ADJUSTMENT TOWARDS TARGET CAPITAL STRUCTURE BY FIRMS LISTED ON THE NAIROBI STOCK EXCHANGE

BY:

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DECLARATION

I declare that this research project is my original work and has not been presented for the award of a degree in this or any other university.

Signed..... Date....07-11-2011.....

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This research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

I dedicate this project to my beloved husband Kenneth Ochieng and my children Angela and Evans Ochieng for being so understanding and supportive during my study period. Thanking you for loving and supporting me throughout the course of my studies.

ABSTRACT

The literature provides conflicting assessments about how firms choose their capital structures, with the trade off, pecking order and market timing hypothesis all receiving some empirical support. The study's objectives were to determine whether firms in Kenya have an optimal target leverage, whether an adjustment towards this target takes place and finally to ascertain the speed of adjustment towards this target leverage.

Secondary data was collected from the records maintained at NSE. From these records financial statements for 12 years starting from the year 1999 to 2010, were extracted. Out of the 30 firms targeted, only 23 firms met the criteria of having complete data for at least ten years. Analysis was done using descriptive statistics together with a partial regression model.

Estimations from the model established that firms in Kenya do have target capital structure. On average however, a typical firm closes about 5.3% of the gap between the current and the desired leverage within one year. At this rate it takes about 10 years to close half of the gap between a typical firm's current and the desired leverage ratios. The slow adjustment is consistent with the hypothesis that other considerations such as market timing or pecking order outweigh the costs of deviating from the optimal leverage.

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ABBREVIATIONS AND ACRONYMS

GMM	: Generalized Method of Moments
NSE	: Nairobi Stock Exchange
CFOs	: Chief Financial Officers
NPV	: Net Present Value
$D_{i,t}$	: Book value of firm i's debt at time t
$S_{i,t}$	: Number of common shares outstanding at time t,
$P_{i,t}$	: Market price per share at time t.
$MDR_{i,t}$	: Firm i's market debt ratio at time t
$MDR_{i,\,t+1}$	: Firm i's debt ratio at time t+1
$MDR_{i,t+1}$*	: Firm i's desired (target) debt ratio at time t+1
$X_{i,t}$	: A vector of firm characteristics related to the costs and benefits of operating with various leverage ratios;
β	: a coefficient vector.
$MDR_{i,t}$	: Firm i's debt ratio at time t
$MDR_{i,t+1}$*	: Firm i's target debt ratio at time t+1
λ	: Speed of adjustment to the target debt ratio starting from time t leverage ratio labeled $MDR_{i,t}$.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Brealey and Myers (2003) define capital structure as the firm's mix of different securities used in financing its investments. They observe that a firm can issue dozens of distinct securities in countless combinations, but it tries to find the particular combination that maximizes its overall market value. When a firm is financed entirely by common stock then all the cash flow from investments belong to the stockholders. However when it issues both debt and equity securities, it undertakes to split up the cash flows into streams such that a relatively safe stream goes to the debt-holders whereas a more risky one goes to the stockholders.

Capital structure is arguably the core of modern corporate finance (Drobetz and Wanzenried, 2006). While Modigliani and Miller (1958) derived conditions under which capital structure is irrelevant for firm valuation, the subsequent theoretical literature has shown that a firm can influence its value and improve its future prospects by varying its optimal ratio between debt and equity.

Fama and French (2002) argue that the two competing models of financing decisions are the trade off theory and the pecking order theory. The trade off theory model is whereby firms identify their optimal leverage by weighing the costs and benefits of an additional dollar of debt. The alternative model is the pecking order model of financing decisions which was developed by Myers (1984).

An adjustment towards target capital structure stems from the trade off theories of capital structure. According to Hovakimian, Hovakimian and Tehranian (2004), trade off theories of corporate capital structure are built around the concept of target capital structure, which balances various costs and benefits of debt and equity. The benefits of debt include, for example, the tax deductibility of interest and the reduction of free cash flow problems whereas the costs of debt include potential bankruptcy costs and agency conflicts between stockholders and bondholders (Fama and French, 2002). At the optimum leverage, the benefit of using debt finance just offsets the cost.

Dynamic versions of the trade off theories posit that companies would undo the effects that random shocks have on their capital structures by actively re-adjusting them towards their target levels (Reinhard & Li, 2010). A survey by Graham and Harvey (2001) shows that 81% of firms consider a target debt ratio or a target range when making their financing options. Other studies have empirically analyzed how long it takes companies that try to adjust their capital structures towards their desired capital structure target levels (e.g., Antoniou, Guney, & Paudyal, 2008; Fama & French, 2002; Flannery & Rangan, 2006). Depending on the regression model and technique used, these studies typically find that companies adjust their capital structures and with a speed of around 10-30 per cent per year towards their capital structure targets.

Using Generalized Method of Moments (GMM) estimation procedure, Ozkan (2001) finds that firms have target leverage ratios and they adjust to the target ratio relatively fast implying that the costs of being away from their target ratios and the cost of

adjustments are both important for firms. Antoniou et al. (2008) use a panel of data and a two-step system-GMM procedure. They show that firms appear to have target leverage ratios but the speed at which they adjust their capital structure towards the target varies by country, with French being fastest and Japanese slowest.

1.1.1 Target Leverage and Adjusting Process

The trade off theory suggests that firms have a target capital structure and managers adjust the ratios towards this target. The speed of adjustment depends on the cost of adjustment relative to the cost of being off target (Hovakimian, Opler and Titman, 2001). According to Antoniou et al. (2008) an examination of the effect of a one period lagged leverage on the current leverage should shed light on whether firms have a target capital structure and if so, what their speed of adjustment is. A positive and below unity coefficient would suggest that firms have a target leverage ratio and revise their capital structure over time. A coefficient greater than one, implies that firms do not have any target debt-equity ratio.

Studies exist in the literatures which focus on the determinants of adjustment to financial targets as well as providing more direct evidence that firms adjust toward a target debt ratio. These studies also shed some light on the likely determinants of speeds of adjustment toward target debt ratios. Taggart (1977) for instance provides evidence that the speeds of adjustment to the long-term capital targets are relatively slow and that liquid assets and short-term debt play an important role in the adjustment process. Marsh (1982) using a logit model, analyses the choice of financing instrument of companies and

argues that this choice depends on the difference between the company's current and target debt ratios. His results suggest that companies try to maintain their long-term target debt levels, although they deviate from these targets in the short run in response to capital market conditions. The study also provides evidence that long-term target debt levels are influenced by operating risk, company size and asset composition.

Jalilvand and Harris (1984) look at the determinants of speeds of adjustment to long term financial targets where the speed of adjustment is allowed to vary across companies and over time. Their results suggest that firm size, interest rates and stock price levels affect speeds of adjustment. In a related work, Shyam-Sunder and Myers (1999) test a benchmark target-adjustment model against a pecking order model and report that the target adjustment model appears to be superior. In a more recent study Drobetz and Wanzenried (2006) use a sample of 90 Swiss firms over the years from 1991 to 2001. Using a dynamic capital structure model, they conclude that faster growing firms and those that are further away from their optimal capital structure adjust more readily.

1.1.2 The Nairobi Stock Exchange

The Nairobi Stock Exchange (NSE) has a long history that can be traced to the 1920s when it started trading in shares while Kenya was still a British Colony (Ngugi & Njiru, 2005). The NSE was constituted in 1954 as a voluntary association of stockbrokers registered under societies Act (NSE, 1997). The newly established stock exchange was charged with responsibility of developing the stock market and regulating trading

activities. According to Ngugi and Njiru (2005) the stock market is yet to make significant contribution in the development process.

However NSE plays a big role by facilitating the mobilization of capital for development. It provides savers in Kenya with an alternative saving tool. Funds that would otherwise have been consumed or deposited in the banks accounts are redirected to promote growth in various sectors of the economy as people invest in securities. Long term savings are mobilized for financing long term ventures through competitive pricing mechanisms.

1.2 Statement of the Problem

The concept of target capital structure plays an important role in many models of corporate financing. Hovakimian et al. (2001) defines target leverage ratio as the ratio that firms would choose in the absence of information asymmetries, transaction costs and other adjustment costs. According to the static trade-off theory (Modigliani & Miller, 1963), for instance, firms optimize their structure by trading off the tax benefit of debt financing against the costs of financial distress. In the agency theoretical models (e.g., Jensen & Meckling, 1976; Stulz, 1990), target leverage minimizes the sum of the agency costs of managerial discretion associated with equity financing and the agency costs of debts, such as the cost of underinvestment (Myers, 1977) and asset substitution (Jensen & Meckling, 1976). In a signaling model (e.g., Ross, 1977), target leverage is determined by trade-off between the benefits associated with a higher market value and the cost of credibly signaling to the market that the value is high.

Besides the significance of target capital structure, it is well documented (e.g., Marsh, 1982; Fama & French, 2002; Flannery & Rangan, 2006) that firms deviate from their target leverage ratios, and that they do not rapidly adjust back to their target. The rate at which firms adjust depends on the relative costs of being away from their target compared to the cost of adjustment. One such cost of adjustment is the degree to which the firm's equity is over or undervalued in the market place.

