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**DETERMINANTS OF CAPITAL STRUCTURE:  
A REVIEW OF THE EVIDENCE**

BY

MIRIE MWANGI

SUPERVISOR

DR. JULIUS M. MALOMBE

**AN INDEPENDENT STUDY PAPER PRESENTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS OF THE AWARD OF THE  
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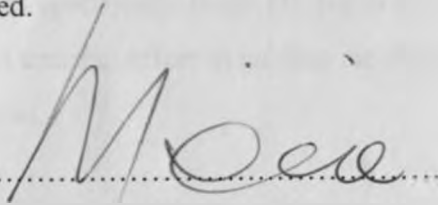
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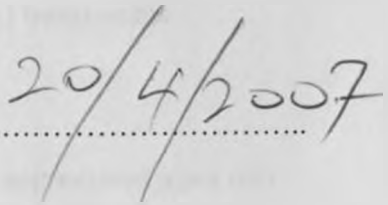
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**DECLARATION**

I hereby declare that the work contained in this independent study paper is my original work, and has not previously in part or in its entirety been presented at any other university towards the award of a degree. All materials referred to have been duly acknowledged.

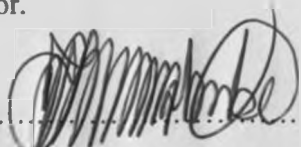
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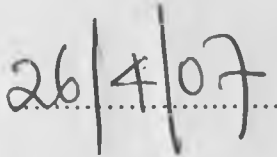
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**SUPERVISOR**

This independent study paper has been submitted with my approval as the university supervisor.

Signed ..... 

**Dr. Julius M. Malombe**

Date. .... 

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To everybody else who may directly or indirectly have had an input into this study, I say ASANTE!

## **ABSTRACT**

One of the key unresolved issues in the field of finance is whether capital structure is a relevant input into the value of the firm. In addition, what are the key determinants of capital structure and why do these variables matter? This study was primarily a literature review in the area of firm capital structure with the ultimate aim of identifying researchable issues in the area of corporate capital structure choices in Kenya.

The study found out that two main theories of capital structure have become predominant, that is the trade-off and pecking order theories; and to a lesser degree the free cash flow theory. Empirical testing of these theories has not yielded definite conclusions as to which of them is better at explaining observed firm capital structures. The bulk of the empirical research in the area of firm capital structure has focused on isolating the relationship between capital structure on the one hand and various explanatory variables such as; tangibility of assets, non-debt tax shields, rates of taxation, growth of firm and investment opportunities, uniqueness of firm's products, industry classification, size of firm, volatility of firm earnings, profitability of firm, bankruptcy costs, adjustment (financing) costs and country that firm is based in; on the other. The studies that have been conducted in Kenya on capital structure have mostly been at the masters degree level and they have focused on testing separately the main theories of capital structure and also the relationship between capital structure and various determinants. It does appear that a lot more empirical work requires to be carried out in the area of capital structure in Kenya.

The study identified several empirically researchable issues in Kenya, primarily focusing on firms listed on the Nairobi Stock Exchange. One issue is testing the trade-off, pecking order and free cash flow theories of capital structure. Another study would be to carry out an empirical assessment of the determinants of capital structure. Yet one could carry out an empirical assessment of the determinants of changes in capital structure. Finally assessing the functional nature of the relationship between the independent variables and each of the dependent variables can be carried out.

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## 1.0 INTRODUCTION

### 1.1 Background

Prior to the Modigliani and Miller (1958) paper the thinking at the time was that there exists a single optimum capital structure for any given firm that maximizes shareholder value (Chandler, 1954; Weston, 1954, 1955; Gordon et al, 1956; Harry, 1957; and Schwartz, 1959).

Modigliani and Miller (1958) wrote a paper showing that subject to some conditions the source of financing was irrelevant in determining the value of the firm. They assumed either explicitly or implicitly that:

- capital markets are frictionless,
- individuals can borrow and lend at the risk-free rate,
- there are no costs to bankruptcy,
- firms issue only two types of claims: risk-free debt and (risky) equity,
- all firms are assumed to be in the same risk class,
- corporate taxes are the only form of government levy (i.e., there are no wealth taxes on corporations and no personal taxes),
- all cash flow streams are perpetuities (i.e., no growth),
- corporate insiders and outsiders have the same information (i.e., no signaling opportunities), and
- managers always maximize shareholders' wealth (i.e., no agency costs).

Copeland and Weston (1992).

If these assumptions were to hold in all circumstances, then the question of whether to finance companies by either debt or equity would perhaps not require to pre-occupy various corporate stakeholders, including the shareholders, managers and theoreticians. Myers (2001) noted that despite the logic of the Modigliani and Miller (1958) results, financing can matter due to factors such as existence of taxes, information asymmetry and agency costs.

Subsequent to the capital structure irrelevance proposition, literature on the subject of capital structure has been expanded by many theoretical and empirical contributions. Some of the works have relaxed the assumptions made by Modigliani and Miller, for example, by considering:

- corporate, personal taxes and bankruptcy costs (Modigliani and Miller, 1963; Stiglitz, 1969; Miller, 1977; Titman, 1984),
- aspects of information asymmetry (Myers and Majluf, 1984; Myers, 1984), and
- agency costs (Jensen and Meckling, 1976; Myers, 1977).

The nature of and the importance of financing choices and the factors that determine those choices have given rise to various theories of capital structure. Another importance of capital structure emanates from the fact that corporate strategy and financial structure of firms are closely intertwined (Kochhar and Hitt, 1998). Capital structure choice is relevant in that it impacts on a firm's ability to meet demands of various stakeholders (Modigliani and Miller, 1958, 1963). Debt-equity decisions that a firm takes may influence how a firm is governed and consequently how it makes strategic choices (Jensen, 1986).

## **1.2 Importance of Capital Structure**

Two main theories currently dominate the capital structure debate: the trade-off theory and the pecking order theory (Fama and French, 2002; and Gaud et al, 2005). These theories differ in their relative emphasis on, or interpretations of factors such as existence of taxes, bankruptcy costs, information asymmetry and agency costs. The trade-off theory emphasizes taxes whereas the pecking order theory emphasizes aspects of information asymmetry (Myers, 2001). However, in each of these and other capital structure theories, it is hypothesized that firms choose between debt and equity depending on both firm-specific and institutional factors (Booth et al, 2001).

The trade-off theory posits that firms maximise their value when the benefits that stem from debt (the tax shield being the tax deductibility of interest expense, the disciplinary role of debt, and the fact that debt suffers less from informational costs than outside equity) equal the marginal cost of debt (bankruptcy costs, and agency



costs between shareholders and bondholders) (Gaud et al, 2005). The benefit of debt is the present value of the tax shelter emanating from the tax deductibility of interest expense, whereas the costs are the expenses associated with bankruptcy (Chen, 1978; and Chen and Kim, 1979).

Myers and Majluf (1984) and Myers (1984) developed the pecking order theory where they emphasized the consequences of information asymmetry that may exist between insiders and outsiders of the firm. The costs that influence the pecking order theory include the transaction costs that would be incurred in new equity and debt issues and the costs associated with the possibility that firms may have superior information than outsiders about the institutions. Therefore, firms would prefer to finance new investments initially with retained earnings, then with debt, and finally, with equity. Consequently, a firm's leverage is a function of its past and present net cash flows. The theory predicts that firms would adapt their financing policy to minimize the associated costs. They will therefore prefer internal financing to external financing, and debt to equity. If the firm must rely on external funds, then it prefers debt to equity due to the lesser impact of information asymmetries (Myers and Majluf, 1984). In the pecking order theory, financial market imperfections are central as transaction costs and asymmetric information link the firm's investments choice to its internally generated funds (Booth, et al, 2001).

The agency theory viewpoint of capital structure, also referred to as the free cash flow theory (Myers, 2001), considers debt as a governance device that could reduce the conflict between managers and shareholders of firms (Jensen, 1986). The use of debt, which contractually binds the firm to make repayments, reduces the agency costs between managers and shareholders since the free cash flow available to managers is reduced. Should the managers spend the free cash flow on wasteful expenditures, then this reduces the likelihood that the firm will honour its repayment obligations. This default may force the firm into bankruptcy and the managers would lose their employment in the firm. Therefore the use of debt may prevent managers from inefficient and wasteful actions, and consequently would increase firm value to the benefit of equity holders. The control role of debt is therefore that it can decrease the

amount of free cash flow available to managers (Jensen, 1986). Kochhar (1996) noted that what is being governed in firms is the free cash flow, which gives rise to some challenges which could be overcome by the choice of financing.

### **1.3 Determinants of Capital Structure**

Booth, et al. (2001) noted that empirically distinguishing among the various capital structure theories has proved to be very difficult. Fama and French (2002) observed that on many issues there is no conflict between the trade-off and pecking order theories. The two theories share many predictions about capital structure, such as that controlling for other effects, more profitable firms have higher dividend payouts, and firms with more investments have lower pay-outs. There does not appear to be enough evidence to enable arriving at a conclusion as to which of the two theories has more predictive power.

