent of their assets using debt.

**Table 6.6: Categorised ownership structure * Level of book value to market value ratio-
Dependent variable :Total debt to total assets ratio**

Categorised Ownership Structure	Level of Book to Market Ratio	Mean	Std. Error	95percent Confidence Interval	
				Lower Bound	Upper Bound
Shareholdings 20 percent to 50 percent	Positive Growth <1	0.416	0.030	0.357	0.475
	No Growth =1	0.363	0.023	0.318	0.408
	Negative Growth > 1	0.329	0.031	0.267	0.390
Shareholdings 51percent to 100percent	Positive Growth <1	0.453	0.025	0.405	0.502
	No Growth =1	0.420	0.021	0.379	0.462
	Negative Growth > 1	0.420	0.021	0.379	0.461
Shareholdings Below 20percent	Positive Growth <1	0.389	0.083	0.227	0.551
	No Growth =1	0.480	0.117	0.251	0.709
	Negative Growth > 1	. ^a	.	.	.

Source: Author

The results showed that firms in which the largest shareholder held 20 percent to 50 percent of the share capital coupled with no growth on average financed 36.3 percent of their assets with debt. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital coupled with no growth on average financed 42.0 percent of their assets using debt; and firms in which the largest shareholder held below 20 percent of the share capital coupled with no growth on average financed 48.0 percent of their assets using debt.

The results showed that firms in which the largest shareholder held 20 percent to 50 percent of the share capital coupled with negative growth, on average finance 36.3 percent of their assets with debt. Firms where a top shareholder holds 51 percent to 100 percent of the shares (have been absolute control) coupled with negative growths are expected to finance 42.0 percent of their assets using debt. Firms where a top shareholder holds below 20 percent of the shares (dispersed ownership) coupled negative growth the firms in are expected to finance 48.0 percent of their assets using debt.

In conclusion, there appeared to be small differences in capital structure amongst positive growth firms, no growth, firm and negative growth firms depending upon the ownership structure and performance otherwise, the difference in performance (growth in BtM ratio) would remain constant for three different shareholdings.

6.5.5 Post Hoc Analysis- Book value to market value on total debt to total assets

Post hoc multiple comparison tests are necessary if differences exist among the means to determine, which means differ (Field, 2009; Ho, 2006). This is critical to the study because the objective during this stage is to establish the impact of performance (book to market ratio) on capital structure (total debt to total assets) taking into account the different performance levels (positive growth, no growth and negative growth). Since the variable book value to market value (LeBtM) as an indicator of performance, and that it is not significant, however, for robustness we need not look at the post-hoc tests. Post hoc tests are done and presented in Table 6.7.

The post-hoc analysis procedure examines the data for patterns that were not specified prior to the analysis; that is, data dredging. The concern in post-hoc analysis is to find patterns and/or relationships between subgroups; in this case within performance (book to market ratio) groups with respect to level of usage of debt, which otherwise remain undetected and undiscovered if the researcher relied only upon a priori statistical method (Klcockars & Hancock, 2000). This analyses the probability that the significant effects will seem to have been discovered among subgroups within a population when none actually exist. The test of between subjects determines the significance as a factor but not how the levels within a factor differ.

The post-hoc tests show the differences in the model for predicated means for each pair of factor levels (performance – book to market ratio) that is, it is a range test. For such an analysis, Turkeys range test denoted turkey HSD is appropriate (Lowry, 2008). The result of post-hoc analysis is in Table 6.7. In Table 6.7, the first column shows that the post-hoc test is Turkey HSD. The next two columns (i) and (j) display the pair of factor levels being tested- levels of the book to market ratio. The third column is the mean difference between, i and j. For level of significance the cutoff point is 0.05 and there do not appear to be significant differences in the debt ratio, that is, between the total debt to the total asset ratio of positive growth, no growth and negative growth.

The post-hoc test suggests that performance, measured as the book to the market value ratio have no influence upon the total debt to the total asset ratio (capital structure). Nevertheless, post hoc test does not account for the levels of other factors thus ignoring the possibility of an interaction effect between performance and ownership structure.

6.5.6 Interpretation of the Post Hoc Effects - Book value to market value on total debt to total assets ratio

The next three statements are possible interpretation of the post-hoc effects. Each one should be verified independently for significance in terms of pair-wise comparisons, and the results presented in Table 6.7. The preview to this analysis, that is the means and standard deviations are as presented in Table 6.1.

The first statement was that a group within the book value to the market value ratio categorised as “positive growth (<1) (with a mean of 0.25182 and a standard deviation of 0.220624) used more debt than the other group within the book value to the market value ratio categorised as no growth (=1) (with a mean of 0.93066 and a standard deviation of 0.280132). However, the difference of -0.04054 between the two groups has a p-value of 0.213 is not statistically significant (see Table 6.7).

The second statement was that a group within the book value to the market value ratio classified as “no growth (=1) (with mean of 0.93066 and a standard deviation of 0.280132) used more debt than the other group within the book value to the market value ratio classified as negative growth (>1) (with a mean of 3.99482 and a standard deviation of 4.912579). The difference of 0.00390 between the two groups is associated with a p-value of 0.191, which is greater than the critical value of 0.05; the difference is not significant (see Table 6.7).

The third statement was that a group within the book value to the market value ratio classified as “positive growth (<1) (with a mean of 0.25182 and a standard deviation of 0.220624) used more debt than the other group within the book value to the market value ratio classified as negative growth (>1) (with a mean of 3.99482 and a standard deviation of 4.912579). The difference of -0.04444 between the two groups are associated with a p-value of 0.985, which is greater than the critical value of 0.05; therefore, the difference is not significant.

Table 6.7: Multiple Comparisons - Total debt to total assets ratio by level of book to market ratio Tukey HSD

(I) Level of Book to Market Ratio	(J) Level of Book to Market Ratio	Mean Difference (I-J)	Std. Error	Sig.	95percent Confidence Interval	
					Lower Bound	Upper Bound
Positive Growth <1	No Growth =1	-0.04054	0.024108	0.213	-0.01608	0.09717
	Negative Growth > 1	0.04444	0.025526	0.191	-0.01551	0.10440
No Growth =1	Positive Growth <1	-0.04054	0.024108	0.213	-0.09717	0.01608
	Negative Growth > 1	0.00390	0.023323	0.985	-0.05088	0.05868
Negative Growth > 1	Positive Growth <1	-0.04444	0.025526	0.191	-0.10440	0.01551
	No Growth =1	-0.00390	0.023323	0.985	-0.05868	0.05088

Based on observed means. The error term is Mean Square (Error) = 0.068.
(Source: Author)

6.5.7 Homogenous Subsets Test – Total debt to total assets ratio with book to market ratio

The final test is the homogenous subsets' test; in this case, Tukey's HSD (honest significant difference test) test is appropriate because the interest to the researcher is to find means that are significantly different from each other (Kinnear& Gray, 1999). The homogeneous subsets' output is generated along with post hoc tests and show, which pair of groups has significantly distinct means on the dependent variable. Subset output would not be interpreted if the main effect was not significant.

In this case, the pairs of groups are based on book value to market value(performance) as the independent variable, that is, negative growth > 1, no-growth =1 and positive growth <1 as groups – grouping levels) and the total debt to the total asset ratio(capital structure) as the dependent variable. The groups are listed in order of ascending means. The means that are listed under each subset comprise a set of means that are not significantly different from each other.

Table 6.8: Tukey HSD^{a,b,c}Total debt to total assets ratio by level of book to market ratio

Level of Book to Market Ratio	N	Subset
		1
Negative Growth > 1	222	0.39163
No Growth =1	288	0.39553
Positive Growth <1	198	0.43608
Sig.		0.162

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square (Error) =0.068.

a. Uses Harmonic Mean Sample Size = 230.287.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Source: Author

For each grouping variable, there are variations in capital structure (debt ratio), and the result in Table 6.8, show that cases of negative growth > 1 has a debt ratio 0.39163, case of no-growth =1, have a debt ratio of 0.39553,while cases of positive growth <1 has a debt ratio of

0.43608. If we ignore the statistical test of significance, and from the ranking, it appears that performance has some influence on capital structure. This is because cases of improved book value to market value are associated with more use of debt. But given that means are all listed under one subset, and with a p-value of 0.162, it follows that the set of means are not statistically significantly different from each other. Furthermore, because all scores for the amount of debt used (see subset 1 in Table 6.8 above) across different levels of growth can be rounded to 40 percent, confirm no difference in total debt to the total asset ratio (capital structure) if the book value to market value is used as a grouping variable.

6.5.8 Summary - Book value to market value ratio on total debt to total assets ratio

The question was, “Does the book value to market value (performance) have an impact on the total debt to the total asset ratio (capital structure)? To answer this question, statistical tests were done and results presented. When the book value to the market value ratio is employed as a performance indicator, the tests of between-subjects effects and the post-hoc test did not reveal differences in capital structure across performance levels. The multiple comparisons and homogenous subset's test failed to reveal a difference in capital structure between performance levels. Therefore, the two null hypothesis:

Null hypothesis: $H_0: \mu \text{ positive growth} \neq \mu \text{ negative growth} \neq \mu \text{ no growth}$ - the population *means* for positive growth, negative growth and no growth, with respect to the total debt to the total asset ratio (capital structure) as the dependent variables, are not equal taking into account ownership structure is not supported by the data; and

Null hypothesis: $H_0: \sigma^2 \text{ positive growth} \neq \sigma^2 \text{ negative growth} \neq \sigma^2 \text{ no growth}$ - the population *variances* for positive growth, negative growth and no growth, with respect to the total debt to the total asset ratio (capital structure) as the dependent variables, are not equal is not equal taking into account ownership structure is not supported by the data. In conclusion, the book value to the market value ratio (as a performance indicator) has no effect on the total debt to the total asset ratio (capital structure) or does not explain usage on debt capital firms.

6.6 Influence of asset turnover ratio (performance) on total debt to total assets ratio (capital structure)

The asset turnover ratio was the first ranked indicator of performance as per canonical correlation analysis (see chapter five). Asset turnover ratio shows the rate at which managers used firm assets to generate revenue (sales). At this stage of analysis, the question then is, “Does the asset turnover ratio (as a performance indicator) have influence on the total debt to the total asset ratio (capital structure)? In answering this question, the asset turnover ratio is the predictor variable while the total debt to the total asset ratio is the predicted variable. The two sub hypotheses on mean and variance are:

Null hypothesis H_0 : μ low asset turnover ratio \neq μ medium asset turnover ratio \neq μ high asset turnover ratio- the population means for the low asset turnover ratio; medium asset turnover ratio and high asset turnover ratio with respect to the total debt to the total asset ratio (capital structure) are not equal taking into account ownership structure.

Alternative hypothesis H_1 : μ low asset turnover ratio = μ medium asset turnover ratio = μ high asset turnover ratio- the population means for low asset turnover ratio, medium asset turnover ratio and high asset turnover ratio with respect to the total debt to the total asset ratio as a dependent variable (capital structure) taking into account ownership structures are equal; and

Null hypothesis H_0 : σ^2 low asset turnover ratio \neq σ^2 medium asset turnover ratio \neq σ^2 high asset turnover ratio- the population variances for low asset turnover ratio, medium asset turnover ratio and high asset turnover ratio with respect to the total debt to total asset ratio as a dependent variable (capital structure) and taking into account ownership structures are not equal.

Alternative hypothesis H_1 : σ^2 low asset turnover ratio = σ^2 medium asset turnover ratio = σ^2 high asset turnover ratio- the population variances for low asset turnover ratio, medium asset turnover ratio and high asset turnover ratio with respect to the total debt to total asset ratio as a dependent variable (capital structure) and taking into account ownership structures are equal.

6.6.1 Descriptive statistics - influence of asset turnover ratio on debt ratio

The different classes of asset turnover ratio and the total debt to the total asset ratio are presented in Table 6.1. The data presented in Table 6.1 confirm that both levels of measurement requirement and sample size requirement are satisfied. The statistics for each combination of factors in the model, performance (asset turnover ratio) and ownership structure (shareholdings) are presented in Table 6.9. The N column in Table 6.9 shows that for the variable asset turnover ratio, there are equal cell sizes, except for high level, which is 232, the rests are 234. This is not the case for ownership structure.

**Table 6.9: Performance (Lev Asset Turnover Ratio) on capital structure -
Dependent variable: Total debt to total assets**

Categorised Ownership Structure	Lev Asset Turnover Ratio	Mean	Std. Deviation	N
Shareholdings 20percent to 50percent	Low 0.073 - 0.6882	0.21975	0.171092	116
	Medium 0.6926 - 1.1073	0.39050	0.168437	83
	High 1.114 - 10.1856	0.57820	0.334240	74
	Total	0.36883	0.269185	273
Shareholdings 51percent to 100percent	Low 0.073 - 0.6882	0.34727	0.255778	116
	Medium 0.6926 - 1.1073	0.39237	0.183122	142
	High 1.114 - 10.1856	0.53606	0.280333	154
	Total	0.43338	0.256300	412
Shareholdings Below 20percent	Low 0.073 - 0.6882	0.05043	0.034182	2
	Medium 0.6926 - 1.1073	0.51884	0.235918	9
	High 1.114 - 10.1856	0.37930	0.270803	4
	Total	0.41918	0.271785	15
Total	Low 0.073 - 0.6882	0.28151	0.226391	234
	Medium 0.6926 - 1.1073	0.39657	0.181080	234
	High 1.114 - 10.1856	0.54680	0.298641	232
	Total	0.40790	0.263214	700

Source: Author

In Table 6.9, the dependent variable is the total debt to the total asset ratio, and the independent variables are asset turnover ratio and ownership structure. The result showed that firms with a low asset turnover, on average financed 28.151 percent of their assets with debt. Firms with the medium asset turnover ratio financed 39.657 percent of their assets with debt; and firms with a high asset turnover ratio financed 54.68 percent of their assets with debt. The

data confirmed that, in this market, on the average firm financed 40.790 percent of their assets using debt capital.

On examination of the asset turnover ratio (performance) there appears to be a performance effect(asset turnover effect) on capital structure. In table 6.9, the variation in the total debt to the total asset ratio (capital structure) is easily visible across asset turnover ratio levels. Therefore, the NSE data confirms that low usage of debt is associated with low asset turnover ratio (performance) and that firms with a debt ratio above 54.68 percent outperform those with the medium and low debt ratio.

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital on average financed 36.883 percent of their assets with debt capital; firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital on average financed 42.1 percent of their assets with debt capital. Firms in which the largest shareholder held below 20 percent of the share capital use the highest amount of the debt, that is, financed 49.918 percent of their assets with debt capital.

It appeared that ownership structure has influence on capital structure. Firms in which the largest shareholder held 20 percent to 50 percent of the share capital coupled with a low asset turnover ratio on average financed 21.975 percent of their assets with debt capital; firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital coupled with a low asset turnover ratio on average financed 34.727percent of their assets with debt capital. Firms in which the largest shareholder held below 20 percent of the share capital coupled with a low asset turnover ratio financed 5.043percent of their assets with debt capital. Therefore, it appears that ownership structure combined with performance has significant influence on capital structure.

Firms, in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled a medium asset turnover, on average financed 39.050 percent of their assets with debt capital. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a medium asset turnover ratio on, average financed 39.237 percent of their assets with debt capital. Firms in which the largest shareholder held

below 20 percent of the share capital coupled with a medium asset turnover ratio, financed 51.884 percent of their assets with debt.

Firms, in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled a high asset turnover ratio, on average financed 57.820 percent of their assets with debt capital. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a high asset turnover ratio, on average financed 53.606 percent of assets with debt capital. Firms in which the largest shareholder held below 20 percent of the share capital, coupled with high asset turnover ratio, finance 37.930 percent of their assets with debt capital.

When the asset turnover ratio is used as an indicator of performance, the data on the NSE support the performance risk hypothesis, that is, more profitable, or that more efficient firms use more debt. The data fail to confirm the franchise value hypothesis that stipulates that firms might prefer to lower the total debt to the total asset ratio to reduce their exposure to financial risk. Therefore, the data support the hypothesis that the population means for low asset turnover ratio, medium asset turnover ratio and high asset turnover ratio with respect to total debt to total assets ratios (capital structure) are not equal taking into account ownership structure.

6.6.2 Homogeneity of Variance Test - Asset turnover ratio on total debt to total assets ratio

The homogeneity of variance test is to confirm if the differences in variances in capital structure (total debt to total assets) by performance (across categories of the asset turnover ratio), ownership structure (shareholdings) and interaction term (ownership structure*asset turnover ratio) were statistically significant. Levene's (1960) test for equality of variance is a criterion for satisfying this assumption, and the result presented in Table 6.10.

**Table 6.10: Levene's Test of Equality of Error Variances^a -
Dependent Variable: Total Debt to Total Assets**

F	df1	df2	Sig.
5.888	8	691	0.0001

Levene's Test of Equality of Error Variances tests the null hypothesis that the error variance of the dependent variable is equal across groups.

Design: Intercept + OwnStrCa + Lev Asset Turnover Ratio + OwnStrCa * Lev Asset Turnover Ratio.

(Source: Author)

The significance level for homogeneity of variance of 0.0001 confirmed that the error variance for the dependent (the total debt to the total asset ratio- capital structure) variable is not equal across the groups (asset turnover ratio). Therefore, the assumption to the ANOVA test has not been met. The data reject the hypothesis that the population variances for low asset turnover ratio, medium asset turnover ratio and medium asset turnover ratio with respect to the total debt to the total dependent variable are equal.

6.6.3 Interpretation of the relationship – Asset turnover ratio on total debt to total asset ratio

The results of “Tests of Between-Subjects Effects” presented in Table 6.11 help in confirming if the relationship between the asset turnover ratio and the total debt to the total asset ratio is statistically significant. The dependent variable is the total debt to the total asset ratio, with the predictor variables being asset turnover ratio and ownership structure as a control. The statistical test confirmed a relationship between the predicted variable (capital structure) and predictor variable (performance); and that the different categories of the independent variable performance (asset turnover ratio levels - low, medium, and high) are linked to the different average scores on the dependent variable (capital structure).