Whereas it apparent from the studies carried out elsewhere that firms deviate from their leverage ratios, the evidence is however based on firms in the developed economies such as USA where the financial markets are highly developed. The same findings can only be applied in Kenya if similar studies carried out locally using data from local firms produce similar results. This is because the financial system in Kenya is comparatively less developed.

While studies that have been done locally (e.g., Kamere, 1997; Omondi, 1996; Odinga, 2003) constitute important steps towards more realistic tests of determinants of capital structure, they still remain silent on concept of target leverage and the adjusting process towards target leverage by firms operating in Kenya.

Some studies have focused more on testing the pecking order hypothesis. For example, Kiogora (2000) using regression model finds a negative relationship between returns of firms quoted on the Nairobi Stock Exchange and their level of leverage; consistent with the pecking order prediction. Omondi (1996) on the other hand finds that firms with high

return on investment use relatively high debt. Gachoki (2005) finds that firms listed on the NSE follow the pecking order theory of capital structure.

A more recent study carried out by Ngugi (2008) investigated capital financing behaviour of firms listed on the NSE. The results show that a pecking order model with an adjustment process cannot be rejected. Specifically, the study finds that the main determinants of capital financing behaviour consist of information asymmetries, non-debt tax shields and local capital market infrastructure.

This study extended the empirical research on the subject of target capital structure by focusing on the dynamics of capital structure decisions and the nature of adjustment process. A study by Flannery and Rangan (2006) show that more than half of the observed changes in capital structures can be attributed to targeting behaviour whereas market timing and pecking order considerations explain less than 10%. More studies needed to be done locally to test whether firms in Kenya have an optimal target debt ratio and whether adjustment process towards this target is supported. Local studies have somewhat ignored the testing of an adjustment towards a target leverage. It is this gap that the study sought to fill.

The study therefore undertook to answer the following research questions; to what extent is targeting behavior an empirically important effect on Kenyan firms' observed capital structures? How apparent do these firms deviate from their optimal debt ratio and then adjust back to it? What is the speed of adjustment?

1.3 Objectives of the Study

The objective of the study was to test whether firms quoted on the Nairobi stock exchange adjust their capital structure towards a target. The study would thus help in establishing whether the trade off theory has an explanatory power of capital structure choices in Kenya and whether the empirical evidence suggested by studies carried out outside Kenya hold locally.

The specific objectives were;

i) To determine whether firms in Kenya have optimal target leverage.

ii) To test whether an adjustment towards target capital structure takes place.

iii) To ascertain the speed of adjustment to the target capital structure.

1.4 Value of the Study

This study contributes to the understanding of capital structure in several ways. Firstly investors are enlightened on the importance of optimal capital structure when making investment decisions. Corporate managers on the other hand can learn more on how to make their financial decisions and /or choices that would be coherent with firm value maximization since the pattern of corporate financing decisions may have changed over time. Scholars and academicians may use the study as a basis for further research. First starting with a long list of factors from the prior literature they can examine which factors are reliably important for predicting leverage and speed of adjustment. Stock brokers and

dealers can gain by being able to study firms with optimal capital structure thereby being in a position to guide their clients appropriately.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews the theories underlying the study of target capital structure. The three pre-eminent theories of capital structure are reviewed. According to Huang and Ritter (2009), these are the static trade off, pecking order and market timing models. The concept of an adjustment towards a target debt ratio has also been highlighted by analyzing the empirical evidence. The chapter concludes by giving an overview of a regression model specification as set out by Flannery and Rangan (2006), and Drobetz and Wanzeried (2006).

2.2 The Key Theories

2.2.1 The Static Trade off Theory

The trade off theory evolved as a result of relaxing the no tax and no bankruptcy costs assumption in the Modigliani and Miller (1958). Debt provides a tax shield but increases the risk of bankruptcy. Both tax shield and bankruptcy risk increase with the level of debt. Bankruptcy cost depends on two sources namely; probability of bankruptcy and costs related to actual bankruptcy. The trade off theory predicts that the values of a levered firm is equal to the value of unlevered firm plus the net leverage costs and benefits (Howe and Jain, 2010). In addition firm value is optimal at the point at which marginal benefit of leverage is equal to the marginal cost of leverage; the optimal level of debt.

Studies which contributed to the development of this theory include among others De Angelo and Masulis (1980), Bradley, Jarell and Kim (1984), Graham & Harvey (2001) and Myers (2003). Graham and Harvey (2001) in a survey of chief financial officers (CFOs) find evidence of a target debt ratio for most firms. There are however empirical studies that challenge predictions of the trade off theory. For instance Graham (2000) argue that tax savings are much bigger than bankruptcy costs, and Fama and French (2002) find evidence contrary to the prediction that more profitable firms are more levered.

The dynamic trade off theory is an important development of the trade off theory. It predicts that firms will actively make changes to remain close to the target debt ratio predicted by the trade off theory. Hovakimian et al. (2001) argue that leverage deficit can be used to predict raising of capital. Flannery and Rangan (2006) find evidence that firms tend to return to target debt ratio when shocked away and Kayhan and Titman (2007) find that stock price changes and financial deficits explain capital structure.

2.2.2 The Pecking Order Theory

Myers (1984) and Myers and Majluf (1984) contradict the trade off theory by arguing that information asymmetry between managers and outside investors produce a "pecking order" of capital financing. Managers, who have inside information, first use internal funds followed by debt and use equity only as the last resort. Findings in support of the pecking order theory include Shyam-Sunder and Myers (1999), Frank and Goyal (2003), and Gachoki (2005).

Myers (1984) suggested a pecking order theory for capital structure in which firms are said to prefer retained earnings as the main source of funds for investment. Next in order of preference is debt, and last comes external equity financing. Firms wish to avoid issuing common stock or other risky securities so that they do not run into the dilemma of either passing up positive net present value (NPV) projects or issuing stock at a price they think is too low.

Myers and Majluf (1984) presented a signaling model that combines investment and financing decisions. In their pioneering work, they showed that, if investors are less well informed than current firm insiders about the value of the firm's assets, then equity may be mispriced by the market. If firms are required to finance new projects by issuing equity, under pricing may be so severe that new investors capture more than the NPV of the new project, resulting in a new net loss to existing shareholders. In this case the project will be rejected even it its NPV is positive. This underinvestment can be avoided if the firm can finance the new project using a security that is not so severely undervalued by the market. For example, internal funds and / or riskless debt involve no undervaluation thus will be preferred to equity.

Helwege and Liang (1996) test the pecking order hypothesis for a group of firms that went public in 1983. They find, consistent with the hypothesis, that firms with surplus internal funds avoid the external market. On the other hand, the size of the internal cash deficit has no predictive power for the decision to obtain external funds. Finally, for firms that raise external capital they find no evidence of pecking order.

Frank and Goyal (2003) test the pecking order theory by studying a sample of 768 publicly held U.S firms with at least 19 years of data (1971-1989). The theory predicts that external financing should be only a portion of the total capital formation and that external equity should be a small fraction of external finance. However, Frank and Goyal (2003) find external finance to be large such that, net equity issues commonly exceed net debt issues, and that net equity issues track the firm's financing deficit much more closely than do debt issues. They also find that the financing deficit does not challenge the rate of conventional leverage factors (e.g., market to book equity, sales revenue, profitability, fixed to total assets, and lagged leverage) that are proxies for equilibrium factors that explain capital structure.

Fama and French (2002) analyze the dividend and debt policies of firms in the context of the static trade off and pecking order models. They find that firms with larger profits and fewer investments have larger dividend payouts. They also find that more profitable firms and firms with higher investments have lower leverage. They interpret these results as being consistent with both theories. They find that short term variations in investments and earnings are absorbed by debt.

2.2.3 The Market Timing Theory

According to Myers (1984), market timing is a relatively old idea. In surveys such as one done by Graham and Harvey (2001), managers continue to offer at least some support for the idea. Hovakimian et al. (2001) show that firms tend to issue equity after the value of their stock has increased. Baker and Wurgler (2002) argue that corporate finance is best

understood as the cumulative effect of past attempt to time the market; thus firms do not generally care whether they finance with debt or equity, they just choose the form of financing which, at that point in time, seems to be more valued by financial markets.

Essentially therefore according to Frank and Goyal (2003) managers look at current conditions in both debt markets and equity markets. If they require financing, they will use whichever looks more favorable currently. If it turns out that neither is favorable, then financing may be deferred. Alternatively if current conditions look unusually favorable, funds may be raised even if they are not currently needed.

2.3 The Concept of Adjustment to Target Capital Structure

The concept of a target debt ratio, which reflects the tradeoffs between the benefits and costs of debt financing, is quite familiar to most finance managers (Titman &Tsyplakov, 2007). In the optimum, the leverage of a firm equals its target leverage. In practice however, a firm may choose not to adjust its leverage immediately to target. This will be the case when adjustment costs are high or the financial system is simply not able to cater for the financing needs of firms.

In a survey of CFOs, Graham and Harvey (2001) report that 37% of their respondents have a flexible target debt ratio, 34% have somewhat tight target range while 10% have a strict target. They further argue that this concept also plays a role in many theories of optimal capital structure; however there is a substantial debate about the extent to which the idea of target debt ratio is useful.