Rajan and Zingales (1995) noted that the bulk of the empirical work carried out in the area of capital structure was carried out in the United States of America. Further, the bulk of the studies have focused on determinants of capital structure, and it is not clear whether the findings would support one or the other theory of capital structure. Carrying out similar studies in different environments would assist in testing the robustness of the conclusions arrived at in the USA. Because of the absence of evidence to overwhelmingly support one theory or the other, and due to the symmetry in some predictions on capital structure among the theories, this study focused on the important factors relating to capital structure, irrespective of the theory that the relationship is hypothesized by.

There are various measures of capital structure, which include: total liabilities, long-term liabilities, short-term liabilities, and convertible debt divided by either book values or market values of equity. The divisor can also be either sum of numerator plus book values or market values of equity. (Titman and Wessels, 1988; Booth et al, 2001).

The variables that could have a relationship with leverage include: tangibility of assets, non-debt tax shields, rates of taxation, growth of firm and investment opportunities, uniqueness of firm's products, industry classification, size of firm, volatility of firm earnings, profitability of firm, bankruptcy costs, adjustment (financing) costs, country that firm is based in (DeAngelo and Masulis, 1980; Taggart, 1980; Myers and Majluf, 1984; Altman, 1984; Titman, 1984; Titman and Wessels, 1988; Rajan and Zingales, 1995; Booth et al, 2001; and Fama and French, 2002;).

#### **1.4 Statement of the Problem**

It does appear that very little is conclusively known about the considerations taken into account by firms when making substantial financing decisions. The purpose of this paper is to review and document the literature on capital structure. Theoretical and empirical evidence will be reviewed with a view to ascertaining, in the area of firm capital structure, the dominant theories and/or factors that are important in defining observed capital structure. Whereas the paper reviews global literature, it also specifically looks at the works carried out in Kenya in the area.

The specific objectives of the study are to identify and review relevant literature and document answers to the following questions:

- 1.4.1 does firm capital structure matter?
- 1.4.2 what are the key determinants of firm capital structure? and
- 1.4.3 how is capital structure correlated with the main determining factors?

It is expected that empirically researchable issues in the area of corporate capital structure in Kenya will be identified.

#### **1.5 Importance of the Study**

The study is expected to be useful to the various stakeholders of companies, and especially the following:

##### ***1.5.1 Academicians and Researchers***

It is hoped that the findings of this study will add more knowledge in the area of capital structure, especially indicating what the evidence is in regard to what can

explain observed corporate leverage. The study is also expected to provide some foundation for further research on capital structure.

### ***1.5.2 Existing and Prospective Owners of Firms***

The owners of firms, in pursuit of one of their objectives of optimizing value would benefit by knowing what the key considerations in capital structure choice are.

### ***1.5.3 Managers of Firms***

As the people charged with the responsibility of deploying capital, they would benefit from knowing the main factors that are important in deciding what funding source to access.

### ***1.5.4 Suppliers of Non-Equity Funds to Firms***

The providers of non-equity finance to companies take various types of risks, especially default risk. In attempting to optimize risk and return, they would benefit from knowing the key factors that determine the level of indebtedness of companies so that they can better assess any funding request that they may receive or take suitable actions if they have already provided funds.

## 2.0 LITERATURE REVIEW – GENERAL LITERATURE

### 2.1 Introduction

At the most general level capital structure refers to the mix of securities and financing sources used by corporations to finance real investment (Myers, 2001). Prior to the Modigliani and Miller (1958) paper, the question of relationship between firm value and source of financing does not appear to have been explicitly documented. Donald (1938) in an essay gave his opinion that it did appear that businesses would in the foreseeable future rely more on equity and internally generated cash flows. He predicted a declining role for capital markets in raising new equity.

Jacoby (1948) noted that whereas in general funds to expand businesses come from retained earnings, loans or issues of securities, the determination of demand for funds for business and the sources of those resources is very difficult as, among others the demand is a cause and effect of changes in the economy.

A theoretical paper by Froman (1950) noted that even if individuals have the capacity to supply equity capital to business, their so doing hinges on their perceived risk and return of such investment being superior to competing investments such as fixed income securities. He argued that the equity source of finance for business was likely to play a relatively small role.

Bogen (1950) observed that a firm's management considers borrowed capital most risky (due to fixed obligations), low risk is new equity (no fixed obligations) and yet lower risk is retained earnings (with not even implied risk to pay dividends). Investors, however would find supplying new equity more risky than say supplying funds to the firm through bonds. This implies that capital structure would be an outcome of risk-return considerations by the firm and suppliers of funds. Indeed, Chandler (1954) noted that the quality of earnings, a key determinant of how attractive a firm is to invest in is a function of capital structure as the expense on loans is a fixed obligation.

Weston (1954) in a theoretical paper discussing whether there exists norms for debt levels gave one of the motivations for firm borrowing as: *'A firm may borrow so long*

*as incremental returns from borrowing exceed incremental costs of borrowing, taking into account the additional risks that may be involved by incurring more debt.*” pp. 125. Firms would therefore continue to borrow until their value was maximized, beyond which additional debt would result in reduction in shareholder value.

The pre-MM state of the art was captured in a paper by Weston (1955) where it was noted that the thinking at the time in regard to capital structure was the trading on equity concept, that is borrowing magnifies gains and loses. The author also observed that at the time there did not appear to be a convincing theory on financial policy. Indeed, a question was posed on whether it was possible to have a theory of financial policy. The paper concluded that in the area of firm financing, *“The significant questions have not yet been adequately formulated. This remains our main task for the future.”* pp. 143.

Dauten (1955) cited some obstacles to the development of a theory of business finance such as the challenge of distinguishing between how firms finance operations in practice against how they ideally should. Studying past actions, made by humans with varying backgrounds, could lead to principles that perpetuate past errors. Van Arsdell et al (1955) noted that it is therefore important to clarify whether in seeking a theory of firm financing, the focus is scientific validation of propositions or coming up with general guides for managers. Clearly the emphasis ought to be better understanding the ‘why’ and ‘how best to’ of firm financing and not on the ‘what’.

Gordon et al (1956) in a theoretical paper examining the required rate of return in capital budgeting decisions noted that at the time the relationship between risk of a firm and debt had not been thoroughly addressed and hence *“... the widespread practice of arbitrarily establishing a “satisfactory” financial structure and only borrowing to the extent allowed by it.”* pp. 109. This suggests the existence of an optional capital structure, but with the debt limit exogenously set.

Harry (1957) aptly captured the challenges of making investment and financing decisions by first observing that firms made these decisions with the objective of

maximizing firm value. The key challenge would be choice of the discount rate: is it the borrowing rate or is it another number?

At about the same time when Modigliani and Miller (see below) wrote their paper, Schwartz (1959) in a theoretical exposition captured the pre-MM thinking by arguing that there exists a single optimum capital structure for any given firm that maximizes its value. He considered two types of risks that firms face: external risks (these are a function of the industry that the entity operates in) and internal risks (captured essentially by the debt to equity ratio). The basic argument is that if equity is held constant, then a firm would continue borrowing until the marginal return of earnings from the additional assets financed by the debt equals the marginal cost of the funds. This would imply that beyond the equality of marginal earnings and marginal cost of funds any additional borrowings would lead to reduction in value and hence the existence of an optimal capital structure. The external risks would suggest that optimal capital structure would vary across firms in different industries.

Modigliani and Miller (1958) wrote a theoretical paper showing that subject to some conditions the source of financing is irrelevant in determining the value of the firm. They assumed either explicitly or implicitly that:

- capital markets are frictionless,
- individuals can borrow and lend at the risk-free rate,
- there are no costs to bankruptcy,
- firms issue only two types of claims: risk-free debt and (risky) equity,
- all firms are assumed to be in the same risk class,
- corporate taxes are the only form of government levy (i.e., there are no wealth taxes on corporations and no personal taxes),
- all cash flow streams are perpetuities (i.e., no growth),
- corporate insiders and outsiders have the same information (i.e., no signaling opportunities), and
- managers always maximize shareholders' wealth (i.e., no agency costs).

Copeland and Weston (1992)

If these assumptions were to hold in all circumstances, then the question of whether to finance companies by either debt or equity would perhaps not require to pre-occupy various corporate stakeholders, including the shareholders, managers and theoreticians. Myers (2001) noted that despite the logic of the Modigliani and Miller (1958) results, financing can matter due to factors such as existence of taxes, information asymmetry and agency costs.

Subsequent to the capital structure irrelevance proposition, literature on the subject of capital structure has been expanded by many theoretical and empirical contributions. Some of the works have relaxed the assumptions made by Modigliani and Miller, for example, by considering:

- corporate, personal taxes and bankruptcy costs (Modigliani and Miller, 1963; Stiglitz, 1969; Miller, 1977; Titman, 1984),
- aspects of information asymmetry (Myers and Majluf, 1984; Myers, 1984), and
- agency costs (Jensen and Meckling, 1976; Myers, 1977).

