DETERMINANTS OF CAPITAL STRUCTURE OF COMPANIES LISTED AT NAIROBI STOCK EXCHANGE (NSE)

BY:

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DECLARATION

This research project is my original work and has not been presented elsewhere for any other assessment or award.

Signed..... **Date:** 07/11/03.....
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Supervisor's Approval

This research project has been presented for examination with my approval as the course instructor.

Signed ..... **Date** 7-11-2003.....
Mr. Luther Otieno

DEDICATION

I specifically dedicate this project work to my dear parents the late John Odinga Onam and Mrs. Magdalena Odinga for their dedicated parental support and enduring responsibility of bringing me up to be what I am today.

My dedication also go to my dear brother the late Maurice Ogwayo Odinga for his enormous contribution towards my education.

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ABSTRACT

This paper studies the determinants of capital structure of companies listed at Nairobi stock exchange (NSE). The main objective is to investigate the relationship between capital structures and hypothesized influential variables such as asset tangibility, growth, size, business risk (earning volatility) profitability and non-debt tax shield.

Using multiple regressions as the tool of analysis, the result predict that these variables influence leverage at a varying degree with profitability and non-debt tax shield being the most significant variables in determining leverage.

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CHAPTER ONE

1.0 INTRODUCTION AND STATEMENT OF THE PROBLEM:

1.1 INTRODUCTION

Investigating capital structure empirical evidences, one might find very little consensus with respect to important hypothesis. In each model the choice between debt and equity depends on firm and economy specific factors (Mateus and Balla, (2001).

There has been no clear answer from the studies done on capital structure as to whether firms have target debt rations. In traditional trade-off model, the main advantage of debt financing is the tax advantage of interest deductibility (Modigliani and Miller, 1963).

The primary costs are those associated with financial distress and the personal tax expense bondholders incur when they receive interest income (Miller 1977). The pecking-order model of financing choice is based on asymmetric informative explanations of capital structure. The assumption here is that firms do not have target debt ratio, but instead use external financing only when internal funds are insufficient.

In the agency theory, there exists potential conflict of interest between inside and outside investors. This can determine an optimal capital structure that trades off agency costs against other financing costs.

Different researchers have come up with different conclusions on capital structure decisions. Hovakimlan et al, (2000) studied on the determinants of target capital structure. They regressed leverage on a set of potential determinants of target capital structure e.g. profitability, growth, size and concluded that growth is a significant market determinant, and that firms have target capital structure. Mateus and Balla (2002),

analyzed capital structure choice of firm in Hungary and Portugal. They used debt ratio as dependent variable and six independent variables namely; average tax rate, asset tangibility, business risk, size, return on asset and market to book value ratio. Using cross-sectional regression analysis they found out that these variables actually affect capital structure decisions. Booth et al, (2001), examined financial structure firms in a sample of 10 developing countries and concluded that the above variables are determinants of capital structure. Chen et al, (1998) examined the extent to which the main capital structure theories explain capital structure choice in Dutch. They concluded that the pecking order hypothesis is more relevant in explaining capital structure decisions in Dutch. Banerjee et al ,(2000) analyzed the dynamics of capital structure on a sample of UK and US firms. They predicted that firms typically have a target capital structure but adjust very slowly towards the target.

1.2 RESEARH PROBLEM

From the introduction above, based on studies cited above, it becomes clear that one cannot precisely answer the important question of capital structure decision. However, there seem to be a theoretical consensus, to some extent on certain variables that affect capital structure of firms. These include profitability, business risk, asset tangibility, growth, size and existence of non-debt tax shield.

This study seeks answers to the following question:

- Which variables affect capital structure decision?

The purpose of this paper is to extend on research carried elsewhere in order to find out whether the same variables are explaining capital structure decisions in a similar way as in the other studies done in other countries.

A local study was done 8 years ago, Omondi, (1996), this was an extension of an earlier study done by Kamere, (1987). He used local data available at Nairobi Stock Exchange from 1987 to 1994. He concluded that turn over, growth, asset structure and age are determinants of capital structure in Kenya. This study however had some limitations on the statistical model that was used. It does not give the magnitude and direction of the determinants of capital structure hence it is of limited use in predicting capital structure.

A similar study was by Kiogoria (2000) who set to find out whether companies quoted at the NSE in the same industry have similar capital structure; concluding that the industry bias exists. These earlier studies set a stage for the need to identify the direction and magnitude of factors that impact on capital structure.

1.3 OBJECTIVE OF THE STUDY

1. To identify the relationship between capital structure and hypothesized influential variables such as asset tangibility, growth size, business risk (earning volatility), and profitability.

1.4 JUSTIFICATION OF THE STUDY

The findings of this study will help corporate managers and researchers understand the factors useful in determining capital structure of their firms. This will enable them improve on their financial decisions.

CHAPTER TWO

2.0 LITERATURE REVIEW

1.1 The Traditional Theory of Capital Structure

This theory holds that there exists an optimal level of leverage. The implication is that minimizing the cost of capital when the optimal level of debt capital is employed, maximize the value of the firm, Brealey and Myers (1988). It is based on the argument that at low levels of debt, increased leverage does not increase the cost of debt hence the replacement of an expensive source of capital (equity) with a cheaper source (debt) translate into increase in the value of the firm. It is this benefit that creates borrowing incentives to firms. However borrowing will continue upto a certain level, and beyond that level, let us call it the turning point, the cost of debt begins to rise. It is at the turning point that the firm's value is at maximum and is considered to be the optimal capital structure level.

Brealey and Myers, (1988), observe that this argument holds because investors who hold debt are uninformed of the increased risk at "moderate" debt levels and will continue demanding the same return on debt. They argue that it is only at "excessive" debt levels, they demand a higher return.

2.2 Modigliani and Miller (1958) MM without Corporate Taxes

Modigliani and Miller challenged the traditional theory of capital structure by developing a new theory. They did their work with certain assumptions, which include; existence of homogenous risk class, homogenous expectations, efficient capital market, risk-less debt and zero growth. They concluded that the capital structure of a firm is irrelevant to its value in a world without corporate taxes. The market value of a firm is determined solely

by the magnitude and risk of the cash flow generated by the capital assets. The debt equity ratio merely indicates how the stream of future cash flows will be divided among the debt holders and shareholder. This argument was based on the arbitrage process which refers to the buying and selling of identical assets at different prices when one is over valued, the demand will continue to rise for the under-valued asset in order to sell to the over-valued firm. The law of demand and supply will set in to restore the prices at equilibrium. MM's first proposition therefore holds that the value of the levered firm equals the value of the unlevered firm:

$$V_L = V_U$$

Where V_L = Value of the Levered Firm

V_U = Value of the Unlevered Firm

This implies that a firm's capital structure is irrelevant and that WACC is the same no matter what mix of debt and equity is used. Hence a firm should use any source of financing whichever is convenient.

In their **second proposition**, they argued that the cost of equity capital is an increasing function of leverage. It is based on the argument that when debt is introduced, it increases the risk of the firm, this will compel the equity holders to demand a risk premium to compensate them for the additional risk. Hence the cost of equity to a levered firm is the sum of the cost of equity to unlevered firm and a risk premium. This implies that the cost of equity rises as the firm increases its use of debt financing. The risk of equity depends on the risk of firm operations and on the degree of financial leverage.

2.3 MM with corporate taxes (1963)

This was an improvement of the MM's previous work. The assumption of zero tax rate was seen as a serious limiting factor, and hence the need to come up with a model that incorporate taxes. In 1963 Modigliani and Miller (1963), argued that the value of a firm will increase with leverage because interest in debt is tax-deductible expense, hence there exist an extra benefit to the levered firm. The value of the levered firm will be the sum of the value of unlevered firm and the gain from the leverage.

$$V_L = V_U + t_d$$

Where V_L is the value of the levered firm

V_U is the value of the unlevered firm

t_d is the tax saving

This implies that firms should use only (100 percent) debt financing to take advantage of the tax savings. In practice for many reasons no firm deliberately follow a policy of one hundred percent debt financing.