2.4 Empirical Evidence on the Concept of Adjustment to Target Capital Structure

The concept of target capital structure plays an important role in many models of corporate financing. Hovakimian et al. (2001) has defined target leverage ratio as the ratio that firms would choose in the absence of information asymmetries, transaction costs and other adjustment costs. According to the static trade off theory (Modigliani & Miller, 1963; Myers, 1984) firms optimize their structure by trading off the tax benefit of debt financing against the costs of financial distress. In the agency theoretical models (e.g., Jensen & Meckling, 1976; Stulz, 1990), target leverage minimizes the sum of the agency costs of managerial discretion associated with equity financing and the agency costs of debts, such as the cost of underinvestment (Myers, 1977) and asset substitution (Jensen & Meckling, 1976). In a signaling model (e.g., Ross, 1977), target leverage is determined by trade-off between the benefits associated with a higher market value and the cost of credibly signaling to the market that the value is high.

In spite of the significance of target capital structure, it is well documented (e.g., Marsh, 1982; Leary and Roberts, 2005; Flannery & Rangan, 2006) that firms deviate from their target leverage ratios, and that they do not rapidly adjust back to their target. The rate at which firms adjust depends on the relative costs of being away from their target compared to the cost of adjustment. One such cost of adjustment is the degree to which the firm's equity is over or undervalued in the market place.

Myers (1984) contrasted the trade off theory of capital structure. He came up with the "pecking order" theory, under which information asymmetries lead managers to perceive

that the market generally under prices their shares. In view of that, investments are financed first with internally generated funds, after which the firm will issue safe debt if internal funds prove insufficient. Equity is only used as a last resort. Accordingly, as far as pecking order is concerned, observed leverage reflects primarily a firm's historical profitability and investment opportunities. Meaning firms have no strong preference about their leverage ratios and therefore do not reverse changes caused by financing needs or earnings growth.

In addition there are two theories that further reject the notion of adjustment towards a target leverage ratio. Firstly, Baker and Wurgler (2002) argue that a firm's capital structure reflects cumulative ability to sell overpriced equity shares. They further argue that share prices normally fluctuate around "true" values, and managers tend to issue shares when firm's market to book ratio is high (the market timing theory). Unlike the pecking order hypothesis the market timing theory asserts that managers routinely exploit information asymmetries to benefit the current shareholders. Similar to the pecking order hypothesis, there should be no reversion to a target capital ratio if market timing is dominant influence on a firm's leverage. Secondly Welch (2004) argues that managerial inertia permits stock changes to have a prominent effect on market-valued debt ratios. He posits that over reasonably long time frames, the stock price effects are considerably more important in explaining debt-equity ratio than all previously identified proxies together.

Trade off theory maintains that market imperfections cause a link between leverage and firm value, thereby making firms to take positive steps to offset deviations from their optimal debt ratio (Flannery and Rangan, 2006). The speed with which firms reverse deviations from target debt ratios depends on the cost of adjusting leverage. With zero adjustment costs, the trade off theory implies that firms should never deviate from their optimal leverage.

The existing literature provides mixed results on the speed of adjustment towards target financial leverage. Fama and French (2002) estimate a speed of adjustment of 7-18% per year. Lemon, Roberts and Zender (2008) find that capital structure is so persistence that cross-sectional distribution of leverage in the year prior to the initial public offering predicts leverage twenty years later, yet they estimate a relatively rapid speed of adjustment of 25% per year for book leverage. Furthermore both Leary and Roberts (2005) and Alti (2006) find that the effect of equity issuance on leverage completely vanishes within two to four years, suggesting fast adjustment toward target leverage.

Flannery and Rangan (2006) show that firms do target a long run capital structure and estimate an even faster speed of adjustment that is 35.5% per year using market leverage and 34.4% per year using book leverage, suggesting that it takes about 1.6 years for a firm to remove half of the effect of a shock on its leverage. This adjustment speed is roughly faster than existing estimates in the literature thereby affording targeting behavior an empirically important effect on firms observed capital structures. Furthermore when they (Flannery and Rangan, 2006) added market timing or pecking

order variables to their base specification, they found some support for these theories. However, they also found out that more than half of the observed changes in capital structures can be attributed to targeting behavior while market timing and pecking order considerations explain less than 10%.

Drobetz and Wanzenried (2006) use dynamic adjustment model and panel data methodology to investigate the determinants of time varying target capital structure. Their sample comprises a panel of 90 Swiss firms over the years 1991 to 2001. They observe that faster growing firms and those that are further away from their target optimal capital structure adjust more readily. Finally, Antoniou et al. (2008) who analyze the financing decisions of companies from the USA, UK, Germany, France and Japan over the years from 1987 to 2000 find also some support for consideration that companies adjust their capital structures towards target levels.

Local studies (e.g., Kamere, 1997; Omondi, 1996; Odinga, 2003) constitute important steps towards more realistic tests of determinants of capital structure. However, these studies have not captured the concept of target leverage and the adjusting process towards target leverage. Some studies have focused more on testing the pecking order hypothesis. Kiogora (2000) for instance using regression model finds a negative relationship between returns of firms quoted on the Nairobi Stock Exchange and their level of leverage; consistent with the pecking order prediction. Omondi (1996) on the other hand finds that firms with high return on investment use relatively high debt. Gachoki (2005) finds that firms listed on the NSE follow the pecking order theory of capital structure.

A more recent study carried out by Ngugi (2008) investigated capital financing behaviour of firms listed on the Nairobi Stock Exchange. The results show that a pecking order model with an adjustment process cannot be rejected. Specifically, the study finds that the main determinants of capital financing behaviour consist of information asymmetries, non-debt tax shields and local capital market infrastructure.

2.5 Testing Adjustment towards Target Leverage

2.5.1 The Regression Model and Estimation Specification

To identify whether or not target adjustment considerations are behind the capital structure changes of companies listed on the NSE, the study utilized the following capital structure target adjustment model as set out by Flannery and Rangan (2006). The model is as follows;

$MDR_{i,t} = (D_{i,t}) / (D_{i,t} + S_{i,t} * P_{i,t})$ .....(1)

Where;

$MDR_{i,t}$= A firm's market debt ratio which is the primary leverage measure

$D_{i,t}$ = book value of firm i's debt at time t

$S_{i,t}$ = the number of common shares outstanding at time t,

$P_{i,t}$ = the price per share at time t.

Bearing in mind the possibility that target leverage might differ across firms or over time, it is modeled by specifying a target capital structure ratio. Since the target leverage is not directly observable, a proxy is used. The first stage consists of a regression analysis that incorporates those explanatory variables which correspond to those determinants of

capital structure that have been mentioned in the literature. In this way, a value that can serve as an estimation of the target leverage is obtained. The regression model is of the form;

$MDR_{i,t+1} = \beta X_{i,t}$ .....(2)

Where;

$MDR_{i,t+1}$* = firm i's desired (target) debt ratio at time t+1

$X_{i,t}$ = a vector of firm characteristics related to the costs and benefits of operating with various leverage ratios;

β = a coefficient vector.

Under the trade off hypothesis, $\beta \neq 0$, and variation in $MDR_{i,t+1}$* should be non trivial.

The purpose of equation (2) is to provide an estimate of firm's target leverage ratio which is defined as the ratio that firms would choose in the absence of information asymmetries, transaction costs and other adjustment costs (Hovakimian et al., 2001). A positive and below unity coefficient would suggest that firms have a target leverage ratio and revise their capital structure over time whereas a coefficient greater than one implies that firms do not have any target debt equity ratio (Antoniou et al., 2008).

2.5.2 Adjustment to Target Leverage

In a frictionless world, firms would always maintain their target leverage. However, adjustment costs may prevent immediate adjustment to a firm's target as the firm trades off these adjustment costs against the cost of operating with sub-optimal leverage.

The study utilized Flannery and Rangan (2006) model that permits incomplete (partial) adjustment of the firm's capital ratio towards its target within each time period. The data can then indicate a typical adjustment speed. A standard adjustment model is written as follows;

$MDR_{i,t+1}-MDR_{i,t} = \lambda(MDR_{i,t+1}^{*}-MDR_{i,t})+\delta_{i,t+1}$.....(3)

Where;

$MDR_{i,t+1}$ - is Firm i's debt ratio at time t+1

$MDR_{i,t}$ - is Firm i's debt ratio at time t

$MDR_{i,t+1}^{*}$ - is firm i's target debt ratio at time t+1

λ - is the speed of adjustment to the target debt ratio starting from time t leverage ratio labeled $MDR_{i,t}$.

The distance $(MDR_{i,t+1}^{*}-MDR_{i,t})$ is the total amount that the debt ratio must change to bring the firm back to its target debt ratio. Each year, the typical firm closes a proportion λ of the distance between actual and its desired leverage. The existence of adjustment cost is represented by the restriction that $|\lambda|<1$, which implies that $MDR_{i,t+1} \rightarrow MDR_{i,t+1}^{*}$ as $t \rightarrow \infty$. In contrast, if $\lambda=1$ then all adjustment is made instantaneously, and a firm's debt ratio is always at the target. In the presence of adjustment costs, it is expected that $\lambda<1$, hence a firm has only partially adjusted to the target debt ratio. If $\lambda>1$, then an over-adjustment has occurred yet the firm is still not at its target debt level.