The nature of and the importance of financing choices and the factors that determine those choices have given rise to various theories of capital structure. Capital structure choice is relevant in that it impacts on a firm's ability to meet demands of various stakeholders (Modigliani and Miller, 1958, 1959, 1963). Debt-equity decisions that a firm takes may influence how a firm is governed and consequently how it makes strategic choices (Jensen, 1986). Another importance of capital structure emanates from the fact that corporate strategy and financial structure of firms are closely intertwined (Kochhar and Hitt, 1998).

Depending on the nature of study, different definitions of capital structure could be adopted. Capital structure could, among others, mean total debt to equity, long term debt to equity, total debt to firm value, and long term debt to long term assets. The broadest definition of corporate structure is the ratio of total liabilities to total assets. Total liabilities may also include creditors used for transactions purposes rather than for financing and consequently may overstate leverage. Also, total assets which include debtors would be influenced by trade credit policies. (Rajan and Zingales,



1995). To avoid ignoring works by virtue of the specific meaning assigned to capital structure, this paper adopts a broad view, whereby leverage is taken to be a measure of the ratio of funds contributed by shareholders and other suppliers of funds, irrespective of whether adjustments such as for debtors and creditors have been factored.

## **2.2 Why Capital Structure is Important**

Two main theories currently dominate the capital structure debate: the trade-off theory and the pecking order theory (Fama and French, 2002; Gaud et al, 2005). These theories differ in their relative emphasis on, or interpretations of factors such as existence of taxes, bankruptcy costs, information asymmetry and agency costs. The trade-off theory emphasizes taxes whereas the pecking order theory emphasizes aspects of information asymmetry (Myers, 2001). A third key theory is the agency or free cash flow theory. However, in each of these and other capital structure theories, it is hypothesized that firms choose between debt and equity depending on both firm-specific and institutional factors (Booth et al, 2001).

The trade-off theory posits that firms maximise their value when the benefits that stem from debt (the tax shield being the tax deductibility of interest expense, the disciplinary role of debt, and the fact that debt suffers less from informational costs than outside equity) equal the marginal cost of debt (bankruptcy costs, and agency costs between shareholders and bondholders) (Gaud et al, 2005). The benefit of leverage is the present value of the tax shelter emanating from the tax deductibility of interest expense, whereas the costs are the expenses associated with bankruptcy (Chen, 1978; and Chen and Kim, 1979).

According to the trade-off theory of capital structure, the optimal debt ratio of a firm can be viewed as determined by a trade-off of the costs and benefits of borrowing, assuming that its assets and investments remain unchanged. The firm thus attempts to balance the benefits emanating from interest expense tax shields against various costs associated with increased risks (Miller, 1977). The firm would substitute debt for equity, or equity for debt, until an optimal level whereby the value of the firm would be maximized (Myers, 1984). Capital structure moves towards a target ratio that

reflects various attributes such as tax rates, asset type, conflicts of interest between inside and outside investors, agency costs (assets and growth opportunities could be proxies for these costs) and other financing costs (Booth, et al, 2001).

In the trade-off model, firms identify their optimal leverage by weighing the costs and benefits of marginal change in debt. The costs of debt include potential bankruptcy costs and agency conflicts between equity holders and suppliers of debt. The trade-off model predicts that firms would maximize value by selecting the dividend payout that equates the costs and benefits of the marginal dividends. (Fama and French, 2002). The actual relative significance of bankruptcy costs and tax benefits of debt is an issue that requires to be answered empirically (Chen and Kim, 1979). However, Miller (1977) argues that bankruptcy costs should be insignificant as it is in the best interests of all key stakeholders to reduce them. Furthermore, controversies exist on how valuable the tax shields are, and which, if any, of the costs of financial distress are material (Myers, 1984).

Kim (1982) noted that optimal capital structure may not exist universally as there may be equity holder clienteles primarily due to differences in personal income tax rates. However, Taggart (1980) observed that clienteles based on tax rates may not exist due to information incompleteness among the investors.

Myers and Majluf (1984) and Myers (1984) developed the pecking order theory where they emphasized the consequences of information asymmetry that may exist between insiders of the firm and outsiders. The costs that influence the pecking order theory include the transaction costs that would be incurred in new equity and debt issues and the costs associated with that firms have superior information than outsiders about the institutions. Therefore, firms would prefer to finance new investments initially with retained earnings, then with debt, and finally, with equity. Consequently, a firm's capital structure is driven by the firm's past and present net cash flows. The theory predicts that firms would adapt their financing policy to minimize the associated costs. They will therefore prefer internal financing to external financing, and debt to equity. If the firm must rely on external funds, then it prefers debt to equity due to the lesser

impact of information asymmetries (Myers and Majluf, 1984). In the pecking order theory financial market imperfections are central as transaction costs and asymmetric information link the firm's investments choice to its internally generated funds (Booth, et al. 2001).

The agency theory of Jensen and Meckling (1976), Jensen (1986), and Easterbrook (1994), posits that the interests of managers are not aligned with those of suppliers of funds, and managers have a tendency to waste free cash flow (the excess of cash earnings from its assets in place over the size of profitable investments) on perquisites and bad investments. Debt obligations and dividends help reduce this agency problem by forcing managers to pay out more of the firm's excess cash.

The agency theory viewpoint of capital structure, also referred to as the free cash flow theory (Myers, 2001), considers debt as a governance device that could reduce the conflict between managers and shareholders of firms (Jensen, 1986). The use of debt, which contractually binds the firm to make repayments, reduces the agency costs between managers and shareholders since the free cash flow available to managers is reduced. Should the managers spend the free cash flow on wasteful expenditures, then this reduces the likelihood that the firm will honour its repayment obligations. This default may force the firm into bankruptcy and the managers would lose their employment in the firm. Therefore the use of debt may prevent managers from inefficient and wasteful actions, and consequently would increase firm value to the benefit of equity holders. The control role of debt is therefore that it can decrease the amount of free cash flow available to managers (Jensen, 1986). Kochhar (1996) argued that what is being governed in firms is the free cash flow, which gives rise to some challenges which could be overcome by the choice of financing.

Fama and French (2002) predict that to control the agency costs created by free cash flow, firms with more profitable assets in place commit a larger fraction of their earnings before interest to debt payments and dividends. Thus, holding investment opportunities constant, both use of debt and dividend payout bear a positive relationship to firm profitability. Controlling for profitability, firms with less

investment opportunities have higher leverage and dividend payouts. Zwiebel (1996) argued that managers may actually have an incentive to use debt, that is to avert firm control challenges. Hart (1988) noted that whereas capital structure can aid shareholders reduce agency costs, there are other tools at their disposal such as managerial incentive schemes and internal structure of the firm designed to provide some checks and balances on employee behaviour. Booth et al (2001) notes that in the agency theory framework of capital structure, potential conflicts between managers and equity investors determine an optimal capital structure that trades off agency costs against other financing costs. The type of assets of the firm and growth opportunities are key proxies for the agency costs.

I wish to end this section by stating that I have steered clear of the behavioral angle (essentially relaxing the assumption that human beings are rational) of looking at capital structure since as Miller (1977) stated “.....*rational behavior models generally lead to better predictions and descriptions at the level of the industry, the market and the whole economy than any alternatives available to them.*” pp. 272.

### **2.3 Key Variables Relating to Capital Structure**

Booth, et al, (2001) noted that empirically distinguishing among the various capital structure theories has proved to be very difficult. Consequently, a great deal of the empirical research tries to explain capital structure by using cross-sectional tests and a variety of variables that are not theory specific. Shyam-Sunder and Myers (1999) argued that in time-series studies many empirical tests are not sufficiently statistically powerful to distinguish among the trade-off theory, the pecking order theory and other capital structure theories.

Fama and French (2002) observed that on many issues there is no conflict between the trade-off and pecking order theories. The two theories share many predictions about capital structure, such as that controlling for other effects, more profitable firms have higher dividend payouts, and firms with more investments have lower pay-outs. There does not appear to be enough evidence to enable arriving at a conclusion as to which of the two theories has more predictive power. Rajan and Zingales (1995) noted that

the bulk of the empirical work carried out in the area of capital structure was carried out in the United States of America. Further, the bulk of the studies have focused on determinants of capital structure, and it is not clear whether the findings would support one or the other theory of capital structure. Carrying out similar studies in different environments would assist in testing the robustness of the conclusions arrived at in the United States of America.

Because of the absence of evidence to overwhelmingly support one theory or the other, and due to the symmetry in some predictions on capital structure among the theories, this study focused on the important factors relating to capital structure, irrespective of the theory that the relationship is hypothesized by.

To measure the theoretical attributes implied by capital structure theories, various more easily measurable proxies are used (Titman and Wessels, 1988). These proxies include asset structure, non-debt tax shields, growth, uniqueness, industry classification, size, earnings volatility, and profitability. It is worth noting that even the empirical approach of looking at relationships between capital structure and its determinants is not without challenges. Titman and Wessels (1988) highlight some of these as: the determinants or attributes may not have unique variables capturing them and the variables could be measured in different ways; the selected variables for an attribute may suffer from researcher bias; a selected explanatory variable of a specific attribute may also contain information about another attribute and hence selected variables may be measuring the effects of several different attributes; since the variables are not perfect representations of the attributes, their use in regression analysis introduces errors; and errors in both the explanatory and dependent variables may create spurious correlations.