Schwartz and Aronson (1967), argue that various classes of firms have developed some typical financial structures that are optimal for their operational risks and asset structures. This is especially in a market where sources of funds may be somewhat segregated.

Miller (1977) introduced a model that incorporated both personal and corporate taxes. He concluded that when personal taxes are introduced, the income available to investors is reduced when dividends are paid, this has the impact of reducing the value of the firm. However, Miller at a later date proposes that both corporate and personal taxes do not adequately explain the use of debt.

Not satisfied with the reason given as to why firms use debt, researchers embarked on research to justify the wide use of debt in the real world. A number of theories, some of which have been discussed below, are advanced as useful in explaining corporate usage of debt.

2.4 Pecking Order Theory

This theory is based on asymmetric information explanation of capital structure. It assumes that firms do not target a specific debt ratio, but instead use external financing only when internal funds are insufficient.

The pecking order initially proposed by Myers (1984), based in part on the argument in Myers and Majluf (1984), suggests that firms finance their needs in a hierarchical fashion, first using internally available funds, followed by debt, and finally external equity (Chiltenden et al, 1996)

The major prediction of the model is that firms will not have a target or optimal capital structure, but will instead follow a pecking order of incremental financing choices that places internally generated funds at the top of the order followed by debt issues and finally, only as a last resort new equity financing.

This theory is based upon costs derived from asymmetric information between managers and the market, and the idea that trade off theory costs and benefits to debt financing are of second order importance when compared to cost of issuing new securities. The preference is a reflection of the relative cost of the available sources of funds due to informational asymmetry (Chirinko and Singha, 2000). External funds are less desirable because informational asymmetries between management and investors imply that

external funds are undervalued in relation to the degree of asymmetry (Myers and Majluf 1984; Myers 1984).

Highly profitable firms might be able to finance their growth by using retained earnings and thus maintaining a constant debt ratio. (Booth et al 2001).

The proponent of signal hypothesis claim that a firm's capital structures signals to the outsiders the firm's internal information to the outsiders. Ross (1977), suggests that where a firm value and debt level are all positively related, (Managers know the true distribution of the firm's returns, but investors do not). The outsiders use capital structure to signal the quality of the firm of future prospects. (Information asymmetry), managers can use the firm's capital structure to signal the information. Investors take larger debt levels as a signal of management's confidence in the firm.

2.5 The Agency Theory

This theory holds that there exists potential conflict of interest between insiders and outside investors. This can determine an optimal capital structure that trade-off agency costs against other financing costs (Mateus and Balla, 2002). The nature of the firm's assets and growth opportunities are important factors when determining those agency costs. (Booth et al, 2001). Jensen and Meckling (1976), building on earlier work of Fama and Miller (1972) initiated the agency cost models. Under this framework, debt is considered as a necessary mechanism to mitigate the conflicts between equity holders and managers. The arguments are: First of all, debt financing reduces the amount of 'free' cash available at managers' disposal (Jensen, 1986) and it explains why companies in mature industries with few growth opportunities and abundant cash flow tend to have

high leverage ratio. Secondly, debt can be considered as a mechanism to force liquidation if a firm's cash flow is poor (Harris and Raviv, 1990), even though managers may always want to continue firm's current operations whereas shareholders may be better off by liquidating current operations. Further, manager tendency in empire building which is not necessarily in the interest of shareholders, can be controlled when debt financing is employed (Stulz, 1990). The optimal capital structure is thus obtained by trading off the benefit of debt in preventing investment in value decreasing projects against the cost of debt in preventing investment in value increasing projects.

2.6 Trade Off Theory

This theory explains the friction between costs of financial distress and the tax deductibility of the costs of finance (Chirinko and Singha, 2000). It suggests that firm's trade – off several aspects, including the exposure of the firm to bankruptcy and agency costs against the tax benefits associated with debt usage, offsetting these considerations is that tax benefits encourage debt use by firms (tax deductibility of interest) and the final capital structure adopted by a firm will be a trade-off between these tax benefits and costs associated with bankruptcy and agency. This implies that there's a target or optimal debt-equity ratio for a firm (Romano et al, 2000) that changes only as benefits and costs alter over time.

The main benefit of debt is the tax advantage of interest deductibility (Modigliani and Miller 1963). The primary costs are those associated with financial distress and the personal tax expense bondholders incur when they receive interest income (Miller 1977). The trade off theory of capital structure therefore predicts that firms will choose their mix of debt and equity financing to balance costs and benefits of debt. The tax benefit of

debt and control of free cash flow problems push firms to use more debt financing, while bankruptcy costs and other agency problems provide firms with incentives to use less. The theory describes a firm's optimal capital structure as the mix of financing that equates the marginal costs and benefits of debt financing. One of the main empirical prediction of this theory is that debt ratios will tend to be mean reverting as firms use the external capital markets strategically to keep themselves at a close to their optimum (Lemmon et al, 2002).

The dynamic version of the trade-off theory (Fischer, Heinkel and Zecher, 1989) implies that firms passively accumulate earnings and losses letting their debt ratios deviate from the target as long as the costs of adjusting the debt ratio exceed the cost of having a sub optional capital structure. If so, firms that have been highly profitable in the past are likely to be unlevered while firms that experienced losses are likely to be over levered.

2.7 Theoretical explanations of Capital structure determinants

There are variables which have been commonly documented in literature and in many capital structure studies as the major variables that affect firm leverage for example Banerjee et al 2000, Chen et al 1998, Mateus and Balla 2002. These variables consist of: asset tangibility, growth size, business risk (earning volatility), profitability and non debt tax shield:

1. Asset Tangibility

It is easier for the lender to establish the value of tangible assets because typically there is more asymmetric information about the value of the latter. Moreover, it is highly likely that in the face of probable bankruptcy, intangible assets like goodwill will rapidly

disappear, thus diminishing the net worth of a firm and further accelerating its bankruptcy probability. The argument here could be that firms with greater percentage of their total assets composed of tangible assets will have a higher capacity for raising debt. In an uncertain world, with asymmetric information, the asset structure of a firm has a direct impact on its capital structure since firm's tangible assets are the most widely accepted sources for bank borrowing and raising secured debt. If the borrowers have imperfect information regarding the firm, firms with little tangible assets will find it difficult to secure borrowed funds. This suggests that a positive relationship between asset tangibility and leverage exist, hence it implies the existence of imperfect information, and this suggests the relevance of models based on asymmetric information for explaining capital structure choice of Kenyan firms. On the other hand the absence of a relationship between tangible assets and leverage seems to suggest that information problems do not play an important role. The sign of the coefficient with respect to asset tangibility provides information on the importance of theories based on asymmetric information.

Mateus and Balla, (2002) did this analysis in Hungary and Portugal and realized a negative correlation and attributed this to the difficulty in issuing secured debt in the two countries. Omondi, (1996) did a local study and found out a positive correlation. He argued that tangible asset is used as a security to secure debt finance and thus firms with adequate tangible asset will easily secure debt capital. But that is the furthest Omondi's study goes. It does not tell us much as to how we can predict capital structure.

In this study asset tangibility is tested using a proxy computed as the total assets less current assets divided by total assets.

2. Profitability

There are different views on the relationship between leverage and profitability. According to the pecking order theory, if a firm has more retained earnings, it will be in a better position to finance its future projects by retained earnings, instead of external debt financing. Myers and Majluf (1984), argues that firms prefer internal to external financing and the more profitable the firm, the greater the availability of internal capital, hence there should be a negative relationship between profitability and leverage.

