DETERMINANTS OF CAPITAL STRUCTURE: EVIDENCE FROM THE NAIROBI SECURITIES EXCHANGE

By

NJIRU LINCOLN NDWIGA

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DECLARATION

This Research Project is my original work and has not been submitted in any other Institution.

Signed _____ Date 08/11/2012

Njiru Lincoln Ndwiga

D63/68023/2011.

This Research Project has been submitted for examination with my approval as the University Supervisor.

Signed _____ Date 8/11/2012

Mr. Mirie Mwangi

Lecturer, Department of Finance and Accounting

University of Nairobi.

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DEDICATION

This research work is dedicated to my mother, Gladys R. Njiru; thanks for your never-ending support.

ABSTRACT

Capital structure decisions are at the core of modern finance thinking. Capital structure decisions offer opportunities to create value for shareholders, yet these opportunities are often neglected because of difficulties in identifying the optimum capital structure that will maximise shareholder value (Opler, Saron, and Titman, 1997). The study, conducted from August 2012 to October 2012, set out to establish the determinants of capital structure in companies listed at the NSE. Leverage was the dependent variable, with Size, Profitability, Tangibility, Growth Opportunity, Tax, Non-debt tax shields, and Risk of a firm being the independent variables.

The study was primarily administered through the use of secondary data obtained from the financial statements of these companies. This was then analysed using descriptive statistics. Resultant data was subsequently presented using appropriate methods. The study also undertook correlation and multiple regression analysis.

The results of the correlation analysis reflect a positive correlation between size, profitability, and tangibility on the one hand, and growth and non-debt tax shields on the other. There is no relationship between all other independent variables examined. The results of the multiple regression analysis indicate that three (size, profitability and growth) of the seven independent variables are significant at a 5%. Future studies in this area could delve deeper into each of the measures of study to determine their individual relationship with Leverage. Future studies may also consider the determinants of capital structure in non-listed companies.

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ABBREVIATIONS

B	Billion
D	Debt
E	Equity
E.A	East Africa
EAT	Earnings After Tax
EBT	Earnings Before Tax
EBIT	Earnings Before Interest and Tax
k_d	Cost of Debt
k_e	Cost of Equity
KES	Kenya Shillings
M&M	Franco Modigliani and Merton Miller
NSE	Nairobi Securities Exchange
ROA	Return on Assets
SME	Small and Medium-sized Enterprise
WACC	Weighted Average Cost of Capital

CHAPTER ONE: INTRODUCTION

1.1 Background in the Study

Capital is an important resource for all companies. Capital may take the form of equity and/or debt. Whereas some companies could be all equity financed and have no debt at all, others could have low levels of equity and high debt usage. The decision on the mix of equity and debt capital is called financing or capital structure decisions. According to Fama and French (2002), the two competing models of financing decisions are the trade off theory and the pecking order theory. A number of factors may affect and/or influence capital structure too. These include: size, profitability, tangibility, growth opportunities, tax, non-debt tax shields, volatility, and industry classification (Bauer, 2004). Other potential determinants of capital structure that have been mentioned include uniqueness, income variability, and time dummies (Song, 2005).

1.1.1 The Concept of Capital Structure

Capital structure is defined as the mix of a company's long-term debt, specific short-term debt, common equity and preferred equity. The capital structure is a framework of different types of financing employed by a firm to acquire resources necessary for its operations and growth. Commonly, it comprises of stockholders' investments (equity capital) and long-term loans (loan capital), but, unlike financial structure, does not include short-term loans (such as overdraft) and liabilities (such as trade credit). It is also referred to as capitalization structure (Brealey and Myers, 1973). Capital structure

decisions offer opportunities to create value for shareholders, yet these opportunities are often neglected because of difficulties in identifying the optimum capital structure that will maximise shareholder value (Opler, Saron, and Titman, 1997).

The Modigliani-Miller theorem, proposed by Franco Modigliani and Merton Miller, forms the basis for modern thinking on capital structure, though it is generally viewed as a purely theoretical result since it disregards many important factors in the capital structure decision. The theorem states that, in a perfect market, how a firm is financed is irrelevant to its value ("Capital Structure," n.d., para. 2).

Even with the 1963 revision to the Modigliani and Miller theory when they admitted corporate tax into their analysis, altering their results dramatically, there still was a problem with the model because companies' capital structures are not almost entirely made up of debt. Other factors that companies need to take into consideration include bankruptcy costs, agency costs, tax exhaustion, and information asymmetry (Lynch, 2009).

