

**A STUDY OF THE INFLUENCE OF THE CORPORATE TAX RATE  
ON THE CAPITAL STRUCTURE OF QUOTED COMPANIES AT  
THE NSE**

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**Declaration**

This research project is my original work, and has not been presented for any degree award in any other University.

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### **Dedication**

To my late Grand Parents Mr. Adrian Chibutsa and Mrs. Philomena Shinjili, for your love and support.

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The pursuit of knowledge is a humbling experience; it makes one realize just how much he doesn't know.

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## **Abstract**

The corporate tax rate has been decreasing from the rate of 42.5% in the year 1990 to 30% in the year 2003. These changes would have an implication on the capital structure of companies since the Kenyan tax System is based in large part on formal lables and only indirectly on underlying asset characteristics.

This study sought to establish whether these reductions had an effect on the capital structure of quoted companies. It further sought to determine whether the Kenyan financial decision makers were sensitive to the reductions in the tax rate.

The findings of the study revealed that there was a positive relationship between the corporate tax rate and the capital structure of quoted companies. This is an indication that the reductions in the tax rate led to the reduction in the use of debt; and therefore concluded that the Kenyan financial decision makers were sensitive to the changes in the tax rate.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background to the study**

The determination of an optimal capital structure has been one of the most contentious topics in the finance literature. Although a lot of studies have been done on the area of capital structure, the puzzle of how firms make capital structure decisions is unresolved (Brealy and Myers, 1988).

Capital structure refers to the combination of debt and equity capital that a firm uses to finance its long-term operations. The value of a firm depends upon its expected earnings stream and the rate used to discount this stream. The rate used to discount earnings stream is the firms required rate of return or the cost of capital. Capital structure decision can thus affect the value of the firm either by changing the expected earnings or the cost of capital or both. An optimal capital structure would be obtained at the combination of debt and equity that maximizes the total value of the firm (Value of share plus value of debt) or minimizes the weighted cost of capital.

The various capital structure theories address the theoretical relationship that exists between the value of the firm and the capital structure. The traditional view which refers to finance theorists before 1958 (Kamere 1987), argue that the value of a firm can be maximized by minimizing the cost of capital through the careful use of debt. The basis of this argument is that at low levels of debt, increased leverage does not increase the cost of debt hence an incentive to borrow exists. This is the case until a certain level when the



cost of debt begins to rise. Under these circumstances, the weighted average cost of capital curve is expected to decline to a minimal and then start rising implying that an optimal capital structure exists and it is at this point that the value of the firm is maximized (Omondi 1996).

Regarding the cost of equity, traditional theorists argue that borrowing at first increases the expected return on equity at a slow rate which then shoots up with excessive borrowing (Omondi 1996). The traditional theory has been complemented with encouraging more analysis in the contemporary ways of looking at capital structure for example signaling theory (Ross 1977) and the Agency theory (Jensen 1976)

Modigliani and Miller in 1958 developed a new financial theory in which they concluded that the capital structure of a firm is irrelevant to its value in a world without corporate taxes given the assumptions that there exists a homogenous risk class, homogenous expectations, capital markets, risk less, debt and zero growth. These findings were reaffirmed with the aid of the arbitrage process, which refers to the buying, and selling of identical assets at different prices. In the arbitrage process, if two companies differed only in the way they were financed and in their total market values, then investors would sell their stock of the overvalued firm and buy those of the undervalued firm. This process would continue until the two firms' stock prices had the same market value (Omondi 1996).

In 1963 Modigliani and Miller revised the limiting assumption of a zero corporate tax rate. On this new basis they concluded that leverage would increase a firm's value. Interest paid to debt holders is treated as a tax-deductible expense. Dividends paid to share holders on the other hand are not tax deductible. Thus, unlike dividends, the return to debt holders is not subject to the taxation at the corporate level. This makes debt financing advantageous. This proposition acknowledged the relevance of the capital structure. MM show that the value of the firm will increase with debt due to the deductibility of the interest charges for tax computation and the value of the levered firm will be higher than the unlevered firm. The value of the levered firm is equal to the value of the unlevered firm plus the present value of the interest tax shield.

$$V_L = V_U + TD$$

This new view led to a focus on the relationship between corporate tax and the capital structure. This project set out to verify if tax changes affect corporate financial behavior of quoted companies in the Nairobi Stock Exchange. The main proxy to represent corporate financial behavior will be the capital structure.

Capital structure theories are built on cost concepts that balance various costs and benefits of debt and equity. These include tax benefits of debt and costs of financial distress (Modigliani and Miller, 1963), Business risk (probability of financial distress) Myers (1984 a and b), Bankruptcy costs (Tangible versus intangible assets), Agency costs of debt and equity finance (Jensen and Meckling, 1976, Myers 1977, Stalz 1990, Hart and Moore, 1995) Asymmetric information (Myers and Majluf 1984), Product/Input market forces (Brander and Lewis 1986) and corporate control.

The definition of leverage is the ratio of total debt to capital, where capital is defined as the total debt plus equity. Short-term debt is included because it constitutes a significant proportion of total debt employed by firms. This measure of leverage looks at the capital employed and thus best represents the effects of past financing decisions. It most directly relates to the agency problems associated with debt, as suggested by Jensen and Meckling (1976) and Myres (1977). This is the definition that is most suitable for this study, as it will bring out the different sizes of interest deductible for tax purposes given different tax rates.

This research narrowed on the influence of the tax rate on the capital structure of quoted companies. For companies, interest payments are tax deductible, but returns to equity investors are not. Dividends are subject to double taxation, and even returns to equity in form of capital gains are subjected to at least one level of tax, at the corporate level. Thus, there appears to be a strong incentive to use debt to fund the firm's activities. Some scholars have embraced this belief perhaps most prominent is Stiglitz (1973), who suggested that firms should use equity to cover the capitalization of ideas thereby avoiding immediate capital gains taxes, but that debt should support any new investment by existing enterprises.

This research addressed the issue of the corporate tax rate and the influence it has on the capital structure of quoted companies.

## **1.2 Statement of the problem**

The Kenyan tax system and most of the other countries tax systems are based in large part on formal labels, and only indirectly on underlying asset characteristics. Thus, equity faces one set of tax rules and debt another, often more favorable. This disparity in the tax treatment raises the need of analyzing the association between the tax rate and the level of leverage.

In the presence of different tax treatments for the various sources of finance, financial policy affects the user cost of capital and therefore investment. Financial policies that are tax sensitive mostly involve making decisions regarding the capital structure, ownership structure and capital budgeting decisions.