A different view holds that the choice of a firm's capital structure signals to outside investors the information of insiders. In which case investors take larger debt levels as a signal of good performance of the firm and management's confidence (Ross 1977 and Leland and Pyle 1977) about future performance. In the absence of asymmetric information, profitable firms may signal quality by leveraging up Jensen (1986). If this argument is true, then there will be a negative relationship between the debt level and profitability.

The analysis done by Mateus and Balla, (2002) yielded a negative relationship between profit measured (by returns on assets) and debt level in Portugal. There was no significant relationship in the case of Hungary. However, in a local study, Omondi, (1996), the result was a positive relationship. He argued that with more profit, there exists an incentive to invest more and hence more borrowing to invest in order to earn even more profit. In this study, profitability will be tested using income instead of profit because it is not affected by leverage. Profitability is therefore computed as earnings before tax divided by total assets.

3. Business Risk

It has been argued that earnings volatility increases the probability of a firm's bankruptcy. This is because the decline can be massive and result into difficulty whose end result is defaults on interest and principal payment. Lenders will usually regard a firm's volatile earnings as the results of poor management, due to this they are likely to discount such firm's stock price and demand an extra premium for debt financing. These firms are bound to experience a difficult time in sourcing external funds. Taking the above argument into consideration, then one would expect a negative relationship between earnings volatility and leverage.

Analysis done by Mateus and Balla,(2002) revealed a negative relationship between leverage and business risk in both Portugal and Hungary. A local study done by Omondi, (1996) considered changes in movement of working capital and realized positive relationship. He argued that fund flows are not closely related to capital structure per se. In this study business risk is also tested, it is considered to be the variance of the operating income. (Variations in income realized by the firm).

4. Growth

According to agency theory, we can predict a negative relationship between growth and debt level. Myers' (1977), argues that under-investment problem suggests a negative relationship between growth and long term debt. His argument was that a firm's growth opportunities are intangible assets instead of tangible assets; the liquidity effect of high leverage may reduce a firm's ability to finance its future growth. He concluded that managers at firms with valuable growth opportunities should choose low leverage. Rajan and Zingales, (1995) argue that due to the Myers and Majluf, (1984) "Under investment

problem", firms expecting high future growth should use a greater amount of equity finance. This therefore predicts a negative relationship between expected growth and leverage. A similar relationship was also suggested by Titman and Wessels (1988), but for the reason that firms with greater growth opportunity have more flexibility to invest sub optimally and thus expropriate wealth from bondholders to shareholders.

Mateus and Balla, (2002), did not find any significant relationship in their study in Hungary and Portugal. However, a study done by Omondi, (1996) using the data collected locally in Kenya revealed a positive correlation. He argued that as firms in Kenya grow in size they acquire more debt to finance new investment opportunities. He pointed out that retained earnings as a source of capital prove to be significant.

This paper analyses growth as the average percentage change in total assets from the previous to the current year. It can also be measured as the natural logarithm of total sales.

5. Size

It has been argued that informational asymmetries are less severe for larger firms than for smaller firms. This suggests a positive relationship between a firm's size and leverage. If the financial market is more aware of what is going on at larger firms, the firm will find it easier to raise debt. The larger firms are also believed to be in a better position to diversify their investment projects and hence limit their risks due to cyclical fluctuations. Larger firms can therefore be considered to have a lower financial distress risk. Titman and Wessels (1988) argue that direct bankruptcy costs being fixed, they constitute a smaller portion of a firm value as a firm increases in size.

This analysis has been done by Mateus and Balla, (2002) and they revealed a significant relationship between leverage and firm's size in Hungary. Size is also analysed in this study and is computed as the logarithm of total assets.

6. Non-Debt Tax Shields

Modigliani and Miller (1958) argued that the main incentives for borrowing is to take advantage of interest tax shields. However, this will only hold if the firm has enough taxable income to justify debt financing. This incentive will be reduced with the presence of other non-debt tax shields like depreciation and amortization.

From the above argument, it is expected that there will be a negative relationship between the variable and leverage level.

To test for this variable in this study a proxy of non-debt tax shield is computed by dividing depreciation by the total assets.

7. Uniqueness

When a firm owns unique assets, there will be a limited market for the assets. The financial market is likely to devalue the assets since there will be a lower expected value recoverable by the lender in the market in the event of bankruptcy.

Titman and Wessels (1988) predicted a negative relationship between the variable and the leverage of the firm.

2.8 Other related studies

Mateus and Balla, (2002) did a study to analyse capital structure choices of firms in Hungary and Portugal. They chose three debt ratios as dependent and six independent variables and could see that debt ratios seem to be affected in the same way by the same type of variables that are significant. The dependent debt ratios were: total debt ratio, long-term book-debt ratio and long-term market-debt ratio. The independent variables were: average tax rate, asset tangibility, business risk, size, return on assets and market-to book ration. Using a cross – sectional regression analysis they concluded that the relevant variables explaining capital structure in developed countries are also relevant in developing countries; despite the difference in their institutional structure. However, they also revealed that these ratios are affected by macro factors, such as inflation rate and GDP growth rate but their impact is low. These findings were consistent with a similar study done by Booth et al, (2001). The main goal in this study was to examine the financial structure of firms in a sample of developing countries using a new-level database. Using the same cross-sectional regression he came up with a similar conclusion.

Chen et al, (1998) conducted a study on the determinants of capital structure of the Dutch firms. Their objective was to investigate whether and to what extent the main capital structure theories can explain capital structure choice of Dutch firms. Using a panel data model, they analyzed the theoretical variables which they referred to as the determinants of capital structure, this included asset tangibility, growth, size earning variability, profitability, market to book ratio as a proxy for Tobin q ratio. They concluded that pecking order hypothesis is more relevant in explaining the financial choice of Dutch

firms and hence the importance of asymmetric information models in explaining capital structure choice of Dutch firms.

Banerjee et al, (2000), did a study on the dynamics of capital structure. They used a dynamic adjustment model, and panel data methodology on a sample of UK and US firms to specifically establish the determinants of a time-varying optimal capital structure. They concluded that firms typically have capital structure that are not at the target and that they adjust very slowly towards the target market.

Lemmon et al, (2001) also did a study on debt capacity and tests of capital structure theories. Using empirical models estimated by Shyam – Sunder/Myers and Frank/Goyal to analyse capital structure determinants in USA, they concluded that the pecking order appears to be a good description of the financial policies of majority of the firms.

From the above captured literature, it is easy to point out that most of the studies are done based on developed economy data, it is therefore difficult to make a precise conclusion that these findings can work in developing countries and in Kenya specifically which have a different institutional structure.

Taking the above argument into serious consideration, it becomes an important step to extend these studies to Kenya in order to find out whether the same variables are explaining capital structure decision, in a similar way as in the findings in the above cited studies. This paper therefore analyses the capital structure choice using the local data in Kenya and compare the results to the existing findings.

A local study was done 8 years ago. Omondi, (1996) using data collected from the Nairobi Stock Exchange (from 1987 to 1994). He extended the study done by Kamere, (1987), using correlation coefficient he analysed the relationship between leverage and

the variables. Basing his argument on the significance of relationship, he concluded that turn over, growth, asset structure and age are determinants of capital structure in Kenya. This study however had some limitations on the statistical model that was employed. He used correlation coefficient that is by definition a measure of the degree of linear relationship between two variables. Correlation analysis is non-directional and only considers relationship as the critical aspect. It does not give a clear indication as to which of the two related variable affect the other.

The presence of correlation between two variables does not necessarily mean that there's a cause and effect relationship between the two variables (leverage and profitability). Correlation only implies that the two variables move together in the same or opposite direction. Two variables can be correlated because both are the results of some other factors.