Measures of capital structure are discussed, and thereafter a brief discussion of the various attributes or proxies, their observable or measurable indicators and the expected theoretical relationships between them and capital structure choice follows.

### ***2.3.1 The Dependent Variables: Measures of Capital Structure***

There are various measures of capital structure, and these include: total liabilities, long-term liabilities, short-term liabilities, and convertible debt divided by either book values or market values of equity. The divisor can also be either sum of numerator plus book values or market values of equity. (Titman and Wessels, 1988; Booth et al. 2001).

Titman and Wessels (1988) noted that although defining debt ratios using either book or market values may yield different conclusions in capital structure studies, data limitations tends to force researchers carrying out empirical work to measure debt in terms of book values rather than market values. The book values and market values of these measures are highly correlated and therefore each can be used as a proxy for the other without significant errors being introduced (Bowman, 1980). Further, Bowman (1980) observed that there is no reason to suspect that differences between market values and book values should be correlated with the determinants of capital structure and consequently no obvious bias will result from use of book values instead of market values.

### ***2.3.2 The Independent Variables and Their Relationship With Capital Structure***

In this section is discussed various independent variables and the nature of their relationship with the dependent variable, capital structure. These independent variables are: tangibility of assets; non-debt tax shields; rates of taxation; growth of firm and investment opportunities; uniqueness of firm's products; industry classification; size of firm; volatility of firm earnings; profitability of firm; bankruptcy costs; adjustment (financing) costs; and country that firm is based in.

#### ***2.3.2.1 Tangibility of Assets***

The type of assets owned by a firm may in some ways affect its capital structure decisions. Myers and Majluf (1984) suggest that firms may prefer to raise funds through secured debt in order to avoid the high costs associated with issuing equities. Due to this reason, firms with more assets that can be used as collateral for securing debt are more likely to access funds from this source.

A similar relationship was suggested by Jensen and Meckling (1976), and Myers (1977). Shareholders of leveraged firms may have an incentive to take higher investment risks at the expense of the debt holders, but when the debt is secured on assets, the firm may be required to use the funds for a specified project. Investments that can not be collateralized have no such guarantee and therefore lenders may require higher compensation, which in turn may lead such firms to prefer equity to debt.

Measures of tangibility of asset, which capture an aspect of assets that be used for collateral include the ratio of intangible assets to total assets and the ratio of inventory plus gross plant and equipment to total assets (Titman,1988). Rajan and Zingales (1995) and Booth et al (2001) define asset tangibility as total assets less current assets, divided by total assets.

#### 2.3.2.2 Non-Debt Tax Shields

DeAngelo and Masulis (1980) argued that since some depreciation and investment expenditure are tax deductible, then they can be viewed as substitutes for the tax benefits of debt financing. Consequently, firms with larger non-debt tax shields, which may be the more profitable ones, might include less debt in their capital structures. Fama and French (2002) on the other hand, argued that since more profitable firms face a higher expected tax rate, the expected payoff from interest tax expense shields is higher for more profitable firms. Interest expense being tax deductible may push more profitable firms towards higher debt ratios. There is therefore no consensus on the nature of relationship, positive or negative, between levels of non-debt tax shields and debt ratios. Measures of non-debt tax shields include depreciation over total assets, investment tax credits over total assets, and estimated non-debt tax shields over total assets (Titman and Wessels, 1988).

#### 2.3.2.3 Rates of Taxation

The corporate tax rate is one of the variables that would capture the benefit accruing from the deductibility of interest expense. Booth et al (2001) argued that although for individual firms, defining tax variables is difficult, the average tax rate for the country

would be a good proxy. The average tax rate is obtained by summing the tax expense and dividing by the total earnings before tax. Since corporate interest expense is tax-deductible, then increases in the tax rate could be directly related to increases in debt ratios (Peles and Sarnat, 1979).

#### 2.3.2.4 Growth of Firm and Investment Opportunities

Titman and Wessels (1988) argued that firms in growing industries have more investment projects and hence more opportunity to take risks at the expense of debt holders. The higher risk faced by suppliers of non-equity funds would be factored in the terms and prices that such suppliers would ask of the firms. Consequently, in order to avoid the higher cost of debt, the firms may prefer equity, and therefore growth should be negatively related to debt levels. However, Myers (1984) had noted that the agency problem may be mitigated if the firm were to issue short-term rather than long-term debt. Short-term debt measures may therefore be positively related to growth rates if growing firms substitute long-term with short-term funds. Jensen and Meckling (1976) argued that the agency costs may be reduced if firms issue convertible debt. This would imply that measures of convertible debt may be positively related to growth rates. Growth would therefore exhibit a positive relationship to both short-term and convertible debt, and a negative relationship to long-term debt.

Fama and French (2002) noted that in the simple pecking order theory, debt would increase as investments exceed retained earnings and fall when investment is less than retained earnings. If profitability is held constant, then firms with more investments would use up more retained earnings and therefore would have a higher debt ratio. Myers (1984) argued that in a more complex perspective, the pecking order theory predicts that firms with larger expected investments have less current leverage. This is because firms consider both current as well as future financing adjustment costs. Firms can keep debt ratios low when investments are persistently larger than earnings by keeping dividend payout ratios low. Consequently, firms with large expected investments maintain an unutilized debt capacity to avoid incurring either the



opportunity cost of foregoing future investments or financing such investments from proceeds of more expensive new equity issues.

Jung et al. (1996) argued that firms should use equity to finance their growth because such financing reduces the shareholders-managers agency costs. However, firms with less growth prospects should use debt because of its disciplinary role (Jensen, 1986; Stulz, 1990). A common proxy for growth opportunities is the market value to book value of total assets. Firms with growth opportunities should exhibit a greater market-to-book than firms with less growth opportunities, but Harris and Raviv (1991) suggest that this is not necessarily the case. For example when assets whose values have increased over time have been fully depreciated and when assets with high values are not accounted for in the balance sheet. Rajan and Zingales (1995) suggested that the relationship between growth opportunities and leverage is negative. This may be due to firms issuing equity when stock prices are high. As mentioned by Hovakimian et al. (2001), large stock price increases are usually associated with improved growth opportunities, leading to a lower debt ratio.

Measures of growth and investment opportunities include: firms market value over its net book value; rate of growth of assets (assumes that the past rate of investment will be sustained). Fama and French (2002); and Myers (1977). Other measures are capital expenditure divided by total assets; growth of total assets as measured by the percentage change in total assets; and research and development divided by sales (Titman and Wessels, 1988).

#### 2.3.2.5 Uniqueness of Firm's Products

Titman (1984) argued that a firm's liquidation decision is linked to its bankruptcy status. Therefore the costs that firms can potentially impose on their customers, suppliers, and workers by entering into liquidation are relevant to their capital structure choices. Stakeholders, including customers, employees, and suppliers of firms that produce unique or specialized products may incur relatively higher costs in the event that the firm liquidates. The employees and suppliers to the firm may have job specific skills and unique capital infrastructure, respectively. The customers would

incur costs attempting to identify alternative sources of the products or other firms to service their existing relatively unique products. Because of these reasons, debt ratios may be negatively related to uniqueness of the firm.

Measures of firm uniqueness include: expenditures on research and development over sales; selling expenses over sales; and employee quit rates, being the work force that voluntarily left their jobs over total workforce. Expenditure on research and development could indicate firm uniqueness because corporations that deal in products with close substitutes are likely to do less research and development since their innovations would be more easily replicated. Firms having relatively more unique products could be expected to advertise more and spend more in promoting and selling their products. Both expenditures on research and development and selling expenses would be positively related to uniqueness. It is however, likely that less unique firms would have higher employee quit rates as the skills of their employees are less job-specific and hence would find it costly to change their jobs. (Titman and Wessels, 1988).

Titman and Wessels (1988) did indicate that two of the measures of uniqueness, that is expenditures on research and development over sales; and selling expenses over sales may have some co linearity with other explanatory variables: positively correlated to non-debt tax shields and negatively correlated to collateralisable assets. Measures of debt ratio may thus be positively related to measures of firm uniqueness due to its positive correlation with non-debt tax shields and its negative correlation with asset collateral value.

#### 2.3.2.6 Industry Classification

As Titman (1984) argued, firms that deal in products requiring the availability of unique servicing and spare parts would find liquidation more costly. This suggests that firms dealing in machines and equipment should have less debt in their capital structure. Across industries, there are significant differences in the external factors that impact on firms. Among these characteristics is environmental dynamism, defined as the rate and the instability of environmental change (Child, 1972; Dess and Beard,

1984). Environmental dynamism is the product of several forces operating at one time. These include an increase in the size and number of organizations within an industry, and an increase in the rate of technological change and its diffusion throughout that industry. As the environment in which firms operate become more dynamic, the accuracy of their assessment of the potential impact of decisions decreases (Milliken, 1990). As the degree of environmental dynamism varies across industries, there are differences in the capabilities required and strategies for survival which in turn have firm performance implications (Simerly and Li, 2000). In support of relevance of industry to capital structure, Taggart (1980) observed that capital structures tend to be more similar within industry groups than across industries.