To address some of the imperfections of the M&M model, theories have been developed to reflect real world determinants of capital structure. These theories include trade-off theory which suggests that optimal capital structure is a trade-off between net tax benefit of debt financing and bankruptcy cost. Trade off theory model is whereby firms identify their optimal leverage by weighing the costs and benefits of an additional dollar of debt (Mwangi, Omollo, and Amenya, 2012).

On the other hand, the pecking order theory is in sharp contrast with the theories that attempt to find an optimal capital structure by studying the trade-off between the advantages and disadvantages of debt finance. In this approach, there is no search for an optimal capital structure. Companies simply follow an established pecking order which enables them to raise finance in the simplest and most efficient manner (in order: use all retained earnings available; then issue debt; then issue equity, as a last resort) (Lynch, 2009).

Inertia is a theory which states that the debt/equity choice is mainly driven by inertia. The financing theory is not driven by the worry about flexibility or cost of access, but by the fact that this course of action takes the least effort (Servaes and Tufano, 2006).

Another theory of capital structure is the agency cost theory which illustrates the financial behaviour of firms in the context of agent and principle relationship (Bitok, Kibet, Tenai, and Mutwol, 2011). This may be viewed in light of measures put in place by debt-holders in order to safeguard their investments (Lynch, 2009).

1.1.2 Determinants of Capital Structure

In their distinguished works, Harris and Raviv (1991) summarize that "several studies shed light on the specific characteristics of firms and industries that determine leverage ratios. These studies generally agree that leverage increases with fixed assets, non-debt tax shields, growth opportunities and firm size, and decreases with volatility, advertising expenditures, research and development expenditures, bankruptcy probability, profitability and uniqueness of the product." However, the relationship between the

factors and capital structure is not consistent. The empirical results vary, and sometimes contradict in many studies. Moreover, comparisons of capital structure across countries reveal that institutional differences may affect the cross-sectional relation between leverage and factors (Niu, 2008).

1.1.3 The Nairobi Securities Exchange

In Kenya, dealing in shares and stocks started in the 1920's when the country was still a British colony. However the market was not formal as there did not exist any rules and regulations to govern stock broking activities. At that time, stock broking was a sideline business conducted by accountants, auctioneers, estate agents and lawyers who met to exchange prices over a cup of coffee. Because these firms were engaged in other areas of specialization, the need for association did not arise ("History of Organisation," n.d., para. 1).

It was not until 1954 that the Nairobi Stock Exchange was then constituted as a voluntary association of stockbrokers registered under the Societies Act, with 1988 seeing the first privatization through the NSE, the successful sale of a 20% government stake in Kenya Commercial Bank. In September 2006 live trading on the automated trading systems of the Nairobi Stock Exchange was implemented ("History of Organisation," n.d., para. 3 and 4).

There are 60 companies listed in both the Main, and Alternative Investment Market Segment, with a NSE 20 Share Index and the All Share Index (NASI). In February 2007 NSE upgraded its website to enhance easy and faster access of accurate, factual and

timely trading information. The upgraded website is used to boost data vending business. In the same year, the NSE reviewed the 20 Share Index and announced the companies that would constitute the NSE Share Index. The review of the NSE 20-share index was aimed at ensuring it is a true barometer of the market ("History of Organisation," n.d., para. 13 and 14).

In July 2011, the Nairobi Stock Exchange Limited changed its name to the Nairobi Securities Exchange Limited. The change of name reflected the strategic plan of the Nairobi Securities Exchange to evolve into a full service securities exchange which supports trading, clearing and settlement of equities, debt, derivatives and other associated instruments. In September 2011 the Nairobi Securities Exchange converted from a company limited by guarantee to a company limited by shares and adopted a new Memorandum and Articles of Association reflecting the change ("History of Organisation," n.d., para. 22 and 23).

1.2 Statement of the Problem

Drobetz and Wanzenried (2006) pointed out that capital structure is arguably the core of modern corporate finance. The relationship between capital structure and firm value has been the subject of considerable debate, both theoretically and in empirical research. Throughout the literature, debate has centered on whether there is an optimal capital structure for an individual firm or whether the proportion of debt usage is irrelevant to the individual firm's value (Baxter, 1967).