In my view there's need to employ a more robust methodology to analyze the capital structure in this country to come up with better results. This explains why the method used in this study is multiple regression analysis, which is a better analytical tool than correlation in understanding the direction and magnitude of the determinants of capital structure. Regression emphasizes the prediction of one variable from the other. It describes leverage as a function of the respective independent variables (growth, business risk, size, tangibility, profitability and non-debt tax shield)

$$Y_i = f(X_i)$$

Where Y_i is the debt ratio and is the dependent variable. X_i- represents independent variables as stated above.

Thus $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6$ is a multiple regression model describing how leverage (Y) will be related to any one of the independent variables while holding other variables constant, and the total effect on leverage by all the variables combined. Test of significance is then done to verify their significance. Multiple regression has the advantage of eliminating bias as a result of some confounding variables by including them as regressors. It also reduces residual variance and hence improves the confidence intervals and tests.

In regression the interest is directional, and thus makes it possible to predict the debt level given the existence of certain variables under study. This will clearly point at which variable is significant in leverage effect. Regression will predict the effect on the level of leverage as a result of changes of each respective variable (marginal effect).

Omondi, (1996) used data collected from the Nairobi Stock Exchange from 1987 to 1994. Another reason for this study therefore is to take into account and to appreciate the highly dynamic world. Things are changing very fast in all aspects and Kenya is not left out. So many changes have taken place after 1994. In my view, it is also important to conduct a current research that will depict the current situation in this country. This will be useful to investors in this country and scholars who will be interested in knowing the current situation and any new developments if any.

Kiogora (2000) did another study on capital structure but tested variations in the capital structure of the quoted companies in Kenya. Her study did not analyse the determinants of capital structure.

Another improvement is that data used in this study cover a longer period than other earlier studies. Data is collected from 1990 to 2002. This will capture part of the data

used by Omondi, (1996) to the current data. This wide coverage will take into account the changes experienced over the years.

CHAPTER THREE

3.0 RESEARCH DESIGN AND METHODOLOGY

3.1 Population

The population of this study will consist of all companies quoted at the Nairobi Stock Exchange between January 1989 to December 2001 (see appendix I) Omondi,(1996) used the data up to and including 1994, hence the need to capture part of his data and any subsequent development.

3.2 The Sample

Sampling is based on whether the firm has been quoted at least for eight years, this is to capture the dynamic nature of capital structure. Twelve companies are left because their period of listing is less than eight years.

Firms in the finance and investment sector are left out because they don't have a clear debt structure. This further eliminates twelve more companies leaving a sample of twenty-nine companies.(See appendix II)

3.3 Data Collection method

Data is collected using secondary data from annual reports of the quoted companies and records maintained at Nairobi Stock Exchange (NSE). From the data, the variables used in this study included:

1. Debt/leverage ratio – computed as total debt divided by total debt plus equity.
2. Tangibility – computed as the total assets less current assets divided by total assets.

3. Profitability – is computed as earnings before tax divided by total assets.
4. Business risk – is computed as the variance of operating income.
5. Growth – is the average percentage change in total assets from the previous to the current year.
6. Size – is computed as the log of total assets.
7. Non-debt tax shield – is calculated as the depreciation divided by total assets.

3.4 Data analysis method

This study employs multiple regression as the tool for analysis. This model describes leverage as a function of all the determinant variables represented in a general linear model as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$$

It describes how leverage (Y) will be related to any one of the independent variables (regressors) provided all others remain constants.

Where: Y – is the leverage/debt ratio to be predicted (dependent)

β_0 – is the coefficient of regression. It predicts the relationship between the leverage and the respective variable. This relationship is compared with the known theoretical relationship to prove or disapprove the theoretical explanation.

X_1 – represent tangibility as an independent variable (regressor)

X_2 – represent profitability as an independent variable (regressor)

X_3 – represent business risk as an independent variable (regressor)

X_4 – represent growth as an independent variable (regressor)

X_5 – represent non-debt tax shield as an independent variable (regressor)

X_6 – represent size as an independent variable (regressor)

β_1 – represent the change in leverage that accompanies a unit change in variable X_1 (marginal effect) while holding other variables constant.

β_2 – represent the marginal effect of variable x_2 on leverage holding other variables constant.

β_3 – represent the marginal effect of variable x_3 on leverage while holding the other variables constant.

β_4 – represent the marginal effect of variable x_4 on leverage while holding the other variables constant.

β_5 – represent the marginal effect of variable x_5 on leverage while holding the other variables constant.

β_6 – represent the marginal effect of variable x_6 on leverage while holding the other variables constant.

Overall total change in leverage (Y) therefore can be computed as the sum of the individual changes of the variables.

$$Y = \beta\, 0 + \beta_1 X_1 + \beta\, _2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Then $$\Delta Y = \beta_1 \Delta X_1 + \beta_2 \Delta X_2 + \beta_3 \Delta X_3 + \beta_4 X_4 + \beta_5 X_5$$

Following this analysis marginal effect on debt is computed for each variable. Comparison is made and significance of each predictor variable tested. The test is to determine whether the value of a predictor variable is significantly different from zero. The marginal effect on leverage as a result of all the variables is computed and the significance of the effect tested to find out whether and to what extent they explain leverage.

t- statistics are computed using standard error that account for non-independence of the data collected.(95% confidence level of estimate is used). T(N-K-1) = b/sb

Where b is the regression coefficient of the variables, sb is the standard error of the regression coefficient, N is the number of subjects and k is the number of predictor variables. The resulting t is on N-K-1 degree of freedom. The t—statistic values are considered significant if the value is equal to two or more while for P-value if the value is equal to zero point one or less

CHAPTER FOUR

FINDINGS

4.0 Introduction

The objective of this study was to determine selected financial variables that impact on leverage to help in planning the amount to be borrowed. The variables that could be useful in predicting level of borrowings considered in the study include tangibility, profitability, business risk, growth in total assets, size and non debt tax shield. The findings are presented below

4.1 Tangibility

The assumption is that firms with tangible assets have a higher capacity to raise debt. This would suggest a positive relationship between asset tangibility and leverage. The results of the regression for the co-efficient tangibility are summarized below:

Regression results for the variable - Tangibility

	N.	const.	coef.	SE-coef.	t - ration	P	Sign	SIG.
1 A.BAUMAN	12	-5.912	-0.7205	0.1959	-3.68	0.014	Negative	YES
2 BAMBUR CEMENT	12	-4.599	0.2165	0.3536	0.61	0.563	Positive	NO
3 B.A.T. KENYA	12	1.252	-1.028	0.1983	-5.18	0.004	Negative	YES
4 BROOKE BOND	12	11.046	-1.0865	0.3	-3.39	0.019	Negative	YES
5 BOC KENYA	12	-0.9702	-0.18828	0.07762	-2.43	0.06	Negative	YES
6 CAR & GENERAL	12	3.512	-0.05796	0.3533	-1.64	0.162	Negative	NO
7 CARBACID INVEST.	12	-0.0513	0.06177	0.0391	1.58	0.175	Positive	NO
8 CMC HOLDINGS	12	-1.91	-9605	0.9508	-1.01	0.359	Negative	NO
9 CROWN BERGER	11	-9.853	-3.1244	0.7806	-4	0.028	Negative	YES
10 DUNLOP KENYA	12	1.042	-2182	0.5632	-0.39	0.714	Negative	NO
11 E.A. BREWERIES	12	3.255	-0.0205	0.3322	0.06	0.953	Negative	NO
12 E.A.CABLES	12	0.1399	0.0847	0.03585	-2.36	0.065	Negative	YES
13 E.A. PACKAGING	12	2.88	0.0222	0.9135	0.02	0.982	Positive	NO
14 EAAGADS	12	2.625	0.4327	0.2943	1.47	0.201	Positive	NO
15 EXPRESS KENYA	12	13.84	-1.854	1.66	-1.12	0.315	Negative	NO