In the model in table 6.11, the values of intercept, the asset turnover ratio (LeAssTurn) and interaction term (OwnStrCa * LeAssTurn) are statistically significant because their significance level is greater than the cut off level of <0.05; therefore, these variables had an effect on capital structure. Ownership structure (OwnStrCa) (p = 0.126) has no effect on capital structure.

Table 6.11: Tests of Between-Subjects Effects - Dependent Variable: Total Debt to Total Assets

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	9.638 ^a	8	1.205	21.461	0.0001	0.199
Intercept	12.695	1	12.695	226.141	0.0001	0.247
OwnStrCa	.233	2	0.117	2.076	0.126	0.006
LeAssTurn	1.013	2	0.507	9.026	0.0001	0.025
OwnStrCa * LeAssTurn	1.215	4	0.304	5.411	0.0001	0.030
Error	38.790	691	0.056			
Total	164.896	700				
Corrected Total	48.428	699				

a. R Squared = 0.199 (Adjusted R Squared = 0.190) Source: Author

The overall corrected model, F value = 21.46 and p-value of 0.0001 are statistically significant. The null hypothesis that "the mean total debt to the total asset ratio (capital structure) was not equal across all categories of the asset turnover ratio" is supported by data. However, this does not tell us which component of the asset turnover ratio, whether low, medium and high, behaves differently.

Effect size is a quantitative measure of the strength of a phenomenon. The partial eta squared measure of effect size on the relationship between asset turnover ratio and total debt to the total asset ratio is presented in Table 6.11. Based on Cohen's criteria for effect size, except for the intercept, all other partial eta squares are small, but much higher than in the case of the book value to the market value ratio. The statement that "membership in categories defined by asset turnover ratio categories accounts for a reasonable amount of the differences in average total debt to the total asset ratio" is therefore, marginally supported.

6.6.4 Estimated marginal means – asset turnover ratio on total debt to total assets ratio

The result from the comparison of estimated marginal means of total debt to the total asset ratio (as dependent variable) for groups within asset turnover ratio (as the predictor variable) while holding ownership structure constant is presented in Table 6.12. The results are that firms in which the largest shareholder held 20 percent to 50 percent of the share capital,

coupled with a low asset turnover ratio, on average financed 22.0 percent of their assets with debt capital. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a low asset turnover ratio, on average financed 34.7 percent of their assets using debt capital; and firms in which the largest shareholder held below 20 percent of the share capital, coupled with a low turnover ratio, on average financed 5 percent of their assets using debt capital.

The results are that firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with a medium asset turnover ratio, on average financed 39.1 percent of their assets with debt capital. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a medium asset turnover ratio, on average financed 39.2 percent of their assets using debt capital. Firms in which the largest shareholder held below 20 percent of the share capital, coupled with a medium turnover ratio, on average financed 51.9 percent of their assets with debt capital.

Table 6.12: Estimated means based on categorised ownership structure * Lev Asset Turnover Ratio –Dependent Variable: Total Debt to Total Assets

Categorised Ownership Structure	Lev Asset Turnover Ratio	Mean	Std. Error	95percent Confidence Interval	
				Lower Bound	Upper Bound
Shareholdings 20percent to 50percent	Low 0.073 - 0.6882	0.220	0.022	0.177	0.263
	Medium 0.6926 - 1.1073	0.391	0.026	0.339	0.442
	High 1.114 - 10.1856	0.578	0.028	0.524	0.632
Shareholdings 51percent to 100percent	Low 0.073 - 0.6882	0.347	0.022	0.304	0.390
	Medium 0.6926 - 1.1073	0.392	0.020	0.353	0.431
	High 1.114 - 10.1856	0.536	0.019	0.499	0.574
Shareholdings Below 20percent	Low 0.073 - 0.6882	0.050	0.168	-0.279	0.379
	Medium 0.6926 - 1.1073	0.519	0.079	0.364	0.674
	High 1.114 - 10.1856	0.379	0.118	0.147	0.612

Based on observed means, the error term is Mean Square (Error) = .056. The mean difference is significant at the 0.05 level.

Lev = Level

Source: Author

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with a high asset turnover ratio, on average financed 57.8 percent of their assets with debt capital. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a high asset turnover ratio, on average financed 53.6 percent of their assets with debt capital; and firms in which the largest shareholder held below 20 percent of the share capital, coupled with a high turnover, on average financed 37.9 percent of their assets with debt capital. There appeared to be differences in capital structure among low, medium and high asset turnover firms, taking into account ownership structure as the control variable.

6.6.5 Interpretation of the post hoc effects – asset turnover ratio on total debt to total assets ratio

The next three statements are possible interpretation of the post-hoc effects. Each one is verified independently for significance in terms of pair-wise comparisons, and the results presented in Table 6.13. The preview to the analysis is the means and standard deviations presented in Table 6.1.

The first statement was that a group within asset turnover ratio, that was categorised as a low asset turnover ratio (with mean of 0.4545 and a standard deviation of 0.1513) used more debt than the other group within the asset turnover ratio, that was categorised as a medium asset turnover ratio (with a mean of 0.8917 and a standard deviation of 0.1192). The difference between the groups the means of -0.11506, had a p-value of 0.0001, is statistically significant.

The second statement was that a group within asset turnover ratio categorised as a medium asset turnover ratio (with a mean of 0.8917 and a standard deviation of 0.1192) used more debt than the other group within the asset turnover ratio categorised as a high asset turnover ratio (with a mean of 2.0581 and a standard deviation of 1.0653). The difference between the group means of -0.15023 has a p-value of 0.0001, is statistically significant.

The third statement was that a group within asset turnover ratio categorised as a low asset turnover ratio (with a mean of 0.4545 and a standard deviation of 0.1513) used more debt

than the other group within the asset turnover ratio categorised as a high asset turnover ratio (with a mean of 2.0581 and a standard deviation of 1.0653). However, the difference of 0.26529 between the groups with a p-value of 0.0001, which is less than the critical value of 0.05 is statistically significant.

The mean difference is significant at the 0.05 level. Therefore, the null hypothesis that the population means for low asset turnover ratio (performance), medium asset turnover ratio and high asset turnover ratio with respect to the total debt to total assets ratios as the dependent variable (capital structure) are not equal taking into account ownership structure is supported by the data. As a result, when the asset turnover ratio is used as an indicator of performance, performance affects debt usage.

Table 6.13: Multiple Comparisons - Total debt to total assets ratio by Lev asset turnover ratio Tukey HSD

(I) Lev Asset Turnover Ratio	(J) Lev Asset Turnover Ratio	Mean Difference (I-J)	Std. Error	Sig.	95percent Confidence Interval	
					Lower Bound	Upper Bound
Low 0.073 - 0.6882	Medium 0.6926 - 1.1073	-.11506*	0.021904	0.0001	-0.16650	-0.06361
	High 1.114 - 10.1856	-.26529*	0.021951	0.0001	-0.31685	-0.21373
Medium 0.6926 - 1.1073	Low 0.073 - 0.6882	.11506*	0.021904	0.0001	0.06361	0.16650
	High 1.114 - 10.1856	-.15023*	0.021951	0.0001	-0.20179	-0.09867
High 1.114 - 10.1856	Low 0.073 - 0.6882	.26529*	0.021951	0.0001	0.21373	0.31685
	Medium 0.6926 - 1.1073	.15023*	0.021951	0.0001	0.09867	0.20179

Based on observed means, the error term is Mean Square (Error) = 0.056. *.

Source: Author

6.6.6 Homogenous Subsets Test – Total debt to total assets ratio with asset turnover ratio

In this case, the groups are derived from the asset turnover ratio (performance), and the asset turnover ratios are the independent variable, (that is, low asset turnover ratio, medium asset

turnover ratio and highasset turnover ratio as groups – grouping levels). The derived groups are used to predict total debt to the total asset ratio (capital structure) and to establish if there are significant capital structure variations between the groups. The results are presented in table 6.14.

Table 6.14: Homogenous Subset Total debt to total assets ratio Tukey HSD^{a,,b,,c}

Lev Asset Turnover Ratio	N	Subset		
		1	2	3
Low 0.073 - 0.6882	234	0.28151		
Medium 0.6926 - 1.1073	234		0.39657	
High 1.114 - 10.1856	232			0.54680
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed. Based on observed means, the error term is Mean Square (Error) = 0.056.

a. Uses Harmonic Mean Sample Size = 233.330. b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed. c. Alpha = 0.05. *Source: Author*

The means that are listed under each subset comprise a set of means that are not significantly different from each other. But in this case, as shown in Table 6.14, the means are under different subsets; because each group is under a different subset. We conclude that the total debt to the total asset ratio for groups within the asset turnover ratio is significantly distinct.

Poor asset turnover ratios are associated with low usage of debt. That group financed only 28.151 percent of the assets with debt capital. Cases of a high asset turnover ratio are associated with more usage of debt, as that group financed 54.68 percent of the assets with debt capital. The null hypothesis that the population means and variance for low asset turnover ratio (performance), medium asset turnover ratio and medium asset turnover ratio with respect to the total debt to the total asset ratio (capital structure) are not equal taking into account ownership structure is supported by the data.

6.6.7 Summary – Asset turnover ratio on total debt to total asset ratio

The question was, “Does the asset turnover ratio (performance) have an impact on total debt to the total asset ratio (capital structure)? To answer this question, a number of statistical tests were done and results presented. Using the asset turnover ratio as a performance indicator, the

tests of between-subjects effects and the post-hoc test revealed a difference in capital structure across performance levels. The multiple comparisons and homogenous subset's test reveal a difference in capital structure between performance levels. Therefore, the two null hypothesis:

Null hypothesis H_0 : $\mu_{\text{low asset turnover ratio}} \neq \mu_{\text{medium asset turnover ratio}} \neq \mu_{\text{high asset turnover ratio}}$ - the population means for low asset turnover ratio, medium asset turnover ratio and high asset turnover ratio with respect to the total debt to the total asset ratio (capital structure) as the dependent variables are not equal taking into account ownership structure is supported by the data; and

Null hypothesis H_0 : $\sigma^2_{\text{low asset turnover ratio}} \neq \sigma^2_{\text{medium asset turnover ratio}} \neq \sigma^2_{\text{high asset turnover ratio}}$ - the population variances for low asset turnover ratio, medium asset turnover ratio and high asset turnover ratio with respect to the total debt to the total asset ratio (capital structure) as the dependent variable are not equal taking into account ownership structure is supported by the data. Therefore, when asset turnover is used as a performance indicator, performance affects the amount of debt employed by firms.

6.7 Influence of capital structure on performance

The impact of capital structure on performance is addressed in this section. This seeks an answer to the question: “What are the main effects of the capital structure and ownership structure as independent variables on performance as the dependent variable?” and, “What are the interactions among the predictor variables, namely capital structure with ownership structure?” In answering this question, capital structure and ownership structure is the predictor variable while performance is the predicted variable. The hypothesis is:

H_{02} : Leverage does not have significant effect on firm performance; the alternative hypothesis:

H_{12} : Leverage has a significant effect on firm performance.

$$Performance_i = \alpha_i + \beta_i CapitalStructure_i + \beta_i ControlVariables_i + \epsilon_i$$

Where α , β parameters to be estimated and ϵ are is the error term

6.7.1 Influence of total debt to total asset ratio (capital structure) on book value to market value performance

In chapter two, it was pointed out that debt capital can moderate manager's excesses thus enhancing performance; therefore, we start the analysis by assessing the impact of capital structure on performance. The total debt to the total asset ratio, an indicator of capital structure, is used to predict the book value to market value, an indicator of performance. The question to be answered is, "Does the total debt to the total asset ratio (capital structure) have an impact on book value to the market value ratio (performance)? The sub hypothesis is that:

Null hypothesis H_0 : $\mu_{\text{high debt ratio}} \neq \mu_{\text{medium debt ratio}} \neq \mu_{\text{low debt ratio}}$ - the population means for firms with the high debt ratio, medium debt ratio, and low debt ratio, with the book value to the market value ratio as the dependent variable (performance) with ownership structure as a control variable is not equal.

Alternative hypothesis H_1 : $\mu_{\text{high debt ratio}} = \mu_{\text{medium debt ratio}} = \mu_{\text{low debt ratio}}$ - the population means for firms with the high debt ratio, medium debt ratio, and low debt ratio, with the book value to the market value ratio as the dependent variable (performance) with ownership structure as a control variable is equal.

Null hypothesis H_0 : $\sigma^2_{\text{high debt ratio}} \neq \sigma^2_{\text{medium debt ratio}} \neq \sigma^2_{\text{low debt ratio}}$ - the population variances for firms with high debt ratio, medium debt ratio, and low debt ratio, with the book value to the market value ratio as the dependent variable (performance) with ownership structure are not equal.

Alternative hypothesis H_1 : $\sigma^2_{\text{high debt ratio}} = \sigma^2_{\text{medium debt ratio}} = \sigma^2_{\text{low debt ratio}}$ - the population variance for firms with high debt ratio, medium debt ratio, and low debt ratio, with the book value to the market value ratio as the dependent variable (performance) with ownership structure as a control variable is equal.

6.7.2 Descriptive Statistics - Influence of debt ratio on book to market ratio

The basic statistics for each combination of factor and covariate in the model, capital structure (debt ratio levels) and ownership structure (shareholdings) as the predictor variable with the book to market value as the independent variable are in Table 6.15. The N column in Table

6.15 shows that there are unequal cell sizes. During the period of this study majority of firms, 326 out of 708 cases had a low debt ratio; 125 out of 708 cases had the medium debt ratio, and 257 out of 708 cases had a high debt ratio.

The result showed that firms with a high debt ratio have on average the highest book value to the market value ratio (growth) of 1.4860; and that not much difference in the book value to the market value ratio between the medium debt ratio (with the book value to the market value ratio of 2.1149) and a low debt ratio (with the book value to the market value ratio of 1.7131), that is, if rounded to one decimal point, (see total section in Table 6.15). At this point, the best performance is associated with a high debt ratio.

Table 6.15: Descriptive statistics capital structure (debt ratio) on performance - Dependent variable: Book value to market value ratio

Categorised Ownership Structure	Categorised Total Debt to Total Assets	Mean	Std. Deviation	N
Shareholdings 20percent to 50percent	High Debt ratio 0.45 to 2.03956	0.9682	0.8330	87
	Medium Debt ratio 0.3515 to 0.44781	1.1944	1.0135	41
	Low Debt ratio 0 to 0.34278	1.3274	1.1492	145
	Total	1.1929	1.0466	273
Shareholdings 51percent to 100percent	High Debt ratio 0.45 to 2.03956	1.8161	2.2310	162
	Medium Debt ratio 0.3515 to 0.44781	2.6017	6.2202	82
	Low Debt ratio 0 to 0.34278	2.0722	3.9269	176
	Total	2.0768	3.9891	420
Shareholdings Below 20percent	High Debt ratio 0.45 to 2.03956	0.4325	0.3062	8
	Medium Debt ratio 0.3515 to 0.44781	1.0250	0.3889	2
	Low Debt ratio 0 to 0.34278	0.2600	0.1720	5
	Total	0.4540	0.3556	15
Total	High Debt ratio 0.45 to 2.03956	1.4860	1.8870	257
	Medium Debt ratio 0.3515 to 0.44781	2.1149	5.1052	125
	Low Debt ratio 0 to 0.34278	1.7131	3.0096	326
	Total	1.7016	3.1735	708

Source: Author

It appears that ownership structure has influence on performance. Firms in which the largest shareholder held 20 percent to 50 percent of the share capital, on average had a book value to the market value ratio of 1.1929. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital on average had the lowest book value to the market value ratio of 2.0768; and firms in which the largest shareholder held below 20 percent of the share capital on average had the highest book value to market value of 0.4540. The best performance is associated with dispersed shareholding; and it is possible that the shares of such trade frequently.

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with high debt ratio, had an average book value to the market value ratio of 0.9682. Firms in which the largest shareholder held below 20 percent of the share capital, coupled with a high debt ratio had an average book value to the market value ratio of 0.432; and firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with high debt ratio, had an average book value to the market value ratio of 1.8161. The best bet then would be a firm where shareholding is dispersed (shareholdings below 20 percent) with a substantial amount of debt in capital structure.

Firms, in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with medium debt ratio, had an average book value to market value of 1.1944. Firms in which the largest shareholder held below 20 percent of the share capital, coupled with a medium debt ratio, had an average book value to the market value ratio of 1.0250; and firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a medium debt ratio, had an average book value to the market value ratio of 2.6017. The best bet then would be a firm where shareholding is dispersed (shareholdings below 20 percent) with the medium amount of debt in capital structure.

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with a low debt ratio, had an average book value to the market value ratio of 1.3274. Firms in which the largest shareholder held below 20 percent of the share capital, coupled with a low debt ratio, had an average book value to the market value ratio of 0.2600; and firms

in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a low debt ratio, had an average book value to the market value ratio of 2.0722. The best bet then would be a firm where shareholding is dispersed (shareholdings below 20 percent) with a low amount of debt in capital structure.

6.7.3 Homogeneity of variance test – total debt to total assets ratio on book value ratio to market value ratio

The homogeneity of variance test confirms the differences in variances in performance (book value ratio to the market value ratio) predicted by capital structure (across categories of the total debt to the total asset ratio), ownership structure (shareholdings) and interaction term (ownership structure*total debt to the total asset ratio). The analysis of variance assumes that the variance of the dependent variable is homogeneous across all the cells formed by the factors (independent variable). This tests the equality of means across groups and equality of variances across groups to establish if a difference exists or not. Levene's (1960) test for equality of variance is a criterion for satisfying this assumption, and the result presented in Table 6.16.

Table 6.16: Levene's Test of Equality of Error Variances a Dependent Variable: Book to Market Ratio

F	df1	df2	Sig.
6.042	8	699	0.0001

Source: Author

The significance result for homogeneity of variance is $<.05$, which shows that the error variance of the dependent variable is not equal across the groups, that is, the assumption of the ANOVA test has not been met.