In other models of debt adjustment, the optimal level of debt is externally determined either in terms of historical data or by an adjustment process with lags of more than one

year (e.g., Jalivand and Harris, 1984; Shyam-Sunder and Myers, 1999). The proposed model followed Flannery and Rangan (2006), Drobetz and Wanzenried (2006) and Hovakimian et al. (2001) where firms adjust to a target debt ratio that is not determined externally. Instead the target debt ratio is included in the model as a linear function of the determining factors of capital structure as specified in equation (2). This class of model is extended and speed of adjustment to the target debt ratio is endogenized.

Rewriting the target adjustment model in equation (3), treating target leverage $MDR_{i,t+1}^*$ as linearly dependent on the capital structure determinants as specified in equation (2) yields the following expression for leverage at time t+1;

$MDR_{i,t+1}=(\lambda\beta)X_{i,t}+ (1-\lambda)MDR_{i,t} + \delta_{i,t+1}$ .....(4)

Equation (4) says that managers take actions to close the gap between where they are ($MDR_{i,t}$) and where they wish to be ($\beta X_{i,t}$).

To model a target debt ratio, the study applied firm characteristics (X_{it}) that appear in literature (e.g., Rajan & Zingales, 1995; Hovakimian, et al., 2001; Fama & French, 2002). The study focused on four of the variables; tangibility of asset, the market to book ratio as a proxy for growth, firm size and profitability. Their expected effects on the target debt ratio in line with the findings from the studies are as explained in the following paragraphs.

2.6. Firm Characteristics that Determine Leverage Ratio

One of the determinants of capital structure is profitability. Profitability can be measured using return on assets (ROA) ratio. Earnings before interest and taxes as a proportion of total assets was used as a proxy for ROA. A firm with higher earnings per asset dollar could prefer to operate with either lower or higher leverage. Lower leverage might occur as higher retained earnings mechanically reduce leverage, or if the firm limits leverage to protect the "franchise" producing these high earnings. Higher leverage might reflect the firm's ability to meet debt payments out of its relatively high cash flow. Growth is the other determinant of capital structure that the study used. The market to book ratio of firm assets was used as a proxy of growth. A higher market to book ratio is generally taken as a sign of more attractive future growth options, which a firm tends to protect by limiting its leverage.

Asset tangibility is yet another determinant of capital structure that the study applied. The ratio of fixed assets to total assets was used as proxy for asset tangibility. Bradley et al. (1984) asserts that firms that invest heavily in tangible assets also have higher financial leverage since they borrow at lower interest rates if their debt is secured with such assets. Firm size is yet another determinant that has been widely applied in literature as being able to determine capital structure. Like in Flannery and Rangan (2006) the natural log of total assets was used as a proxy for firm size. Larger firms tend to operate with more leverage, perhaps because they are more transparent, have lower asset volatility, or have better access to public debt markets. Titman and Wessels (1988) observe that larger firms are more diversified and hence lower variance of earnings,

making them able to tolerate high debt ratio. Smaller firms on the other hand may find it relatively more costly to resolve information asymmetries with lenders, thus may present lower debt ratios.

2.7 Conclusion from the Literature Review

The two major theories of capital structure that have been widely studied are the trade off and the pecking order theories. Target adjustment behavior has been used in support for the trade off theory and against the pecking order theory. Essentially therefore the two theories appear to have what Reinhard and Li (2010) refer to as "horse race". Unsatisfied with the empirical evidence for both the pecking order theory and the traditional trade off theory of capital structure, Fama and French (2005) conclude that it is time to stop running horse races between the two theories as stand-alone stories for capital structure. It is best to regard the two models as stable mates with each other having elements of truth that help explain some aspects of financing decisions.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology that was used to carry out this research study. It illustrates research design, defines the population as well as describing the data collection methods and analysis techniques that were employed.

3.2 Research Design

Descriptive research design was used to test whether companies quoted on the NSE adjust towards a target capital structure. Descriptive research design is concerned with finding out "what is" and can either be quantitative or qualitative since it involves gathering data that describes events and then organizes, tabulates, depicts and describe the data collection.

The study involved gathering financial statements of firms quoted on the NSE for a period of twelve years from 1999 to 2010. The use of descriptive statistics allowed the application of dynamic capital structure model as applied by Drobetz and Wanzeried (2006), Flannery and Rangan (2006) and Ozkan (2001). Dynamic capital structure model captures at least two important features of corporate borrowing behavior. First, firms have a long run optimal target debt ratio which is assumed to be a function of several firm specific characteristics that vary over time, over firms, or both over time and firms. Second, an adjustment process takes place which involves a lag in adjusting to changes in the optimal target debt ratio.

3.3 Population

The population of the study consisted of all the 47 companies listed on the NSE between years 1999 to 2010 (see Appendix 1). The period was chosen in order to capture the most current data since the earlier related studies (e.g., Ngugi, 2008) captured data from year 1990 to 1999 and the capital financing behavior may have changed over the years.

3.4 Sample

The sample size was 30 firms, constructed from 47 companies quoted on the NSE. Judgmental sampling was used to select the sample. Following the previous studies (e.g., Ozkan, 2001; Flanery & Rangan, 2006) all the 15 firms in the financial and investment sector were excluded. This is because capital structures of these firms are not comparable to those of non financial sectors. Besides the capital structures of financial sectors are highly regulated. The 15 firms are banks, insurance and investment companies. It was also assumed that there might be lack of continuous data for Uchumi Supermarket and Hutchings Biemer Ltd. since they were on suspension. The two firms were therefore also excluded.

3.5 Data Collection

Data was collected using secondary data from annual reports of the quoted companies and records maintained at the NSE. The data extracted included profit before tax (EBIT), market to book value, total debt, and total equity among others. More details are as shown in Table 1(Appendix B).

3.6 Data Analysis

In order to meet the objectives, data was analyzed and tested so as to draw conclusion on whether firms in Kenya consider target leverage and whether an adjustment process towards this target is supported. Both statistical package for the social sciences (SPSS) for windows version 17 and Ms Excel were used to help in data analysis.

To test whether firms quoted on the NSE have target leverage and bearing in mind the possibility that target leverage might differ across firms or over time, it was modeled by specifying a target capital structure ratio. The regression equation was of the form; $MDR_{i,t+1}{}^{*} = \beta X_{i,t}$ which was discussed in chapter two. Secondly to test whether adjustment process takes place, the partial adjustment model as highlighted in chapter two was used. It was of the form $MDRi_{,t+1} - MDR_{i,t} = \lambda(MDR_{i,t+1}{}^{*} - MDR_{i,t}) + \delta_{i,t+1}$. The equation can be re written as; $MDR_{i,t+1} = (\lambda \beta)X_{i,t} + (1-\lambda)MDR_{i,t} + \delta_{i,t+1}$.

The symbol λ was used as the adjustment parameter representing the magnitude of adjustment during one period (also termed the speed of adjustment) hence achieving the objective of estimating the speed of adjustment. As explained in chapter two if λ equals one, full adjustment is achieved within one period and actual leverage at the end of the period will equal the target as set out at the beginning of that period. The adjustment parameter provides a proxy for the adjustment costs that the firm faces.

The estimation crucially depended on the correct specification of the target capital structure. Regression and correlation analysis were used to provide preliminary evidence.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the research findings on whether firms listed on the NSE adjust their capital structure towards a target. The study was conducted on a target of 30 firms listed on the NSE. The data used was extracted from these firms' financial statements for a period of 12 years starting from 1999 to 2010. Various analyses were conducted as stipulated in the research methodology. The findings of the study are presented in sections below.

4.2 Analysis of Sample Selection

The period targeted for the research study was from 1999 to 2010. The sample was based on the firms with continuous data for at least 10 years. Appendix 3 shows the summary of the firms selected. The missing values for firms selected were set at zero to avoid losing many observations. Out of the 30 firms targeted, 23 firms met the criteria for selection which was set at selecting only firms which had the required data for at least ten years. Figure 4.1 has categorized the selected firms according to sectors.

Figure 4.1: Proportion of Listed Firms Selected per Sector

Source: Research Data

The above figure illustrates that firms categorized under the industrial and allied sector constituted the bulk of the firms sampled which translated to 57%. Next was commercial and services sector at 33% followed by agricultural sector at 10%.

4.3 Analysis of Primary Leverage Measure ($MDR_{i,t}$)

The study applied the capital structure adjustments model as set out by Flannery and Rangan (2006). The model and its variables are as explained in chapter two. From the model the firm's market debt ratio was computed and used as the primary leverage measure. The values are shown in Table 4.1 below.

Table 4.1: Individual Firm's Market Debt Ratio from 1999 to 2010 ($MDR_{i,t} = (D_{i,t})/(D_{i,t} + S_{i,t}*P_{i,t})$.