16 FIRESTONE E.A.	9	20.66	-2.66	1.447	-1.84	0.317	Negative	NO
17 GEORGE W.	12	2.28	-0.681	1.449	-0.47	0.658	Negative	NO
18 KAPCHORUA	12	0.8079	0.1743	0.2893	0.6	0.573	Positive	NO
19 KENYA OIL	12	12.29	-1.734	0.9078	-1.91	0.114	Negative	NO
20 KENYA N. MILLS	12	1.834	0.00911	0.04689	0.19	0.854	Positive	NO
21 KENYA POWER	12	12.246	-1.4809	0.7234	-2.05	0.096	Negative	YES
22 MARSHALLS	12	3.854	0.5329	0.2457	2.17	0.082	Positive	YES
23 NATION M. GROUP	12	-5.381	-0.5577	0.6914	-0.81	0.457	Negative	NO
24 E.A. PORTLAND	12	5.17	1.028	0.369	2.79	0.039	Positive	YES
25 SASINI TEA & C.	12	-0.1391	-0.08476	0.09119	0.93	0.395	Negative	NO
26 STANDARD N.P.	12	-4.04	1.015	1.634	0.62	0.562	Positive	NO
27 TOTAL KENYA	12	-5.292	2.4547	0.6131	4	0.01	Positive	YES
28 UCHUMI SUPERM.	9	1.218	-0.5441	0.4205	-1.29	0.419	Negative	NO
29 UNGA GROUP	12	0.757	-0.0787	0.1475	-0.53	0.617	Negative	NO

	CO-EFF.	SE-COEF.	t-ratio	P	SIG.
TANGIBILITY	**0.0981**	**0.149**	**0.6**	**0.54**	**NO**

At market level the result indicates a positive relationship between tangibility and leverage. The tangibility co-efficient is 0.149 with a t-ratio of .0.60 and P- value is .54 This confirms the theoretical view that firms with tangible assets are favoured by lending institutions . The conclusion is that lenders look at firms with tangible assets favourably because they can be used as security. Omondi (1996) who did a local study found a positive correlation between tangibility and leverage. He observes that that tangible assets is used in this country as a security to secure debt finance. Again the conclusion is that firms with adequate tangible assets will easily secure debt.

At individual company, the analysis indicates that this relationship vary from one company to another. Sixty six percent of the sample of firms have negative coefficient while thirty four percent have positive coefficient. Out of sixty six percent of companies

with a negative coefficient, only five or seventeen percent of the companies have a significant negative coefficient. This suggest that lenders vary their decisions from one company to another

Mateus and Balla (2002), revealed a weak relationship in Hungary, they attribute this to the difficulty in issuing secured debt in that country. These finding could be a pointer to market imperfection in Kenya.

Chen et al, (1998), argue that if banks have imperfect information regarding the operations of the firm, they tend to ask firms to provide security to cover the amount of loans.

4.2 Profitability

One would expect lenders to consider lending to most profitable firms. At the same time profitable firms may rely on internally generated funds i.e pecking order theory. The coefficients for profitability are summarized in the table below:

Regression results for the variable - Profitability

	COMP.	N.	CONST.	PROFIT. COEF.	SE coef	t- ratio	P	SIGN	SIG
1	A.BAUMAN	12	-5.912	-0.3104	0.5809	-0.53	0.616	Negative	N
2	BAMBUR CEMENT	12	-4.599	-0.6415	0.4345	-1.48	0.19	Negative	N
3	B.A.T. KENYA	12	1.252	-1.2505	0.15	-8.34	0	Negative	YE
4	BROOKE BOND	12	11.046	-0.8089	0.3451	-2.34	0.066	Negative	YE
5	BOC KENYA	12	-0.9702	-0.1115	0.1119	-1	0.365	Negative	N
6	CAR & GENERAL	12	3.512	0.5135	0.3943	1.3	0.25	Positive	N
7	CARBACID INVEST.	12	-0.0513	0.11389	0.05989	1.9	0.116	Positive	N
8	CMC HOLDINGS	12	-1.91	-10.519	5.576	-1.89	0.118	Negative	N
9	CROWN BERGER	11	-9.853	-3.271	1.056	-3.1	0.053	Negative	YE
10	DUNLOP KENYA	12	1.042	-0.1219	.4.39	-0.3	0.775	Negative	N
11	E.A. BREWERIES	12	3.255	0.2333	0.5986	0.39	0.713	Positive	N
12	E.A.CABLES	12	0.1399	-0.06292	0.02865	-2.2	0.079	Negative	YE
13	E.A. PACKAGING	12	2.88	-1.4774	0.7701	-1.92	0.113	Negative	N
14	EAAGADS	12	2.625	0.3271	0.4893	0.67	0.533	Positive	N
15	EXPRESS KENYA	12	13.84	-2.7143	0.8323	-3.26	0.022	Negative	YE
16	FIRESTONE E.A.	9	20.66	-3.128	1.677	-1.87	0.313	Negative	N
17	GEORGE W.	12	2.28	-0.511	0.9089	-0.56	0.598	Negative	N
18	KAPCHORUA	12	0.8079	0.1599	0.3608	0.44	0.676	Positive	N
19	KENYA OIL	12	12.29	-1.963	1.029	-1.91	0.115	Negative	N
20	KENYA N. MILLS	12	1.834	-0.2829	0.2495	-1.13	0.308	Negative	N
21	KENYA POWER	12	12.246	-1.2828	0.6318	-2.03	0.098	Negative	YE
22	MARSHALLS	12	3.854	0.5321	0.3576	1.49	0.197	Positive	N
23	NATION M. GROUP	12	-5.381	-0.7633	0.4425	-1.73	0.145	Negative	N
24	E.A. PORTLAND	12	5.17	-0.5264	0.1871	-2.81	0.037	Negative	YE
25	SASINI TEA & C.	12	-0.1391	-0.06332	0.0625	-1.01	0.358	Negative	N
26	STANDARD N.P.	12	-4.04	0.501	1.033	0.48	0.648	Positive	N
27	TOTAL KENYA	12	-5.292	-0.0796	0.2986	-0.27	0.801	Negative	N
28	UCHUMI SUPERM.	9	1.218	-0.0792	0.3797	-0.21	0.869	Negative	N
29	UNGA GROUP	12	0.757	-0.4479	0.2389	-1.88	0.12	Negative	NO
	PROFITABILITY			**CO-EF. -0.8569**	**SE-COEF. 0.2555**	**t-ratio -3.35**	**P 0.02**	**SIGN NEGATIVE**	**SIG. YES**

The hypothesized relationship was that profitability is negatively related to capital structure. At market level, the result show a negative relationship between profitability and leverage with a significant t- ratio of –3.35 . This could be due to the effect of the pecking order theory. This theory holds that firms follow a pecking order of incremental financing choices that places internally generated funds at the top of the order followed by debt and lastly equity. This finding is similar to Mateus and Balla (2002), who report a negative relationship between profit and leverage level in Portugal, and attributed this to pecking order theory. This is contrary to what Omondi, (1996), found out, that with more profit, there exist an incentive to invest more and hence more borrowing. It is also important to focus on the market practice because when there is a lot of domestic borrowing by the government, their securities are so attractive that most bank limit borrowing to other sector and therefore the negative relationship is highly supported. On individual company analysis, seventy six percent (76%) of the companies sampled have negative coefficient and this is in line with the average market result. The remaining twenty four percent have positive coefficient. The difference could be due to individual company characteristics. Overall, one is attempted to conclude that profitable companies at Nairobi stock exchange tend to borrow less.

4.3. Business risks

Lenders are particular about their risk exposure. Furthermore in efficient markets lenders as investors expect to be compensated for additional risk exposure. High business risk would suggest that the borrower might find it difficult servicing debt or that the borrower pay a premium for additional risk .