This project's main focus is the influence of corporate tax rate on the capital structure of quoted companies. With regard to the source of finance, the Kenyan tax strongly favors debt rather than equity capital mainly because it provides complete deductibility of interest expenses and no relief for the opportunity cost of equity capital. If the Kenyan policy makers take into consideration the bias against equity financing by the present tax system, then in the long run there might be a negative impact in the allocation of resources. This will arise because policy makers will pursue financial decisions that favor debt financing over equity financing. Following the changes in tax rate from 45% to 30% from 1989 to date, corporate behavior is logically expected to change. Lower tax rate makes issuing equities or retaining earnings less costly than before. Firms are expected to have adapted their behavior until their capital structure reaches the composition consistent to the relative cost of the two sources of finance caused by lowering of the tax

rate. The major challenge involved identifying whether the Kenyan policy makers have been sensitive to these reductions in corporate tax rates. The second major challenge involves establishing the optimal trade-off between alteration of the capital structure and the tax benefit such alteration will generate.

Numerous studies have been carried out to investigate the determinants of capital structure. A local study done by Odinga (2003), he used local data available at the Nairobi Stock Exchange to investigate the variables that affect the capital structure decision. He concluded that profitability and non-debt tax shield are the most significant variables in determining leverage. His study however had a major limitation; he did not investigate the influence of the tax shield as a variable that affects the capital structure decision. Abai(2003) did a study to investigate the determinants of corporate debt maturity structure for companies quoted at the NSE, he identified effective income tax rate as one of the determinants. A recent study by Musili(2005) in which he sets out to determine the factors that motivate management of industrial firm's in choosing their capital structure; He concluded that industrial firms are more likely to follow a financing hierarchy than to maintain a target debt to equity ratio. Onsomu (2003), set out to determine if there is a relationship between debt and the value of Kenyan firms quoted at the NSE she concluded that there was no significant relationship between debt and the value of the firm. Omondi (1996) did a study on the capital structure in Kenya, it was an extension of an earlier study done by Kamere(1987). Using local data from the NSE he concluded that turnover, growth, asset structure and age are determinants of capital structure in Kenya. Although many of these studies examine the determinants of capital

structure of firms, none of them investigates the influence of tax and the tax rate on the capital structure decision. The only study that has addressed the influence of corporate tax on capital structure is by Minga Negash (2001). In Kenya, there has been no empirical investigation into this subject. However, the studies in Kenya identify in passing the role of tax in capital structure decision. Although these papers provide a useful insight into the firm's capital structure determinants in this case the corporate tax rate. These earlier studies set a stage for the need to identify whether the tax rate influences the capital structure.

### **1.3 Objective of the study**

To ascertain the relationship between capital structure and the tax rate for companies quoted on the Nairobi Stock Exchange.

### **1.4 Research Hypothesis**

The capital structure of quoted companies is influenced by the corporate tax rate.

### **1.5 Justification of the study**

Taxation is a concept that financial decision makers have to learn to live with. This is because it is a concept that is not optional and its effects on a firm depend largely on the financial decisions of the firm.

The findings of this project will assist in answering the following questions;

- I. Does the corporate tax rate have an effect on the capital structure of quoted companies?

- II. Are the Kenyan financial decision makers sensitive to the influence of corporate tax rate while making capital structure decisions?
- III. Is there an optimal corporate tax rate where the managers are indifferent on the source of financing to use on quoted firms?

The answers to these questions will have will have a two-pronged approach to solving the disparities that are caused by the tax treatment of debt and equity. The findings of the study may lead to one or both of the following key approaches being adopted;

- I. Financial managers will be more sensitive to the influence that the corporate tax rate has to the decisions they make with regard to the capital structure of quoted companies. Financial Managers will further identify whether Miller's (1977) capital structure irrelevancy is a feasible firm level policy.
- II. Alternatively the government policy makers will pursue tax reforms that will influence the corporate financial policy; in this regard tax reforms will be aimed at eliminating bias against equity financing by quoted companies and other firms.
- III. Scholars who will study the Capital structure theory will be made aware of the association between the corporate tax rate and the capital structure of quoted companies.

## **Chapter Two**

### **Literature Review**

#### **2.1 The concept of capital structure.**

The term capital structure represents the proportionate relationship between the different forms of long term financing. Funds used for firms operations may be generated internally or externally. When raising funds externally, firms choose between equity and debt. Most of the effort of financial decision-making process is centered on the determination of the optimal capital structure of a firm. Kochhar (1997) defines capital structure as a mixture of financial liabilities (Debt and Equity) that is used to finance the operations of a firm. Different theories have been proposed to explain the optimal mix of debt and equity. The theories suggest that firms select their capital structure depending on attributes that determine the various costs and benefits associated with debt and equity financing. Explanations vary from the irrelevancy hypothesis (M&M 1958) to the optimal capital structure where the cost of capital is minimized and the value of the firm maximized.

#### **2.2 Theories of capital structure.**

Various models have been proposed in finance literature to guide between the choice of debt and equity. These models are based on the benefits and costs associated with each source of finance. The greatest assumption that underlies each theory is that the decision maker has a need to minimize costs and maximize shareholders wealth.



### **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 maximizes the value of the firm Brealy and Myers (1998). 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) translates into increase in the value of the firm. It is this benefit that creates borrowing incentives to firms. However, borrowing will continue up to 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.

Brealy and Myers (1998) observe that this argument holds because investors who hold debt are informed 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 that they demand a higher return.

Alexander (1963) better explains the fact that debt funds are cheaper than equity funds carries the clear implication that the cost of debt plus the increased cost of equity together on weighted basis will be less than the cost of equity, which existed on equity before debt financing. In other words the weighted average costs of capital will decrease with the use of debt.

Solomon (1963) supports the traditional position by asserting that companies in various industry groups appear to use leverage as if there is some optimal range appropriate to each group while significant inter company differences debt ratios exist within each industry, the average use of leverage by industrial groups tend to follow consistent pattern over time. This implies that there must be some significant relationship between debt and the value of the firm. Otherwise the selection of debt levels could be random.

The validity of the traditional view is questioned on the ground that the market value of the firm depends upon its net operating income and risk attached to it. The form of financing does not change net operating income nor the risk attached to it but simply the way in which the income is distributed between equity-holders and debt-holders (Brealey and Myers 1998).

Modigliani and Miller (1958), criticize the traditional view on the ground that the assumption that the cost of equity remains unaffected by leverage up to some reasonable limit does not provide sufficient justification for such an assumption. They do not accept the contention that moderate amounts of debt in 'sound' firms do not really add very much to the 'riskiness' of the share.