6.7.4 Interpretation of the Relationship – Total debt to total assets ratio on book value to market value ratio

The confirmation of a relationship between the predicted variable (the book value to the market value ratio as a performance indicator) and predictor variable (grouping variable - total

debt to the total asset ratio as a capital structure indicator) is an affirmation that distinct categories of the independent variable (the groups within the total debt to the total asset ratio are: ratio - high debt ratio, medium debt ratio, and low debt ratio) are linked to the different average scores within the dependent variable (the book value to the market value ratio - performance). The statement is correct if the relationship is statistically significant in the "Tests of Between-Subjects Effects." The results of tests between subject variables with the book value to the market value ratio as dependent variable and total debt to the total asset ratio as predictor variable and ownership structure as a control variable are presented in Table 6.17. Since there is more than one independent variable for this analysis, the entries for the "Corrected Model" and the variable will not be identical.

Table 6.17: Tests of Between-Subjects Effects - Dependent Variable: Book value to market value ratio

<i>Source</i>	<i>Type III Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta Squared</i>
Corrected Model	194.580 ^a	8	24.323	2.455	0.013	0.027
Intercept	153.427	1	153.427	15.485	0.0001	0.022
OwnStrCa	150.905	2	75.453	7.615	0.001	0.021
TDtTAcA	3.824	2	1.912	0.193	0.825	0.001
OwnStrCa * TDtTAcA	9.838	4	2.459	0.248	0.911	0.001
Error	6925.827	699	9.908			
Total	9170.405	708				
Corrected Total	7120.407	707				

Source: Author

The significance value of intercept, ownership structure (OwnStrCa) values (ownership) are significant (<0.05), therefore, these variables have effect on the book value to the market value ratio (performance) (see Table 6.17). However, there is no effect of the total debt to the total asset ratio (TDtTAcA) ($p = 0.825$) on the book value to the market value ratio (performance). The null hypothesis that "the mean book value to the market value ratio was not equal across all categories of the total debt to the total asset ratio" is not supported by the data. The result showed that there is no effect of interaction term (OwnStrCa * TDtTAcA), ($p = 0.911$) on the book value to the market value ratio (performance). However, ownership structure (OwnStrCa) has effect ($p = 0.001$) on book value to the market value ratio (performance); therefore, the hypothesis that "the mean book value to market value was equal

across all categories of ownership structure (OwnStrCa)” is not supported by the data. The overall corrected model, F value = 2.455 and p-value of 0.013 are statistically significant.

The interpretation of Cohen’s criteria for effect size is: less than .01 = trivial; 0.01 up to 0.06 = small; 0.06 up to 0.14 = moderate; 0.14 or greater = large (Field, 2009). Based on preceding scale, except for the intercept, all other partial eta squares are either trivial or small. On the basis of Cohen's criteria, all partial eta squares are trivial. The statement that membership in categories defined by total debt to total asset ratio class identification accounts for the differences in the average book value to the market value ratio is not supported by the data.

6.7.5 Estimated marginal means – total debt to total assets ratio on book value to market value ratio

The estimated marginal means that is the mean response for each factor, adjusted for any other variables within the model (Ho, 2006). The result from the comparison of estimated marginal means of the book value to the market value ratio (as dependent variable) for groups within the total debt to the total asset ratio (as the predictor variable) while holding the ownership structure constant is presented in Table 6.18.

In interpreting the results, negative growth meant the book value per share is greater than the market value per share; positive growth meant that the market value per share is greater than the book value per share; and no-growth meant the book value per share is equal to the market value per share. The results were that firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with a high debt ratio, and on average had a positive growth (0.968). Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a high debt ratio, on average had a negative growth (1.816); and firms in which the largest shareholder held below 20 percent of the share capital coupled with a high debt ratio on average had a positive growth (0.432).

The result showed that firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with a medium debt ratio on average had a negative growth (1.194). Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a medium debt ratio, on average had a negative growth

(2.602); and Firms in which the largest shareholder held below 20 percent of the share capital, coupled with the medium debt ratio, on average had insignificant growth (1.025).

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital coupled with a low debt ratio had a negative growth of 1.327; firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital coupled with a low debt ratio on average had a negative growth of 2.072. Firms in which the largest shareholder held below 20 percent of the share capital coupled with a low debt ratio on average had a positive growth of 0.260.

Table 6.18: Categorised Ownership Structure * Categorised total debt to total assets ratio- Dependent variable: Book value to market value ratio

Categorised Ownership Structure	Categorised Total Debt to Total Assets	Mean	Std. Error	95percent Confidence Interval	
				Lower Bound	Upper Bound
Shareholdings 20percent to 50percent	High Debt ratio 0.45 to 2.03956	0.968	0.337	0.306	1.631
	Medium Debt ratio 0.3515 to 0.44781	1.194	0.492	0.229	2.160
	Low Debt ratio 0 to 0.34278	1.327	0.261	0.814	1.841
Shareholdings 51percent to 100percent	High Debt ratio 0.45 to 2.03956	1.816	0.247	1.331	2.302
	Medium Debt ratio 0.3515 to 0.44781	2.602	0.348	1.919	3.284
	Low Debt ratio 0 to 0.34278	2.072	0.237	1.606	2.538
Shareholdings Below 20percent	High Debt ratio 0.45 to 2.03956	0.432	1.113	-1.753	2.618
	Medium Debt ratio 0.3515 to 0.44781	1.025	2.226	-3.345	5.395
	Low Debt ratio 0 to 0.34278	0.260	1.408	-2.504	3.024

Source: Author

However, at the 95 percent confidence interval the means of book value to market value ratios by shareholdings below 20 percent and by all levels are not statistically significant because the lower bound is negative while the upper bound is positive. This is not the case for the other categorised capital structure and all levels of debt. In conclusion, there are small insignificant differences in book value to market value between high debt ratio firms, medium

debt ratio and low debt ratio firms; even so, the difference remained constant for the three types of shareholdings, and there is no interaction effect.

6.7.6 Interpretation of the post hoc effects - total debt to total asset ratio

(capital structure) on the book value to market value ratio (performance)

The next three statements are possible interpretation of the post-hoc effects. Each one should be verified independently for significance in pair-wise comparisons as presented in Table 6.19. The preview to this analysis, that is the means and standard deviations are as presented in Table 6.1.

The first statement was that a group within the total debt to the total asset ratio, that was categorised a “high debt ratio” (with mean of 0.54680 and standard deviation of 0.298641), performed better than (showed a better book value to the market value ratio) the other group categorised as a “medium debt ratio” (with a mean of 0.39657 and standard deviation of 0.181080). However, the difference between the two groups’ means (-0.629) is statistically insignificant (p-value = 0.160).

The second statement was, a group within the total debt to the total asset ratio categorised as “medium debt ratio” (with a mean of 0.39657 and standard deviation of 0.181080) post a better performance (showed a better book value to market ratio) those classified as “low debt ratio” (mean of 0.28151, standard deviation of 0.226391). The groups' mean difference of 0.402 has a p-value of 0.446, which is greater than the critical value of 0.05. The difference is not statistically significant.

The third statement was, a group within the total debt to the total asset ratio categorised as “low debt ratio” (with a mean of 0.28151 and a standard deviation of 0.226391) post a better performance (book value to market ratio) than those classified as “high debt ratio” (with a mean of 0.54680 and a standard deviation of 0.298641). The groups' mean difference of 0.227 has a p-value of 0.663, which is greater than the critical value of 0.05. The difference is not statistically significant.

The 95percent confidence intervals reported to have been negative lower bound and positive upper bound, confirming that the differences in the means are by chance. Therefore, as far as the data in this study, there are no visible differences in performance across different categories of debt levels. If we stop the study at this point, then the conclusion is that debt capital has no influence on performance; therefore, debt capital fails to reinforce corporate governance.

Table 6.19: Multiple Comparisons Book to Market Ratio Tukey HSD

(I) Categorized Total Debt to Total Assets	(J) Categorized Total Debt to Total Assets	Mean Difference (I-J)	Std. Error	Sig.	95percent Confidence Interval	
					Lower Bound	Upper Bound
High Debt ratio 0.45 to 2.03956	Medium Debt ratio 0.3515 to 0.44781	-0.629	0.343	0.160	-1.435	0.177
	Low Debt ratio 0 to 0.34278	-0.227	0.263	0.663	-0.844	0.390
Medium Debt ratio 0.3515 to 0.44781	High Debt ratio 0.45 to 2.03956	0.629	0.343	0.160	-0.177	1.435
	Low Debt ratio 0 to 0.34278	0.402	0.331	0.446	-0.376	1.180
Low Debt ratio 0 to 0.34278	High Debt ratio 0.45 to 2.03956	0.227	0.263	0.663	-0.390	0.844
	Medium Debt ratio 0.3515 to 0.44781	-0.402	0.331	0.446	-1.180	0.376

Source: Author

6.7.7 Homogenous subsets test – total debt to total assets ratio with book value to market value ratio

The final test is the homogenous subsets' test; in this case, Tukey's HSD (honest significant difference test) test is appropriate because the interest to the researcher is to find means that are significantly different from each other (Kinnear & Gray, 1999). The homogeneous subsets' output is generated along with post hoc tests and show, which pair of groups has distinct means on the dependent variable. Subset output would not be interpreted if the main effect was not significant. In this case, the pairs of groups are based on total debt to the total asset ratio (capital structure), the independent variable; that is, high debt ratio, low debt ratio and medium debt ratio as groups are the grouping levels) and the book value to the market value (performance) is dependent variable. The groups are listed in order of their ascending means (see Table 6.20).

Table 6.20: Book value to market value Tukey HSDa,,b,,c

Categorised Total Debt to Total Assets	N	Subset
		1
High Debt ratio 0.45 to 2.03956	257	1.48599
Low Debt ratio 0 to 0.34278	326	1.71313
Medium Debt ratio 0.3515 to 0.44781	125	2.11488
Sig.		0.113

Source: Author

However, given that means are all under one subset, the means are not significantly different from each other. The p-value of 0.113, is greater than 0.05, confirmed no difference in book value to market value (performance) if the total debt to the total asset ratio (capital structure) is used as a discriminating variable.

6.7.8 Summary – Influence of total debt total asset ratio (capital structure) on book value to market ratio value (performance)

The question was, “Does total debt to total assets ratio (capital structure) affects the book value to the market value ratio (performance)? To answer this question, a number of statistical tests were done and results presented. However, using the total debt to the total asset (capital structure indicator) as a predictor variable, the tests of between-subjects effects and the post-shock test did not confirm differences in performances across categories of capital structure (the total debt to the total asset).

The estimated marginal means revealed no interaction between the debt ratio and ownership structure in a manner that propel firms to better performance. Multiple comparisons and homogenous subsets test showed no difference in performance across capital structure levels. Therefore, the null hypothesis $H_0: \mu_{\text{high debt ratio}} \neq \mu_{\text{medium debt ratio}} \neq \mu_{\text{low debt ratio}}$ -the population means for firms with high debt ratio, medium debt ratio, and low debt ratio, with the book value to the market value ratio as the dependent variables (performance) are not equal taking into account ownership structure is not supported by the data; and

The null hypothesis $H_0: \sigma^2_{\text{high debt ratio}} \neq \sigma^2_{\text{medium debt ratio}} \neq \sigma^2_{\text{low debt ratio}}$ - the population variances for firms with high debt ratio, medium debt ratio, and low debt ratio,

with the book value to the market value ratio as the dependent variables (performance) are not equal taking into account ownership structure is not supported by the data. In conclusion, the total debt to the total asset ratio (capital structure) has no influence on the book value to the market value ratio (performance).

6.8 Influence of total debt to total assets ratio on asset turnover ratio

This is a further assessment the impact of capital structure on performance; the total debt to the total asset ratio (capital structure) is used to predict the asset turnover ratio (performance). The question to be answered is, “Does the total debt to the total asset ratio (capital structure) have an impact on the asset turnover ratio (performance)? The sub hypothesis is that:

Null hypothesis H_0 : $\mu_{\text{high debt ratio}} \neq \mu_{\text{medium debt ratio}} \neq \mu_{\text{low debt ratio}}$ - the population means for firms grouped into high debt ratio, medium debt ratio, and low debt ratio, with the asset turnover ratio as the dependent variable (performance) with ownership structure as control variables not equal.

Alternative hypothesis H_1 : $\mu_{\text{high debt ratio}} = \mu_{\text{medium debt ratio}} = \mu_{\text{low debt ratio}}$ - the population means for firms with the high debt ratio, medium debt ratio, and low debt ratio, with the asset turnover ratio as the dependent variable (performance) with ownership structure as a control variable is equal.

Null hypothesis H_0 : $\sigma^2_{\text{high debt ratio}} \neq \sigma^2_{\text{medium debt ratio}} \neq \sigma^2_{\text{low debt ratio}}$ - the population variances for firms with high debt ratio, medium debt ratio, and low debt ratio, with the asset turnover ratio as the dependent variable (performance) with ownership structure as a control is not equal.

Alternative hypothesis H_1 : $\sigma^2_{\text{high debt ratio}} = \sigma^2_{\text{medium debt ratio}} = \sigma^2_{\text{low debt ratio}}$ - the population variance for firms with high debt ratio, medium debt ratio, and low debt ratio, with the asset turnover ratio as the dependent variable (performance) with ownership structure as a control variable are equal.

6.8.1 Descriptive Statistics –Total debt to total assets ratio (capital structure) on asset turnover ratio (performance)

The descriptive statistics for each combination of factors in the model, capital structure (debt ratio levels) and ownership structure (shareholdings) with the asset turnover ratio as an independent variable are presented in Table 6.21. The N column in Table 6.21 shows that there are unequal cell sizes. Over the years' majority of firms' show low debt ratio in 318 out of 700 cases, those classified as of a medium debt ratio are 125 out of 700 cases, and case classified as a high debt ratio is equally large, 257 out of 700.

It appears capital structure (total debt ratio) has a discriminating effect on performance (assets turnover ratio) (see total section on Table 6.21). The data in Table 6.21 showed that firms with a high debt ratio have on average an asset turnover ratio of 2.32; and there was sizable difference in the average asset turnover ratio between firms with medium debt ratio (2.21) and firms with a low debt ratio (1.66), the average ratio for all cases being two (2).

Ownership structures marginally influenced the asset turnover ratio. Firms in which the largest shareholder held between 20 percent to 50 percent of the share capital on the average had an asset turnover ratio of 1.85, firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital on average had an asset turnover ratio of 2.09; and firms in which the largest shareholder held below 20 percent of the share capital on the average had an asset turnover ratio of 2.13. There may be an interaction effect between capital structure and ownership structure, because the mean differences in the asset turnover ratio by the debt ratio vary between ownership structures.

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital coupled with a high debt ratio (the total debt to the total asset) had an average asset turnover ratio of 2.32; firms in which the largest shareholder held below 20 percent of the share capital coupled with a high debt ratio had an average asset turnover ratio of 2.25; and firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital coupled with a high debt ratio exhibited an average asset turnover ratio of 2.31. These averages appear not to be significantly different (see Table 6.21).

Table 6.21: Capital structure (debt ratio) on performance Dependent Variable: Asset Turnover Ratio

Categorised Ownership Structure	Categorised Total Debt to Total Assets	Mean	Std. Deviation	N
Shareholdings 20percent to 50percent	High Debt Ratio 0.45 to 2.03956	2.32	0.755	87
	Medium Debt Ratio 0.3515 to 0.44781	2.05	0.773	41
	Low Debt Ratio 0 to 0.34278	1.50	0.708	145
	Total	1.85	0.821	273
Shareholdings 51percent to 100percent	High Debt Ratio 0.45 to 2.03956	2.31	0.784	162
	Medium Debt Ratio 0.3515 to 0.44781	2.28	0.690	82
	Low Debt Ratio 0 to 0.34278	1.79	0.783	168
	Total	2.09	0.805	412
Shareholdings Below 20percent	High Debt Ratio 0.45 to 2.03956	2.25	0.463	8
	Medium Debt Ratio 0.3515 to 0.44781	2.50	0.707	2
	Low Debt Ratio 0 to 0.34278	1.80	0.837	5
	Total	2.13	0.640	15
Total	High Debt Ratio 0.45 to 2.03956	2.32	0.764	257
	Medium Debt Ratio 0.3515 to 0.44781	2.21	0.722	125
	Low Debt Ratio 0 to 0.34278	1.66	0.761	318
	Total	2.00	0.816	700

Source: Author

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with a medium debt ratio, had an average asset turnover ratio of 2.05. Firms in which the largest shareholder held below 20 percent of the share capital, coupled with a medium debt ratio, had an average asset turnover ratio of 2.50; and firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a medium debt ratio, had an average asset turnover ratio of 2.28 (see Table 6.21).

Firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with low debt ratio, had an average asset turnover ratio of 1.50. Firms in which the largest shareholder held below 20 percent of the share capital, coupled with a low debt ratio had an average asset turnover ratio of 1.80; and firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a low debt ratio, had an average asset turnover ratio of 1.79. The best bet then would be a firm where shareholding is dispersed (shareholdings below 20 percent) with a low amount of debt in capital structure (see Table 6.21).

The best bet for performance sensitive investors would be a firm where shareholding is dispersed (shareholdings by the top investors is below 20 percent) and with a medium amount of debt in capital structure because at that level, the highest asset turnover ratio of 2.50 is posted. This suggests existence of an optimal capital structure.

6.8.2 Homogeneity of variance test – Total debt to total assets ratio on asset turnover ratio

The homogeneity of variance test confirms the differences in variances in performance (the asset turnover ratio) predicted by capital structure (across categories of the total debt to the total asset ratio), ownership structure (shareholdings) and interaction term (ownership structure*total debt to the total asset ratio). The analysis of variance assumes that the variance of the dependent variable is homogeneous across all the cells formed by the factors (independent variable). This tests the equality of means across groups and equality of variances across groups to establish if a difference exists or not. Levene’s test for equality of variance is a criterion for satisfying this assumption, and the result presented in Table 6. 22.

Table 6.22: Levene's Test of Equality of Error Variancesa - Dependent Variable: Lev Asset Turnover Ratio

F	df1	df2	Sig.
1.674	8	691	0.101

Levene's Test of Equality of Error Variances, tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + OwnStrCa + TDtTAcA + OwnStrCa * TDtTAcA.

Source: Author

The significance result for homogeneity of variance is >0.05 , which shows that the error variance of the dependent variable is equal across the groups, that is, the assumption of the ANOVA test has been met.