The result summarized on the table below show that at market level, the relationship between business risk and leverage is positive.

Regression results for the variable – Business risks

	COMP.	N.	CONST.	COEF	SE-coef	t- ratio	P	SIGN	SIG.
1	A.BAUMAN	12	-5.912	-0.0000094	0.0000055	-1.7	0.15	Negative	NO
2	BAMBUR CEMENT	12	-4.599	-0.00000065	0.00000031	-2.06	0.086	Negative	YES
3	B.A.T. KENYA	12	1.252	0.00000018	0.00000013	1.35	0.235	Positive	NO
4	BROOKE BOND	12	11.046	0.00000243	0.00000063	3.87	0.012	Positive	YES
5	BOC KENYA	12	-0.9702	-0.00000078	0.00000044	-1.8	0.132	Negative	NO
6	CAR & GENERAL	12	3.512	0.00000499	0.00000221	2.26	0.073	Positive	YES
7	CARBACID INVEST.	12	-0.0513	-0.0000002	0.00000057	-0.35	0.741	Negative	NO
8	CMC HOLDINGS	12	-1.91	0.00000174	0.00001188	0.15	0.889	Positive	NO
9	CROWN BERGER	11	-9.853	0.0000293	0.00000812	3.61	0.037	Positive	YES
10	DUNLOP KENYA	12	1.042	-0.00003786	0.00007131	-0.53	0.618	Negative	NO
11	E.A. BREWERIES	12	3.255	-0.00000039	0.00000021	-1.8	0.131	Negative	NO
12	E.A.CABLES	12	0.1399	0.00000037	0.00000046	0.8	0.458	Positive	NO
13	E.A. PACKAGING	12	2.88	0.0000057	0.00000505	1.13	0.31	Positive	NO
14	EAAGADS	12	2.625	0.000012	0.00001486	0.81	0.456	Positive	NO
15	EXPRESS KENYA	12	13.84	0.00001361	0.00000998	1.36	0.231	Positive	NO
16	FIRESTONE E.A.	9	20.66	-0.00000402	0.00000214	-1.88	0.312	Negative	NO
17	GEORGE W.	12	2.28	0.00000048	0.00000184	0.26	0.805	Positive	NO
18	KAPCHORUA	12	0.8079	0.00000156	0.00000183	0.85	0.433	Positive	NO
19	KENYA OIL	12	12.29	0.00000618	0.00000656	0.94	0.39	Positive	NO
20	KENYA N. MILLS	12	1.834	0.00000007	0.00000077	0.09	0.929	Positive	NO
21	KENYA POWER	12	12.246	0.00000015	0.00000022	0.67	0.532	Positive	NO
22	MARSHALLS	12	3.854	0.00000235	0.00000092	2.55	0.051	Positive	YES
23	NATION M. GROUP	12	-5.381	-0.00000096	0.0000024	-0.4	0.706	Negative	NO
24	E.A. PORTLAND	12	5.17	0.00000043	0.00000028	1.53	0.186	Positive	NO
25	SASINI TEA & C.	12	-0.1391	-0.00000012	0.00000013	-0.96	0.381	Negative	NO
26	STANDARD N.P.	12	-4.04	0.00003278	0.0000155	2.11	0.088	Positive	YES

27 TOTAL KENYA	12	-5.292	0.00000144	0.00000068	2.13	0.086	Positive	YES
28 UCHUMI SUPERM.	9	1.218	0.0000023	0.0000014	1.63	0.349	Positive	NO
29 UNGA GROUP	12	0.757	-0.0000003	0.00000102	-0.29	0.78	Negative	NO

	CO-EFF.	SE-COEF.	t-ratio	P	SIGN	SIG.
BUSN. RISK	0.00026	0.00017	1.55	0.182	POSITIVE	NO

However the t-statistics shows a relationship which is not significant. The P-value confirms the lack of the relationship. If the relationship was statistically significant, then the positive relationship suggest that firms attempt to borrow when the project is relatively risky.

Individual company analysis indicates that sixty six percent of the companies have positive coefficient while thirty four percent have negative coefficient. This is in line with the market result and confirms the capital structure bias among companies. Analysis done by Mateus and Balla, (2002), revealed a negative relationship between leverage and business risk in both Portugal and Hungary. They agued that lenders would usually regard a firm's risk (volatile earnings) as the result of poor management hence the difficulty in sourcing external funds by a firm. Such a view may not hold in countries where debt availability is limited

4.4.Growth

Firms require additional funding to to support its growth opportunities. Myers,(977) thesis was that under-investment imply a negative relationship between growth and long- term debt.

Regression results for the variable – Growth.

	COMP.	N.	CONST.	GROWTH CEOF.	SE-COEF	t- ratio	P	SIGN	SIG.
1	A.BAUMAN	12	-5.912	0.0006666	0.0008186	0.81	0.452	Positive	NO
2	BAMBUR CEMENT	12	-4.599	-0.0006424	0.0003871	-1.66	0.148	Negative	NO
3	B.A.T. KENYA	12	1.252	0.0031175	0.0007643	4.08	0.01	Positive	YES
4	BROOKE BOND	12	11.046	-0.0004664	0.0003013	-1.55	0.182	Negative	NO
5	BOC KENYA	12	-0.9702	0.000708	0.0002296	3.08	0.027	Positive	YES
6	CAR & GENERAL	12	3.512	0.0012546	0.000799	1.57	0.177	Positive	NO
7	CARBACID INVEST.	12	-0.0513	-0.0004704	0.0002088	-2.25	0.074	Negative	YES
8	CMC HOLDINGS	12	-1.91	0.001783	0.006084	0.29	0.781	Positive	NO
9	CROWN BERGER	11	-9.853	0.0004306	0.0005142	0.84	0.464	Positive	NO
10	DUNLOP KENYA	12	1.042	0.001377	0.002343	0.59	0.582	Negative	NO
11	E.A. BREWERIES	12	3.255	-0.0005135	0.0003304	-1.55	0.181	Negative	NO
12	E.A.CABLES	12	0.1399	0.0004875	0.0002516	1.94	0.11	Positive	NO
13	E.A. PACKAGING	12	2.88	0.007246	0.004459	1.63	0.165	Positive	NO
14	EAAGADS	12	2.625	0.000892	0.0007524	1.19	0.289	Positive	NO
15	EXPRESS KENYA	12	13.84	-0.001158	0.002896	-0.4	0.706	Negative	NO
16	FIRESTONE E.A.	9	20.66	-0.004591	0.003717	-1.24	0.433	Negative	NO
17	GEORGE W.	12	2.28	-0.000824	0.001088	-0.76	0.483	Negative	NO
18	KAPCHORUA	12	0.8079	0.0005341	0.0004023	1.33	0.242	Positive	NO
19	KENYA OIL	12	12.29	0.003116	0.003385	0.92	0.4	Positive	NO
20	KENYA N. MILLS	12	1.834	0.0005307	0.0005941	-0.89	0.413	Negative	NO
21	KENYA POWER	12	12.246	0.010693	0.004847	2.21	0.078	Positive	YES
22	MARSHALLS	12	3.854	-0.003982	0.000747	-5.33	0.003	Negative	YES
23	NATION M. GROUP	12	-5.381	-0.002301	0.004614	-0.5	0.639	Negative	NO
24	E.A. PORTLAND	12	5.17	0.0004093	0.0002173	1.88	0.118	Positive	NO
25	SASINI TEA & C.	12	-0.1391	-0.00007645	0.0000623	-1.23	0.274	Negative	NO
26	STANDARD N.P.	12	-4.04	-0.002549	0.005712	-0.45	0.674	Negative	NO
27	TOTAL KENYA	12	-5.292	-0.002848	0.001049	-2.71	0.042	Negative	YES
28	UCHUMI SUPERM.	9	1.218	0.003343	0.001943	1.72	0.335	Positive	NO
29	UNGA GROUP	12	0.757	0.000073	0.001388	0.05	0.96	Positive	NO

	CO-EFF.	SE-COEF	t-ratio	P	SIGN	SIG.
GROWTH	0.000488	0.00036	1.35	0.235	POSITIVE	NO

The hypothesized relationship for this variable was that growth is negatively related to leverage. At market level this study report an extremely weak relationship between leverage and growth. The t- statistic analysis indicates that the influence of growth variable on leverage is statistically insignificant for the market as a whole. The same is confirmed by the insignificant P- value. If t- ratio was significant, the argument for this result could be that firms with growth opportunities have a high demand for funds to finance their investments and tend to rely on borrowed funds.