However, the traditional view represents a logical appeal and should be appreciated for prompting the kind of vigorous analysis that MM subjected capital structure choice to. According to Omondi (1996), the notions of traditional view have been subjected to more abstract reasoning and analysis and some contemporary ways of looking at capital

structure for example the signaling theory (Ross,1977) and the Agency theory (Jensen 1976).

Pandey (1999) asserts that the argument of traditional theorists that an optimum level structure exists can be supported on two counts: the tax deductibility of interest charges and Market imperfections. Therefore, there is no doubt that traditional theorists are important contributors on the debate about financing choices.

### **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 shareholders.

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 (Omondi, 1996). 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 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 provided it 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 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.

### **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 follows a policy of one hundred percent debt financing.

The underlying rationale for the M&M argument is that the value of the firm is determined solely by the Non current assets and net current assets section of the balance sheet i.e., by what is usually referred to as the company's investment policy. The economic substance of the firm is unaffected whether the liability side of the firm's balance sheet is sliced into more or less debt. To increase the value of the firm, it must invest in additional projects with positive net-present values.

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.

### **Modern Theories of Capital structure**

Modern theories have been advanced to try and explain the factors that affect capital structure. 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 have been advanced as useful in explaining corporate usage of debt. These theories identify other factors apart from the tax advantage of debt that explain a firm's capital structure. Some of these theories and factors are discussed below.

### **Business risk (Probability of financial distress) and Capital structure**

Business risk is the first of two determinants of the costs of financial distress, according to Myers (1984 a and b). If one multiplies the costs of bankruptcy (which differ from industry to industry) by the probability of financial distress (not just bankruptcy, because indirect costs can be incurred even if a firm recovers), one obtains the expected cost of financial distress. Financial distress has been defined as the disruption of normal operating and financial conditions caused by impending insolvency (Emery, 1998). Companies should then balance this cost against the tax benefits of debt in this static approach to obtaining the optimum leverage ratio.

The variability of cash flows is at the heart of business risk. The greater the fluctuations in a company's cash flows, the greater the chance it will be unable to meet its obligation

in any given period. Firms with steadier cash flow will be able to support higher debt levels than riskier firms, all other factors being equal. An important point to note is that shareholders bear the costs of adjusting the firm's level of risk every time risky debt is issued. This is so because the market demands a premium to buy the bonds of risky firms; on average, that premium covers expected bankruptcy costs.

Financial distress costs will affect both the cost of debt and the cost of equity. If a firm becomes bankrupt, financial distress costs will fall mostly on the bondholders since equity holders can lose nothing more than their original investment of equity investors will have largely disappeared (Ibid, 2000). Financial leverage increases the probability of financial distress and hence the cost of debt capital increases.

On the basis of his study, Altman (1984) found out that bankruptcy costs often exceed 20% of firm value. He further observed that costs of financial distress are peculiar to leveraged firms only and they can be high especially as the level of debt rises. Contrary, Emery (1998) observes that any company with fixed costs becomes financially distressed when its cash inflows are insufficient to cover its capital structure. Therefore even unleveraged firms can face financial distress. Haugen and Seubet (1978) in their study concluded that bankruptcy costs are not sufficient to influence capital structure.

### **Agency costs and Capital structure**

Agency problems result when members of one group of stakeholders (such as managers) place their own interests before the interests of the group they represent (such as the

stakeholders). How well the company controls the losses associated with the agency problems (either through incentive plans, monitoring, or covenants) can have a dramatic impact on its capital structure and value. As Mehran(1992) explains: “Although [the findings presented] do not necessarily suggest that agency theory provides a complete explanation for corporate capital structure, they do indicate that any theory that ignores agency issues is seriously incomplete.

Bondholders are protected by some covenants against the possibility of managers trying to take advantage of them. According to Jensen (1976) these covenants hamper the corporation’s legitimate operations to some extent. He further puts it that the costs of lost efficiency plus those incurred by monitoring the covenants are what are referred to as agency costs. Agency costs increases the cost of debt and at the same time reduces the value of equity as noted by Musili (2005).

Kamere (1987) noted that agency problems may bring about an optimal ratio of debt and equity financing when agency costs related to debt and equity financing are considered. Costs associated with protective covenants are substantial and rise with the amount of debt financing. Shareholders incur monitoring costs to ensure manager’s actions are based on maximizing the value of the firm. Jensen and Meckling (1976) noted that with increasing costs associated with higher levels of debt and equity, an optimal combination of debt and equity might exist that minimizes total agency costs.



## **Signaling Theory and Capital structure**

Ross (1978) introduced signaling theory to finance in which he suggested that managers can use capital structure as well as dividends to give some signals about the firm's future prospects. More specifically, outsiders may interpret increasing the amount of debt in the firm's capital structure as a sign of confidence in a firm's future.

Kamere (1987) notes that signaling is closely related to agency problem in that the use of a firm's capital structure to convey information to the market about a firm's profitability is made possible by failure on the part of principals to control actions of management fully. Harris and Raviv (1990) contend that in general, managers do not always behave in the best interest of investors. Debt according to them serves this purpose by offering creditors the option to force the firm into liquidation and it also generates information about these aspects.

Therefore, the expectation is that a debt equity ratio should be balanced between the demands of the firm and the speculations of the investors and the general public about the firm's prospects.

## **The Trade off Theory of Capital Structure**

Myers (1984) noted that the theories of capital structure don't seem to explain the actual financing behavior. He therefore ushered two ways of thinking which he identified as static trade off framework and pecking order framework. In the Trade off theory of capital structure, Myers (1984) draws extensively from the work related to MM papers in

which the firms' tradeoff the benefits of debt financing (favorable corporate tax treatment) against higher interest rates and bankruptcy costs. "A firms' optimal debt ratio is determined by a trade off of the costs and benefits of borrowing, holding the firm's assets and investment plan constant" (Ibid 2000). This implies that an optimal capital structure is a result of balancing the value of interest tax shields against various costs of bankruptcy or financial distress.

The trade off theory contrasted MM (1963) by implying that, in real world, firms rarely use 100 percent debt. The primary reason is that firms limit their use of debt to reduce the probability of financial distress (bankruptcy) and also that interest rate on debt becomes prohibitively high at high debt levels. (Musili, 2005).

### **The Pecking Order Theory of Capital Structure**

The pecking order model, argues that adverse selection issues in raising funds by different methods dominate other considerations in the tradeoff model such that a hierarchy of funds results. Firms will use internal funds first, then debt and only when such options are exhausted will they resort to using new equity finance.