6.8.3 Interpretation of the relationship – Total debt to total assets ratio on asset turnover ratio

The relationship between the predicted variable (the asset turnover ratio as a performance indicator) and predictor variable (grouping variable - total debt to the total asset ratio as a capital structure indicator), if confirmed, is evidence that distinct categories of the independent variable (the independent variable which is the total debt to the total asset ratio or debt ratio) contained the following groups: ratio - high debt ratio, medium debt ratio, and low debt ratio) are linked to the different average scores on the asset turnover ratio (performance). The statement is correct if the relationship is statistically significant in the "Tests of Between-Subjects Effects." The results of tests of between-subjects effects are in Table 6.23.

Table 6.23. Tests of Between-Subjects Effects - Dependent Variable : Asset Turnover Ratio

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	76.276 ^a	8	9.535	16.905	0.0001	0.164
Intercept	396.402	1	396.402	702.852	0.0001	0.504
OwnStrCa	3.978	2	1.989	3.527	0.030	0.010
TDtTAcA	9.797	2	4.898	8.685	0.0001	0.025
OwnStrCa * TDtTAcA	3.115	4	.779	1.381	0.239	0.008
Error	389.718	691	.564			
Total	3258.000	700				
Corrected Total	465.994	699				

Source: Author

The data confirmed an effect of total debt to total assets ratio (capital structure) (TDtTAcA) ($p = 0.0001$) on the asset turnover ratio (performance). The null hypothesis that "the mean asset turnover ratio was not equal across all categories of total debt to total assets" is supported by data. But, there is no effect of interaction term (OwnStrCa * TDtTAcA), (p -value = 0.239). Ownership structure (OwnStrCa) has the effect on the asset turnover ratio, $p = 0.030$. Therefore, the null hypothesis that "the mean asset turnover ratio value is equal across all categories of ownership structure (OwnStrCa)" is not supported by data. The overall corrected model, F value = 16.905 and p -value of 0.0001 are statistically significant. On the basis of Cohen's criteria, all partial eta squares are small. The statement that "membership in

categories defined by the total debt to the total asset ratio as class identification accounts for the differences in the average asset turnover ratio" is marginally correct.

6.8.4 Estimated Marginal Means – Total debt to total asset ratio on asset turnover ratio

The estimated marginal means is the mean response for each factor, adjusted for any other variables within the model (Ho, 2006). The result from the comparison of estimated marginal means of the asset turnover ratio (as the dependent variable) of groups in the total debt to the total asset ratio (as the predictor variable) while holding the ownership structure constant is presented in Table 6.24.

Table 6.24: Estimated Marginal Means - Categorized ownership structure * categorised total debt to total assets, dependent variable: asset turnover ratio

Categorised Ownership Structure	Categorised Total Debt to Total Assets	Mean	Std. Error	95percent Confidence Interval	
				Lower Bound	Upper Bound
Shareholdings 20percent to 50percent	High Debt ratio 0.45 to 2.03956	2.322	0.081	2.164	2.480
	Medium Debt ratio 0.3515 to 0.44781	2.049	0.117	1.819	2.279
	Low Debt ratio 0 to 0.34278	1.503	0.062	1.381	1.626
Shareholdings 51percent to 100percent	High Debt ratio 0.45 to 2.03956	2.315	0.059	2.199	2.431
	Medium Debt ratio 0.3515 to 0.44781	2.280	0.083	2.118	2.443
	Low Debt ratio 0 to 0.34278	1.786	0.058	1.672	1.899
Shareholdings Below 20percent	High Debt ratio 0.45 to 2.03956	2.250	0.266	1.729	2.771
	Medium Debt ratio 0.3515 to 0.44781	2.500	0.531	1.457	3.543
	Low Debt ratio 0 to 0.34278	1.800	0.336	1.141	2.459

Source: Author

The results are that firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with high debt ratio on average had an asset turnover ratio of 2.322. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a high debt ratio, had an asset turnover of 2.315; and firms in which the largest shareholder held below 20 percent of the share capital, coupled with a high debt ratio, are in that period expected turnover is 2.250.

The results are that firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with a medium debt ratio, had on average an asset turnover ratio of 2.049. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital, coupled with a medium debt ratio, had an asset turnover of 2.280; and firms in which the largest shareholder held below 20 percent of the share capital, coupled with a medium debt ratio, are in that period expected turnover is 2.500.

The results are that firms in which the largest shareholder held 20 percent to 50 percent of the share capital, coupled with a low debt ratio, had on average an asset turnover ratio of 1.503. Firms in which the largest shareholder held more than 51 percent (51 percent to 100 percent) of the share capital coupled with a low debt ratio had an asset turnover of 1.786; and firms in which the largest shareholder held below 20 percent of the share capital, coupled with a low debt ratio, had on average an asset turnover ratio of 0.336.

Therefore, there are differences in the asset turnover ratios between high debt ratio, medium debt ratio and low debt ratio firms. However, depending upon the ownership structure and capital structure the difference remained constant for three different shareholdings, and there was no interaction effect.

The 95 percent confidence interval of the difference provides an estimate of the boundaries between which the true mean difference lies in 95 percent of all possible random samples of all firms similar to the ones included in this study. Since their confidence intervals lie entirely above 0.00, you can safely say that for all categories of debt the estimated asset turnover marginal means are significantly different.

6.8.5 Interpretation of the Post Hoc Effects – Debt Ratio on Asset Turnover ratio

The next three statements are possible interpretation of the post-hoc effects. Each one is verified independently for significance in the table of pair-wise comparisons, and the results presented in Table 6.25. The preview to this analysis, that is the means and standard deviations are as presented in Table 6.1.

Table 6.25: Multiple comparisons asset turnover ratio - Tukey HSD

(I) Categorized Total Debt to Total Assets	(J) Categorized Total Debt to Total Assets	Mean Difference (I-J)	Std. Error	Sig.	95percent Confidence Interval	
					Lower Bound	Upper Bound
High Debt Ratio 0.45 to 2.03956	Medium Debt Ratio 0.3515 to 0.44781	0.11	0.082	0.391	-0.09	0.30
	Low Debt Ratio 0 to 0.34278	0.66*	0.063	0.0001	0.51	0.81
Medium Debt Ratio 0.3515 to 0.44781	High Debt Ratio 0.45 to 2.03956	-0.11	0.082	0.391	-0.30	0.09
	Low Debt Ratio 0 to 0.34278	0.55*	0.079	0.0001	0.36	0.74
Low Debt Ratio 0 to 0.34278	High Debt Ratio 0.45 to 2.03956	-0.66*	0.063	0.0001	-0.81	-0.51
	Medium Debt Ratio 0.3515 to 0.44781	-0.55*	0.079	0.0001	-0.74	-0.36

Source: Author

The first statement was, a group within the total debt to the total asset ratio that was categorised as a “high debt ratio” (with a mean of 0.54680 and a standard deviation of 0.298641) outperformed (showed a better asset turnover ratio) the other group categorised as a “medium debt ratio” (with a mean of 0.39657 and a standard deviation of 0.181080). The mean difference between the groups (0.11, p-value = 0.391) is not statistically significant.

The second statement was, a group within the total debt to the total asset ratio that was categorised as “medium debt ratio” (with a mean of 0.39657 and a standard deviation of 0.181080), outperformed (showed a better asset turnover ratio) the other group categorised as a “low debt ratio” (with a mean of 0.28151 and a standard deviation of 0.226391). The mean difference between the two groups (0.55, p-value=0.0001) is statistically significant.

The third statement was, a group within the total debt to the total asset ratio that was categorised as “low debt ratio” (with a mean of 0.28151 and a standard deviation of 0.226391) outperformed (showed a better asset turnover ratio) the other group categorised as a “high debt ratio” (with a mean of 0.54680 and a standard deviation of 0.298641). The mean difference between the two groups (-0.66, p-value =0.0001) is statistically significant.

Based on preceding findings, capital structure (the total debt to the total asset ratio) has a discriminating effect on performance (asset turnover ratio). This is unlike the case when the book value to market value is a performance indicator.

6.8.6 Homogenous Subsets Test – Asset turnover ratio by total debt to total assets ratio

The pairs of groups are extracted from the total debt to the total asset ratio (capital structure). The total debt to the total asset ratio is the independent variable. The groups are high debt ratio, low debt ratio and medium debt ratio. The asset turnover ratio (performance) is the dependent variable. The groups asset turnover ratio means are listed in an ascending order of means (see Table 6.26). The asset turnover groups are significantly different as between low debt ratio and high debt ratio and low debt and medium debt. Therefore, cases of a high debt ratio are associated with a high asset turnover.

Table 6.26: Tukey HSD a,,b,,c - Asset turnover ratio

Categorised Total Debt to Total Assets	N	Subset	
		1	2
Low Debt ratio 0 to 0.34278	318	1.66	
Medium Debt ratio 0.3515 to 0.44781	125		2.21
High Debt ratio 0.45 to 2.03956	257		2.32
Sig.		1.000	0.328

Means for groups in homogeneous subsets are displayed.

Based on observed means, the error term is Mean Square (Error) = 0.564.

Source: Author

From the resulted presented in Table 6.26, there is evidence that debt ratios have a discriminating effect, that is, different debt levels are associated with different levels of performance if the performance measure is the asset turnover ratio. Firm or cases with a low debt ratio are associated with the lowest asset turnover ratio.

6.8.7 Summary – Influence of total debt to total assets ratio on asset turnover ratio

The question was, “Does asset the total debt to the total asset ratio (capital structure) have an impact on the asset turnover ratio (performance)? To answer this question, a number of statistical tests were done and results presented. Using the total debt to the total asset as the capital structure indicator and predictor variable, the tests of between-subjects effects and the

post-shock test revealed differences in the asset turnover ratio (performances) across categories of capital structure (the total debt to the total asset).

The null hypothesis $H_0: \mu_{\text{high debt ratio}} \neq \mu_{\text{medium debt ratio}} \neq \mu_{\text{low debt ratio}}$ -the population means for firms with high debt ratio, medium debt ratio, and low debt ratio, with the asset turnover ratio as the dependent variables (performance) are not equal taking into account ownership structure is supported by the data.

The null hypothesis $H_0: \sigma_{\text{high debt ratio}} \neq \sigma_{\text{medium debt ratio}} \neq \sigma_{\text{low debt ratio}}$ -the population variance for firms with high debt ratio, medium debt ratio, and low debt ratio, with the asset turnover ratio as dependent variable (performance) taking into account ownership structures are not equal is also supported by the data. In conclusion, the total debt to the total asset ratio (capital structure) has influence on the asset turnover ratio (performance).

6.9 Discussion of Findings

The first hypothesis addressed in this chapter is the influence of performance on capital structure (debt ratio); and the second hypothesis is the influence of capital structure on performance. The idea is to establish the effect of performance on capital structure and effect of capital structure on performance at different *levels* of performance and/or different levels of capital structure while considering ownership structure. This requires the use of GLM instead of OLS.

The first hypothesis (effect of performance on leverage) is based on two theories, namely: return - risk hypothesis and franchise value hypothesis. The return - risk hypothesis stipulates that more profitable firms use more debt because that group of firms generates sufficient cash to reduce the probability of bankruptcy; while the franchise value hypothesis states that more efficient firms may choose to use less debt to avoid exposure to financial distress and bankruptcy (Margaritis & Psilaki 2010; Berger & Bonaccorsi di Patti, 2006).

The second hypothesis was the influence of debt on performance; this thesis stipulates that debt capital can have a positive or negative influence on performance (Cheng & Tzeng, 2011; Margaritis & Psillak, 2008). The efficiency hypothesis is anchored on the agency cost model of Jensen and Meckling (1976) and Jensen (1986) and discussed in Mishkin (2010: 174-175) and in Tirole (2006). The efficiency hypothesis suggests that debt capital plays a disciplinary role that reduces managerial dissipations, the final results being enhanced performance. The argument is that the use of debt capital commits managers to pursue strategies with greater vigor than they would without the threat of financial distress (Berk & DeMarzo, 2011:531; Hennessy & Livdan, 2009; Haris & Raviv 1988). At the same time, debt capital might impact adversely on performance due to excessive risk-taking and asset substitution as suggested by Jensen (1986); and due to debt overhang and underinvestment as in Myers (1977). A detailed discussion on the negative effect of debt on performance is in Berk and DeMarzo (2011:524 – 526).

In relation to the first hypothesis, the data support the hypothesis that efficient and profitable firms employ more debt than comparable firms that are less profitable, possibly because profitable firms' exposure to financial risk is low (propensity to be bankrupt is low). There is no evidence that support the franchise hypothesis, that is, more efficient firms use less debt as suggested in Adhari and Rita, (2012), Margaritis and Psillak, (2007), and Lai, Lin and Wen, (2005). Such finding confirmed the existence of concentrated equity ownership on the NSE as pointed out by He and Matvos (2012:2). On the observation that firms with a low asset turnover ratio use less debt, one could also argue that less use of debt impact adversely on firm performance, and that debt capital does play a disciplinary role.

However, the data only show statistically significant relationship between capital structure and performance if asset turnover ratio and not book value to the market value ratio is the performance indicator. By measuring the sales generated per shilling of assets invested in the firm, total asset turnover measures the management ability to use assets to generate sales. Furthermore, asset use is the primary focus of economic value added, and it is sales that are the major source of cash to most businesses (Atkinson, Kaplan, Matsumura & Young,

2007:619). The interpretation is that the lower the total asset turnover ratio, as compared to historical data for the firm and industry data, the more sluggish the firm's sales. Too low asset turnover ratio may indicate a problem thus making it difficult meeting debt obligations. It is also possible that many business problems could be traced to poor management of assets to generate sales or to support the service provision.

The surprising result is the inability of the book value to the market value ratio to predict the usage of debt. The importance of the book value to the market value ratio is that it captures the value the market attributes to an organization as a proportion of its measured assets, and we would expect this value to be less than one because firms have resources that do not appear in the balance sheet as assets. When this ratio exceeds one, it signals that the market believes that the firm's liquidation value is higher than its value as a going concern (Atkinson, Kaplan, Matsumura & Young, and 2007:620). One would expect debt holders, being risk averse, to monitor this ratio to be discriminate among negative growth, no growth and positive growth firms. High-growth firms present a greater investment opportunity with more chances to generate profits, cash and therefore, have the capacity to service its debt obligations.

In relation to findings on the second hypothesis, the finding of this study is that capital structure has influence on firms' performance. The findings support the proposition that in firms where debt capital is substantial, debt monitoring could encourage managers to avoid opportunist's activities is supported by the data as is in Cheng and Tzeng (2011) and in Tirole (2006).

The data used in this study tell us that capital structure (the total debt to the total asset ratio) levels predict asset turnover ratio (performance) and not book to market ratio. On the question as to whether an ideal capital structure existed, a powerful finding supported by the data is that, yes an optimum capital structure existed on the NSE, but only if the asset turnover ratio is the indicator of performance. The range of optimal capital structure is medium debt ratio 0.3515 to 0.44781 or in percentage terms from 35.15 to 44.781 percent (section 6.9.5) because those firms with the total debt to the total asset ratio from 35percent through 45percent show a

better asset turnover ratio (performance) than those firms outside this bracket. Such a finding negated the original hypothesis in Modigliani and Miller (1958) that cash flow of a firm's asset does not depend on its choice of capital structure (though Modigliani and Miller (1958) argument apply to perfect market), and the data in this study imply the existence of the best capital structure on the NSE.

In conclusion, the data confirmed that there is a bi-directional relationship between capital structure and performance. However, the influence of capital structure on performance or the influence of performance on capital structure depends on measure of performance employed. Managers should take into account performance level in their determination of usage of debt, while to benefit from the disciplinary role of debt, shareholders as owners should encourage managers to use debt financing.

6.10 The theoretical and practical implications of the findings

This analysis makes a theoretical and practical contribution. It demonstrates how competing hypotheses, in this case performance- risk hypothesis, franchise- value hypothesis and efficiency hypothesis (agency cost hypothesis) dominate each other. Thus the theory supported by the data is that efficient and profitable firms use more debt, and that use of debt mitigates agency costs. In addition, it provides new empirical evidence, based on data in an emerging economy, on the bi-directional relationship between performance and capital structure.

A number of similar studies at this level use large firms' data in Europe, US and some parts of Asia that might not be representative of countries classified as emerging economies in which the supporting institutions are yet to be developed (La Porta, Lopez-de-Silanes & Shleifer, 1999). Margaritis and Psillak (2010:631) writing on the relationship between capital structure and performance in France, recommend is that "In future research, it will be of interest to extend this analysis across distinct countries and across different industries as well as to examine further aspects of ownership and governance characteristics."

In terms of methodology, by using GLM, this study has improved on earlier studies by comparing different levels of performance to different levels of capital structure in contrast to making inferences based on conditional means (OLS) estimates. OLS cannot tell us, for example, whether poor performance is associated with low or high debt ratios. This study addressed this problem and report existence of optimum capital structure. In addition, by using canonical correlation (chapter 5) and GLM, the findings confirm that the bi-directional relationship between capital structures on the NSE is independent of the statistical method employed.

From a practical view point, the analysis pointed out that to determine the bi- directional relationship between performance and capital structure; the asset turnover ratio exhibited higher information content than book value to market value. In addition, the advice to managers would be that the optimum capital structure is medium debt ratio 0.3515 to 0.44781 or in percentage terms from 35.15 percent to 44.781 percent. The existence of the best capital structure reflected managers' concern that levered firms incurring financial distress cost that reduce shareholder's wealth in the firm, besides financial managers can use this finding to evaluate their firm's capital structure policy.

6.11 Chapter Summary

There are two hypotheses examined in this chapter:

The first hypothesis being:

H₀₁: Firm performance does not have a significant effect on leverage, the alternative hypothesis being,

H₁₁: Firm performance has a significant effect on leverage.

The second hypothesis being:

H₀₂: Leverage does not have a significant effect on firm performance; the alternative hypothesis being:

H₁₂: Leverage has a significant effect on firm performance.

The general linear model (GLM) procedure provides regression analysis and analysis of variance to examine the bi direction relationship between capital structure and performance. An elaborate analysis that started with observing level of measurement requirement, sample size requirement, the normality test and descriptive statistic to explore the data structure are carried, and results presented.