Indeed, many studies have concluded that an optimal capital structure does not exist – such was the case in Hatfield, Cheng and Davidson (1994). However, in the case of Mwangi, Omollo and Amenya (2012), they concluded from their study that firms in Kenya do have target capital structure in their study.

Bloated equity can obviously lower the Debt/Equity ratio. However, there are downsides to bloated equity. With too many shares available in the market, stock prices tend to stay depressed. Also, each individual shareholder may end up with a smaller percentage of the company's equity if shares are issued to FIIs and private equity investors. On the other hand, too small an equity capital restricts the ability of a company to borrow large sums of money. Most loans are sanctioned as a percentage of shareholder's equity. That is why you may find a huge bonus issue preceding a company's intention to take on a big loan - for growth or an acquisition ("What does the Debt/Equity ratio indicate?" 2009, para. 10-12).

While some studies such as Bauer (2004) have favoured the pecking order theory, others such as Bitok, Kibet, Tenai and Mutwol (2011) seem to be in favour of the static trade-off hypothesis. Mwangi, Omollo and Amenya (2012) also weighed heavily in favour of the trade off theory by firms in making their financial decisions, but insisted that the characteristics of market timing and pecking order theories should not be ignored nonetheless.

Both Ndung'u (2010) and Kuria (2010) drew conclusions that support the pecking order model as developed by Myers and Majluf (1984). Harris and Raviv (1991) in their survey of capital structure theories claimed: "The models surveyed have identified a large

number of potential determinants of capital structure. The empirical work so far has not, however, sorted out which of these are important in various contexts."

There have been conflicting results on determinants of capital structure too. For example, Titman and Wessels (1988) concluded that asset tangibility (collateral value), non-debt tax shields, financial distress (volatility) and growth do not affect leverage, while leverage (short-term measure) is negatively related to firm size. On the other hand, Harris and Raviv (1991) concluded that leverage increases with fixed assets tangibility, non-debt tax shields, firm size and growth opportunities and decreases with financial distress (volatility) and profitability. Similarly, Booth, Aivazian, Demirguc-Kunt, and Maksimovic (2001) concluded that leverage correlated positively with asset tangibility only for 4 out of 10 countries and positively related to financial distress.

Given the conflicting results, and the fact that there is no clear answer on which model best explains capital structure, it will be interesting to explore the link between theory and practice of capital structure, more so, understanding the determinants of capital structure in companies listed in the NSE.

1.3 Objectives of the Study

This study sought to ascertain the determinants of capital structure in companies listed on the Nairobi Securities Exchange. The study also sought to explore whether any one particular theory best explains preferred capital structure in the NSE.

1.4 Significance of the Study

The capital structure decision, as has been noted by many researchers, is at the core of modern finance thinking. Yet, many firms in Kenya do not have a target capital structure. This study seeks to offer an understanding of capital structure decisions by investment managers in firms requiring a huge capital outlay.

The study will also be important in advancing the theory and understanding of capital structure decisions by scholars and academicians, besides aiding investors in making informed investment decisions. The study provides useful recommendations for policy direction and management of Kenyan firms.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section provides a review of the various studies that have been undertaken in the area of capital structure, and narrows its focus on studies undertaken in the country on determinants of capital structure, whilst seeking an international perspective on the same as well. It aims at comparing and contrasting the different authors' views on the research topic, relating this research study to conclusions drawn, highlighting any gaps and how this research study aims to address these gaps.

2.2 Review of Theories

The modern theory of capital structure began with the seminal paper of Modigliani and Miller (1958). The Modigliani–Miller theorem (of Franco Modigliani, Merton Miller) forms the basis for modern thinking on capital structure. The theorem states that, under a certain market price process, in the absence of taxes, bankruptcy costs, agency costs and asymmetric information, and in an efficient market, the value of a firm is unaffected by how that firm is financed. It does not matter if the firm's capital is raised by issuing stock or selling debt. It does not matter what the firm's dividend policy is. Therefore, the Modigliani–Miller theorem is also often called the capital structure irrelevance principle ("Modigliani–Miller theorem," 2009, para. 1).