Under the pecking order model, developed by Myers (1984) and Myers and Majluf (1984), there is a strict ordering or hierarchy of sources of finance. These results from adverse selection issues that arise when the firm has more information about its value than providers of funds. These adverse selection issues are absent when retained earnings are used as the marginal source of funds and are greater for equity than debt finance.

Providers of finance therefore require a risk premium that is greater for equity than debt finance. The result is that firms will have a preference for internal sources of funds followed by debt and then, when such sources are exhausted, equity finance will be used. An implication of the pecking order approach is that firms do not have a target level of leverage and their actual level of debt essentially responds to the difference between investment and retained earnings (Benito, 2003). The pecking order model implies that leverage is decreasing in company cash flow or profitability and increasing in investment, *ceteris paribus* (Benito, 2003). The availability of internal funds, through cash flow or current profitability, implies that firms have less need to make recourse to external debt, implying a lower debt ratio. Moreover, for a given level of cash flow the amount of debt will be increasing in the investment being undertaken by the firm. The important observation is that both of these predictions are in contrast to those described above for the tradeoff model. However, in a refined (i.e. non-static) pecking order model capital structure decisions are influenced by future as well as current financing costs. In this context, firms may wish to maintain a capacity for additional debt with larger expected investments implying lower current indebtedness. This implies the importance of controlling for investment opportunities. A consideration of the relation between debt and growth opportunities is also of interest in its own right. A case for expecting a positive relation (particularly when the debt ratio is measured at book values) could be expected, especially under the pecking order model. As growth opportunities increase the demand for funds, this may mean that for given availability of internal funds, additional external funds are required including additional debt.

## 2.3 Major Determinants of Capital Structure Choice

There are various attributes that different theories of capital structure suggest may affect the firms' capital structure decision. These attributes according to Titman and Wessels (1988) are denoted as non-debt tax shields, asset structure, growth, uniqueness, industry classification, size, earnings volatility, and profitability. This study will explore each determinant and identify other determinants that have been established in recent studies.

### **Non-debt tax shield (Corporate Tax and Capital Structure relationship)**

Taxes do not only influence the extent of leveraging up but also affect the type of security that firms prefer to issue. For instance Carter and Manzon (1995) show that firms make greater use of redeemable preference shares if they have lower marginal tax rates. This finding supports the proposition that firms cannot make efficient use of tax shields prefer to issue a security that is tax favored in the hands of the holder. Alford(1993) also shows that firms issue convertible preferred stocks when they cannot make efficient use of debt related tax shields.

Related to this is the size of the tax rate itself. Intuitively if interest is tax deductible, then the size of the shield,  $T_c D^*$  (where  $D^* = r_d D / K_d$ ,  $r_d$  is interest rate and  $D$  is the face value of debt,  $K_d$  is the cost of risk free debt) will be altered. That is, the gain from leverage will be affected by the extent of the movement of  $T_c$ . This implies, for instance, a reduction in the (top) statutory corporate tax rate reduces the amount of cash outflow. Yet the value formula  $V_L = V_U + T_c B^*$  predicts the reduction in  $V_L$  irrespective of whether  $T_c$  is defined as statutory, effective, top tax rate or marginal tax rate. Further,  $T_c B^*$  can be

linear as in Modigliani and Miller or nonlinear as in Talmore, Haugen and Barnea (1985). As noted above, irrespective of the type of benefit function one envisages, the theory predicts a positive association between the tax variable (marginal tax) and the size of the debt (cumulative or incremental). Further, the model envisages a steady state or a long-run equilibrium. Few studies have been able to corroborate this prediction. For instance Fama and French (1998) find the opposite. They reported that the tax effect of debt financing does significantly affect the firm value. Gupta and Newberry (1997) reported that effective tax rates (ETRs) are negatively associated with leverage. Nonetheless, works that did not report positive association are viewed as anomalous results, often criticized on the ground of poor model formulation or the researchers' inability to recognize the problem of endogeneity of the tax status of firms or both. Further, the proper proxy for the tax variable (marginal or effective) has never been properly articulated.

Kale and Noe (1992) reported that corporate leverage ratios have not changed very much over time. They state that by allowing the cost of financial distress to be related to the size of the firm's tax shield, it can be shown that when financial distress costs vary with leverage gains, the optimal level of debt will be insensitive to changes in the corporate tax rate. In contrast Dotan and Ravid (1985) state that tax is endogenous in leverage and investment decisions. Graham, Lemmon and Schallheim (1998) study of the association between debt, lease and taxes provides evidence that shows the endogeneity of the tax status of the firm in a financing decision. According to them studies that focus on association between tax rate proxies and corporate financial policy indicators report spurious correlations. Graham et al (op cit) warn that if the endogeneity issue is not properly addressed, the experiment can yield a biased result. Biased results show a negative association between debt and taxes. To overcome this problem they suggest the

use of 'before-financing' tax rate. In Kenya, Odinga (2003) found a significant positive relationship between leverage and non-debt tax shield. He argues that firms with high amounts of depreciation allowance borrowed more for replacement and repairs. To measure this variable, total depreciation from the firm's profit and loss account was divided by total assets.

### **Asset structure (Tangible versus Intangible Assets)**

One of the biggest determinants of the cost of financial distress is the tangibility of a company's underlying assets. Tangible assets such as plants and property retain their value even in bankruptcy, so capital intensive firms can support higher levels of debt at lower costs because there is little threat to bondholders that the assets they claim to be worthless. Many companies maintain a lot of their value in technology and human capital, assets that may only have value as part of going concern. These firms stand to lose more from going bankrupt and an efficient bond market will recognize that. They will pay a higher cost for debt and typically support lower leverage ratios than similar firms with more tangible assets. Myers (1984) asserts that firms holding valuable intangible assets tend to borrow less than firms holding mostly tangible assets. Long and Malitz (1983) found a significant positive relationship between the rate of capital expenditure (in fixed plant and equipment) and the level of borrowing. In Kenya the view that firms with tangible assets borrow more is supported by both Kamere (1987) and Omondi (1996). This means that firms in Kenya prefer debt issues than equity issues that are supportive of the pecking order hypothesis.

## **Growth**

As observed by Titman and Halt (1988) equity controlled firms have tendency to invest sub optimally to expropriate wealth from the firm's bondholders. The cost associated with this agency relationship is likely to be higher for firms in growing industries, which have more flexibility in their choice of future investments. Therefore, expected future growth should be negatively related to long-term debt levels. Myers (1977) however noted that this agency problem is instigated if the firms issue short term rather than long-term debt.