The research questions guiding the analysis are put in broad terms; and given that the study is to establish group differences, the research questions to be answered using GLM is: What are the main effects of the independent variables? What are the interactions among the independent variables? From the preceding broad terms, the research questions are operationalised and answered. The specific questions are: What is the influence of book value to the market value ratio (as an indicator of performance) on the total debt to the total asset ratio (as an indicator of capital structure)? What is the influence of the asset turnover ratio (as an indicator of performance) on total debt to the total asset ratio (as an indicator of capital structure)? What is the influence of the total debt to the total asset ratio (as an indicator of capital structure) on book value to the market value ratio (performance)? What is the influence of total debt to the total asset ratio (capital structure) on the asset turnover ratio (performance)?

For each question, homogeneity of variance test is relied on to confirm if there are substantial differences in the dependent variable as grouped by the independent variable. The analysis of variance assumes that the variance of the dependent variable is homogeneous across all the cells formed by the factors (independent variable). In addition, Levene's (1960) test for equality of variance is reported, and the test of between-subjects effects is done and reported. The estimated marginal means are used for exploring the interaction effect between performance and ownership structure. Post-hoc- multiple comparison tests are done to establish whether differences exist among the means, that is, post hoc range tests and pair wise multiple comparisons can determine which means differ. The post-hoc effect of each question is interpreted. The homogenous subsets' output is generated along with post hoc tests and interpreted.

In relation to the first hypothesis, the data supports the hypothesis that efficient and profitable firms employ more debt than comparable firms that are less profitable, possibly because their exposure financial risk is low (propensity to be bankrupt is low). There is no evidence to support the franchise hypothesis that more efficient firms use less debt as suggested in Margaritis and Psillak, (2008), and Lai, Lin and Wen (2005). However, the data only show statistically significant relationship if asset turnover ratio and not the book value to the market value ratio is used as a performance indicator to predict usage of debt capital.

In relation to the second hypothesis, that is, on the influence of debt on performance, the finding is, after controlling for ownership structure, firms that use more debt outperformed those that use less debt. Therefore, the data on the NSE support the efficiency hypothesis that the use of debt capital alleviates agency costs so as to improve in firm performance (Mishkin 2010: 174-175; Margaritis & Psillak, 2007; Tirole, 2006; Lins & Roper, 2004; Jensen, 1986; Jensen & Meckling, 1976). Such a finding negated the original hypothesis in Modigliani and Miller (1958) that capital structure decision is irrelevant and would imply the existence of an optimum capital structure on the NSE.

Studies by Bhagat and Bolton (2008), King and Santor (2008), and Ghosh (2008) implied that the use of debt capital has negative effects on firm performance. Schoubben and Van Hulle (2006) finding are that the relationship between capital structure and performance depended on the depth of the agency problem in a firm. Therefore, the conclusion in this chapter, based on the data analysis, is that firm can increase its value more by issuing debt capital and that performance levels influence manager's decision on the amount of debt to use to finance assets.

In the next chapter (7), we examine the extent to which performance and capital structure predict the change of CEO. This is because to reverse the decline in performance non performing managers must be replaced and that replacing non performing managers is the

core of corporate governance; the findings in chapter 7 will strengthen the support the thesis that debt played a disciplinary role as implied in this chapter.

CHAPTER 7

THE RELATIONSHIP BETWEEN DEBT CAPITAL, PERFORMANCE, AND CHANGE IN THE CHIEF EXECUTIVE OFFICER (CFO) - FINDINGS

7.1 Introduction

In chapter six (6) the relationship between capital structure or debt levels and performance levels was investigated by subjecting data from non-financial firms listed on the NSE to general linear model (GLM). This is an improvement on OLS studies that focus only on the test of significance of predictor coefficients but do not use levels of performance to levels of leverage and vice versa. The researcher established that performance is explained in terms of sub optimal capital structure choices; and that capital structure choice is not independent of levels of performance. Though the data confirms a bi-directional relationship between performance and capital structure choices, the restriction is that the relationship depends on the indicator of performance employed. While the asset turnover ratio confirms a bi-directional relationship, the book to market ratio fails the test. It emerged that on the NSE more efficient (asset turnover ratio as a measure of productivity) firms may use more debt. Therefore, the mean efficiency risk hypothesis and not franchise value hypothesis applies, and that firms that employ debt capital reported improved firm performance compared to those that used low debt capital.

This chapter examines the extent to which performance and capital structure predict the change of CEO. This is because to reverse a decline in performance non performing managers must be replaced and that replacing non performing managers is the core of corporate governance. The findings will support or negate the thesis that debt plays a disciplinary role in addition to supporting or not supporting the thesis that CEOs are replaced in response to poor performance. The focus in this chapter is whether the two concepts, performance and capital structure play, at firm level and over period influence change of CEO. Therefore, panel data is appropriate and this explains why at this stage of this study generalised estimating equation (GEE) model was used.

In this chapter, the finding on the relationship between debt capital, performance, and change in CEO is presented. This chapter is arranged as follows: in section, 7.2 are performance and capital structure indicators; in section, 7.3 are data structure and the generalised estimating equations (GEE) Model; in section, 7.4 are the hypothesis to be tested; in section 7.5, a comment on data is presented; in section, 7.6 are model information; in section, 7.7 are the correlated data summary; in section, 7.8 are variables of the study - categorical variable information; in section 7.9 goodness of fit of the model are presented; in section, 7.10 are the results, interpretation of results and discussion of results; in section, 7.11 are ownership structure and change of CEO; in section 7.12, the effect of performance on change of CEO is presented; in section, 7.13 are about debt capital and change in CEO; in section, 7.14 are the change in CEO, performance and debt capital (interaction effect); section 7.15 is the summary of findings; in section, 7.16 are the theoretical and practical significance of the findings; and 7.16 are the summary of the chapter.

7.2 Selecting indicators of performance and capital structure

In chapter five (5) canonical correlations were used to cross match indicators of performance with capital structure indicators. The analogy is like a patient who needed blood infusion, and such a patient's blood must be cross matched with the donated blood to avoid the infusion crisis. It emerged that, from the data, out of a battery of both measures of performance and capital structure, two measures of performance namely book to market ratio and asset turnover ratio and a measure of level of borrowings namely total debt to total assets, emerged as describing the relationship between capital structure and performance.

The originality in this study is at three levels; first, it is an attempt to address the naivety in similar studies that use return on asset (ROA) or other measures of performance without probing what the data tell us about competing indicators of performance and capital structure. Second it uses same data set to test bi-directional relationship between capital structure and performance. Third is the grouping of firm characteristics, namely performance, level of borrowing and ownership structure, and the use of GML, GEE other than OLS, in addition to data from an emerging economy to model the relationship between firm performance and capital structure.

The findings in chapter 5 are used in chapter 6 at two levels, first in terms of identifying variables to be used in chapter six (6) and in terms of lending credibility to finding in chapter 6. The findings in chapter five are expected to conceptually be similar to those as a proof that the bi-directional relationships between performance and capital structure are independent of the statistical model. In chapter 5 two indicators of performance namely book to market ratio and asset turnover ratio, and an indicator of level of borrowing, the total debt to the total asset ratio are selected as useful in determining whether a relationship between performance and capital structure exists using data of firms listed on the NSE.

The asset turnover ratio (as an indicator of performance) predicted the total debt to the total asset ratio, i.e. level of borrowing; equally, the total debt to the total asset ratio predicted the asset turnover ratio level, i.e. performance. However, the book to market ratio (as a performance indicator) was not useful in predicting the total debt to the total asset ratio (as an indicator of level of debt) and total debt to the total asset ratio was not functional in predicting book to market ratio.

The originality in chapter 6 is the grouping of firm characteristics, namely, levels of performance, levels of borrowing and level's ownership structure, and subjecting the data to generalised linear models to model the relationship between firm performance and capital structure (Lys & Sabino, 1992). In statistics, the generalised linear model is a flexible generalization of ordinary linear regression that allows for response variables that have error distribution models other than a normal distribution. The data in this study is largely not normally distributed, and it would be inappropriate to subject it to ordinary linear regression as is done in some similar studies.

In both chapter 5 and 6, the research's confidence in the relationship between performance and capital structure is natured to give direction to the influence of both performance and capital structure on change on chief executive officer CEO or the contribution of capital structure and performance to corporate governance. To recap, to the extent that capital structure impact on performance, or that firm performance influenced the amount of debt capital is a result of choices made by CEO, the CEO must hold accountable for the choices or decisions made.

This chapter (chapter 7) presents the findings on the relationship between debt capital, performance, and change in CEO, using GEE. Theories are presented in chapter 2 and three 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 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. Therefore, in this chapter the final objectives of this study, namely: whether poor performance causes changes of CEO; whether the level of debt cause change of CEO; and levels of debt level and performance (interaction effect) cause change of CEO are addressed. This is based on the statement of the problem that “It is not clear why CEOs are replaced or replaced on the NSE. One suggestion is that managers are replaced due to poor performance. Another is that debt holders influence the replacement of CEO and that replacing non performing managers signifies effective corporate governance.”

7.3 Data Structure and the generalised estimating equations (GEE) model

The panel data is used in this section; this requires special tools of analysis. The data relied on contains repeated 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 good, average or poor are captured. Because the analysis includes between group's effects as well as within subject effects, generalised estimating equation's (GEE) is an appropriate tool of analysis.

The GEE procedure extends the generalised linear model to allow for analysis of repeated measurements or other correlated observations, such as clustered data (Diggle, Heagerty, Liang & Zeger, 2002; Hardin & Hilbe, 2003; McCullagh & Nelder, 1989). In this section of the study GEE is used to fit a repeated measures logistic regression to study effects of

performance with the capital structure, with ownership structure on change of CEO. With repeated data, there are within subject variables and correlation and between subject variables and correlation. The combination of values of the within-subject variables defines the ordering of measurements within subjects. In addition, GEE takes into account the dependency of observations by specifying a working correlation structure and take care of models for repeated categorical response data, and thus generalize models for matched pairs. The very crux of GEE is instead of attempting to model the within-subject covariance structure, treat it as a nuisance and simply model the mean response.

In GEE a response variable can be either continuous or categorical. In this study, the focus was on a categorical variable $\Delta CEO = (CEO_{ij})$. Change in CEO is a response variable for each firm_{*i*}, measured at different occasions (each year as a time point), $j = 1, 2 \dots 23_i$; and each ΔCEO_i can be a binomial or multinomial response. In this case ΔCEO is a binomial response. Data collected on a pre-determined number of units (firms listed on the NSE), then classified according to two levels of a categorical variable, result into a binomial sampling. The predictor variables' $X = (X_1, X_2 \dots X_k)$ which is a set of explanatory variables, can be discrete, continuous, or a combination. X_i is $n_i \times k$ matrix of covariates. In this chapter, there are four predictor variables: the total debt to the total asset ratio at two levels (at factor and covariate levels) as the capital structure indicator; asset turnover ratio (at factor and covariate levels) as the performance indicator; book to market ratio (at factor and covariate level) as indicators of performance time of measurement (year) as trial variable, industry, ownership structure.

7.4 Hypothesis

Three hypotheses are tested in this chapter. These are the third, fourth and fifth hypotheses.

7.4.1 The third hypotheses test the effect of performance on change of CEO

H₀₃: Firm performance does not have a significant effect on Change of CEO.

H₁₃: Firm performance has a significant effect on Change of CEO.

7.4.2 The fourth hypothesis test the effect of leverage on change of CEO

H₀₄: Leverage does not have a significant effect on change of CEO.

H₁₄: Leverage has a significant effect on change of CEO.

The relationship is modeled in the equation below:

$$\Delta CEO_i = \alpha_i + \beta_1 Performance_i + \beta_2 CapitalStructure_i + \beta_3 Ownership\ Structure_i + \epsilon_i \dots \dots \dots \text{Equation 7.1}$$

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

7.4.3 The fifth hypotheses test the combined effect of leverage and performance on change of CEO

H₀₅: Leverage and performance does not have a significant effect on Change of CEO

H₁₅: Leverage and performance has a significant effect on Change of CEO.

The relationship is modeled in the equation below:

$$\Delta CEO_i = \alpha_i + \beta_1 Performance_i + \beta_2 CapitalStructure_i + \beta_3 (Performance \times CapitalStructure)_i + \beta_4 ControlVariables_i + \epsilon_i \dots \dots \dots \text{Equation 7.2}$$

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

Where α , β parameters to be estimated and ϵ is the error term.

7.5 Data used in the study

The data used in this section of the study was extracted from annual reports and stock market records from NSE. The analysis covered 23 years. There were 851 cases in total, but 157 cases were excluded; therefore, 694 were used for analysis. The change in CEO was the dependent variable. The response variables were: categorised ownership structure, categorised the total debt to the total asset ratio (as an indicator of level of borrowing), categorised book to market ratio (as indicator of performance), and the asset turnover ratio (as indicator of performance).

The categorization of variables is as follows: for change in CEO, 0 represented no change in CEO while 1 represented change in CEO. The categories ownership structure: shareholdings 20 percent to 50 percent are 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 the 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 are labeled 1, medium 0.6926 - 1.1073 are labeled 2, and high 1.114 - 10.1856 are labeled 3.

7.6 Model Information

The aim is to model the probability that a CEO is replaced based on capital structure and performance and ownership structure scores. The model information is presented in Table 1, and in it is a summarised modeling selection, which is useful for making sure the procedure fits 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 trials occurring in a subject; that is, in each company sampled. The subject effects are company serial number and industry.

Table 7.1: Model information

Events Variable	Change Of CEO
Trials Variable	Year
Probability Distribution	Binomial
Link Function	Logit
Subject Effect 1	Company Serial Number
Subject Effect 2	Industry
Working Correlation Matrix Structure	Unstructured

Source: Author

The ability to specify a non-normal distribution and non-identity link function is the essential improvement of the generalised linear model over the general linear model. The choice 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_i is replaced and a ‘failure’ ($Y_i = 0$) if CEO_i 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 & Yates; 1938). Logit link to predict the probability of change in CEO is (used when μ is bounded between 0 and 1 as when data are binary), specified as follows:

$$g(\mu) = \text{logit} \left(\frac{\mu}{1 - \mu} \right) = \Delta CEO = \alpha_i + \beta_1 Performance_i + \beta_2 CapitalStructure_i + \beta_3 OwnershipStructure_i + \epsilon_i \dots \dots \dots \text{Equation 7.3}$$

Where α, β parameters to be estimated and ϵ 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 in. Working correlation matrix structure represents the within-subject dependencies. Its 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.

7.7 Correlated data summary

Correlated data summary that provides information concerning the repeated measures specification is presented in Table 7.2. There are two variables that identify the subjects, company serial number and industry. There are two variables, company serial number and industries that identify the subjects.

Table 7.2 Correlated data summary

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

Source: Author

The minimum and maximum number of measurements per subject does not equal the number of levels of the within-subject effect. This tells 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).

7.8 Variables of the study - Categorical variable information

The test at this stage is to establish whether a firm with high debt and/ or report woeful performance has a higher propensity to replace a CEO. Therefore, 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 7.3.

For predictor variable, the categorization 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 predictor variable for each company over the period of the study. Overall, the propensity to replace CEO on the NSE appeared to be low (see Table 7.3).

Table 7.3: 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%
	Categorised Total Debt to Total Assets	Total	694	100.0%
		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%
Factor	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.

Source: Author

7.9 Goodness of fit

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 & Hilbe, 2003). Accordingly, information criteria based on a generalization 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 as follows:

- Independent in which the repeated measurements are uncorrelated and for the data in this analysis, it's Corrected Quasi-likelihood under Independence Model Criterion (QICC) value of -819152.695;
- Autoregressive of first order, AR(1) in which repeated measurements have a first-order autoregressive relationship and for the data in this analysis its Corrected Quasi-likelihood under Independence Model Criterion (QICC) value of -819010.087;
- Exchangeable structure that has homogenous correlations between elements and also known as a compound symmetry structure and for the data in this analysis its Corrected Quasi-likelihood under Independence Model Criterion (QICC) value of -818621.308;
- The M-dependent in which consecutive measurements have a common correlation coefficient, and for the data in this analysis its Corrected Quasi-likelihood under Independence Model Criterion (QICC) value of -818566.875; and
- Unstructured which is a completely general correlation matrix and for the data in this analysis, it's Corrected Quasi-likelihood under Independence Model Criterion (QICC) value of -1109379.352.

The structure that obtains the smaller QIC is "better." The computation of the QICC assumes that the distribution, link function, and working correlation matrix specifications are all "correct" for the data set. The results are in the bottom of Table 7.4 (a), and were summarised in table 7.4 (b) the smallest QIC is the unstructured structure. The result presented in Table 7.4 (a), indicate 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.

Table 7.4 (a): Goodness of fit of the model

Parameter	M-dependent			Exchangeable			AR1			Independent			Unstructured		
	β	Std. Error	Sig.	B	Std. Error	Sig.	β	Std. Error	Sig.	B	Std. Error	Sig.	β	Std. Error	Sig.
(Intercept)	-9.705	0.595	*	-9.683	0.504	*	-9.614	0.559	*	-	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	9.654 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 ^a			0 ^a			0 ^a			0 ^a			0 ^a		
[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 ^a			0 ^a			0 ^a			0 ^a			0 ^a		
[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 ^a			0 ^a			0 ^a			0 ^a			0 ^a		
[LeAssTurn=1]	-0.129	0.176	ns	-0.156	0.175	ns	-0.180	0.18	ns	-	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	0.184 -	0.173	ns	-0.216	0.225	0.336
[LeAssTurn=3]	0 ^a			0 ^a			0 ^a			0.131 0 ^a			0 ^a		
(Scale)	1						1			1					
Log likelihood	-819152.695			-819010.087			-818621.308			-818566.875			-1109379.352		

0^a- means reference category; ns = not significant

Source: Author

Table 7.4 (b): Goodness of Fit^a

	Value
Quasi Likelihood under Independence Model Criterion (QIC) ^b	1109419.531
Corrected Quasi Likelihood under Independence Model Criterion (QICC) ^b	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.	
Source: Author	

7.10 Model results, interpretation of results and discussion

7.10.1 Test of model effects

An obvious question of interest would be to determine 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 β . To address the issue of how specific firms compared, averaged across years, one would be interested in whether the appropriate differences in elements of β were equal to zero. 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 $\beta_1 - \beta_{23}$. In Table 6 below is 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 7.5 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

Source: Author

Chi-Square, DF and $Pr > ChiSq$ - These are the Chi-Square test statistic, Degrees of Freedom (DF) and associated p-value ($PR > ChiSq$) corresponding to the specific test that all of the predictors are simultaneously equal to zero. We are testing the probability ($PR > ChiSq$) of observing a Chi-Square statistic as extreme as, or more than the observed one under the null hypothesis; the null hypothesis is that all of the regression coefficients in the model are equal to zero. The DF defines the distribution of the Chi-Square test statistics and is defined by the number of predictors in the model. The DF of 2 for each of the predictor variables in table 6

indicates the three levels for each predictor variable. Typically, $PR > ChiSq$ is compared to a specified alpha (α) level, our willingness to accept a type 1 error, which is typically set at 0.05 or 0.01; α is 0.05 in this study. 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.