	FIRM	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	Average
1	Kakuzi	0.28	0.49	0.6	0.49	0.44	0.36	0.47	0.7	0.71	0.39	0.32	0.25	0.46
2	Rea Vipingo	0.21	0.24	0.17	0.12	0.1	0.13	0.26	0.38	0.57	0.5	0.42	0.04	0.26
3	Sasini	0.4	0.58	0.49	0.16	0.19	0.26	0.43	0.32	0.19	0.08	0.06	0.06	0.27
4	Marshals	0.61	0.49	0.62	0.36	0.4	0.45	0	0.01	0	0.14	0.11	0.02	0.27
5	Car & General	0.21	0.19	0.17	0.13	0.14	0.16	0.08	0.02	0.11	0.11	0.09	0.17	0.13
6	Kenya Airways	0.54	0.8	0.61	0.48	0.43	0.63	0.75	0.79	0.68	0.71	0.7	0.62	0.64
7	CMC	0.05	0.05	0.02	0.03	0.07	0.14	0.14	0.19	0.39	0.6	0.56	0.12	0.2
8	NMG	0	0.01	0.01	0.01	0.02	0	0	0	0.01	0.05	0.12	0.04	0.02
9	TPS	0.21	0.29	0.24	0.23	0.21	0.23	0.15	0.27	0.35	0.41	0.36	0.33	0.27
10	ARM	0.32	0.3	0.21	0.15	0.19	0.29	0.19	0.14	0.29	0.3	0.32	0.3	0.25
11	BOC	0	0.13	0.16	0.02	0.02	0.02	0.02	0.03	0.08	0.07	0.05	0.03	0.05
12	EA Cables	0.21	0.13	0.08	0.07	0.03	0.02	0.02	0.08	0.11	0.11	0.02	0.02	0.07
13	EA Breweries	0.02	0.02	0.01	0.02	0.02	0.02	0.03	0.05	0.12	0.13	0.12	0.13	0.06
14	Sameer Africa	0.31	0.3	0.32	0.35	0.42	0.34	0.29	0.29	0.37	0.34	0.32	0.43	0.34
15	Kenya Oil	0.04	0.07	0.05	0.06	0.04	0.02	0.05	0.08	0.24	0.23	0.08	0.14	0.09
16	Mumias	0.17	0.29	0.08	0.13	0.06	0.13	0.29	0.51	0.6	0.4	0	0	0.22
17	Unga	0	0.31	0.23	0.05	0.07	0.07	0.13	0.2	0.26	0.18	0.14	0.14	0.15
18	Bamburi	0.06	0.1	0.09	0.03	0.03	0.04	0.06	0.05	0.13	0.32	0.19	0.19	0.11
19	Crown Berger	0.08	0.15	0.14	0.08	0.1	0.08	0.07	0.07	0.31	0.38	0.26	0.25	0.16
20	EA Portland	0.3	0.41	0.35	0.28	0.28	0.34	0.52	0.51	0.81	0.83	0.84	0.78	0.52
21	KPLC	0.67	0.64	0.51	0.3	0.31	0.42	0.47	0.88	0.96	0.7	0.58	0.21	0.55
22	Total Kenya	0.4	0.44	0	0	0	0	0	0	0	0	0	0.01	0.07
23	Bat	0.07	0.07	0.07	0.07	0.04	0.03	0.03	0.02	0.1	0.1	0.09	0.12	0.07

Source: Computed from NSE Data

The above table demonstrates that the market debt ratio ($MDR_{i,t}$) for firms listed on the NSE ranged between an average of 2% to 64% from the lowest to the highest respectively when considering individual firm average for the 12 year period. However the overall mean market debt ratio for the entire period was found to be 23% with a standard deviation of 0.22 as shown in Table 4.2 below. This is quite an improvement from the findings of Ngugi (2008) which found the debt ratio to be very low by international standards. According Ngugi 2008 the debt ratio declined from 9% to 2% between the first and the second halves of 1990s.

Table 4.2: Summary of the Overall Descriptive Statistics for the Variables

	NO. OF OBSERVATIONS	Mean	Standard Error	Median	Standard Deviation	Sample Variance	Kurtosis	Skewness	Range	Minimum	Maximum	Sum
$MDR_{i,t}$	276	0.23	0.01	0.15	0.22	0.05	0.56	1.10	0.96	0.00	0.96	62.96
Growth (M To B)	253	17.13	1.92	6.50	30.60	936.17	23.92	4.32	252.00	0.00	252.00	4332.70
Tangibility	253	0.74	0.02	0.80	0.33	0.11	1.41	-0.16	2.12	0.00	2.12	187.98
Profitability	253	0.11	0.01	0.11	0.17	0.03	7.28	-1.39	1.43	-0.90	0.53	28.77
Size	253	14.64	0.14	14.67	2.23	4.97	27.46	-4.39	17.95	0.00	17.95	3702.99
$Mdr_{i,T+1}$	253	0.23	0.13	0.17	0.21	0.04	0.29	1.00	0.99	-0.13	0.86	57.85
Growth Coef Mb)	23	-0.02	0.01	-0.01	0.03	0.00	4.33	-1.93	0.13	-0.11	0.02	-0.40
Tangibility Coef	23	0.16	0.14	0.07	0.68	0.46	3.15	1.13	3.37	-1.15	2.21	3.62
Profitability Coef	23	-0.35	0.13	-0.21	0.62	0.39	2.12	-1.46	2.66	-2.08	0.59	-7.99
Size Coef	23	0.11	0.05	0.06	0.23	0.05	1.48	1.11	0.93	-0.25	0.69	2.49

Source: Computed from NSE Data

4.4 Estimation of Target Debt Ratio ($MDRi_{,t+1}*$)

In the second part of the analysis target debt ratio ($MDR_{i,t+1*}$), which is an estimate of firm's target leverage ratio was estimated. Target debt ratio has been defined by Hovakimian et al. (2001) as the ratio that firms would choose in the absence of information asymmetries, transaction costs and other adjustment costs. The regression model in the form; $MDR_{i,t+1*} = \beta X_{i,t}$, where the $X_{i,t}$ is vector of firm characteristics related to the costs and benefit of operating with various leverage ratios and β is a coefficient vector, was used. Firm specific variables used were growth which was proxied by the ratio of market value to book value of equity, tangibility of which the net fixed tangible assets as a proportion of total asset was used as a proxy, profitability which was proxied by earnings before tax as a proportion of total assets and size of the firm which was proxied by the natural log of total assets.

Table 4.3 below shows an analysis of target debt ratio, $MDR_{i,t+1*}$ as estimated by the use of firm specific variables explained above. For all the firms sampled the target debt ratio estimated was not the same as the actual debt ratio. For instance in the year 2010 Kakuzi Ltd's actual debt ratio was 28% whereas the estimated target debt ratio was 56%. For the same period Marshals Ltd had an actual debt ratio of 61% while the estimated target was 54%. The overall estimated target debt ratio averaged 22.8% with a standard deviation of 21% (Table 4.2), which is not far from the actual cross sectional averages.

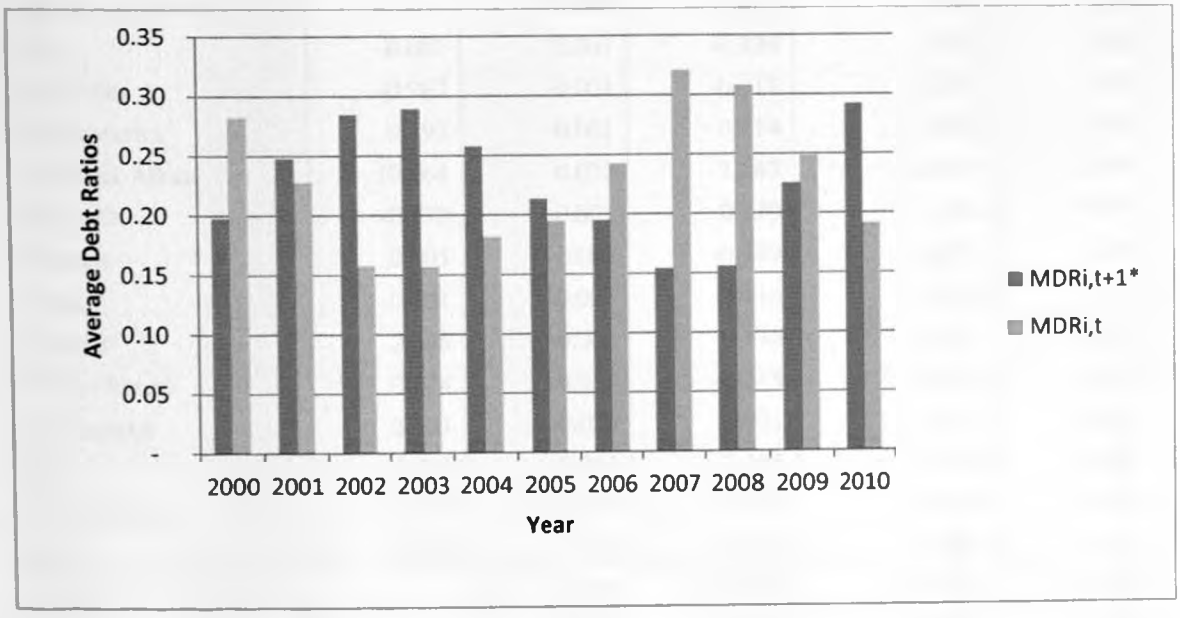
Table 4.3: Estimated Target Debt Ratio for Individual Firms from 2000 to 2010