In support of this, Lon and Malitz (1983) found a significant negative relationship between rates of investment in advertising and research and development (R&D) and the level of borrowing. Advertising and Research and Development act as proxies for growth.

Kamere (1987) has indicated similar views. The prediction of growth on capital structure is in contrast with the pecking order theory prediction. This is because the high growth firms are particularly subject to adverse selection problem and according to the pecking order theory they should be indicative of more debt issues. Using growth as proxy for pecking order theory prediction then, it would be appropriate to conclude that firms in Kenya do not follow the pecking order philosophy in their financing choices. However, this would be termed too shallow for making such a major conclusion.

## **Size**

There is a relationship between size and the level of leverage (Titman and Wessels, 1988). Chua and McConnel (1982) provide evidence that suggests that direct bankruptcy costs appear to constitute a larger proportion of a firm's value as that value decreases. It is also the case that relatively large firms tend to be more diversified and less prone to bankruptcy. This indicates that large firms should be more highly leveraged.

The cost of issuing debt and equity is much more with small firms than large ones as noted by Musili(2005). This suggests that small firms may be more leveraged than large firms and may prefer to borrow short term rather than issue long-term debt because of the lower fixed costs associated with this alternative. (Titman and Wessels, 1988). This may be supportive of pecking order prediction since small firms are faced with adverse selection problem.

In Kenya, Kamere (1987) found out that long-term debt and the value of total assets (size) are positively correlated. This suggests that the use of debt financing may be higher among large firms than among smaller ones. This is inconsistent with the pecking order theory prediction.

## **Profitability**

Brigham and Gapenski (1990) observed that firms with very high rates of return on investments use relatively little debt. The practical reason is that highly profitable firms do not need to do much debt financing since their high rates of return enable them to do



their financing with retained earnings. This behavior is consistent with pecking order theory prediction.

Myers (1977) cites evidence from Donaldson (1961) and Brealey and Myers (1984) that suggests that firms prefer raising capital, first from retained earnings second from debt and third from issuing new equity. He suggests that this behavior may be due to the costs of issuing new equity. These can be the costs discussed in Myers and Majluf that arise because profitability of a firm, and hence the amount of earnings available to be retained should be an important determinant of current capital structure.

Contrary, Omondi (1996) found out that Kenyan firms tend to borrow more when their profits are high. He gives an explanation for this, that high profits serve as an incentive to the firm to invest more and this is what may warrant borrowing for expansion of business. Omondi's finding on profitability would be indicative that firms in Kenya do not follow the pecking order theory of capital structure in their financing choices. However, Odinga (2003) found a significant negative relationship between leverage and profitability. He argued that profitable firms financed most of their investment opportunities from retained earnings and borrowed less to avoid contractual obligations to pay. Equity is more secure in the sense that investors do not demand the required rate of return.

### **Asymmetric Information**

Another key assumption inherent to the validity of MM proposition I is the homogeneity of expectations. This means that all market participants (managers as well as other stakeholders) are assumed to have equal information about the future states of nature, and to interpret the same way. This is not, however, always an innocuous assumption. New security issues illustrate this point. As Smith (1990) concludes: Myers and Majluf (1984) also assume that a potential purchaser of securities has less information about the prospects of the firm than management and that management is more likely to issue securities when the market price of the firms traded securities is higher than management's assessment of their value. Sophisticated investors revise their estimate of the value of the firm if management announces a new security issue; further more, the larger the potential disparity in information, the greater the revision in expectations and the larger the negative price reaction to the announcement of a new issue.

### **Product/Input market forces**

Models of product and input market forces attempt to determine the link between debt and strategic variables. Brander and Lewis (1986) were among the first to explore this possible factor in the capital structure puzzle. They examined the connection between capital structure and firm strategy, whereas other models considered the effects of leverage on customer/supplier relations.

## **Corporate Control**

Capital structure has been shown to have an important impact on the market for corporate control. The debt versus equity decision has an impact on the eventual distribution of voting rights in these contests, as well as an influence on the expected payoffs to the target and would be buyer.

### **2.4 Other related studies.**

A number of capital structure related studies have been done in Kenya. Kamere (1987) performed an opinion survey to find out from the auditors and financial managers what factors they consider to be important in their capital structure decisions. Most notable in his findings as significant factors that influence capital structure decisions include the stability of cash flows, the level of interest rates, the firm's asset structure, tax shield and the maturity of debt.

Omondi (1996), extended on the work of Kamere, though restricted his analysis on to public listed companies. Using correlation coefficient and data for the period 1987-1994, he analyzed the relationship between leverage and the variables. His results revealed a significant positive relationship between leverage and profitability. Interest charges also tested positive, though the coefficient was very low.

Odinga (2003) built on Omondi's work. He studied the major determinants of capital structure variations of listed companies. He regressed asset tangibility, profitability,

growth opportunities, business risk, non-debt tax shield and firm's size against leverage. Only profitability and non-debt tax shield tested significant, profitability being negatively related to leverage and non-debt tax shield being positively related with leverage. His findings on profitability contradicted Omondi's findings. Unlike Odinga (2003), Omondi (1996) found a significant negative relationship.

The limitation in Odinga's study is that it only explains the existing capital structures without giving an insight of the capital structure issues from a practical point of view. This study borrows heavily from the previous studies in terms of study design and methodology, except for the industrial orientation.

The corporate tax rate has not been investigated as a factor that influences the capital structure though it is central to the various theories of capital structure. There is need to establish the association that exists between tax rate and leverage. This study focused on the association of various proxies of corporate tax rate and leverage. Using data from NSE the capital structure was analyzed with respect to the changing corporate tax rate over the years.

## **CHAPTER THREE:RESEARCH METHODOLOGY**

### **3.1 POPULATION**

The population of this study consisted of all companies quoted at the Nairobi Stock Exchange from the year 1990 to 2003. The fourteen were chosen because significant changes in the tax rate have been realized between this time periods. The corporate tax rates have been as follows:

1990	42.5%
1991	40%
1992	37.5%
1993-1997	35%
1998-1999	32.5%
2000-2006	30%

The study used annual reports that are available at the Nairobi Stock Exchange.

### **3.2 SAMPLING**

A large sample of firms was used. The population for this study consisted of all the firms listed at the NSE for the period between 1990 and 2003. Firms that were not listed in any of the years chosen for the purposes of the study were left out.

### **3.3 DATA COLLECTION METHOD**

Data was collected using secondary data from annual reports of the quoted companies and the records maintained at the Nairobi Stock Exchange (NSE). The variables that were used include:

1. Debt/leverage ratio – computed as total debt divided by total debt plus equity. This will act as the proxy for the capital structure.
2. Effective tax rate - computed as the ratio of actual tax paid as reported in the cash flow statement and earnings before interest and taxes. This is a reliable proxy for corporate tax.