7.10.2 Parameter Estimates

The results in Table 7.6 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.

To achieve this objective, sampled firms are placed into categories according to their levels of performance and levels of capital structure. The idea is to establish the role of capital structure in overall business strategy and its drive for business performance. In Table 7.6, the output contains the parameter estimates, empirical standard error estimates, confidence intervals, z scores and p-values of categorical variables. 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.

Table 7.6: Parameter Estimates

	Parameter	β	Std. Error	Hypothesis Test			Exp(B)	95% Wald 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 ^a					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 ^a					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 ^a					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 ^a					1		
	(Scale)	1							

Events (Independent Variable) : Change of CEO

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

Source: Author.

7.10.3 Interpretation of model parameter estimates

The output presented in table 7.6 is to be interpreted at two levels. The first section in Table 7.6 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 the model generated as extracted from table 7.6 is:

$$g(\mu) = \log\left(\frac{\mu}{1-\mu}\right) = \Delta CEO = -9.627 - 2.072 \text{ Shareholdings } 20\% \text{ to } 50\% - 0.631 \text{ Shareholdings } 51\% \text{ to } 100\% + 1.233 \text{ High Leverage } + 1.870 \text{ Medium Leverage } + 0.001 \text{ Positive Growth } < 1(BtM) + 0.637 \text{ No Growth } = 1(BtM) + 1.114 \text{ Low } 0.073 \text{ to } 0.6882 \text{ (Asset Turnover Ratio) } - 0.216 \text{ Medium } 0.6926 \text{ to } 1.1073 \text{ (Asset Turnover Ratio)} \dots \text{Equation 7.4}$$

The results in equation four (7.4) are quite informative in terms of factors that might propel corporate governance on the NSE. The constant term of -9.627 is statistically significant; remember 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 that is not accounted for by the terms in the model, and it guarantees that your 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 in CEO based on these variables is reduced or zero.

There are two performance indicators in the equation 7.4, the book to the market ratio and the asset turnover tell almost the same story, that is, that 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 you can reject the null hypothesis. The asset turnover ratio appeared to be more informative and supportive of the hypothesis; at a low asset turnover ratio (poor 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 result captured in equation 7.4 and the model confirm that debt might be playing a disciplinary role as long as 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 than on average finance 35 percent of their assets with debt.

In terms of ownership, in equation 7.4, it is apparent 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 51percent to 100percent with a coefficient of - 0.631(negative), there is a suppressing effect in replacing a CEO; though with a p-value of 0.171, this is not statistically significant.

The second section (column 8) in Table 7.6 captures Exp (β), specifically inform the prediction weights. The interpretation is that, e^β represents the change in the odds of the outcome (change in CEO) (multiplicatively) by increasing x (independent variable) by one unit. In summary:

- If $\beta = 0$, the odds and probability are the same at all x levels ($e^\beta = 1$)
- If $\beta > 0$, the odds and probability increase as x increases ($e^\beta > 1$)
- If $\beta < 0$, the odds and probability decrease as x increases ($e^\beta < 1$)

For the 95% Wald confidence interval for odds ratio, the interpretation is as follows:

- If entire interval is above 1, conclude positive association
- If entire interval is below 1, conclude negative association
- If interval contains 1, cannot conclude there is an association

The discussions are on the model are presented below.

7.11 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 7.6. 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 board of directors who have a fiduciary duty to serve the interests of the corporation rather than interests of the firm's management. An examination of shareholding in 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 also 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 50percent 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. In section 6.3 in chapter 6, we presented table 6.1 and noted that on the NSE, in the listed firms sampled, the 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 (Table 7.3 above), 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 you take the odds ratio related to categorised shareholding variable, firm in which an individual shareholder is classified as belonging to Shareholdings 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; $\alpha = 0.05$) is not statistically significant.

The deduction from the reported findings is that firms in which an individual shareholder has influence or controlling interest are reluctant replacing 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 the NSE.

It is possible that such managers are appointed by such influential shareholder, who subsequently finds it difficult removing such non performing managers. These findings negate the theory that dispersed shareholders are too weak to have unified stand against blundering management (Low, Makhija, & Sanders, 2007:2). 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 & Mahoney, 2005), a viewpoint that shareholders are not the only group that is interested in the success of the firm (Financial Times. 2009; Lancaster & Lipsey, 1996).

7.12 Performance and change of CEO

In this section are the test results and discussions of the third hypothesis:

H₀₃: Firm performance does not have a significant effect on change of CEO.

H₁₃: A firm performance has significant effect on Change of CEO.

The result of the impact of performance on change of CEOs on the NSE is presented in table 7.6. In chapter 5, the result of the data analysis confirmed two measures of performance to be

used in this study, namely book to market ratio and asset turnover ratio. Both measures 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 usage of debt capital.

7.12.1 Book value to market value ratio and change of CEO

The result of the impact of the book to the market ratio of equity on change of CEOs on the NSE is summarised and presented in table 7.6. The book value of equity is the sum of the retained earnings and other balance sheet entries classified under stock holder's equity, such as common stock and capital contributed in excess of par value of a share. The market value of a share is the price at which a share can be currently be sold; and in this study it share prices reported on the NSE. 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. The interpretation in this study is that relatively low values of the ratio, normally above 1, characterize growth stock and relatively high values of the ratio normally below 1, characterize value stock (Atkinson, Kaplan, Matsumura & Young, 2007; Sharpe, Alexander & Bailey, 1999).

Fama and French (1992) examined the relationship between BV/MV ratio and stock return and found out that on average the larger the BV/MV ratio the larger the market ratio. In South Africa, Auret and Sinclair (2006:36) conclusion on the importance of BV/MV is 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 sharing returns according to risk/return 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 7.4). The negative growth > 1 (LeBtM=3) is used as a reference group. For this variable, if you 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% 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 to use this ratio this 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 & Grabowski, 2010:216; Auret & Sinclair, 2006; Fama & 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 in 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, & Chen, 2007; Vassalou & 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.

7.12.2 Asset turnover ratio and change in CEO

The result of the impact of the asset turnover on change of CEOs on the NSE is summarised and presented in Table 7.6. In chapter 6, the finding was that asset turnover ratio predicts firm

usage of debt well, in fact, far much better than the book to market ratio; at the same time, total debt to the total asset ratio predicts the asset turnover ratio but not the book value to the market value ratio. That link is exploited in this section to look at the impact of performance along with the level of debt as variables that influence change of CEO. The asset turnover ratio is an efficiency ratio that measures a company's ability to generate sales from its assets (Palepu & Healy, 2013). In other words, this ratio shows how efficiently a company can use its assets to generate sales, so 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 & Nissim, 2014; Penman, 2013; Palepu & 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 7.6) 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; $\alpha = 0.05$), 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 it as 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 & Livnat, 2011; Soliman, 2008).

7.13 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 organizational controls managers have acted against the interest of investors; and there is a need to develop additional controls (Adams, Hermalin & Weisbach, 2010; Ravina& Sapienza, 2010:964; Gordon, 2007).

Leverage ratios are used to investigate the firm's use of debt. Financial leverage measures the amount of financing other than equity, including short and long-term debt (May, 2010:294).The total debt to the total asset ratio measures the proportion of total assets financed by debt. In this, section is the test results and discussions of the fourth hypothesis:

H₀₄: Leverage does not have a significant effect on change of CEO.

H₁₄: Leverage has a significant effect on change of CEO.

The results of the impact of debt capital on change of CEOs on the NSE are presented in Table 7.6. The analysis of collected data reported in chapter 5 (canonical correlation) showed that the total debt to the total asset ratio is the best indicator of the debt level from competing indicators of debt usage. The 694 cases are grouped using total debt to total asset ratio and presented in Table 7.3. The categorisations are: high leverage (0.45 to 2.03956) is labeled as TDtTAc=1; medium leverage 0.3515 to 0.44781 is labeled as TDtTAc=2; and low leverage 0 to 0.34278 labeled as TDtTAc=3. The low leverage labeled as TDtTAc=3 is the reference group.

For this variable, if you take the odds ratio, high leverage (TDtTAc=1) firms $\beta = +1.233$ (sig. 0. .013; $\alpha = 0.05$), and that with the positive sign and entire Wald interval at 95% confidence level above 1, we conclude positive association; and confirm that those firms in this group (see $\text{ex}(\beta)$) in table 7.6 are 3.430 times likely to change CEO compared to firms in reference

group (low leverage (TDtTAc_a=3)); while the medium leverage (TDtTAc_a=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_a=3)).

The data confirmed 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 the NSE.

The findings are in line with the two theoretical prescriptions discussed in chapter 2, namely; the use of debt capital alleviates agency costs resulting into improved performance; and the theory of using debt capital to tame managers. 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 firms that finance their assets with 35% and above with debt capital are more likely to replace their CEOs than those that use less than 35percent of debt capital in financing their assets. The conclusion then is that on the NSE debt could be playing 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_a=2) than high leveraged firms (TDtTAc_a=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 replacing the CEO (Tirole, 2006). In all the effect of debt capital on CEO is not similar across distinct levels of debt capital (leverage).

7.14 Changes in CEO, performance and debt capital

This hypothesis was to test the interaction effect of performance and debt capital on change of CEO. The GGE result for this model did not add value, and the results are not reported.

7.15 Discussion and summary of findings

The central idea (thesis or debate or contribution to finance theory) in this study is to examine departure from the Modigliani and Miller (1958) assertion that capital structure decisions have no impact on a firm's value; specifically assessing the role of debt capital in addressing agency conflicts within a firm. This is because not much is known about empirical relevance of such theories on the NSE in Kenya; and this is the gap in knowledge filled in this study. The relevancy of capital structure in this study is tested by examining the impact of levels of debt capital and levels of performance on replacement of CEOs. In using performance and debt levels the study went beyond using ordinary least square regression (OLS) by employing generalised estimating equation (GEE).

Margaritis and Psillak (2010:631) writing on the relationship between capital structure and performance in France, recommend that "In future research, it will be of interest to extend this analysis across different countries and across different industries as well as to examine further aspects of ownership and governance characteristics." Intuitively, replacing CEOs in non-performing firms signify effective corporate governance; but failure to replace non performing managers exposed stakeholders to decline wealth, thus question the model in which board of directors is solely responsible for corporate governance. The idea in this study is to explore the contribution of debt capital to enhancement of corporate governance in firms listed on the NSE.

From the data and resulting analysis, the evidence is that the propensity to replace non performing managers over the period of study is low, but this does not stop us from analysing the factors that influenced the changes in CEOs; the assumption is that the information in the replacements is still valuable. Major financial decisions within a firm, be it capital budgeting, financing and asset-management decision are influenced by internal and to some extent, external governors who include shareholder, suppliers of short-term and long-term capital, markets and products and services in those markets and regulators. However, the depth of influence the governors have over the firm varies, and their interests do not always align due to variations in their risk profiles and attitudes. As an example, there might be a conflict of

interest between debt holders and shareholders on a decision to replace a CEO. The findings of this study that shareholders are reluctant to replace non performing CEO on the face of poor performance suggest a failure in corporate governance and a potential conflict between debt holders and shareholders.

In relation to ownership, the tendency on the NSE to replace CEO is higher in firms where there is dispersed ownership in contrast to concentrated ownership (that is, where one shareholder has a controlling interest). The low replacement of CEO in firms where one shareholder has a controlling interest, might be due to excessive influence that shareholders have over the CEO's appointment or existence of special relationship between the CEO and that major shareholder. Such a CEO might compromise minority shareholder's interest in the firm. In a country like Kenya where minority shareholders are not protected, minority shareholders might suffer losses if the CEO extends favors to the controlling shareholders responsible to his or her appointment. There is vast literature on large owners benefiting at the expense of small owners through arrangements such as dual-class equity, pyramid structures, and cross-ownership (Peng & Jiang, 2010; Hoskisson, Johnson, Tihanyi & White, 2005).

In Fisman, Khurana and Rhodes (2010) model, weak governance protects mediocre CEOs from dismissal. The evidence in Ellul and Yerramilli (2013) and Laeven and Levine (2009) showed that shareholders give a priority to their interest at the expense of the other stakeholders when they suggested that the presence of institutional investors increases the riskiness of the bank. If shareholders fail to replace a non performing CEO, there is a strong case for reinforcing corporate governance, through other mechanisms. Other mechanisms would include allowing debt holders to participate at higher-level decision making or even encourage a corporate takeover. Failure to tame errand CEOs could also mean that governors' choice of performance indicators useful in evaluating CEOs is prone to systematic biases.

Those studies suggesting a link between management turnovers and performance echo ineffectiveness or lack of corporate governance (Firth, Fung & Rui, 2005; DeFond & Mingyi, 2004). Again, this study used two indicators of performance: namely book value to the market

value ratio and the asset turnover market ratio to test the effect of poor performance on CEO turnover.

Using the book value to the market value ratio as a performance indicator, we interpret firms with the book value to market value ratio value of less than one (BtM is <1) as growth firms, and because such firms are well managed, they need not to replace their CEOs. However, the data analysis and finding above confirm that the change in CEO in this group is not different from those with the book value to market value ratio value greater than one, negative growth (BtM is >1), classified as reporting pitiable performance. Change in CEOs is not sensitive to the book value to the market value ratio as the performance indicator; and to be assertive, this indicator suggests that on the NSE, CEOs with poor performance are not replaced as advanced by Dimopoulos and Wagner (2010:2). 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 or retention of CEO is rejected*. It is possible that those in command of disciplining managers do not look at this indicator or any other correct indicators in their evaluation of CEO.

When asset turnover is used as a performance indicator, change in CEO is associated with poor performance (low asset turnover ratio). The findings confirmed that the propensity to change CEO is higher in firms with a low asset turnover than those with a high asset turnover. The data confirm that as far as this indicator is concerned the 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.

The finding that low asset turnover ratio is associated with change in CEOs on the NSE is in line with match theory (interactions between firm and executive) that explains firm productivity and performance in terms of interactions between firm and CEO, in this case use of assets to generate sales or services, and interpreted to mean that firm failure is traced to manager's capability (Allgood & Farrell, 2003); and Ambrosini, Bowman and Collier (2009) argue that firm failure could be attributed to managers using the extant set of dynamic capabilities, when these are not appropriate for the new environment. Others interpret the

match theory to mean that it is a CEO's effort that shape firm performance, and conclude that non performing CEOs be replaced (Eisfeldt & Kuhnen, 2010). The power of asset turnover as a performance indicator to predict change in CEO found support in the argument by Wermers, Wu and Zechner (2008:26) that were corporate governance exist; poor performance preceded replacement of management. The specific finding is that CEO whose firm asset turnover ratio is low; that is, with a range between 0.073 times - 0.688 times are likely to be replaced.

The final question is: Does debt capital mitigate the agency problem? Or Does debt capital plays a disciplinary influence replacement of non-performing CEOs? *The findings based on the data support the hypothesis that debt capital plays a governance role as suggested in Jensen (1986). Jorion, (2007) suggested that debt holders must monitor both shareholders and CEOs to tame shareholders and their CEOs appetite for excessive risk.*

The finding that firms with high debt had greater propensity to replace non performing managers empirically supported the assertion by Jorion (2007) and Harvey, Lins and Roper (2004) that debt capital alleviated agency costs and might propel replacement of non-performing CEOs. The finding is that firms that financed 35 percent, and above of their assets with debt capital is more likely to replace their CEOs than those that finance their assets with less than 35 percent of debt capital. The conclusion is that firms with higher default risk as a result of substantial debt capital in the capital structure are distinctly possible to change their top management to avoid total collapse (Wei Ting, 2011).

7.16 The theoretical and practical implication of the findings

This study contributes to the debate on irrelevancy or relevancy of capital structure decision. The specific issue is about the extent to which debt capital mitigates agency cost. The data used in this study point out that (generate a theory), depending on the measure of performance, and measure of usage of borrowed capital, and to the extent that replacing a non performing CEO signifies effective corporate governance; the emerging theory is that debt capital supplement equity capital in alleviating agency costs. The finding negates MM theory of capital structure irrelevancy and is in support of the alternative hypothesis that in the real world, frictions make capital structure decisions relevant. The practical orientation is that

firms should use debt capital to bring forces to bear on the operations and choices of firms and to protect the investment of shareholders and other stakeholders.

The study also 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; second managers are made aware that debt capital combined with poor performance could see them replaced. The findings 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.

Another important finding is the low-rate replacements of CEO despite poor performance in a number of firms, and this finding confirms the prevalence of the firm fixed effect in contrast to managerial effect, and that on the NSE, the manager characteristics are not well matched to firm characteristics. Low replacement despite poor performance put into question how effective the market and other firm controllers evaluate and control managers on the NSE. It is a challenge on factors that those responsible for replacing managers consider in CEO replacement decision and whether CEO replacement is proactive or not as discussed in Ertugruland Krishnan (2011). Finally and again from a practical perspective, managers of debt-conservative firms who objectively read this study will consider using more debt.

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 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

in this study using GEE, we are able to point out whether 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.

7.17 Summary of the chapter

The objective in this chapter was to test the effect of performance and debt capital on change of CEO. The specific hypotheses being:

H₀₃: Firm performance does not have a significant effect on change of CEO.