Firms operating in more dynamic environments may prefer to use less debt as borrowings may be more expensive as a result of a higher risk premium. Debt-holders may also wish to exercise greater control on the firm to reduce its likelihood of default. In extreme cases potential suppliers of funds may decline to invest in such firms since the agency cost problem cannot be effectively eliminated (Jensen and Meckling, 1976).

A measure of industry class could be captured by a dummy variable indicating the type of assets that the firm deals in (Titman, 1984). Simerly and Li (2000) suggest that the variability of an industry factor, such as value of shipments, over time could be used as a proxy to measure industry class and dynamism.

#### 2.3.3.7 Size of Firm

The size of firms being related to measures of leverage has been suggested by various authors. Fama and French (2002) argued that expected bankruptcy costs are higher for firms with more volatile earnings, and such corporations are likely to be smaller, and therefore such lower sized firms would be driven towards lower target debt ratios. Ang et al (1982) and Warner (1977) provide evidence that suggests that the ratio of bankruptcy costs to firm value increases with decrease in firm value. Larger firms also tend to be more diversified and therefore less likely to go into bankruptcy. Ferri and Jones (1979) suggest that large firms can borrow at better terms than smaller ones

and therefore would have more debt in their capital structure. Consequently, firm size would be positively related to debt ratios.

An indicator of firm size is sales (more specifically the natural logarithm of sales) (Booth et al, 2001; Titman and Wessels, 1988). Titman and Wessels (1988) also argued that employee quit rates could be used as an indicator of firm size to capture the fact that larger firms offer wider career opportunities to their employees and hence have lower staff quit rates.

#### 2.3.2.8 Volatility of Firm Earnings

Fama and French (2002) argued that firms with more volatile earnings would have higher expected bankruptcy costs and therefore are likely to target lower leverage. Since corporate interest expense is tax deductible, and in order to avail themselves of this benefit, firms with less volatile earnings may opt for higher debt ratios. (Fama and French, 2002). Titman and Wessels (1988) also noted that a firm's debt ratio decreases with increased volatility of earnings. Considering the pecking order theory, Fama and French, (2002) also concluded that in order to reduce the likelihood of raising funds through debt and new equity or alternatively to avoid foregoing profitable investments when net cash flows are low, firms with more volatile net cash flows are likely to have lower debt ratios.

A measure of a firm's earnings volatility is the standard deviation of a firm's change in operating income (Titman and Wessels, 1988). Fama and French (2002) suggested using firm size (natural logarithm of total assets) as a proxy for earnings volatility. Booth et al (2001) instead suggested the use of the standard deviation of return on assets (earnings before interest and tax divided by total assets).

#### 2.3.2.9 Profitability of Firm

Myers (1984), and Myers and Majluf (1984) suggest that firms prefer raising capital from retained earnings, debt, and new equity, in that order. This could, to some extent, be due to the relatively higher transaction costs of issuing new equity compared to debt; and debt to using retained earnings. The pecking order may also

arise due to information asymmetry. The past profitability of a firm, and hence retained earnings available for funding, should be related to a firm's current capital structure. Fama and French (2002) noted that in the simple pecking order theory, debt would increase as investments exceed retained earnings and fall when investment is less than retained earnings. Therefore if profitability persists and retained earnings consistently exceed investments, then leverage would be lower for more profitable firms.

The trade-off theory, considering bankruptcy costs, tax deductibility of corporate interest expense and manager-security holder agency costs predicts a positive relationship between profitability and debt ratio. However, the pecking order theory, taking into account transaction costs and information asymmetry between insiders and outsiders suggests that initially the relationship between profitability and debt ratio would be negative as retained earnings are used, then positive as debt is issued and finally negative as new equity is raised (Gaud et al, 2005).

Measures of a firm's profitability include: operating income over sales; operating income over total assets; and earnings before interest but after taxes over total assets. Titman and Wessels (1988); Booth et al (2001); and Fama and French, (2002).

#### 2.3.2.10 Bankruptcy Costs

Bankruptcy costs can have an impact on the value of the firm since its onset may necessitate parties other than equity and debt holders sharing in the firm's cash flow (Altman, 1984). These costs can thus cause the value of the firm in bankruptcy to be less than the value of the expected cash flows of a continuing entity. The trade-off theory would suggest that higher expected bankruptcy costs would push firms towards lower debt ratios in order to reduce the risk of incurring the costs (Myers, 2001). Scott (1976) argued that in cases where the market for real assets was imperfect, then optimal level of debt was an increasing function of the liquidation value of the firm's assets. This suggests that bankruptcy, which would force the sale of the firm's assets, is a factor to be considered in capital structure choices. Kim (1978) noted that the costs of bankruptcy comprise: asset disposal short-fall arising from liquidation or

“indirect” costs of reorganisation; the various administrative expenses payable to third parties; and the loss of unutilized tax credits. These costs, though important, are difficult to estimate and document.

#### 2.3.2.11 Adjustment (Financing) Costs

In the trade-off theory, when firms are setting target debt ratios they weigh all costs (including those incurred to raise additional funds) against potential benefits (Fama and French, 2002). To reduce the likelihood of having to issue debt or equity or alternatively incur opportunity costs of foregoing profitable investments, firms factor in a cushion of investable funds. Financing costs impede movement toward the target debt ratios. The higher the costs that would be incurred in raising additional debt or equity, the larger will be the gap between the actual and optimal debt ratios.

#### 2.3.2.12 Country That Firm is Based in

Booth et al (2001) noted that debt ratios in developing countries appear to be affected by the same types of variables that are significant in developed countries. However, since the choice between debt and equity depends on both firm-specific and institutional factors and since different countries may have differences such as economic growth rates, inflation rates, taxation rates and the development of capital markets, then capital structure may differ from country to country. Other differences across countries that may impact on capital structure include: the institutional framework governing bankruptcy, the preparation of financial statements, and the availability of different financing instruments (Rajan and Zingales, 1995).

### **2.4 Conclusion**

This chapter contains a summary of some pertinent literature in the area of capital structure choice. It is noteworthy that the bulk of the work in the area commenced after the publication of the MM 1958 seminal paper. Two main theories of capital structure have become predominant, that is the trade-off and pecking order theories; and to a lesser degree the free cash flow theory.

In examining the question of determinants of capital structure, several approaches can be adopted such as selecting independent variables:

- more consistent with one of the main theories of capital structure, trade-off, pecking order theory or even the free cash flow theory.
- without being constrained by either of the main theories of capital structure.

In assessing the relationship between capital structure and the independent variables, several measures of capital structure can be used, including: total liabilities, long-term liabilities, short-term liabilities, and convertible debt divided by either book values or market values of equity. The divisor can also be either sum of numerator plus book values or market values of equity. The choice of independent variables is wide and includes: tangibility of assets, non-debt tax shields, rates of taxation, growth of firm and investment opportunities, uniqueness of firm's products, industry classification, size of firm, volatility of firm earnings, profitability of firm, bankruptcy costs, adjustment (financing) costs and country that firm is based in. This is by no means exhaustive.

### 3.0 LITERATURE REVIEW – EMPIRICAL LITERATURE

#### 3.1 Introduction

Copeland and Weston (1992) highlight the difficulties that could be encountered while testing empirically capital structure issues. These include:

- capital structure changes are sometimes made simultaneously with new investment decisions. This makes it difficult to separate the impact on firm value that comes from the investment decision and the one that emanates from the financing choice,
- capital structure is difficult to measure. Good market value data is hard to obtain for public companies and virtually impossible for private companies, and
- total liabilities of the firm may not all be disclosed, such as leasing contracts, pension liabilities, deferred compensation to management and employers performance guarantees, lawsuits that are pending, warranties, and contingent securities such as warrants, convertible debt, and convertible preferred stock.

Copeland and Weston (1992) identify the three broad approaches to empirical tests of capital structure of firms as:

- cross-sectional studies that attempt to explain observed capital structure as a function of various explanatory variables, such as the tax rate, non-debt tax shields, potential for agency costs, operating leverage, systematic risk, etc. The incremental impact of each of these variables on financial leverage can, hopefully, help to separate the competing theories of capital structure.
- time series studies that looks at the relationship between changes in debt ratios and the occurrence of a potentially leverage-changing event, such as acquisition of assets, and
- effects of exchanges between debt and equity. Exchanges could change leverage without necessarily there being a change in the assets side of the balance sheet.

Booth et al (2001) noted that empirically distinguishing between the capital structure theories is virtually impossible. Consequently, empirical research has now tended to



focus on explaining capital structure decisions by looking at relationships between debt ratios and a variety of explanatory variables that can be justified by some or several of the capital structure theories.

In this chapter, selected empirical evidence available, generally and for Kenya specifically, is reviewed. The evidence is arranged bearing in mind the research questions. Those that address the research question number one (Does firm capital structure matter?) are discussed first. The section also covers the importance of capital structure and the main theories of firm capital structure. Those that address the research questions numbers two and three (What are the key determinants of firm capital structure? and How is capital structure correlated with the main determining factors?) are discussed next. These were not separated as there were no studies that focused solely on factor identification. The studies identified the independent variables and looked at the relationship between these and capital structure.