### **3.4 DATA ANALYSIS METHOD**

The data was analyzed using Ms. Excell, SPSS and Minitab. The sample mean and standard deviation was calculated for all the companies listed from 1989 to 2003 to describe and establish the variance in capital structure (Debt/Leverage ratio) due to changes in tax rates. The trend of the changes in means was analyzed to establish whether they were changing in line with the tax rate. A hypothesis test was carried out to establish if the changes in the means of the debt-leverage ratios are significantly different under the different tax regimes chosen. This was to identify whether the tax rate influences the capital structure of a firm significantly. The response to changes in the tax rates was lagged for example for the changes in 1993, the capital structures in 1994 was studied. This is because it takes time for companies to react to a change and adjust their capital structure. A significance test of the differences in means of debt/leverage ratios in the different tax regimes was computed at a 95% level of confidence.

The companies were then categorized under the different segments in the stock exchange and the means computed. The trend of the means was then analyzed to identify whether some segments were more sensitive to tax changes than others. A hypothesis test was performed to establish whether the differences in means were statistically significant under the different tax regimes.

The means for the debt leverage ratios that had been computed for the years 1989 to 2003 were regressed against the corporate tax rates for the respective years. This was to establish whether the tax rate has a direct relationship with the debt leverage ratio.

The form of the simple linear regression equation is,

$$Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

Where

$Y_i$  – Represents the means for the debt leverage ratio (  $i$  ranges from 1989 to 2003)

$\beta_0$  – the Y intercept

$X_i$  – Represents the independent variable (Corporate tax rate,  $i$  ranging from 1989 to 2003)

$\beta_1$  – Represents the slope of the population

$\varepsilon_i$  – Random error in Y observations

The means for the debt leverage ratios that had been computed for the years 1989 to 2003 for the four segments of the NSE were regressed against the corporate tax rates of the respective years. This was to determine the relationship between the tax rate and debt leverage ratio for the respective segments in the NSE.

The form of the simple linear regression equation is,

$$Y_{i,j} = \beta_0 + \beta_1 X_i + \varepsilon_i$$

Where

$Y_{i,j}$  – Represents the means for the debt leverage ratio (  $i$  ranges from 1989 to 2003,  $j$  ranges from 1 to 4 each representing the segments in the NSE)

$\beta_0$  – the Y intercept

$X_i$  – Represents the independent variable (Corporate tax rate,  $i$  ranging from 1989 to 2003)

$\beta_1$  – Represents the slope of the population

$\epsilon_i$  – Random error in Y observations

Calculations were carried out for coefficient of correlation ( $R$ ) and coefficient of determination ( $R^2$ ).

**Coefficient of correlation** –  $R$  was used to establish the relationship between the corporate tax rate as an independent variable and the debt leverage ratio as a dependent variable. A positive  $R$  showed a direct relationship while a negative  $R$  showed an inverse relationship.

**Coefficient of determination** – ( $R^2$ ) was used to measure the total variation in the dependent variable that was accounted for by variation in the independent variable.



## CHAPTER FOUR: DATA ANALYSIS

### 4.0 RESEARCH FINDINGS & ANALYSIS

The study was aimed at determining the influence of the corporate tax rate on capital structure on quoted companies.

### 4.3 Descriptive statistics of the Debt-Leverage ratios

The table below reports descriptive statistics of central tendency for the debt leverage ratios for the years 1989 to 2003.

**Table 1**

Year	Mean	Median	St Dev	SE Mean	Minimum	Maximum	Tax Rate
2003	16.89	9.03	26.04	4.28	0.00	133.40	30%
2002	19.48	9.56	25.16	3.98	0.00	106.55	30%
2001	14.64	6.79	21.25	3.36	0.00	114.32	30%
2000	14.58	5.78	20.62	3.18	0.00	110.17	30%
1999	13.10	5.21	17.85	2.72	0.00	78.66	32.5%
1998	8.12	0.00	19.47	2.97	0.00	112.21	32.5%
1997	6.12	0.03	10.41	1.57	0.00	42.61	35%
1996	7.11	0.03	12.30	1.85	0.00	47.16	35%
1995	4.92	0.04	11.28	1.74	0.00	62.51	35%
1994	5.95	0.13	18.49	2.92	0.00	115.37	35%
1993	4.42	0.06	7.18	1.16	0.00	26.34	35%
1992	8.19	0.04	21.56	3.50	0.00	128.66	37.5%
1991	11.35	0.61	25.01	4.17	0.00	135.08	40%
1990	17.10	6.38	28.36	6.19	0.00	110.67	42.5%
1989	18.56	10.05	30.54	7.88	0.33	97.35	42.5%

The mean of debt equity ratio was highest in 2002 with 19.48 followed by 1989 with 18.56. The corporate tax rate was 30% and 42.5% respectively. It can be noted that the mean reduced from the year 1989 to 1993 along with the reduction in the corporate tax rate. The corporate tax rate from 1993 to 1997 was stable at the rate of 35%, during this period the mean fluctuated increasing and decreasing in an alternating pattern over the four years. The mean later increased steadily from 8.12 in 1998 to 19.48 in 2002, this was

despite the decrease in tax rate from 32.5% to 30% in 1999. The tax rate remained constant at 30% from the year 2000 to the year 2003 but the mean of the debt leverage ratio increased up to 19.48 in the year 2002 and reduced to 16.89 in the year 2003. The reduction in means from 1989 to 1993 was logical as lower tax rate makes issuing equities or retaining earnings less costly than before therefore more firms opted to use equity and retained earnings as a source of finance thus a decrease in the mean. The stable tax rate of 35% between the years 1993 and 1997 either made managers indifferent on the source of finance to use or the influence of the other determinants of capital structure guided the finance managers. The increase in the means in the debt leverage in the period 1998 to 2003 can be attributed to other factors that determine capital structure as the corporate tax rate was constant during this period. A comparison of the means using the T test revealed that the differences in the means were significant for the period 1989 to 2003.

#### **4.1.2 Descriptive Statistics of Debt Leverage ratios categorized under segments**

The table below reports descriptive statistics of central tendency for the debt leverage ratio for the companies categorized under the segments in the Nairobi Stock Exchange.