H₁₃: Firm performance has a significant effect on Change of CEO

And

H₀₄: Leverage does not have a significant effect on change of CEO.

H₁₄: Leverage has a significant effect on change of CEO.

And

H₀₅: Leverage and firm performance does not have a significant effect on Change of CEO

H₁₅: Leverage and firm performance has a significant effect on Change of CEO.

This chapter presented the findings on the relationship between debt capital, performance, and change in CEO. The core concept in the chapter is the role of debt capital in addressing agency conflicts. For debt to capital mitigates agency costs, there must be visible differences in change in CEOs in firms with more debt when compared to those with less debt in their capital structure in the face of poor performance; this is a test of theoretical construct derived from the relevancy or irrelevancy of capital structure as advanced by Modigliani and Miller (1958).

The data relied on contained repeated binary measures of the change in CEO in each sampled company, for the period 1990 through to 2012. The 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 good, average or poor and a control variable, ownership structure (percentage of shareholding by large owners) is provided. GEE is used to fit a repeated measures logistic regression to study effects of performance with the capital structure, with ownership structure on change of CEO. GEE allowed for analysis of non-normal data and repeated measurements or other correlated observations, such as clustered data (Lalonde, Nguyen, Yin, Irimata & Wilson, 2013; Diggle, Heagerty, Liang, & Zeger, 2002; Hardin & Hilbe, 2003; Liang & Zeger, 1986).

The book value to the market value ratio, asset turnover ratio and the total debt to the total asset ratio are used to test the effect of performance and capital structure on change of CEOs. The event (dependent) variable is the change in CEO and is a random variable. The probability distribution of the dependent variable is binomial. The year is the variable specifying the number of trial occurring in a subject. The predictor variables, the total debt to total assets, levels of book value to market value ratio, asset turnover ratio and categorised ownership structure initially reported as covariate is converted into factors.

The GEE model generated parameter estimates of goodness fit. There are four models to choose from: M-dependent, exchangeable, auto regressive of first order AR(1), independent and unstructured models; the results show that the smallest QIC is the unstructured structure; therefore, unstructured model is used to model the impact of performance and capital structure on change of CEO (see table 7.4 (a) and 7.4 (b)).

In testing for model effect, the result of testing the global null hypothesis: $\beta = 0$, and relying on the Wald Chi-Square test (see table 7.5) showed that at least one of the predictors' regression coefficient is not equal to zero in the model. Then we proceeded to establish the level and direction of predictor's regression, and that regression coefficients are not equal to zero.

The parameter estimates for all factors are calculated and presented in table 7.6; and interpreted and in summary, the findings are as presented. If you take the odds ratio related to this variable, it is apparent that firms in which an individual shareholder hold 20 percent to 50 percent of equity capital, are less likely to change CEOs compared to those firms in which an individual shareholders hold of 20 percent and below, the same applies to firms in which one shareholder hold 51 percent to 100 percent, though this is not statistically significant. Therefore, the data confirms that group of shareholders captured in this study do not influence change in CEO.

In relation to performance as a variable inducing change in CEO, the results varied depending on the indicator of performance. When the book to market ratio (BV/MV) is employed as a performance indicator, we did not see any influence and concluded no association between change in CEO and performance. The analysis confirmed that the change in CEO in all groups, that is, firms with positive growth, negative growth and no growth were not different. However, though not statistically significant, the no-growth firms' are 1.892 times less likely to change CEO compared to firms in the reference group. When the asset turnover ratio is used as the performance indicator, we see positive association; and confirm that those firms with a low asset turnover are 3.045 times likely to change CEO compared to firms with the high asset turnover ratio, but the change in CEO in the firms with the medium asset turnover ratio is not different from the firms with the high asset turnover. Therefore, the data supported the hypothesis that low asset turnover ratio is associated with change in CEOs on the NSE; and this finding is important in the sense that it goes beyond merely stating that a relationship existed by specifying what is a low asset turnover ratio for this market is. The finding matches the level of performance to replacement of CEO.

In relation to the influence of debt capital on change in CEO, a positive association is confirmed. The data confirmed that firms with high leverage (debt) are 3.430 times likely to change CEO when compared to firms in low leverage. The firms with a medium leverage are 6.491 times likely to change CEO compared to firms in the reference group (low leverage). The data tells us that though high levels of debt are associated with high levels of default probability, the propensity to replace CEO is higher in a medium leveraged than high

leveraged. The finding was that replacement non performing CEOs by debt holders in medium leverage firms is higher than those in high levered firms suggests that debt holders in a medium levered firm are more risk averse than those in high leveraged firms.

In conclusion the three hypotheses:

H₀₃ Firm performance does not have a significant effect on change of CEO.

H₁₃: Firm performance has a significant effect on Change of CEO

And

H₀₄ Leverage does not have a significant effect on change of CEO.

H₁₄: Leverage has a significant effect on change of CEO.

H₀₅: Leverage and firm performance does not have a significant effect on Change of CEO

H₁₅: Leverage and firm performance has a significant effect on Change of CEO.

The three are supported by the data. However, the relationship is significant only if the asset turnover ratio is used as a measure of performance. In the next, final chapter, is presented the summary; conclusion; evaluation of research contribution; limitations of this research; and suggested areas for further studies.

CHAPTER 8

SUMMARIES, CONCLUSIONS, AND RECOMMENDATIONS

8.1 Introduction

This study provided evidence on the effect of performance on leverage; effect of leverage on performance; and debt capital levels, performance levels and ownership structure levels on change in CEO at the Nairobi Securities Exchange (NSE) in Kenya. This study emphasized role that management of performance and debt capital play in enhancing the value of firms listed at NSE. The significance of the debt monitoring role is traced to Tung (2009). Tung (2009:117 - 123) referred to leverage in the board room as the unsung influence of private lenders in corporate governance, ‘The dearth (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.’

The use of debt by business firms is an unresolved issue, that is, researchers are not yet definite on the role of debt capital in businesses. Managers do not always adopt leverage choices that maximises shareholders’ value (Jiraporn, Chintrakarn&Liu, 2012). In that sense managers might be inefficient in their capital structure decisions. In addition, firms with dominant CEO are likely to adopt significantly lower leverage to circumvent disciplinary mechanisms that accompany debt financing (Jiraporn, Chintrakarn & Liu, 2012). Shareholders might be reluctant replacing non performing CEO even when the CEO’s continued stay is harmful to other stakeholders.

The primary objective of this study is to investigate the relationship between capital structure, performance and replacement of CEO in firms listed on the Nairobi Securities Exchange. The secondary objectives of the study were:

- To establish if firm performance has an effect on leverage.
- To establish if leverage has an effect on firm performance.
- To establish if firm performance causes changes of CEO.
- To establish if leverage cause change of CEO.
- To establish if leverage and firm performance (interaction effect) causes change of CEO.

The resulting five (5) hypotheses were:

H₀₁: Firm performance does not have a significant effect on leverage, and alternative

H₁₁: Firm performance has a significant effect on leverage.

H₀₂: Leverage does not have a significant effect on firm performance; the alternative hypothesis:

H₁₂: Leverage has a significant effect on firm performance.

H₀₃: Firm performance does not have a significant effect on Change of CEO the alternative hypothesis:

H₁₃: Firm performance has a significant effect on Change of CEO.

H₀₄: Leverage does not have a significant effect on change of CEO, the alternative hypothesis:

H₁₄: Leverage has a significant effect on change of CEO.

H₀₅: Leverage and firm performance does not have a significant effect on Change of CEO, the alternative hypothesis:

H₁₅: Leverage and performance has a significant effect on Change of CEO.

The data collected was subjected to three statistical techniques (methods) as a step to achieving the research objectives. The statistical methods that were employed in this study were canonical correlation, general linear model (GLM) and generalised estimating equation

(GEE). The result to be generated by these three statistical models was to confirm a bi-directional relationship between capital structure and performance; in addition to confirming that firm performance and debt capital influenced the change of CEO.

This chapter presents a summary of the study in this research: where it started, the distance covered and its destination. The rest of the chapter is presented as follows: in section 8.1 is the introduction; section 8.2 is the summary of the chapters; section 8.3 is the conclusion; section 8.4 is the contribution of this research; section 8.5 is limitations of this research; and section 8.6 is further research.

8.2 Summary

Chapter one (1) is the background of the study, statement of the problem, objectives of the study, justification of the study and limitations of this study. In chapter one, the key concepts in the study, namely corporate governance, performance, debt capital and change in CEO are introduced. The key section is the statement of the problem, specifically the research gap. The key observation that a firm's choice of capital structure is inconsequential is inconsistent with the observation that firms invest significant resources both in terms of managerial time and effort, legal fee and investment banking fees, in managing their capital structures anchored this research. The justification of the deployment of such resources is that the choice of leverage is of critical importance to a firm's value and that individual firms have an optimum capital structure, such that a firm's choice of capital structure is relevant. Yet in addressing the relevancy or irrelevancy of capital structure choices, researchers are not in consensus, whether it is the capital structure that influences performance or performance that influences capital structure or both, and that 'debt capital, one would argue reduces agency costs and induce agency benefits, if there are visible differences in performance across distinct levels of capital structure; and visible differences in capital structure across different levels of performance', finally 'that debt capital becomes a relevant corporate governance mechanism, only if it has a noticeable effect on corporate governance, namely replacement of CEO's in poorly performing firms.

Chapter two (2) is contemporary literature on key concepts of the study, namely, performance, capital structure and corporate governance. On capital structure theories, the literature reviewed showed a lack of agreement, thus creating a research gap. In relation to corporate governance, there is evidence consistent with a causal relationship between an overall governance index and higher share prices in emerging markets. Better firm-level corporate governance practices are linked to higher valuations, better performance and more dividends become available investors. Durnev and Kim (2005) point out that it is hard to predict firm-level governance choices and related it to performance. The chapter discussed those responsible for corporate governance in firms and the role of debt capital in corporate governance. The chapter presented literature and showed a lack of agreement as to whether it usage of debt capital that influences performance, or it is performance that influences usage of debt. In addition, measures of capital structure and performance are presented. The core theories that emerged and anchored this study are: agency theories- under investment, debt overhang and capital structure-related theories that include irrelevancy and relevancy of capital structure decisions, efficiency hypothesis and franchise value hypothesis.

In Chapter three (3) is presented contemporary literature required to understand the contribution of debt capital to corporate governance. The literature on the role that debt CapitalLand firm performance plays in forcing top management to quit is presented. Evaluation of corporate governance is operationalised by assessing the extent to which inefficient managers are replaced due to poor firm performance. There was no consensus on the extent to which performance and leverage influence change in CEOs. In the review, there was agreement that non performing managers should be replaced to reverse the decline. However, under some circumstances, shareholders are reluctant replacing non-performing managers; and there is a need to reinforce corporate governance to propel replacement of non-performing managers. In one study, it is reported that ‘the change in turnover in response to a decline in performance is insignificant or even goes against firing underperforming managers’ (Dimopoulos & Wagner, 2010:2). In an emerging economy perspective, is possible that, the link between firm performance and management turnover is fuzzy due to weak laws, weak regulation and underdeveloped capital markets (Strenger, Kleindiek, Schmelzle, & Volynets,

2012) and this need confirming. Leverage in the board room is the *unsung* influence of private lenders in corporate governance (Tung, 2009:117–123). The conclusion from the review is that a research gap exists, and the focus then shifted to the relevant theories.

The resulting theories useful in interpreting the findings in this study are strategic choice and the microeconomic theories and agency theory. The match theory explains firm productivity and performance in terms of the match between CEO and the firm. The other theories included contractualist view of the corporation; that is, debt holders have a contact with the firm; common sense theory assumes that sound and prudent judgment based on a simple perception of the situation or facts and that a new CEO has the capacity to enhance performance. Echelon theory hypothesizes that demographic diversity of senior management is positively associated with the diversity of the workforce and recall that management is achieving results through others. In addition are the dependency theory - characterises organization behaviour and managers as critical resources to the success of corporations; exchange-based power - potential of debt capital as a resource that would influence behavior and replacement of top management; risk theory- adverse changes in risk acts as a signal to shareholders and regulators to take corrective action that include replacement of topmost management. Finally, concepts and measures about firm performance change in CEO and capital structure were presented.

Chapter four (4) explained the research philosophy, approach, design, population, sample of the study; and methods used to address the research problem and research objectives. It explained how the bi-directional relationship between capital structure and performance is to be examined and reported; and how the extent to which poor performance and capital structure influence change in CEO is to be established. In this, chapter is a planned and deliberate approach that controls the collection, analysis and interpretation of data to report credible findings and conclusions. In this chapter, the researcher sets the standard for data collection and data analysis that must be adhered to whether the findings are to be believable.

The study is based on listed firms on the NSE and covered the period 1990 to 2012. Compared to major world markets in Europe, USA and Japan, NSE is a small capital market,

with only 62 listed firms, in a growing economy which was constituted in 1954 as a voluntary association of stockbrokers registered under the Societies Act. Therefore, it is important informing the outside world, particularly potential foreign investors, about the activities at NSE. The variables used in this study are identified and reported in this chapter. The capital structure indicators used are the interest cover ratios, the long-term debt to equity market value, long-term debt to equity book value, long-term debt to equity market value, equity book value to total debt, and equity market value to total debt; while the performance indicators used are return on total assets, earnings before tax and interest to total assets, return on the market value of equity, return on book value of equity, book value to market value ratio, growth in sales, and the asset turnover ratio; and the control variable is the largest individual shareholder (ownership structure). The data on these variables cover the period 1990 to 2012.

Literature has been used to inform the study, and the study tested the pre-existing theory, through the use of a hypothesis. It relied on quantitative data, to discover and understand the role of debt capital at this market and how performance influences capital structure decision and in addition large data set are available. Therefore, in terms of research philosophy, this study adopted a positivist position to address the research problem and research objectives.

The data on the variables of the study collected from authoritative sources was subjected to three statistical techniques (methods): canonical correlation, general linear model (GLM), and generalised estimating equation (GEE) to generate specific results. In addition, in the chapter is presented the expected output from each model and how to interpret the results.

Chapter five (5) presented the results from the evaluation of bi-directional relationship between capital structure and performance on subjecting the data to canonical correlation analysis. In addition, specific performance and capital structure indicators subjected to GLM, and GEE models to evaluate bi-directional relationship between capital structure in chapter six; and the impacts of performance and capital structure on change in CEO in chapter seven were identified. For the second time in this study, the first and second hypotheses are examined in this chapter. The presentation in this chapter is in line with the commitment made

by the researcher in chapter four (4). The highlights of the chapter are: the data structure, the canonical correlation model and equation, results of the analysis, conclusion and discussion. The findings and conclusion on the bi-directional relationship between capital structure and specific variables useful in building further relationship are presented. The discussions incorporated the research contribution and practical implication of this study. From the list of variables presented in chapter four (4), the finding is that the variables that contribute most to the bi-directional relationship between performance and capital structure are the asset turnover ratio, the book value to the market value ratio and the total debt to the total asset ratio. The degree to which the canonical variate of capital structure explained the variability in performance indicators and the degree to which canonical variate of performance measure explained the variability in capital structure variables help in the understanding of the relationship between capital structure and performance and are therefore reported. The findings showed that the first canonical variate for the capital structure explained 0.065 percent of the variability in performance, but the cumulative or proportion explained by all (6) canonical variates was 15.2 percent. In terms of performance measurement, we found that the first canonical variate explained 9.13 percent of the variability in capital structure; however, the cumulative proportion of measure explained by all the six canonical variates was 19.96 percent. The degree at which performance influenced the capital structure was higher than the degree at which capital structure influenced on performance. However, the canonical model failed to tell us, which level of performance is matched with which level of debt capital; and this is addressed in chapter six (6).

Chapter six (6) extended the analysis in chapter five in the sense that it tested the robustness of the findings on the bi-directional relationship between capital structure, and performance reported in chapter five (5). The first and second hypotheses were tested in this chapter. Robustness ensures that the research conclusions are independent of the research tool. Chapter six looked at each case independent of the company. The bi-directional is examined in stages by subjecting the data to the general linear model (GLM) procedure; and the indicators identified in chapter five (5) namely asset turnover ratio, book value to market value ratio and the total debt to the total asset ratio are employed each at a time to confirm the bi-directional

relationship between capital structure and performance. The strength in GLM is that it provides regression analysis and analysis of variance for one dependent variable by one or more factors and/or variables. The factor variables divide the population into groups, which are then subjected to GLM procedure, to test null hypotheses about the effects of other variables on the means of various groupings of a single dependent variable. The variables (asset turnover ratio, book value to market value ratio and total debt to total assets) are employed as covariates at one stage of analysis and the same variables are then grouped to create factors at a subsequent stage of analysis. Creating factors by grouping the variables allowed for association of levels' performance and levels of capital structure and subsequent determination of whether poor performance is associated with more usage of debt and whether an optimum capital structure exists. In relation to findings, the data *supports the hypothesis that efficient and profitable firms employ more debt than comparable firms that are less profitable*, possibly because their exposure financial risk is low (propensity to be bankrupt is low); there is no evidence to support the franchise hypothesis that more efficient firms use less debt. However, the data only show statistically significant relationship between performance and capital structure (usage of debt), after controlling for ownership structure, if asset turnover ratio and not the book value to the market value ratio is used as a performance indicator. At the same time, the data on the NSE *support the hypothesis that the use of debt capital alleviates agency costs to improve firm performance, and that managers and possibly investors look at performance in determining the debt capacity of a firm.*

In **chapter seven (7)** findings on the influence of performance and capital structure variables on change of CEO are presented. The third and fourth hypotheses were tested in this chapter. The performance and capital structure variables employed to predict CEO's replacements are asset turnover, book to market value and total debt to total asset ratios. At this stage of the study interest shift from individual cases to CEO replacement in firms over a period of time, and the longitudinal nature of data is taken into account. Therefore, the data contains repeated binary measures of the change in CEO status, in addition to capital structure and performance indicators for each sampled company, for each year from 1990 through to 2012, the industry the firm belonged to, and 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 good, average or poor and a control variable, capital structure, resulting into panel data. Given that the panel data employed at this stage contains repeated measures, GEE is employed to allow for analysis of repeated measurements or other correlated observations, such as clustered data. In the GEE model, the event (dependent) variable change in CEO is a random variable. The probability distribution of the dependent variable is binomial and year is the variable specifying the number of trial occurring in a subject. The relevant statistics were computed, interpreted and informed the conclusion. The resulting empirical model for CEO turnover on the NSE is:

$$g(\mu) = \log\left(\frac{\mu}{1-\mu}\right) = \Delta CEO = -9.627 - 2.072 \text{ Shareholdings } 20\% \text{ to } 50\% - 0.631 \text{ Shareholdings } 51\% \text{ to } 100\% + 1.233 \text{ High Leverage} + 1.870 \text{ Medium Leverage} + 0.001 \text{ Positive Growth} < 1(BtM) + 0.637 \text{ No Growth} = 1(BtM) + 1.114 \text{ Low } 0.073 \text{ to } 0.6882 \text{ (Asset Turnover Ratio)} - 0.216 \text{ Medium } 0.6926 \text{ to } 1.1073 \text{ (Asset Turnover Ratio)} \dots \text{Equation 8.1}$$

In relation to performance as a variable inducing change in CEO, the results were sensitive to the indicator of performance. When the book to market ratio (BV/MV) was employed as a performance indicator, we concluded no association; and that the change in CEO in all groups, that is, firms with positive growth, negative growth and no growth are not different. However, when the asset turnover ratio is used as the performance indicator, we see positive association; and confirmed that those firms with a low asset turnover are 3.045 times likely to change CEO compared to firms with a high asset turnover. However, the change in CEO in the firms with a medium asset turnover this group is not different from the firms with a high asset turnover. Therefore, the data support the hypothesis that low asset turnover ratio is associated with change in CEOs on the NSE. In relation to the influence of debt capital on change in CEO, a positive association was visible and the data confirmed that firms with high leverage (debt) are 3.430 times likely to change CEO compared to firms in low leverage; butte firms with medium leverage are 6.491 times likely to change CEO compared to firms in the reference group (low leverage). The data tells us that though high levels of debt are associated with high levels of default probability, the propensity to replace CEO is higher in a medium

leveraged than high leveraged, 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.