### **3.2 Importance of Capital Structure**

Some of the available studies on importance of and main theories of capital structure are analysed.

Jacoby (1948, 1949) carried out a study to document the aggregate investments and sources of funding of U.S. non-financial firms for different periods, that is 1930 – 1940, 1941 – 1945, 1946 – 1948. The study also made predictions about the future. The results were that during all the three phases, the bulk of annual average expenditure on new plant and equipment was financed by retained earnings. Bank loans played the second most significant role whereas new equity played the least role. The study predicted that in future if businesses required larger investments for assets, then the excess that could not be funded by internally generated funds would come from external sources, loans or equity. The study therefore alluded to a pecking order of financing choices.

Bogen (1950) in a study assessing for the USA economy the role of equity financing (for non-financial firms) for the period 1946-1948 found out that of the total US\$44

billion required for plant and equipment, retained earnings contributed 43%, borrowing 42%, working capital charges 9% and new equity 6%. These results would appear to support the importance of internal to external sources of funding, and when external sources are used, the dominance of debt to new equity.

Peles and Samat (1979) carried out an event study to assess the relationship between a change in tax law in the United Kingdom in 1966 that made the use of debt more advantageous to a firm and capital structure. They used a sample size of 846 firms (selected from 22 industries) for the period 1961 to 1971. They found that, as predicted by the trade-off theory, firms increased the use of debt presumably to capitalize on the benefits emanating from the advantageous change in tax code. Further, capital structure as measured by long term debt to total equity varied significantly across industries as predicted by the trade-off theory (this operates through differences across industries of such factors as asset structure and profitability.) The results would tend to support the traditional position that when firms consider tax advantages, there would exist optimal capital structures. In addition capital structure would appear to reflect industry specific characteristics.

Marsh (1982) studied the question of whether there exists an optimal capital structure and if firms attempt to make adjustments to attain it. Using probit and logit analysis, 748 cash issues of equity and quoted debt made by firms in the United Kingdom in the period 1959 to 1970 were analysed, with a holdout validation sample of 110 issues during the period 1971-1974. He found that firms appeared to make choices of financing instruments as if they had target debt ratios in mind. The results would tend to support the position of the existence of an optimal capital structure as per the trade-off theory. However, the study did not address the question of what drives the optimal capital structure or even whether the same factors would be the significant ones or otherwise across different industries.

Altman (1984) carried out a study to determine whether bankruptcy costs are significant considerations in the capital structure choices of firms. He used regression analysis to study 19 retail and industrial firms that went bankrupt in the period 1970 to

1978 in the United States of America. He concluded that bankruptcy costs, which averaged 11% to 17% of firm value in the three year period prior to bankruptcy, are non trivial. Bankruptcy costs were considered in the study to include direct expenses and indirect costs such as expected loss of profits and loss in asset value. The results would tend to suggest that bankruptcy costs, irrespective of industry, are important considerations when firms make capital structures choices. This is consistent with the trade-off theory of capital structure.

Fama and French (1998) carried out a study using regression analysis to test the relationship between firm value on one hand and on the other capital structure. They used a sample size of 2,400 firms spread across all industries in the United States of America for the period 1965 to 1992. They found that firm value is negatively related to debt levels contrary to predictions by the trade-off theory. The study did not isolate differences across industries. Further, the trade-off theory predicts increasing value at lower debt levels and a reversal of this relationship at higher debt levels. The study is therefore not conclusive due to its combining the entire debt level range.

Fama and French (2002) carried out a study to test the predictions about debt and dividends of both trade-off and pecking order theories of capital structure. They employed regression analysis and used 1,618 firms spread across all industries in the United States of America for the period 1965 to 1999. Their findings were that more profitable firms and firms with fewer investment opportunities have higher dividend payout ratios, which is consistent with the trade-off and pecking order theories. They also found that more profitable firms have lower debt ratios, which is consistent with the pecking order theory and inconsistent with the trade-off theory. Firms with more investment opportunities have lower leverage, which is consistent with the trade-off and pecking order theories. Short term variation in investment and earnings is mainly dealt with through debt. The results thus support the pecking order theory. The results also support the trade-off theory, except in regard to the relationship between leverage and profitability, whereby theory predicts a positive relationship (more profitable firms having a higher ratio of debt to equity) whereas the study found a negative relationship.

Lutomia (2002), using regression analysis, studied the relationship between the firm's capital structure and the systematic risk of companies quoted on the Nairobi Stock Exchange, for the period 1992 – 2001, using all companies except the banks. The study findings were that there was no relationship between the firm's capital structure and the systematic risk of its common stock. However, there were positive effects of leverage leading to the difference between the means of the levered and un-levered estimates of beta.

Frank and Goyal (2003) tested the pecking order theory of capital structure in the United States of America for the period 1971 to 1998. The number of firms in the study was 2,833 for 1971 rising to 7,301 by 1998. Financial firms and regulated utilities were excluded from the study. They used two approaches.

In one, they regressed change in debt (dependent variable) against four independent variables – tangibility of assets, market-to-book ratio (proxy for future growth opportunities), sales (proxy for firm size) and firm profitability. The hypothesis they tested was that the relationship between the debt ratio would be positive for firm size and tangibility of assets and would be negative for profitability and growth. The results were, for the four variables, consistent with predictions by theory. Tangibility of assets and firm profitability were the most significant.

In the other approach, they regressed change in debt (dependent variable) against net internal cash flow, investment and change in working capital (these three forming the financing deficit or surplus). The same was repeated but substituting new equity for debt. Their findings were that new equity tracked financing deficit more closely than debt, contrary to predictions of the pecking order theory.

The same theory modeled in two different ways yielding results that are not similar. There would appear that more work in regard to modeling the pecking order theory requires to be carried out.

Onsomu (2003) regressed debt/equity against the value of firms quoted on the Nairobi Stock Exchange using 22 companies (excluding the finance and investment sector) for the period 1993 to 2001. The study did not find a significant relationship between debt level and value of the firm. This is consistent with the MM debt irrelevance propositions

Gachoki (2005) tested the pecking order theory among firms quoted at the Nairobi Stock Exchange for the period 1998 to 2003, employing regression analysis and using a sample size of 31 companies in all sectors except finance and investment. The researcher studied the relationship between internal funds deficits and the amount of new debt issued. No relationship was found between financing deficit and new debt issued. The results were therefore not consistent with the predictions of the pecking order theory.

### **3.3 Relationship Between Variables**

Some of the available studies on key determinants of firm capital structure and how they are related to capital structure are discussed.

Castanias (1983) tested whether there exists an optimal capital structure, being a trade-off between default costs and tax shelter benefits. The study focused on the USA and employed correlation analysis on 36 lines of businesses (with the number of sampled firms per line varying from 30 to 2,927) for the years 1940, 1950, 1960, 1970, 1972 – 1977. The study examined the relationship between failure rates and leverage ratios. The results were that firm in lines of businesses that have higher probability of failure also tended to have less debt in the capital structure. The study would tend to support the trade-off theory of capital structure. However, the study while acknowledging the difficulty of specifying suitable proxies for bankruptcy costs did not attempt to model these.

Bradley M. et al (1984) carried out a study to test the existence of an optimal capital structure for 25 industries covering 851 non-financial firms in the U.S. for the period

1962-1981. The study employed regression analysis and ANOVA. The mean long-term debt to sum of long-term debt and market value of equity showed significant differences across industries ranging from 9.1% (drugs and cosmetics industry) to 58.3% (airlines). The independent variables used were variability of firm value, the level of non-debt tax shields and the magnitude of the costs of financial distress. The hypothesis tested was that debt ratio was inversely related to level of non-debt tax shields (proxy for tax advantage of debt), financial distress costs and variability of firm value.

The volatility of firm earnings was, consistent with the trade-off theory, statistically inversely related to debt ratios within industries. Not consistent with trade-off theory was the finding that non-debt tax shields was statistically positively related to firm leverage. The strong intra-industry similarities in debt ratios coupled with inter-industry differences and significant inverse relation between firm leverage and debt ratios appears to support the trade-off theory of capital structure.

A fundamental shortcoming of the study which even the researchers acknowledged, is the question of whether the selected variables captured sufficient determinants or whether there were missing variables.

Kamere (1987), using regression analysis, assessed the relationship between debt ratios and some factors (stability of future sales, level of interest rates in the economy, asset structure, lender's attitude towards the firm, tax advantage of debt, size of the business) that influence capital structure for all public companies in Kenya for the period 1981 to 1985. He found that stability of future cash flows, the level of interest rates in the economy, the asset structure (amount of collateralisable assets) were positively related to debt ratios. He found no significant relationship between debt ratios and the other factors.

Titman and Wessels (1988) carried out a study using regression analysis to test the trade-off theory of capital structure by assessing the relationship between capital structure and various determinants, that is collateral value of assets, non-debt tax

shields, growth of firm, uniqueness of firm's products, industry class, size of firm, volatility of firm's earnings and profitability of the firm. They used a sample size of 469 firms in the United States of America for the period 1974 to 1982. They found out that debt levels, as predicted by the trade-off theory, are negatively related to uniqueness of a firm's line of business and its industry class. Debt levels are positively related to size of firm and profitability of the firm as predicted by the trade-off theory. The results did not find relationships between capital structure and collateral value of assets (theory predicts a positive relationship), non-debt tax shields (this is somewhat consistent with theory, whose predictions are not conclusive), growth of firm and volatility of firm's earnings (theory predicts a negative relationships for these). Consequently the study findings are not in general consistent with theory predictions.