The segments were coded as follows:

Agricultural-1

Commercial & Services-2

Finance & Investment-3

Industrial & Allied-4

**Table II**

Year	Segment	Mean	Median	StDev	SE Mean	Minimum	Maximum
2003	1	27.28	38.04	26.22	9.91	0.00	66.58
	2	28.7	7.1	48.4	18.3	0.0	133.4
	3	1.86	0.00	4.08	1.29	0.00	13.04
	4	16.52	11.18	13.28	3.68	0.00	51.10

Year	Segment	Mean	Median	StDev	SE Mean	Minimum	Maximum
2002	1	28.55	34.20	25.52	9.64	0.00	68.18
	2	35.8	21.2	39.0	13.0	0.0	106.5
	3	3.05	0.00	7.54	2.38	0.00	24.22
	4	16.20	12.12	13.25	3.54	0.00	44.71
2001	1	18.25	21.76	16.54	6.25	0.00	40.38
	2	23.7	6.0	39.7	14.0	0.0	114.3
	3	8.31	1.93	13.17	4.16	0.00	36.06
	4	12.34	9.74	12.42	3.21	0.00	49.15
2000	1	14.90	6.13	15.52	5.87	0.00	35.44
	2	21.2	11.3	35.6	11.9	0.0	110.2
	3	13.16	2.10	17.28	5.21	0.00	44.28
	4	11.48	6.87	12.78	3.30	0.58	48.91
1999	1	13.00	9.41	12.62	4.77	0.00	31.39
	2	15.15	1.93	26.33	8.78	0.00	78.66
	3	12.28	3.34	17.78	5.36	0.00	50.36
	4	12.57	5.58	15.65	3.91	0.00	47.84
1998	1	0.410	0.000	0.528	0.199	0.000	1.210
	2	22.6	9.1	35.1	11.1	0.0	112.2
	3	7.52	1.55	12.45	3.94	0.00	35.81
	4	2.79	0.00	5.44	1.36	0.00	19.78
1997	1	1.094	0.178	1.335	0.505	0.000	2.871
	2	11.16	5.06	12.76	4.04	0.00	30.20
	3	7.67	0.00	13.33	4.02	0.00	42.61
	4	4.11	0.01	7.66	1.91	0.00	27.77
1996	1	2.18	0.34	2.67	1.01	0.00	5.87
	2	12.67	5.28	17.03	5.39	0.00	47.16
	3	5.75	0.00	9.96	3.00	0.00	28.35
	4	6.73	0.00	12.54	3.13	0.00	38.33
1995	1	3.30	0.28	4.22	1.60	0.00	9.44
	2	4.92	1.19	9.48	3.16	0.00	29.27
	3	3.37	0.00	7.30	2.20	0.00	21.52
	4	6.83	0.00	16.39	4.23	0.00	62.51
1994	1	3.03	0.14	4.96	2.03	0.00	11.94
	2	3.31	1.62	4.21	1.49	0.00	11.78
	3	4.69	0.00	7.93	2.39	0.00	21.68
	4	9.43	0.09	29.46	7.61	0.00	115.37
1993	1	1.94	0.12	3.06	1.25	0.00	7.16
	2	5.46	6.75	4.47	1.69	0.00	11.62
	3	5.59	0.00	9.78	2.95	0.00	23.69
	4	4.06	0.06	7.46	1.99	0.00	26.34
1992	1	1.76	0.04	3.80	1.55	0.00	9.48
	2	4.89	0.83	7.06	2.67	0.00	15.15
	3	5.82	0.00	10.48	3.16	0.00	27.70
	4	14.47	2.86	33.73	9.02	0.00	128.66
1991	1	1.249	0.598	1.726	0.705	0.000	4.372
	2	17.9	3.3	26.3	11.8	0.0	61.6
	3	6.15	0.00	11.55	3.48	0.00	33.25
	4	17.43	5.92	35.22	9.41	0.00	135.08
1990	1	1.9906	1.9906	*	*	1.9906	1.9906
	2	17.7	3.0	33.5	15.0	0.1	77.5
	3	13.94	6.58	16.52	7.39	0.00	37.23
	4	19.9	9.5	33.6	10.6	0.0	110.7
1989	1	2.1135	2.1135	*	*	2.1135	2.1135
	2	20.1	1.8	16.5	1.0	85.8	1.3
	3	9.39	6.38	5.62	0.33	24.46	0.57
	4	27.7	13.7	17.6	1.4	97.4	6.2

Table II shows the means of the debt leverage ratios classified under the different segments of the Nairobi Stock Exchange. In the Agricultural sector the means reduced from 1989 to 1991 along with the reduction in the corporate tax rate from 42.5% to 40%. In the years 1992 to 1995 the means increased against a reduction in tax rate from 37.5% in 1992 and a stable tax rate of 35% from 1993 to 1995. The mean decreased from the year 1996 to 1998 along with the reduction in tax rate from 35% to 32.5%. The debt leverage ratio means increased from 1999 despite a stable tax rate of 30%. The commercial sector experienced a decrease in the means of debt leverage ratio between 1989 and 1990, 1991 to 1994 and 1996 to 1997. The debt leverage means increased in the years 1990 to 1991, 1994 to 1996 and 1997 to 1998. The years 1998 to 2003 experienced alternations in the means. The means in the finance sector increased in the years 1989 to 1990, 1995 to 1997 and 1998 to 2000. The means decreased from 1990 to 1995, 1997 to 1998 and 2000 to 2003. The debt leverage means in the industrial sector decreased in the years 1989 to 1993, 1994 to 1998 and 1999 to 2000. The means increased in the years 1993 to 1994, 1998 to 1999 and 2000 to 2003. Logically the decrease in the tax rate should have led to a decrease in the means of the debt leverage ratio means, but this was not experienced at all times. This can be attributed to other factors that determine the capital structure whose influences outweigh the impact of a change in tax rate.

#### **4.4 Regression analysis**

The table below shows the coefficient of correlation (R) and coefficient of determination ( $R^2$ ) between the tax rate and the mean for the debt leverage ratios for the years 1989 to 2003.