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
1	Kakuzi	0.18	0.35	0.47	0.63	0.63	0.49	0.42	0.45	0.5	0.58	0.56	0.48
2	Rea Vipingo	0.07	0.46	0.43	0.46	0.47	0.26	0.15	0.04	0.16	0.18	0.3	0.27
3	Sasini	0.03	0.11	0.13	0.16	0.27	0.42	0.29	0.21	0.11	0.47	0.58	0.25
4	Marshals	0.09	0.02	0.25	0.14	0.06	-0.12	0.4	0.42	0.41	0.57	0.54	0.25
5	Car & General	0.14	0.12	0.11	0.11	0.01	0.09	0.16	0.14	0.14	0.18	0.19	0.12
6	Kenya Airways	0.69	0.67	0.7	0.71	0.73	0.7	0.65	0.41	0.47	0.62	0.79	0.65
7	CMC	0.33	0.42	0.42	0.3	0.26	0.23	0.2	0.14	-0.01	-0.13	0.08	0.2
8	NMG	0.05	0.08	0.06	0.02	0	0.02	0.02	0.02	-0.02	-0.01	0.03	0.02
9	TPS	0.32	0.36	0.31	0.29	0.32	0.27	0.23	0.18	0.25	0.27	0.24	0.28
10	ARM	0.3	0.29	0.29	0.25	0.22	0.2	0.27	0.22	0.12	0.19	0.32	0.24
11	BOC	0.05	0.08	0.05	0.04	0.05	0.05	0.03	0	0.01	0.15	0.12	0.06
12	EA Cables	0.05	0.06	0.08	0.08	0.07	-0.01	0.02	0.02	0.08	0.1	0.14	0.06
13	EABL	0.14	0.12	0.1	0.1	0.08	0.05	0.02	0.02	0.01	0	0.02	0.06
14	Sameer	0.41	0.36	0.31	0.36	0.32	0.31	0.35	0.41	0.31	0.33	0.29	0.34
15	Kennol	0.12	0.12	0.18	0.19	0.14	0.12	0.02	0.03	0.02	0.07	0.07	0.1
16	Mumias	0	0	0.31	0.46	0.58	0.23	0.06	0.05	0.15	0.2	0.34	0.22
17	Unga	0.06	0.18	0.2	0.21	0.16	0.15	0.12	0.14	0.17	0.18	0.23	0.16
18	Bamburi	0.2	0.2	0.23	0.17	0.09	0.1	0.05	-0.02	0	0.1	0.1	0.11
19	Crown Berger	0.25	0.27	0.3	0.3	0.1	0.15	0.11	0.06	0	0.17	0.17	0.17
20	EA Portland	0.8	0.76	0.79	0.75	0.59	0.57	0.33	0.18	0.3	0.44	0.46	0.54
21	KPLC	0.13	0.6	0.72	0.86	0.81	0.61	0.54	0.37	0.31	0.42	0.68	0.55
22	Total	0.02	0.03	0.02	-0.01	0.04	0.01	0.02	0.01	0	0.02	0.41	0.04
23	Bat	0.12	0.1	0.09	0.09	0.02	0.03	0.03	0.04	0.08	0.08	0.06	0.07

Source: Computed from NSE data

Table 4.3 therefore confirms that firms listed on the Nairobi Stock Exchange have target debt ratio which is different from the actual observed debt ratio at any point in time. It is however important to note that on average the estimated target debt ratios do not vary significantly from the reported market debt ratio at time t ($MDR_{i,t}$). As is illustrated in figure 4.2 below, the average estimated debt ratios, $MDR_{i,t+1}$* and the average reported debt ratios at time t, ($MDR_{i,t}$) were within the same range of not more than 35%.

Figure 4.2: Cross Sectional Averages of Debt Ratios



Source: Research Data

4.5 Analysis of Coefficient of Firm Specific Variables

Table 4.4 below shows an analysis of coefficients of firm specific variables used in estimating target debt ratio. Mean values together with the corresponding t statistics have been shown.

Table 4.4: Coefficients for the Firm Specific Variables

	Intercept	Growth Coef	Tangibility Coef	Profitability Coef	Size Coef
Kakuzi	5.004	-0.030	-0.677	-0.156	-0.246
Rea Vipingo	2.773	-0.067	-1.153	-0.833	-0.092
Sasini	-6.387	-0.027	2.213	0.116	0.322
Marshals	-7.229	-0.112	-0.030	-0.046	0.612
Car & General	-1.487	-0.008	0.134	0.067	0.115
Kenya Airways	0.048	-0.017	-0.049	-0.413	0.046
Cmc Holdings Ltd	1.972	0.000	0.618	-1.551	-0.124
Nation Media Group	-0.975	0.000	0.074	-0.380	0.072
Tps (Serena)	-0.567	-0.002	0.632	-0.422	0.022
Athi River Mining	-1.131	-0.006	-0.021	-1.531	0.110
Boc	-0.001	0.001	-0.520	-0.515	0.028
Ea Cables	-0.987	-0.001	-0.112	-0.211	0.088
Ea Breweries	0.492	-0.001	0.114	0.039	-0.029
Sammeer Africa	-10.264	0.022	1.243	-0.339	0.686
Kenya Oil	-0.279	-0.001	0.179	0.291	0.017
Mumias	0.005	-0.002	-0.449	-2.079	0.056
Unga	-0.004	-0.027	-0.116	-0.158	0.024
Bamburi	-2.678	-0.006	0.170	-0.213	0.170
Crown Berger	0.274	-0.031	-0.145	-0.097	0.011
Ea Portland	3.293	-0.020	0.701	0.173	-0.196
Kplc	-5.445	-0.061	0.165	-0.316	0.364
Total Kenya	-5.145	0.003	0.722	0.585	0.300
Bat	-1.863	-0.003	-0.074	-0.004	0.132
Mean		-0.0172	0.1574	-0.3475	0.108
t statistics		2.062	0.3877	0.688	2.346

Source: Research Data

The coefficient of growth opportunities as proxied by market to book ratio of equity is negative (-0.0172). It was established that 20 out of 23 firms translating to 87% of the total firms sampled had growth coefficients below zero. Only 3 firms representing 13% had coefficients slightly above zero. The negative impact of growth opportunities on leverage might reveal several features of borrowing behavior of firms listed on the NSE.

It may give support to the prediction that firms which have a relatively large proportion of intangible assets cannot support a high leverage ratio. This evidence is also consistent with the view that firms with greater growth opportunities might have lower leverage ratios due to underinvestment and asset substitution problems that may arise with risky debt.

It should however be noted that there may be other potential reasons for the negative coefficient of the market to book ratio. For instance, this may stem from the tendency of firms to issue stock when their stock price is high relative to their earnings or book value. This would imply that the negative correlation between leverage and the market to book ratio is driven by firms that issue significant amount of equity (Rajan and Zingales, 1995).

Table 4.4 also shows that current profitability of firms exerts a negative influence on firms' borrowing. The negative sign of profitability is consistent with the pecking order hypothesis that predicts preference for internal finance rather than external finance.

For firm size, the study revealed a positive relationship with leverage (+0.108). This is consistent with the earlier studies such as Titman and Wessels (1988) as well Flannery and Rangan (2006). The finding is also consistent with the trade off theory but against the pecking order theory which predicts a negative relationship between leverage and size, with larger firms exhibiting increasing preference for equity relative to debt.

Asset Tangibility which was proxied by the ratio of fixed assets to total assets has revealed a positive relationship with leverage (+0.1574). Previous studies such as Fama and French (2002) argue that the ratio of fixed asset to total assets is an important determinant of capital structure.

4.6 Estimation of the Speed of Adjustment

In order to determine the speed of adjustment to target leverage, the study used a model that permitted partial adjustment of the firm's capital ratio towards its target within each time period. The standard adjustment model used and which was elaborated in chapter two was; $MDR_{i,t+1} - MDR_{i,t} = \lambda(MDR_{i,t+1}^{*} - MDR_{i,t}) + \delta_{i,t+1}$

Where λ obtained is the speed of adjustment to the target debt ratio starting from time t. The distance $(MDR_{i,t+1}^{*} - MDR_{i,t})$ is the total amount that the debt ratio must change to bring the firm back to its target debt ratio. The Table 4.5 below shows detailed results for the estimation of adjustment speed for the firms listed on the NSE.