Individual company analysis indicates that fifty two percent of the firms have positive relationship while fourty eight percent have negative coefficient and it is difficult concluding whether the relationship is negative or positive. This result supports the market result of a positive coefficient.

Omondi (1996), argued that as firms grow in size, they acquire more debt to finance new investment opportunities. This result seem to contradict those of Titman and Vessels, (1988), who predicted a negative result and argued that firms with greater growth opportunities have more flexibility to invest sub-optimally and expropriate wealth from bold holders to shareholders. Mateus and Balla, (2002), did not find any significantrelationship between growth and capital structure in both Hungary and Portugal.

4.5.Size

In finance, size is suggested as a useful variable in explaining firm behaviour. Large firms tend to enjoy higher rating by lenders. The evidence presented on the table below show that size is an important variable in explaining level of borrowing

Regression results for the variable -Size

	COMP.	N.	CONST.	COEF	SE-COEF.	t-ratio	P	SIGN	SIG.
1	A.BAUMAN	12	-5.912	8.801	3.052	2.88	0.034	Positive	YES
2	BAMBUR CEMENT	12	-4.599	5.751	2.665	2.16	0.074	Positive	YES
3	B.A.T. KENYA	12	1.252	-0.62	2.219	-0.28	0.791	Negative	NO
4	BROOKE BOND	12	11.046	-13.024	6.567	-1.98	0.104	Negative	NO
5	BOC KENYA	12	-0.9702	1.3879	0.5765	2.41	0.061	Positive	YES
6	CAR & GENERAL	12	3.512	-4.268	3.936	-1.08	0.328	Negative	NO
7	CARBACID INVEST.	12	-0.0513	0.124	0.2883	0.43	0.685	Positive	NO
8	CMC HOLDINGS	12	-1.91	3.62	35.31	0.1	0.922	Positive	NO
9	CROWN BERGER	11	-9.853	11.5	7.545	1.52	0.225	Positive	NO
10	DUNLOP KENYA	12	1.042	-0.667	7.29	-0.09	0.929	Negative	NO
11	E.A. BREWERIES	12	3.255	-2.881	2.221	-1.3	0.251	Negative	YES
12	E.A.CABLES	12	0.1399	-0.1692	0.4146	-0.41	0.7	Negative	NO
13	E.A. PACKAGING	12	2.88	-3.68	8.015	-0.46	0.665	Negative	NO
14	EAAGADS	12	2.625	-4.893	5.54	-0.97	0.377	Negative	NO
15	EXPRESS KENYA	12	13.84	-16.878	7.092	-2.38	0.063	Negative	YES
16	FIRESTONE E.A.	9	20.66	-21.81	13.29	1.29	-1.64	Negative	NO
17	GEORGE W.	12	2.28	-1.984	4.362	-0.45	0.668	Negative	NO
18	KAPCHORUA	12	0.8079	-1.361	1.03	-1.32	0.211	Negative	NO
19	KENYA OIL	12	12.29	-15.31	13.4	-1.14	0.305	Negative	NO
20	KENYA N. MILLS	12	1.834	-1.827	6.674	-0.27	0.795	Negative	NO
21	KENYA POWER	12	12.246	-13.96	8.975	-1.56	0.181	Negative	NO
22	MARSHALLS	12	3.854	-4.65	1.665	-2.44	0.059	Negative	YES
23	NATION M. GROUP	12	-5.381	8.584	8.829	0.97	0.376	Positive	NO
24	E.A. PORTLAND	12	5.17	-6.407	3.772	-1.7	0.15	Negative	NO
25	SASINI TEA & C.	12	-0.1391	0.3297	0.5018	0.66	0.54	Positive	NO
26	STANDARD N.P.	12	-4.04	5.59	20.04	0.28	0.792	Positive	NO
27	TOTAL KENYA	12	-5.292	7.427	3.743	1.98	0.104	Positive	NO
28	UCHUMI SUPERM.	9	1.218	-1.691	4.075	-0.41	0.75	Negative	NO
29	UNGA GROUP	12	0.757	-0.794	9.648	-0.08	0.938	Negative	NO

	CO-EFF.	SE-COEF.	t-ratio	P	SIGN	SIG.
SIZE	-0.824	1.091	-0.76	0.484	NEGATIVE	NO

Size of a firm is hypothesised to be negatively related to capital structure. At market level this research predicts that size is negatively related to capital structure. However the t-statistic indicates that the result is insignificant . P- values also confirms the insignificant result. If t statistics was significant then the findings is in line with the theory.

This finding suggest the existence of information asymmetries in the Kenyan Market in that investors are more aware of what is going on at larger firms as opposed to smaller firms. The larger firm is also in a better position to diversify their investment project and hence limit their risks due to cyclical fluctuations hence a lower financial distress. They therefore have an upper hand to compete and secure the limited debt finance available in the market. Similar results were reported by Mateus and Balla, (2002), In their study in Hungary.

Considering individual company analysis, it is clear that a bias exist with regard to this variable because sixty six percent have negative coefficient while thirty four percent have positive coefficient which is contrary to the general market result. This is an indication that companies have different

strategies in their capital structures choices. It could also mean that companies enjoy different rating by investors specifically lending.

4.6.Non debt tax shield

In finance literature it is suggested that the main advantage for borrowing is to take advantage of tax shield. This would suggest that firms with tax-shield would rely more on borrowed funds. The result are summarised on the table below:

Regression results for the variable – Non debt tax-shield.

	COMP.	N.	CONST.	COEF	SE- COEF	t-ratio	P	SIGN	SIG
1	A.BAUMAN	12	-5.912	5.3	6.127	0.87	0.423	Positive	N
2	BAMBUR CEMENT	12	-4.599	5.751	2.665	2.16	.0.074	Positive	YE
3	B.A.T. KENYA	12	1.252	0.477	1.371	0.35	0.742	Positive	N
4	BROOKE BOND	12	11.046	-3.202	3.214	-1	0.365	Negative	N
5	BOC KENYA	12	-0.9702	0.8576	0.3969	2.16	0.083	Positive	YE
6	CAR & GENERAL	12	3.512	10.231	8.281	1.24	0.272	Positive	N
7	CARBACID INVEST.	12	-0.0513	1.2428	0.6071	-2.05	0.096	Negative	YE
8	CMC HOLDINGS	12	-1.91	-12.74	24.33	-0.52	0.623	Negative	N
9	CROWN BERGER	11	-9.853	43.99	14.83	2.97	0.059	Positive	YE
10	DUNLOP KENYA	12	1.042	-6.5	20.56	-0.32	0.765	Negative	N
11	E.A. BREWERIES	12	3.255	-9.81	3.394	-2.89	0.034	Negative	YE
12	E.A.CABLES	12	0.1399	0.4143	0.3279	1.26	0.262	Positive	N
13	E.A. PACKAGING	12	2.88	-0.099	9.371	-0.01	0.992	Negative	N
14	EAAGADS	12	2.625	23.45	13.25	1.77	0.137	Positive	N
15	EXPRESS KENYA	12	13.84	1.75	4.542	0.39	0.716	Positive	N
16	FIRESTONE E.A.	9	20.66	-7.349	5.689	-1.29	0.419	Negative	N
17	GEORGE W.	12	2.28	-2.381	4.345	-0.55	0.607	Negative	N
18	KAPCHORUA	12	0.8079	1.306	1.94	0.67	0.531	Positive	N
19	KENYA OIL	12	12.29	5.54	11.13	0.5	0.64	Positive	N
20	KENYA N. MILLS	12	1.834	-0.92	1.854	-0.5	0.641	Negative	N
21	KENYA POWER	12	12.246	22.89	11.46	2	0.102	Positive	YE
22	MARSHALLS	12	3.854	-27.518	4.675	-5.89	0.002	Negative	YE
23	NATION M. GROUP	12	-5.381	-11.208	7.125	-1.57	0.177	Negative	N
24	E.A. PORTLAND	12	5.17	-2.09	2.016	-1.04	0.347	Negative	N
25	SASINI TEA & C.	12	-0.1391	-0.9869	0.4866	-2.03	0.098	Negative	YE
26	STANDARD N.P.	12	-4.04	-7.566	7.274	-1.04	0.346	Negative	N
27	TOTAL KENYA	12	-5.292	8.093	7.486	1.08	0.329	Positive	N
28	UCHUMI SUPERM.	9	1.218	4.681	3.704	1.26	0.426	Positive	N
29	UNGA GROUP	12	0.757	2.399	5.192	0.46	0.663	Positive	N