In next section of this chapter are conclusions on each objective in this study, stating clearly whether the null hypothesis was rejected or accepted; some proposed recommendations based on the research findings; present the contributions, suggests potential areas for further research and the study limitations.

8.3 Conclusion of each objective

The primary objective of this study was to investigate the relationship between capital structure, performance and replacement of CEO in firms listed on the Nairobi Securities Exchange. The primary objective was sub-divided into five secondary objectives, which were as follows:

Secondary objective one (1): To find out if performance affects leverage. The null and alternate hypothesis tested was stated as follows:

H₀₁: Firm performances do not have a significant effect on leverage, and alternative

H₁₁: Firm performance has a significant effect on leverage.

This objective was tested by subjecting the data collected on the performance and capital structure variables to canonical and general linear model procedures. In relation to canonical correlation analysis, the first canonical variate explained the 9.13 percent of the variability in capital structure while the cumulative proportion of measure explained by all the six canonical variates is 19.96 percent; therefore, the data support the hypothesis that performance has a significant effect on leverage. Using GLM the data support the hypothesis that performance has a significant effect on leverage; however, the relationship is conditional on measure of performance. In summary, the null hypothesis that company performances do not have a significant effect on leverage is rejected, and the alternative hypothesis that company performance has a significant effect on leverage was held.

Secondary objective two (2): To find out if leverage affects firm performance. The null and alternate hypothesis tested was stated as follows:

H₀₂: Leverage does not have a significant effect on performance; the alternative hypothesis:

H₁₂: Leverage has a significant effect on firm performance.

This hypothesis was tested by subjecting the competing measures of performance and capital structure to both canonical correlation and general linear model procedures. From the result of canonical correlation analysis, we found out that the first canonical variate for the capital structure explained 0.065percent of the variability in performance, but the cumulative or proportion explained by all (6) canonical variates was 15.2 percent. This implies a minimal impact of capital structure on performance. Using GLM, we found out that capital structure influenced firm performance; even so, that the influence was conditioned to the measure of performance employed. In summary, the null hypothesis that leverage does not have a significant effect on performance was rejected, and the alternative hypothesis that leverage has a significant effect on performance was held.

The conclusion on both secondary objective one and two is that bidirectional relationships between capital structures and performance exist. However, the influence of capital structure on performance or the influence of performance on capital structure depends on measure of performance employed. Finally, the influence of performance through the use of debt capital was more pronounced than the use of debt capital on performance.

Secondary objective three (3): To find out if performance causes changes of CEO. The null and alternate hypothesis tested was stated as follows:

H₀₃: Firm performance does not have a significant effect on Change of CEO

H₁₃: Firm performance has a significant effect on Change of CEO.

In this objective, the measures of performance are book value to market value ratio and asset turnover ratio. The event (dependent) variable change in CEO is a random variable. The data

is subjected to GEE. When the book to market ratio is employed as a performance indicator, we conclude no association; however, when the asset turnover ratio is used as the performance indicator, we see positive association; and confirm that those firms with a low asset turnover are 3.045 times likely to change CEO compared to firms with a high asset turnover while the change in CEO in the firms with a medium asset turnover this group is not different from the firms with a high asset turnover. Therefore, the data support the hypothesis that low asset turnover ratio is associated with change in CEOs on the NSE. The hypothesis that firm performance has a significant effect on change of CEO is accepted if the asset turnover ratio is used as a performance indicator. In summary, the null hypothesis that firm performance does not have a significant effect on change of CEO was rejected, and the alternative hypothesis that firm performance has a significant effect on change of CEO was held.

Secondary objective four (4): To find out if leverage causes changes in CEO. The null and alternate hypothesis tested was stated as follows:

H₀₄: Leverage does not have a significant effect on change of CEO.

H₁₄: Leverage has a significant effect on change of CEO.

In this objective, the measure of capital structure is the total debt to the total asset ratio. The event (dependent) variable change in CEO is a random variable. The data is subjected to GEE. A positive association was visible, and the data confirmed that firms with high leverage (debt) are 3.430 times likely to change CEO compared to firms in low leverage, while the firms with medium leverage are 6.491 times likely to change CEO compared to firms in the reference group (low leverage). In summary, summary, the null hypothesis that leverage does not have a significant effect on change of CEO was rejected, and the alternative hypothesis that leverage has a significant effect on change of CEO was held.

Secondary objective five (5): To find out if leverage and performance (interaction effect) cause change of CEO. The null and alternate hypothesis tested was stated as follows:

H₀₅: Leverage and firm performance has a significant effect on Change of CEO

H₁₅: Leverage and firm performance do not have significant effect on Change of CEO.

This hypothesis was to test the interaction effect of performance and debt capital on change of CEO. The GGE result for this model did not add value, and the results are not reported.

For quick reference, the summary of all the hypotheses indicating the relevant chapter and whether the hypothesis is accepted or rejected are presented in table 8.1. In the first column, we find the relevant chapter in which the hypothesis is tested; the second column is the null hypothesis; the third column is the variables employed to establish the relationship, and the last columns are the results.

Table 8.1 Summary of Hypotheses

Chapter	Hypothesis	Variable Tested	Result
Chapter Five	H ₀₁ : Firm performance does not have a significant effect on leverage	Independent variable is performance; dependent variable is leverage (capital structure) Method: Canonical correlation analysis.	Reject the null hypothesis. Performance measured as asset turnover ratio is influence usage of debt capital
Chapter Five	H ₀₂ : Leverage does not have a significant effect on firm performance.	Independent variable is leverage (capital structure); dependent variable – performance. Method: Canonical correlation analysis.	Reject the null hypothesis. Performance is measured as asset turnover ratio is influence usage of debt capital
Chapter Six	H ₀₁ : Firm performance does not have a significant effect on leverage.	Independent variables is Performance (factor) and is measured as either book value to market value ratio, and ownership structure; dependent variable is leverage (capital structure) (covariate) Method: General Linear Model (GLM)	Reject the null hypothesis. Performance measured as asset turnover ratio is influence usage of debt capital.

Chapter	Hypothesis	Variable Tested	Result
	H ₀₂ : Leverage does not have a significant effect on firm performance	Independent variable is performance (factor) and ownership structure; dependent variable is Performance measured as either book to market value or asset turnover ratio (covariate) Method: General Linear Model (GLM)	Reject the null hypothesis that usage of debt capital has influence on performance - measured as asset turnover ratio
Chapter 7	H ₀₃ : Firm performance does not have a significant effect on Change of CEO	Independent Variables are performance (factor), measured as either book to market value or asset turnover ratio and ownership structure. The dependent variable is Change of CEO. Method Generalised Estimating Equation (GEE)	Reject the null hypothesis performance, measured as asset turnover ratio, has effect on Change of CEO
Chapter 7	H ₀₄ : Leverage (debt usage) does not have a significant effect on change of CEO.	Independent Variables are leverage or debt usage measured as total debt to total assets ratio and ownership structure. The dependent variable is Change of CEO. Method Generalised Estimating Equation (GEE)	Reject the null hypothesis leverage, measured as total debt to total assets, has effect on Change of CEO
Chapter 7	H ₀₅ : Leverage and performance has a significant effect on Change of CEO	This hypothesis was to test the interaction effect of performance and debt capital on change of CEO. The GGE result for this model did not add value and the result are not reported.	

8.4 Contribution of the study

The contribution of this study is at methodological, theoretical and practical levels. By subjecting the data to canonical correlation analysis, the study identified the asset turnover ratio and the book value to the market value ratio and not return on assets (ROA) or return on equity (ROE) as the relevant measures of performance for this research; and total debt to total asset as a relevant measure of capital structure for this study. The three measures were used to establish the association between performance and leverage; and to predict the change in CEO. The analysis provided insights into the structure of the different variable sets (capital structure and performance) as they relate to their dependence in relationship; and this is of practical and conceptual significance and opens a window for further studies. It employed multiple variables instead of examining each variable independently and introduces levels within performance and levels within the capital structure in the analysis. In terms of theory, the first part in this study contributes to the debate and therefore, literature on bi-directional relationship between capital structure and performance and specifically refutes MM irrelevance proposition.

This study demonstrated how by subjecting grouped variables to GLM, competing hypotheses, in this case performance- risk hypothesis, franchise- value hypothesis and efficiency hypothesis (agency cost hypothesis) dominate each other. GLM allowed for the analysis of groups extracted from performance and capital structure indicators. In addition, it provided new empirical evidence, based on data in an emerging economy, on the bi-directional relationship between performance and capital structure. A number of similar studies at this level used large firm data in Europe, US and some parts of Asia, that might not be representative of countries classified as emerging economies in which the supporting institutions are yet to be developed (La Porta, Lopez-de-Silanes & Shleifer, 1999). Investors in these emerging economies are interested in how these businesses are managed, and it is important understanding how financial decisions are made in these economies. This study informed us about capital structure decisions in emerging economies. In addition from this research, the advice to managers would be that the range of optimum capital structure is medium debt ratio 0.3515 to 0.44781 or in percentage terms from 35.15 percent to 44.781

percent, in any case the existence of an optimum capital structure suggests managers concern that levered firms incurring financial distress cost reduce shareholder's wealth in the firm. In addition financial managers can use this finding to evaluate their capital structure policy.

The final contribution is to the debate on irrelevancy or relevancy of capital structure decision. The specific issue was on the extent to which debt capital mitigated agency cost. The data used in this study point out that, depending on the measure of performance and measure of usage of borrowed capital, and to the extent that replacing a non performing CEO signified effective corporate governance, debt capital supplement equity capital in alleviating agency costs; and that is the emerging theory. Therefore, firms should use debt capital to bring market forces to bear on the operations of firms to protect the investment of shareholders.

8.5 Recommendations

The practical conclusion from this study is that finance managers cannot be passive when it comes to choosing between equity and debt capital, that capital structure choices matter. The role of debt capital in capital markets that came out clear in this study is that debt capital played a disciplinary role on the NSE; and this would imply that requiring firms to issue debt would solve all safety and soundness-related concerns within those firms. A similar argument on bank safety is that sub-debt in the bank capital structure can reinforce market and supervisory discipline over bank risk-taking activities (Alexandre, Bouaiss & Refait-Alexandre, 2010; Evanoff & Wall, 2000:1). The same argument can be advanced for non-banking institutions. Therefore, regulators, such as capital market's authority, central bank and economic planning ministry in Kenya should come up with a frame work that relied on financing policies that cultivate effective corporate governance in firms where public interest is substantial. The data in this study support the use of debt to enhance performance by checking managerial excesses. To be specific a total debt to the total asset ratio is the medium debt ratio from 0.35 to 0.45 or in percentage terms from 35percent to 45 percent is recommended because at the level, best performance (asset turnover ratio) is posted. The other recommendation is that in making major financial decision managers should examine the rate at which they generate sales from the resources at their disposal (asset turnover ratio) that

is, managers on the NSE should critically examine the performance level before deciding on the amount of debt to employ in their firms.

8.6 Limitations of the study

This study was limited to non-financial firms on the NSE as a practical approach to strengthening the corporate governance mechanisms within such firms in order to enhance the firm value. This study is a baseline study that other researchers can improve on; and inclusion of financials would allow for generalization of findings on the relationship between capital structure and performance and on the impact of poor performance and debt capital on replacement of CEO. The study did not take into account specific economic and financial structure as control variables and suggest this as the next study.

Though the study covered a relatively long period of time (1990 to 2012) which includes periods of financial reforms in Kenya, the use GEE model and use of repeated data made it difficult controlling for structural breaks in the data because the breaks are repeated within each company that result into almost zero variance.

The other limitation is capturing the intention and the reasons why the shareholders force a CEO to leave by sacking or refusing to renew contract or even the reason why a CEO leaves voluntarily. The other limitations are deduced from the short comings inherent in the accounting data, derived from annual reports that from the core of data that will be used in this study. Accounting numbers contained in annual reports are affected by a number of firm oriented factors; industry and economy factors that make it difficult for the analyst to make intra and inter firm comparisons. The assumption in this study is that annual reports contain useful information.

8.7 Areas for further research

The first suggestion is that a similar study using primary data collected from managers and investors that capture perceptions about the relationship between capital structure and performance; and on the impact of performance and debt capital on replacement of CEO is

required to test the robustness of the conclusions in this study. Second this study predicted change in CEO using capital structure and performance indicators; however, it is also important examining changes in both performance and capital structure after changing CEO.

In this study after subjecting the data to canonical correlation analysis, two measures of performance, the book value to the market value ratio and the asset turnover are relevant measures of performance. The study can be extended by subjecting other indicators of performance such as the return on assets (ROA) and return on equity (ROE) to both GLM and GEE procedures and the results compared to findings in this study as a way of validating the conclusions in this study.

There are methodologies that may be used to validate the study, that were not employed here. An example is for those companies that replace CEOs, how long do they take to recognize that the CEO should be replaced? Such analysis uses duration data analysis often called hazard models. The other alternative is to look at the duration (23 years) and examine what influences the number of CEOs at each companies that is, CEO turnover per company.

The strategic choice and the microeconomic theory theories stipulate that a firm's performance reflects management perceptions and abilities. The proposition is that a new CEO, with new cognitive perceptions will have a positive impact on performance. However, the population ecology theory is that due to structural inertia, change in CEO's cannot significantly affect firm performance. Therefore, there is a need to examine the effect of change of CEO on a firm's performance and financial policy.

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APPENDIX1: CLASSES OF FIRMS ON THE NSE

A. AGRICULTURAL

1. Eaagads Ltd
2. Kapchorua Tea Co. Ltd
3. Kakuzi
4. Limuru Tea Co. Ltd
5. Rea Vipingo Plantations Ltd
6. Sasini Ltd
7. Williamson Tea Kenya Ltd

B. COMMERCIAL AND SERVICES

8. Express Ltd
9. Kenya Airways Ltd
10. Nation Media Group
11. Standard Group Ltd
12. TPS Eastern Africa (Serena) Ltd
13. Scangroup Ltd
14. Uchumi Supermarket Ltd
15. Hutchings Biemer Ltd
16. Longhorn Kenya Ltd

C. TELECOMMUNICATION AND TECHNOLOGY

17. AccessKenya Group Ltd
18. Safaricom Ltd

D. AUTOMOBILES AND ACCESSORIES

19. Car and General (K) Ltd
20. CMC Holdings Ltd
21. Sameer Africa Ltd

22. Marshalls (E.A.) Ltd

E. BANKING

23. Barclays Bank Ltd Ord 0.50

24. CFC Stanbic Holdings Ltd

25. I&M Holdings Ltd

26. Diamond Trust Bank Kenya Ltd

27. Housing Finance Co Ltd

26. Kenya Commercial Bank Ltd

28. National Bank of Kenya Ltd

29. NIC Bank Ltd

30. Standard Chartered Bank Ltd

31. Equity Bank Ltd

32. The Co-operative Bank of Kenya Ltd

F. INSURANCE

33. Jubilee Holdings Ltd

34. Pan Africa Insurance Holdings Ltd

35. Kenya Re-Insurance Corporation Ltd

36. Liberty Kenya Holdings Ltd

37. British-American Investments Company (Kenya) Ltd

38. CIC Insurance Group Ltd

G. INVESTMENT

39. Olympia Capital Holdings ltd

40. Centum Investment Co Ltd

41. Trans-Century Ltd

H. MANUFACTURING AND ALLIED

- 42. B.O.C Kenya Ltd
- 43. British American Tobacco Kenya Ltd
- 44. Carbacid Investments Ltd
- 45. East African Breweries Ltd
- 46. Mumias Sugar Co. Ltd
- 47. Unga Group Ltd
- 48. Eveready East Africa Ltd
- 49. Kenya Orchards Ltd
- 50. A.Baumann CO Ltd

I. CONSTRUCTION AND ALLIED

- 51. Athi River Mining
- 53. Bamburi Cement Ltd
- 54. Crown Berger Ltd
- 55. E.A.Cables Ltd
- 56. E.A.Portland Cement Ltd

J. ENERGY AND PETROLEUM

- 57. KenolKobil Ltd
- 58. Total Kenya Ltd
- 59. KenGen Ltd
- 60. Kenya Power & Lighting Co Ltd
- 61. Umeme Ltd