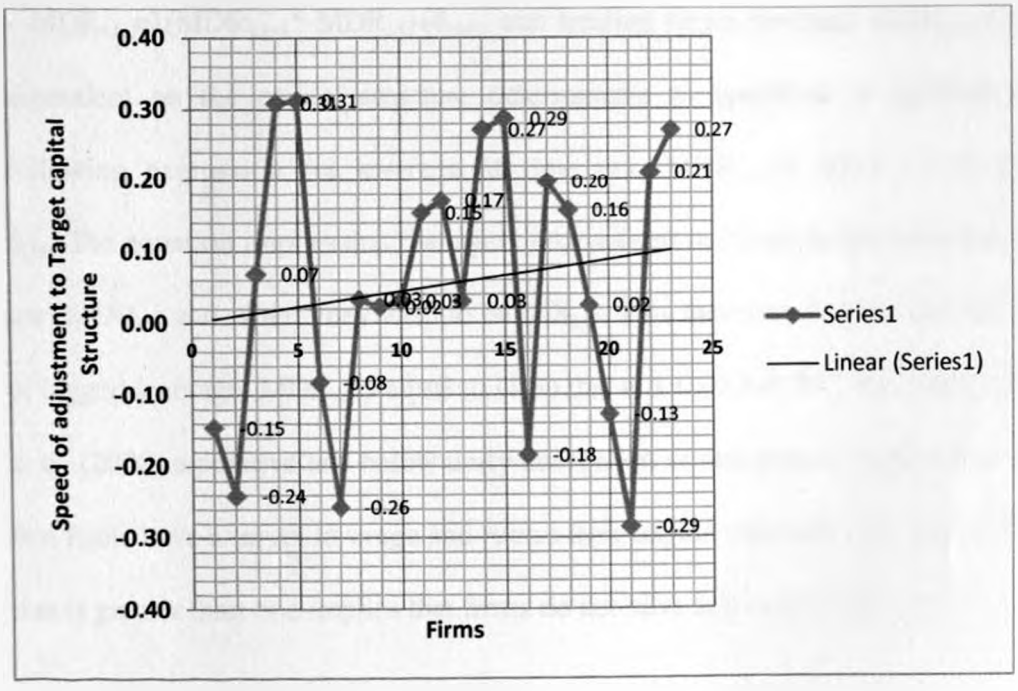
Table 4.5: Regression Results for Estimating the Speed of Adjustment (λ)

			Coeffici ents	*Standar d Error*	*T Stat*	*P-Value*	*Lowe r 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
1	Kakuzi	X Variable 1	-0.15	0.47	-0.31	0.77	-1.24	0.95	-1.24	0.95
2	Rea Vipingo	X Variable 1	-0.24	0.21	-1.18	0.27	-0.71	0.23	-0.71	0.23
3	Sasini	X Variable 1	0.07	0.35	0.20	0.85	-0.74	0.88	-0.74	0.88
4	Marshals	X Variable 1	0.31	0.25	1.25	0.24	-0.25	0.87	-0.25	0.87
5	Car & General	X Variable 1	0.31	0.23	1.36	0.21	-0.21	0.83	-0.21	0.83
6	Kenya Airways	X Variable 1	-0.08	0.22	-0.37	0.72	-0.59	0.42	-0.59	0.42
7	Cmc Holding	X Variable 1	-0.26	0.40	-0.64	0.54	-1.16	0.64	-1.16	0.64
8	Nation Media	X Variable 1	0.03	0.36	0.09	0.93	-0.77	0.84	-0.77	0.84
9	Tps Serena	X Variable 1	0.02	0.18	0.12	0.90	-0.39	0.43	-0.39	0.43
10	Atiriver Mining	X Variable 1	0.03	0.23	0.14	0.89	-0.48	0.54	-0.48	0.54
11	Boc	X Variable 1	0.15	0.33	0.47	0.65	-0.60	0.91	-0.60	0.91
12	Ea Cables	X Variable 1	0.17	0.45	0.38	0.71	-0.84	1.18	-0.84	1.18
13	Ea Breweries	X Variable 1	0.03	0.14	0.22	0.83	-0.28	0.35	-0.28	0.35
14	Sameer Afrioca	X Variable 1	0.27	0.10	2.68	0.03	0.04	0.50	0.04	0.50
15	Kenya Oil	X Variable 1	0.29	0.29	1.00	0.34	-0.36	0.94	-0.36	0.94
16	Mumias	X Variable 1	-0.18	0.36	-0.52	0.62	-1.01	0.64	-1.01	0.64
17	Unga	X Variable 1	0.20	0.36	0.56	0.59	-0.62	1.02	-0.62	1.02
18	Bamburi	X Variable 1	0.16	0.28	0.55	0.59	-0.48	0.80	-0.48	0.80
19	Crown Berger	X Variable 1	0.02	0.25	0.10	0.93	-0.54	0.59	-0.54	0.59
20	Ea Portland	X Variable 1	-0.13	0.13	-0.98	0.35	-0.43	0.17	-0.43	0.17
21	Kplc	X Variable 1	-0.29	0.28	-1.03	0.33	-0.91	0.34	-0.91	0.34
22	Total	X Variable 1	0.21	0.35	0.61	0.56	-0.58	1.00	-0.58	1.00
23	Bat	X Variable 1	0.27	0.19	1.40	0.19	-0.17	0.71	-0.17	0.71

Source: Computed from NSE Data

The study found that the value of λ for firm listed in the NSE ranged between -0.29 and 0.31as shown in Table 4.5. Some firms were found to have positive value of λ while others had negative value of λ, but in all the firms, the value for the speed of adjustment (λ), was less than one indicating that firms listed on the NSE partially adjust to the target debt ratio. There was no case of instantaneous adjustments or over adjustment since there were no values that equaled to 1 or greater than 1. Figure 4.3 shows an overview of speed of adjustment for the 23 firms.

Figure 4.3: Overview of Speed of Adjustment



Source: Research Data

Ignoring the extremes of negative signs witnessed on some seven firms, on average, the adjustment speed was estimated at a mean of 16%. On overall however when the seven

firms were included the rate dropped to 5.3%. This implies that firms quoted at the NSE close about 5.3% of the gap between the current and desired leverage within one year. At this rate it takes about 10 years to close half of the gap between a typical firms' current and the desired leverage ratios.

The slow adjustment is consistent with the hypothesis that other considerations such as market timing or pecking order outweigh the costs of deviating from the optimal leverage. With such a low estimated speed, converges towards a long run target seems unlikely to explain the bulk of variations in firms debt ratio.

As explained in chapter two, rewriting the target adjustment model in equation $MDR_{i,\,t+1} - MDR_{i,t} = \lambda(MDR_{i,t+1}^{*} - MDR_{i,t}) + \delta_{i,t+1}$ and treating target leverage $MDR_{i,t+1}^{*}$ as linearly dependent on the capital structure determinants as specified in equation yields the following expression for leverage at time t+1; $MDR_{i,t+1} = (\lambda\beta)X_{i,t} + (1-\lambda)MDR_{i,t} + \delta_{i,t+1}$.The equation implies that managers take actions to close the gap between where they are ($MDR_{i,t}$) and where they wish to be ($\beta X_{i,t}$). This therefore implies that the coefficient of lagged leverage, $MDR_{i,t}$ is equal to $(1-\lambda)$ that is 1-0.053=0.947. According to Antoniou et al. (2008) a positive and below unity coefficient of one period lagged leverage suggest that firms have a target leverage and revise their capital structure over time. A coefficient that is greater than one implies that firms do not have any target debt ratio.

The estimation results have also revealed that the cost of off target (disequilibrium) for firms listed on the NSE are much lower than the costs of adjustments. The speed of adjustment would be close to one if the costs of being in disequilibrium were much higher than the costs of adjustments. Alternatively it would be close to zero if the cost of

adjustments were lower than the cost of being off target. The latter is the case for the firms listed in NSE.

Table 4.6: T Statistic for Market Debt Ratio ($MDR_{i,t}$)

					95% Confidence Interval of the Difference	
	t	Std. Deviation	Sig. (2-tailed)	Mean Difference	Lower	Upper
2010	5.796	0.19453	0	0.24605	0.1575	0.3346
2009	6.32	0.21435	0	0.28248	0.1898	0.3752
2008	5.308	0.20614	0	0.22814	0.139	0.3173
2007	5.033	0.15028	0	0.1577	0.0927	0.2227
2006	4.991	0.1507	0	0.15684	0.0917	0.222
2005	4.964	0.17556	0	0.18171	0.1058	0.2576
2004	4.501	0.20747	0	0.1947	0.105	0.2844
2003	4.338	0.26792	0	0.24234	0.1265	0.3582
2002	5.563	0.27649	0	0.32074	0.2012	0.4403
2001	6.297	0.23448	0	0.30788	0.2065	0.4093
2000	5.239	0.23284	0	0.26005	0.1568	0.3633
1999	4.737	0.1983	0	0.20029	0.1124	0.2882

Source: Research Data

From the result shown in table 4.6 above, the t- statistics for the firm listed in NSE ranged between 4.338 and 6.320, the significance value were found to be less than 0.05 which shows that the data was statistically significant to make conclusion, the standard deviation was low an indication that MDR for listed in the NSE was within the same range as there were no major deviation. The mean difference was found to very low.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings from the study, conclusions and recommendation. The findings have been summarized in conjunction with the objectives of the study. The researcher had intended to determine whether firms in Kenya have optimal target leverage, and if so to test whether an adjustment towards target capital structure takes place as well ascertaining the speed of adjustment to the target capital structure.