	CO-EFF.	SE-COEF.	t-ratio	P	SIGN	SIG.
MKT.NON DEBT T.S.	-4.844	2.225	-2.18	0.081	NEGATIVE	YES

At market level there exist a positive relationship between non-debt tax shield and the leverage. The t-statistics of 2.18 indicates a highly significant relationship, this significant result that is confirmed by the strong p-value.

This finding confirms the result obtained by Modigliani and Miller (1958). They argues that the main incentives for borrowing is to take advantage of interest tax shields, but this will only hold if the firm has enough taxable income to justify debt financing.

The economic situation has not been favorable in this country for many companies, many have made losses and this could have eroded the incentives due to lack of enough taxable income to justify debt financing. This has further been reduced by the presence of depreciation in the financial statement, which is one of the non-debt tax shields. This justifies the negative relationship predicted by this study.

However, individual company analysis predicts that the effect of this variable vary from company to company, fourty eight percent of the companies have negative coefficient while fifty two percent have positive coefficient.

The market variables

SUMMARY OF MARKET VARIABLES

PREDICTOR	CO-EFFICIENT	SE-COEF.	T	P	sign	SIGNIFICANT
CONSTANT	1.0751	0.7659	1.4	0.219	**Positive**	**NO**
MKT. TANGIBILITY	0.0981	0.149	0.6	0.54	**Positive**	**NO**
MKT. PROFITABILITY	-0.8569	0.2555	-3.35	0.02	**Negative**	**YES**
MKT.BUNS, RISK	0.00000026	1.7E-07	1.55	0.182	**Positive**	**NO**
MKT. GROWTH	0.0004883	0.0003621	1.35	0.235	**Positive**	**NO**
MKT.NON DEBT.T	-4.844	2.225	-2.18	0.081	**Negative**	**YES**
MKT. SIZE	-0.824	1.091	-0.76	0.484	**Negative**	**NO**

R-sq 94.1% R-sq (adjusted) = 87.1%

The r- square is the proportion of variability in the dependent variable accounted for by the independent variable

Both R- squared and adjusted R shows a very strong result of ninety four percent (94%) and eighty seven percent (87%) respectively of the relationship between all the variables and leverage. This confirms that asset tangibility , profitability, business risk (earnings fluctuations), growth, size and non-debt tax shield are valid variables in the capital structure predictor model used in this study.

Some variables which include business risk, growth, and size give a relationship which is contrary to the theorized relationship. This can be attributed to the unique economic factors that affect Kenya. These may include high domestic borrowing by the Government hence funds mat not be available for borrowing no matter how good the firm may be rated in the market by lenders. Other factors may also include political interference and the existence of zombie institutions

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATION.

5.1 CONCLUSION.

The above findings give an insight into the determinants of companies listed at Nairobi stock exchange. The findings enable us to conclude that profitability and non-debt tax shield are the most significant variables in determining leverage. This predicts the effect of pecking order theory and lack of borrowing incentives in the market. The influential variables also vary from company to company indicating that individual firm specific factors play a role in determining capital structure.

5.2 LIMITATIONS OF THE STUDY

The predictor model under this study is not absolutely accurate. It is affected by the dynamic nature of capital structure and rapid global changes on the factors which affect the influential variables.

5.3 SUGGESTION FOR FURTHER STUDIES

The strong significant relationship between profitability and leverage indicates that there's an element of information asymmetry in this market hence the possibility of the pecking order theory explaining capital structure in this country.

A study should therefore be done to investigate whether and to what extent the main capital structure theories can explain capital structure choice of Kenyan firms.

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APPENDIX I

THE POPULATION

COMPANIES LISTED ON THE NAIROBI STOCK EXCHANGE
FROM 1989 - 2001

1 A.BAUMAN
2 ATHI RIVER MINING
3 BAMBUR CEMENT
4 B.A.T. KENYA
5 BROOKE BOND
6 BOC KENYA
7 CAR & GENERAL
8 CARBACID INVEST.
9 CMC HOLDINGS
10 CROWN BERGER
11 DUNLOP KENYA
12 E.A. BREWERIES
13 E.A.CABLES
14 E.A. PACKAGING
15 EAAGADS
16 EXPRESS KENYA
17 FIRESTONE E.A.
18 GEORGE W.
19 KAPCHORUA
20 KENYA N. MILLS
21 KENYA AIRWAYS
22 KENYA POWER
23 LIMURU TEA
24 MARSHALLS
25 NATION M. GROUP
26 E.A. PORTLAND
27 REA VIPINGO
28 SASINI TEA & C.
29 TOURISM -SERENA
30 STANDARD N.P.
31 TOTAL KENYA
32 UCHUMI SUPERM.
33 UNGA GROUP
34 KAKUZI TEA& C.
35 OL PEJETA
36 HUTCHINGS B.
37 LONRHO MOTORS
38 PEARL DRYCL.
39 KENYA OIL
40 KENYA ORCHARDS
41 BARCLAYS BANK
42 THETA GROUP
43 CITY TRUST
44 CFC BANK
45 DIAMOND T. BANK
46 I.C.D.C. INVEST.
47 HOUSING FINANCE
48 JUBILEE INS.
49 KENYA C. BANK
50 NATIONAL BANK
51 NIC BANK
52 PAN AFRICA INS.
53 STAN. CH.BANK

APPENDIX II

	COMPANY	NUMBER OF YEARS
1	A.BAUMAN	12
2	BAMBUR CEMENT	12
3	B.A.T. KENYA	12
4	BROOKE BOND	12
5	BOC KENYA	12
6	CAR & GENERAL	12
7	CARBACID INVEST.	12
8	CMC HOLDINGS	12
9	CROWN BERGER	11
10	DUNLOP KENYA	12
11	E.A. BREWERIES	12
12	E.A.CABLES	12
13	E.A. PACKAGING	12
14	EAAGADS	12
15	EXPRESS KENYA	12
16	FIRESTONE E.A.	9
17	GEORGE W.	12
18	KAPCHORUA	12
19	KENYA OIL	12
20	KENYA N. MILLS	12
21	KENYA POWER	12
22	MARSHALLS	12
23	NATION M. GROUP	12
24	E.A. PORTLAND	12
25	SASINI TEA & C.	12
26	STANDARD N.P.	12
27	TOTAL KENYA	12
28	UCHUMI SUPERM.	9
29	UNGA GROUP	12