Rajan and Zingales (1995), employing regression analysis, studied the relationship between capital structure and various determinants (firm size, growth opportunities, profitability and tangibility of assets) using a sample of 4,557 firms in the United States of America, Japan, Germany, France, Italy, the United Kingdom, and Canada for the period 1987 to 1991. No specific theory, the trade-off or pecking order theory was specified. They found that at aggregate levels firm leverages were similar across the countries. Their conclusions were that more understanding of determinants of capital structure decisions was required and especially the role of factors external to the firm. Since the external environments in the countries of study were unlikely to be identical, the study findings are difficult to interpret as there was no discussion as to which independent variable the forces in the external environment operate through in order to influence capital structure.

Omondi (1996) used regression analysis to study the relationship between debt ratios and some factors (asset structure, firm size, level of interest rates, profitability, cash flow variability, age of firm, industry class, growth, and ownership) that influence capital structure for all listed companies in Kenya for the period 1987 to 1994. The findings were that asset structure (amount of fixed assets) and profitability, in line with theoretical predictions, were positively related to debt ratios. Firm growth was positively related to capital structure, which is inconsistent with theoretical

predictions. Capital structure varied across sectors, as theory predicts. Industrial class, ownership (local-government; local non-government and foreign), interest rates, size, age and turnover were found not to be significantly correlated with capital structure. The study therefore obtained results that were consistent with theoretical predictions and in other cases were not.

Kochhar and Hitt (1998) studied the relationship between corporate strategy and capital structure employing regression analysis and using a sample of 187 large manufacturing firms traded at the American or New York Stock Exchanges that implemented a diversification strategy in the period 1982-1986. They found that a firm's capital structure decisions are influenced by its diversification strategy and that a firm's capital structure simultaneously influences its diversification strategy. These results are inconsistent with theory whereby as in MM 1958 financing decisions are irrelevant for firm strategy.

Simerly and Li (2000) studied the relationship between capital structure and the environmental dynamism using a sample size of 700 firms across all sectors in the United States of America for the period 1989 to 1993. The study employed regression analysis. They found that in low dynamic environments, higher debt-equity ratios are positively related to firm performance. In high dynamic environments, higher debt-equity ratios are highly negatively related to firm performance. In medium dynamic environments, higher debt-equity ratios are weakly negatively related to firm performance. Consequently the relationship between firm performance and capital structure depends on the financial stability of the environment. These results are consistent with the trade-off theory predictions as in more dynamic environments, the risk of bankruptcy is higher and hence firms may opt for lower debt ratios.

Kiogora (2000), using regression analysis, tested for variations based on sectors in capital structure of companies quoted at the Nairobi Stock Exchange for the period 1991 – 1998, using 51 firms. Results indicated that there are differences in the capital structure among industry groupings and those firms within a given sector tend to



cluster towards some target equity/total assets ratio. These results are consistent with the trade-off theory of capital structure and also in line with theoretical predictions regarding sectoral variations in firm capital structure.

Hovakimian et al (2001) carried out a study using regression analysis on the key issues considered by firms when they increase or decrease funding, both debt or equity. The study was testing predictions of the trade-off theory of capital structure on that firms tend to move towards a target debt to equity ratio (which may vary over time) when they raise new debt or equity or retire debt or repurchase equity . They studied 11,136 security issues and 7,366 securities repurchases across all sectors in the United States of America for the period 1979 to 1997. They found that when firms either raise or retire significant amounts of new debt or equity capital, their choices move them towards a target capital structure as suggested by the trade-off theory. However, inconsistent with predictions of theory, they observed that target capital structure considerations appeared to play a more important role when firms repurchase rather than raise capital. This is not consistent with the trade-off theory of capital structure which does not distinguish importance between capital repurchases and new issues in firms moving towards target capital structure ratios. They also found that firms with large market to book ratios were more likely to issue equity and retire debt than are firms that have lower market to book ratios. This is consistent with shareholder's attempt to maximize their wealth.

Booth et al (2001) carried out a study on capital structure in developing countries, whereby they used data collected by the International Finance Corporation for the period 1980-1990. The countries and the respective sample sizes (which were the largest firms in the specific nations) were: India - 99, Pakistan - 96, Thailand - 64, Malaysia - 96, Turkey - 45, Zimbabwe - 48, Mexico - 99, Brazil - 49, Jordan - 38, and South Korea - 93. The study regressed, for each country, the firm's tax rate, asset tangibility, firm's market-to-book ratio, firm size, and variability of return on assets against debt ratios. The study, which did not assess a specific capital structure theory, sought to answer three questions:

- do corporate financial leverage decisions differ significantly between developing and developed countries?
- are the factors that affect cross-sectional variability in individual countries' capital structures similar between developed and developing countries?

The findings were that, *"In general, debt ratios in developing countries seem to be affected in the same way and by the same types of variables that are significant in developed countries. However, there are asymmetric differences in the way these ratios are affected by country factors, such as GDP growth rates, inflation rates, and the development of capital markets."* pp. 118.

- are the predictions of conventional capital structure models improved by knowing the nationality of the company?

The country of origin appeared to be an important variable in determination debt ratios. The implication of this is that the specifications of the model tested had not captured another or other variables through which the country specific institutional factors play in influencing debt-equity decisions of the firm.

Chonde (2002) studied the relationship between debt ratios and some factors (asset value, firm size, profitability, growth of firm, non-debt tax shield, and liquidity) that influence capital structure for 42 government owned enterprises in Kenya for the period 1994 to 1998. Profitability and growth were positively related to leverage. Asset value, firm size, liquidity and non-debt tax shield had negative correlation with leverage.

Odinga (2003) studied the relationship between debt ratios and some factors (asset tangibility, profitability, business risk, growth, size of the business and non-debt tax shield) that influence capital structure for all public companies in Kenya for the period 1989 to 2001. Profitability and non-debt tax shield were found to be the most significant variables in determining leverage. The other variables were not found to be significantly related to debt ratios.

Chiuri (2003) studied corporate leverage clientele effect for firms listed at the NSE and having debt for the period 1990-2001. The results suggested that firms may have acknowledged the importance of the gain from leverage, arising from interest tax shield in establishing the source of equity and debt finance. Maximum gain from leverage was attained when firms obtained debt finance from financial institutions and equity finance from a resident corporate body or foreign individual and/or foreign corporate body. The minimum gain from leverage was obtained when firms obtained equity finance from resident individual and debt finance from non-financial institutions or non-resident individuals or non-resident corporate bodies.

Muriuki (2003) studied the determinants of priority structure of corporate liabilities for firms quoted at the Nairobi Stock Exchange for the period 1992 – 2001 using a sample of 35 firms (excluding those in the financial and investment sector). Firm value and debt levels were found to be positively correlated. The study also showed that firms with secured debt had more growth opportunities unlike the other classes of debt. Profitability was highly correlated to long term debt. Short-term secured debt was the most prevalent across the firm.

Boateng (2004) studied the relationship between capital structure and various determinants for 41 joint venture firms in Ghana for the period 1965 to 1995. The results showed that size of joint venture, industry of joint venture (capital intensity) and ownership level of foreign owner were positively related to debt levels.

Gaud et al (2005) carried out an analysis of the determinants of capital structure using data pertaining to 104 (non-financial, non-utility and other highly regulated firms) Swiss companies listed on the Swiss stock exchange for the period 1991-2000. 946 observations were used in the study. The study utilized a linear regression model relating total debt to total assets as the dependent variable to five independent variables, growth, size, profitability, tangibles and financial distress costs. The results obtained were that size of firms and the magnitude of tangible assets were positively related to debt to debt to assets ratios. Firm growth rates and profitability were found to be negatively related to measures of leverage. Financial distress costs were not

significant. The researchers concluded that both the trade-off theory and the pecking order theory may have been at play. A key limitation of the study lies in the choice of independent variables in that there may also be others (not included) that exhibit a strong relationship with the dependent variable. Further the study is not of a cause-effect design and therefore its use to predict leverage should only be used cautiously.

Psiwa (2005) studied the relationship between gearing levels and company size of firms quoted at the Nairobi Stock Exchange as at 31<sup>st</sup> December, 2004 but for the period 2000 to 2004. He found that firm size was positively related to debt ratios.

Kinyua (2005) studied determinants of capital for small and medium enterprises (SMEs) in Kenya, using a sample of 50 firms. The explanatory variables used were: profitability, lending interest rates, asset structure, management's attitude towards risk, ability of shareholders to raise funds, size of the business, government policy, lenders attitude towards firm, age of business, and tax advantage of debt. It was found that profitability, lenders attitude to the firm, asset structure and size of the business are key determinants of capital structure. Other factors affecting capital structure include sale and lease-back facilities, size of capital investments, availability of credit, return on investment and cost of production. Also, the most preferred source of funding for SMEs are short-term credit, especially trade credit followed by retained earnings. Director's loan and related company balances ranked third followed by bank overdrafts and long-term loans. Raising funds through new ordinary share capital issues was not common.