5.2 Summary of Findings

From the regression results obtained in chapter four, the study established that firm specific variables used in the estimation of target debt ratio revealed coefficients which were consistent with the earlier studies in determining target capital structure.

The study revealed that the current profitability of firms exerts a negative influence on firms borrowing decisions. The estimated coefficients were significant at the level of 5%. The negative sign of profitability is however consistent with the pecking order hypothesis that predicts preference for internal finance rather than external finance. For firm size, the study revealed a positive relationship with leverage. This is consistent with the earlier studies such as Titman and Wessels (1988) as well Flannery and Ragan (2006). The finding is also consistent with the trade off theory but against the pecking order theory which predicts a negative relationship between leverage and size, with larger firms

exhibiting increasing preference for equity relative to debt. Asset Tangibility which was proxied by the ratio of fixed assets to total assets revealed a positive relationship with leverage. Previous studies such as Fama and French (2002) argue that the ratio of fixed asset to total assets is an important determinant of capital structure.

The coefficient of growth opportunities as proxied by market to book ratio of equity was negative. The negative impact of growth opportunities on leverage might give support to the prediction that firms which have a relatively large proportion of intangible assets cannot support a high leverage ratio. This evidence is also consistent with the view that firms with greater growth opportunities might have lower leverage ratios due to the fear of debt-holders to whom firms might pass up valuable investment opportunities. This supports the targeting behavior by managers.

On the estimation of the speed of adjustment the study found that the value of λ for firm listed in the NSE ranged between -0.29 and 0.31. Some firms were found to have positive value of λ while others had negative value of λ, but in all the firms the value for the speed of adjustment (λ) was less than one indicating that firms listed in the NSE have a target capital structure which they partially adjust to. There was no case of instantaneous adjustments or over adjustment since there were no values that equaled to 1 or greater than 1.

5.3 Conclusion

The study analyzed the adjustment towards capital structure by listed companies in NSE. The Key findings were that, there is evidence of an adjustment process in firm's use of debt thereby supporting the targeting behaviour by managers. However the speed of adjustment is somewhat low and therefore not commensurate with major industrial countries. The latter result could be attributable to the fact that debt ratio of Kenyan firms are comparatively low such that many firms do not depart so much from their target.

Secondly the use of debt was found to be negatively related to firms' profitability which is in support of the pecking order theory implying that pecking order theory and some targeting behaviour cannot be ignored. The firms' growth opportunities were also found to exert a negative impact on leverage. The negative impact of growth opportunities on leverage could reveal several features of borrowing behavior of listed companies at the NSE. It may give support to the prediction that firms which have a relatively large proportion of intangible assets cannot support a high leverage ratio. This evidence is also consistent with the view that firms with greater growth opportunities might have lower leverage ratios due to the fear of debt-holders that firms might pass up valuable investment opportunities to.

Other reasons for this for instance may stem from the tendency of firms to issue stock when their stock price is high relative to their earnings or book value; consistent with market timing theory. This would imply that the negative correlation between leverage

and the market to book ratio is driven by firms that issue significant amount of equity (Rajan and Zingales, 1995).

The study has therefore established that targeting behavior which is consistent with the trade off theory is applied by firms in making their financial decisions. However, it may not explain the bulk of the observed capital structure changes as other characteristics of market timing and pecking order theories have featured. Nonetheless the former must not be ignored.

5.4 Limitations of the Study

Time constraint inhibited a wider coverage of firms in that the selection was only possible for those firms listed on the NSE because of data availability. This selection may not yield a true reflection of financing behavior by Kenyan firms. Kenya has numerous small firms that are privately owned but which represent various industries. These firms might encounter prohibitively large costs when making small leverage adjustments.

Secondly lack of sophisticated econometric analysis models was an impediment. Most of the studies carried out in highly industrialized countries produce robust results because of easy accessibility to superior analytical tools.

5.4 Recommendations for Further Studies

The study used the market debt ratio as the primary leverage measure. A similar study could be carried out in the future using book debt ratio as a measure for leverage.

Secondly, the study applied a simple linear regression method (ordinary least square) in which case unobservable firm-specific effects that capture the impact of inter-temporally constant, but unmeasured effects on leverage were excluded. A similar study may therefore be done by including the firms fixed effects that affect leverage and also applying superior analytical tools.

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APPENDIX 1

Companies Listed on the NSE as at 31December 2010

Agriculture

1. Rea Vipingo.
2. Sasini Tea & Coffee Ltd.
3. Kakuzi Ltd.

Commercial & Services

1. Access Kenya Group.
2. Marshals E.A Ltd.
3. Car & General Ltd.
4. Hutchings Biemer Ltd. **Suspended**
5. Kenya Airways Ltd.
6. CMC Holdings Ltd.
7. Uchumi Supermarkets Ltd. **Suspended**
8. Nation Media Group.
9. TPS (Serena) Ltd.
10. ScanGroup Ltd.
11. Standard Group Ltd.
12. Safaricom.

Finance & Investment

1. Barclays Bank of Kenya Ltd.
2. CFC Stanbic Bank Ltd.
3. Housing Finance Ltd.
4. Centum Investment Ltd.
5. Kenya Commercial Bank Ltd.
6. National Bank of Kenya Ltd.
7. Pan Africa Insurance Holdings Co. Ltd.
8. Diamond Trust Bank of Kenya Ltd.
9. Jubilee Insurance Co. Ltd.
10. Standard Chartered Bank Ltd.
11. NIC Bank Ltd.
12. Equity Bank Ltd.
13. Olympia Capital Holdings Ltd.
14. The Co-operative Bank of Kenya Ltd.
15. Kenya Re-Insurance Ltd.

Industrial & Allied

1. Athi River Mining Ltd.
2. BOC Kenya Ltd.
3. British American Tobacco Kenya Ltd.
4. Carbacid Investments Ltd.
5. E.A. Cables Ltd.
6. E.A. Breweries Ltd.
7. Sameer Africa Ltd.
8. Kenya Oil Ltd.
9. Mumias Sugar Company Ltd.
10. Unga Group Ltd.
11. Bamburi Cement Ltd.
12. Crown Berger (K) Ltd.
13. E.A Portland and Cement Co. Ltd.
14. Kenya Power & Lighting Co. Ltd.
15. Total Kenya Ltd.
16. Eveready East Africa Ltd.
17. Kengen Ltd.

APPENDIX 2

Data Collection Form

Variable	Source-Financial Statements (Records Maintained at NSE)
Profit before tax (EBIT)	Income statement
Market price to book value (Kshs)	Market information section, Balance sheet/Statement of Financial Position, Financial Ratios
Ratio of total assets to total assets	Balance sheet/Statement of Financial position
	Market capitalization / Net asset value
Total debt financing	Non-Current liabilities in the balance sheet
Total market equity financing	Market information section , market capitalization
Total assets	Balance sheet/Statement of Financial position
Net Assets	Balance sheet/Statement of Financial position

APPENDIX 3

Table 1: Overview of firms sampled

Name of Firm	Targeted Years 1999 to 2010	No. of Years	Cumulative Years With Available Data	No. of Years	Remarks
Agricultural Sector					
Kakuzi	1999- 2010	12	1999-2010	12	Included in the sample
	1999- 2010	12	1999-2010	12	"
Sasini	1999- 2010	12	1999-2010	12	"
Commercials & Services					
Cmc Holdings	1999- 2010	12	1999-2010	12	"
Kenya Airways	1999- 2010	12	1999-2010	12	"
Marshals	1999- 2010	12	1999-2010	12	"
Nation Media Group	1999- 2010	12	1999-2010	12	"
Safaricom	1999- 2010	12	2008-2010	3	Excluded
Standard Group Ltd	1999- 2010	12	2002-2010	9	"
Tps Serena	1999- 2010	12	1999-2010	12	Included in the sample
Scan Group	1999- 2010	12	2006-2010	5	Excluded
Access Kenya	1999- 2010	12	2007-2010	4	"
Car & General	1999- 2010	12	1999-2010	12	Included in the sample
Industrial and Allied					
Athi River Mining	1999- 2010	12	1999-2010	12	Included in the sample
Bamburi	1999- 2010	12	1999-2010	12	"
Boc	1999- 2010	12	1999-2009	12	"
Cabacid	1999- 2010	12	1999-2004,2008-2009	6	excluded
Bat	1999- 2010	12	1999-2010	12	Included in the sample
Crown Berger	1999- 2010	12	1999-2010	12	"
East African Cables	1999- 2010	12	1999-2010	12	"
E.A.Portland	1999- 2010	12	1999-2010	12	"
E.A.B.L	1999- 2010	12	1999-2010	12	"
Eveready	1999- 2010	12	2006-2010	6	excluded
Sameer Africa	1999- 2010	12	1999-2010	12	Included in the sample
Kennol	1999- 2010	12	1999-2010	12	"
Mumias	1999- 2010	12	2001-2010	10	"
Kplc	1999- 2010	12	1999-2010	12	"
Kengen	1999- 2010	12	1999-2010	12	"
Total	1999- 2010	12	1999-2010	12	"
Unga	1999- 2010	12	1999-2009	10	"

Source: Research Data