**Table III**

**Coefficient of correlation (R) and Coefficient of determination (R<sup>2</sup>) for the means of debt leverage ratios against the corporate tax rate from 1989 to 2003.**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.025(a)	.001	-.076	5.477044884 310190

a Predictors: Corporate tax rate (1989 to 2003)

b Dependent Variable: MEAN (1989 to 2003)

The coefficient of correlation between the corporate tax rate and the mean of debt leverage ratio was 0.025. This gives a direct relationship. This relationship confirms the theoretical view that the non-debt tax shield influences the capital structure of a firm. Omondi(1996) found a direct relationship between the non debt tax shield and leverage. Minga Negash (2002) found an association between tax (Effective tax rate and Marginal tax rate) and extent of debt was statistically significant and the sign of the relation was negative. That finding was inconsistent to the spirit advanced by Modigliani and Miller (1963) but corroborates albeit indirectly, Fama and French (1998)

**Coefficient of correlation (R) and Coefficient of determination (R<sup>2</sup>) for the means of debt leverage ratios against the corporate tax rate from 1989 to 2003 the Agricultural segment.**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.709(a)	.503	.465	7.18150

a Predictors: Tax rate (1989 to 2003)

b Dependent Variable: Means of debt leverage ratio Agricultural sector 1989 to 2003

The coefficient of correlation between the corporate tax rate and the mean of the debt leverage ratio of the Agricultural sector for the years 1989 to 2003 was 0.709. This gives a strong direct relationship. This relationship implies that the capital structure of the firms in the Agricultural sector is more sensitive to changes in the tax rate than the firms listed in the other segments.

**Coefficient of correlation (R) and Coefficient of determination (R<sup>2</sup>) for the means of debt leverage ratios against the corporate tax rate from 1989 to 2003 the Commercial services segment.**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.379(a)	.144	.078	9.1024

a Predictors: Tax rate (1989 to 2003)

b Dependent Variable: Means of debt leverage ratio Commercial & Services 1989 to 2003

The coefficient of correlation between the corporate tax rate and the mean of the debt leverage ratio of the Commercial & services sector for the years 1989 to 2003 was 0.379. This gives a direct positive relationship.

**Coefficient of correlation (R) and Coefficient of determination (R<sup>2</sup>) for the means of debt leverage ratios against the corporate tax rate from 1989 to 2003 the Finance and Investment segment.**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.260(a)	.068	-.004	3.66701

a Predictors: Tax rates (1989 to 2003)

b Dependent Variable: Means of debt leverage ratio Finance & Investment 1989 to 2003

The coefficient of correlation between the corporate tax rate and the mean of the debt leverage ratio of the Finance & Investment sector for the years 1989 to 2003 was 0.260.

This gives a direct positive relationship

**Coefficient of correlation (R) and Coefficient of determination (R<sup>2</sup>) for the means of debt leverage ratios against the corporate tax rate from 1989 to 2003 the Industrial and Allied segment.**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.464(a)	.215	.155	6.28470

a Predictors: Tax rates (1989 to 2003)

b Dependent Variable: Means of debt leverage ratio Industrial & Allied 1989 to 2003

The coefficient of correlation between the corporate tax rate and the mean of the debt leverage ratio of the Industrial & Allied sector for the years 1989 to 2003 was 0.464. This gives a direct positive relationship

## **CHAPTER FIVE: CONCLUSION AND RECOMMENDATION**

### **5.0 Conclusion**

The findings give an insight into the influence of the tax rate on the capital structure of companies listed at the Nairobi Stock Exchange. There exists a positive relationship between the corporate tax rate and the debt leverage ratios. It is very clear that companies at the NSE take the impact of taxation into consideration before choosing between debt and equity.

A direct relationship exists between the tax rate and the debt leverage ratio in all the four segments of the NSE. The Agricultural sector had the strongest relationship, followed by the Industrial & Allied sector, the Commercial & Services sector was third and the Finance & Investment came fourth. The significant difference in the relationship in the different segments can be attributed to the fact that firms in some sectors such as Finance & Investment do not give much regard to the tax savings that result from tax deductibility of interest expense.

An analysis of the changes in the means of debt leverage ratios revealed that the changes were not consistent with the changes in the tax rates. This is in line with the argument by Ross (1985) that with other non-debt tax shields; the impact of interest tax shield is 'crowded out'. In accordance with this argument, the model predicted a negative relationship between non-debt tax shield and leverage.

It was noted that from 1989 to 1997 the means of the debt leverage ratio reduced with a reduction in the corporate tax rate. This is logical as a reduction of the tax rate makes equity less costly and therefore managers are inclined to use more equity. The means increased from 1997 to 2003, but within this period the tax rate was constant with a slight



reduction in the tax rate from 32.5% to 30% in the year 2000. Since there wasn't much change in the tax rate, then the increase can be attributed to other factors that affect the capital structure. This is in line with Modigliani & Miller argument that corporate and personal taxes do not adequately explain the use of debt.

### **5.1 Limitations of the study**

There were factors that affected the macro economic environment in the 1990s that would have affected the accuracy of this research. These factors include the increased inflation between 1990 and 1995. The second factor was the sky rocketing bank interest rates between 1990 and 2002 due to high domestic borrowing. These factors would have affected the decision making of firms as regards the capital structure. This would be because of the unrealistic high cost of debt due to the economic disparities that existed during the time.

Some quoted companies at the Nairobi Stock Exchange were not included in the sample due to unavailability of data and other companies' data were outliers. This reduction in sample size would have affected the calculations of this study.

### **5.4 Suggestions for further research**

It is important that a similar study be conducted with a bigger sample and time horizon by using advanced time series models to enhance our understanding of the association between the tax rate and the capital structure.

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## **APPENDIX**

Listed companies at the Nairobi Stock Exchange.

### **Agricultural sector**

1. Brook bond limited
2. Eaagads Limited
3. George Williamson Kenya Limited
4. Kakuzi Limited
5. Kapchorua Limited
6. Limuru Tea Company Limited
7. Rea Vipingo plantation limited
8. Sasini tea & coffee limited

### **Commercial & Services sector**

1. A Bauman & company
2. CMC holdings
3. Car & general Kenya Limited
4. Express Kenya Limited
5. Kenya Airways Limited
6. Marshall E.A Limited
7. Nation Media group
8. TPS Serena limited
9. Standard Newspaper group
10. Uchumi Supermarkets

**Finance & Investment sector**

1. Barclays Bank of Kenya Ltd
2. CFC Bank Ltd
3. Diamond Trust
4. Housing Finance
5. ICDC
6. Jubilee Holdings ltd
7. K.C.B Bank
8. National Bank
9. National Industrial Credit
10. Standard Chartered Bank
11. City Trust

**Industrial & Allied sector**

1. Athi river Minings
2. BAT Kenya Limited
3. Bamburi cement Limited
4. B.O.C Kenya Limited
5. Crown Berger Ltd
6. Dunlop Kenya Ltd
7. E.A.Cables
8. E.A. packaging Ltd
9. E.A.Portland cement Ltd
10. East Africa Breweries Ltd

11. Firestone East Africa Ltd
12. Kenya Power & Lighting Co Ltd
13. Kenya Orchards Ltd
14. Total Kenya Limited
15. Unga group Ltd