Musili (2005) using a sample of 50 industrial firms, being members of the Kenya Association of Manufacturers, assessed the importance of various factors (projected cash flow from assets to be financed, avoiding dilution of common shareholders, risk of asset to be financed, restrictive covenants on senior securities, avoiding mis-pricing of securities to be issued, corporate tax rate, voting control, depreciation and other non-debt tax shields, correcting mis-pricing of outstanding securities, personal tax rates on debt and equity holders, bankruptcy costs) to managers when they make

financing decisions (selecting from: internal equity, external common equity ordinary debt, convertible debt, ordinary preferred stock, convertible preferred stock ).

Results showed that industrial firms were more likely to follow a financing hierarchy than to maintain a target debt to equity ratio. The study also found out that models based on corporate and/or personal taxes, bankruptcy and other leverage related costs are not as useful in determining the financing mix as the models that suggest that new financing reveals aspects of the firm`s marginal asset performance. In general, financial planning principles are more important in governing the financing decisions of the firm than are specific capital structure theories.

Matibe (2005) studied the relationship between ownership structure (institutional, individual, foreign and state) and capital structure for quoted companies at the NSE (excluding financial institutions and companies in the alternative investment market segment) for the period 1998 – 2002. The research found negative correlation between individual, institutional and foreign ownership with capital structure. State ownership was positively correlated with capita structure.

Mburu (2005) analysed the relationship between asset structure and debt structure for companies listed at the NSE (32 listed companies excluding the firms in the financial industry) for the period 1999-2003. The study found that the higher the level of tangible assets, the higher the level of corporate debt.

### **3.4 Conclusion**

This chapter contains a summary of some pertinent literature in the area of capital structure choice. It is noteworthy that the bulk of the work in the area commenced after the publication of the MM 1958 seminal paper.

There has been empirical testing of the main theories but with no concise conclusion as to which of them is better at explaining observed firm capital structures. Perhaps due to this, the bulk of the empirical research in the area has focused on isolating the

relationship between capital structure on the one hand and various explanatory variable such as; tangibility of assets, non-debt tax shields, rates of taxation, growth of firm and investment opportunities, uniqueness of firm's products, industry classification, size of firm, volatility of firm earnings, profitability of firm, bankruptcy costs, adjustment (financing) costs and country that firm is based in; on the other.

In Kenya, the studies that have been conducted, mostly at the masters degree level, have tested separately the main theories of capital structure, but the main focus has been looking at the relationship between capital structure and various determinants. It does appear that a lot more empirical work requires to be carried out in the area of capital structure in Kenya.

#### 4.0 CONCEPTUAL FRAMEWORK AND RESEARCHABLE ISSUES

Emerging from the literature reviewed, it does appear that there are several theories that attempt to explain the capital structure of firms. The two main ones are the trade-off theory and the pecking order theory. All the capital structure theories hypothesise relationships between capital structure and certain factors that include tangibility of assets, non-debt tax shields, rates of taxation, growth of firm and investment opportunities, uniqueness of firm's products, industry classification, size of firm, volatility of firm earnings, profitability of firm, bankruptcy costs, adjustment (financing) costs, country that firm is based in. The theories differ primarily by the explanatory factors that are emphasized. Irrespective of the theory, two main types of relationships between capital structure and the determining factors can be deduced. These are explained below, after definition of the notations.

Let,

- C = Capital structure of firm,  $f$ , at the end of a discrete time (annual),  $t$
- A = Tangibility of assets
- D = Non-debt tax shields
- R = Rates of taxation
- G = Growth of firm and investment opportunities
- U = Uniqueness of firm's products
- M = Industry classification
- S = Size of firm
- X = Volatility of firm earnings
- P = Profitability of firm
- B = Bankruptcy costs
- Z = Adjustment (financing) costs
- Y = Country that firm is based in
- $V_i$  = Other independent variable,  $i$ , that is important in determination of capital structure
- $k_i$  = Constant multiplier for independent variable,  $i$
- $t$  = End of a discrete time (annual)
- $t+j$  = End of a discrete time (annual), but  $j$  periods later

E = Error term

### Conceptual Relationship One

The relationship between the capital structure and independent variables is of the static nature:

$$C_{f,t} = \text{Function of } (k_a * A_{f,t}, k_d * D_{f,t}, k_r * R_{f,t}, k_g * G_{f,t}, k_u * U_{f,t}, k_m * M_{f,t}, k_s * S_{f,t}, \\ k_x * X_{f,t}, k_p * P_{f,t}, k_b * B_{f,t}, k_z * Z_{f,t}, k_y * Y_{f,t}, k_{vi} * V_{i,f,t}, +E)$$

There may exist co-linearity between some of the explanatory factors, and there may also exist a degree of spurious relationships between the dependent and some of the independent variables. In empirical testing of the functional relationships between the dependent and independent variables, a key decision that requires to be made is the choice of independent variables. In the most basic testing of the relationships, a single independent variable can be regressed against the dependent variable, in essence equivalent to having zeroes as the multipliers for the other independent variables. A more prevalent testing of the dependent-independent variables relationship is to have several independent variables being regressed against the dependent variable. The independent variables with the most explanatory power for the observed dependent variable are isolated. It is also worth noting that there are time mixes between the dependent and some of the independent variables, for example:

- capital structure of the firm is measured as at a particular point in time,
- A, D, R, U, M, S, Y may be capturing current period positions,
- G may be capturing some aspects of the past, present and future, and
- X, P, B, Z may be capturing estimates of future positions or outcomes.

### Conceptual Relationship Two

The relationship between the change in capital structure and independent variables is:

$$C_{f,t+j} - C_{f,t} = \text{Function of } (k_a * A_{f,t}, k_d * D_{f,t}, k_r * R_{f,t}, k_g * G_{f,t}, k_u * U_{f,t}, k_m * M_{f,t}, k_s * S_{f,t}, \\ k_x * X_{f,t}, k_p * P_{f,t}, k_b * B_{f,t}, k_z * Z_{f,t}, k_y * Y_{f,t}, k_{vi} * V_{i,f,t}, +E)$$

The change in capital structure (increase in debt ratio, decrease or none at all) is modeled when necessitated by:

- a significant investment, or



- a significant change in the mix of the liability side of the balance sheet, say for example if new equity is raised to retire a loan.

There may exist co-linearity between some of the explanatory factors, and there may also exist a degree of spurious relationships between the dependent and some of the independent variables. The comments concerning the selection of independent variables and time mixes in conceptual relationship one are also applicable here.

Following on from the literature review, it would appear that there are various unresolved theoretical issues in the area of corporate capital structure. These issues include: Does capital structure matter in as far as firm value maximization is concerned? If capital structure is a relevant variable in shareholder value maximization, what would be the general theory that would inform capital structure choices? Further, what would be the model specification and what would be the relationship among the variables?

Even as the key theoretical issues are being addressed, empirical work continues to be carried out to test the existing (and sometimes conflicting) theoretical constructs in the area of capital structure. In Kenya, empirically researchable issues include:

- i. testing the trade-off, pecking order and free cash flow theories of capital structure. This can be carried out as one study or as three different studies,
- ii. carrying out an empirical assessment of the determinants of capital structure. There are many possible permutations and combinations that can come out of this line of inquiry based on the independent variables that are selected for inclusion in the study,
- iii. carrying out an empirical assessment of the determinants of changes in capital structure (this would essentially be an event study), and
- iv. assessing the functional nature of the relationship between the dependent variable and each of the independent variables.

Due to significant constraints in obtaining information on non listed firms, it may be advisable at this stage to focus on carrying out empirical work on companies listed at the Nairobi Stock Exchange.

## 5.0 CONCLUSION

This study sought to identify and document literature on:

- the importance of and main capital structure theories, and
- the determinants of capital structure and the expected relationship between capital structure and the main determining factors.

The study was also expected to help identify researchable issues in the area of corporate capital structure in Kenya.

The paper has reviewed and documented pertinent empirical and theoretical work in the area of capital structure, both from a general perspective and also more specifically relating to Kenya. It does appear that a substantial body of knowledge exists in the area. However there are still substantial unresolved theoretical and empirical issues. Consequently, work is still continuing in attempting to better understand how firms make capital structure choices.

Some capital structure explanatory variables were identified, which are: tangibility of assets, non-debt tax shields, rates of taxation, growth of firm and investment opportunities, uniqueness of firm's products, industry classification, size of firm, volatility of firm earnings, profitability of firm, bankruptcy costs, adjustment (financing) costs and country that firm is based in.

The study identified several researchable issues in Kenya, primarily focusing on firms listed on the Nairobi Stock Exchange. The issues are:

- testing the trade-off, pecking order and cash flow theories of capital structure,
- carrying out an empirical assessment of the determinants of capital structure,
- carrying out an empirical assessment of the determinants of changes in capital structure, and
- assessing the functional nature of the relationship between the dependent variable and each of the independent variables.

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