Modigliani and Miller (1963) recognized the effect of taxes by using assumption of none corporate tax and in this way corporations were permitted to deduct interest in the form

of expense. This theory recognized that net of tax approach encouraged the firms to utilize 100 percent debt in debt-equity combination but t discouraged 100 percent debt policy. Some other sources were also there to generate the funds at lower costs like retained earnings. In some conditions, retained earnings may be cheaper even tax status of shareholders under the personal income tax also considered ("Miller and Modigliani Theory," 2011, para. 3).

Since the publication of MM's irrelevance proposition, and its subsequent revision in 1963, hundreds of articles on the theory of capital structure have been carried out in order to find out under what conditions capital structure does matter (Song, 2005).

2.2.1 Trade-off Theory

Trade-off theory claims that a firm's optimal debt ratio is determined by a trade-off between the bankruptcy cost and tax advantage of borrowing. Higher profitability decreases the expected costs of distress and let firms increase their tax benefits by raising leverage. Firms would prefer debt over equity until the point where the probability of financial distress starts to be important (Scott, 1977).

2.2.2 Pecking Order Theory

The pecking order theory, as postulated by Myers and Majluf (1984), states that firms follow a hierarchy in financing their operations with a preference for internal over external finance, and for debt over equity (Shyam-Sunder and Myers, 1999). In doing so, firms first use internal equity, then debt, and only then do they use external equity. The

theoretical justifications that underpin the pecking order are threefold (Lynch, 2009): companies will want to minimize costs; companies will want to minimize the time and expense involved in persuading outside investors of the merits of the project; and the existence of asymmetrical information and presumed information transfer that result from management actions.

2.2.3 Inertia

This theory states that the debt/equity choice is mainly driven by inertia. The financing theory is not driven by the worry about flexibility or cost of access, but by the fact that this course of action takes the least effort (Servaes and Tufano, 2006).

2.2.4 Agency Costs

This may be viewed in light of measures put in place by debt-holders in order to safeguard their investments, including, imposing restrictive covenants in the loan agreements that constrain management's freedom of action. These restrictive covenants may limit how much further debt can be raised, set a target gearing ratio, set a target current ratio, restrict the payment of excessive dividends, restrict the disposal of major assets or restrict the type of activity the company may engage in. As gearing increases, debt-holders would want to impose more constrains on the management to safeguard their increased investment (Lynch, 2009).

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2.2.5 The Market Timing Theory

The market timing theory of capital structure argues that firms time their equity issues in the sense that they issue new stock when the stock price is perceived to be overvalued, and buy back own shares when there is undervaluation. Consequently, fluctuations in stock prices affect firms capital structures. There are two versions of equity market timing that lead to similar capital structure dynamics (Luigi and Sorin, 2009). Baker and Wurgler (2002) state that capital structure is the outcome of the historical cumulative timing of the market by managers.

From the theories above, it is clear that considerable progress has been made in advancing Modigliani and Miller assumptions, thus making capital structure relevant to a firm's value. However, very little is known about the empirical relevance of the different theories (Rajan and Zingales, 1995). According to Fama and French (2002), the two competing models of financing decisions are the trade off theory and the pecking order theory.

2.3 Relationship between Capital Structure and the Various Determinants

In their distinguished works, Harris and Raviv (1991) noted that leverage increases with fixed assets, non-debt tax shields, growth opportunities and firm size, and decreases with volatility, advertising expenditures, research and development expenditures, bankruptcy probability, profitability and uniqueness of the product. They would however also note that results are not always unambiguous. Bauer (2004) noted that a number of factors

may affect and/or influence capital structure. These include: size, profitability, tangibility, growth opportunities, tax, non-debt tax shields, volatility, and industry classification.

Whereas it may be argued that the bigger the size, the wider is total capitalization, the effect of size on leverage, from a theoretical point of view, is ambiguous. Also, empirical studies do not provide us with clear information – whereas some authors find a positive relation between size and leverage, others report a negative relationship. Moreover, the results more often than not are weak in as far as the level of statistical significance is concerned (Bauer, 2004).

Similarly, there are no consistent theoretical predictions on the effect of profitability on leverage. For instance, from the point of view of the trade-off theory, more profitable companies should have higher leverage because they have more income to shield from taxes. However, from the point of view of the pecking-order theory, firms prefer internal financing to external. So more profitable companies have a lower need for external financing and therefore should have lower leverage (Bauer, 2004).

With respect to tangibility, it is assumed, from the theoretical point of view, that tangible assets can be used as collateral. Therefore higher tangibility lowers the risk of a creditor and increases the value of the assets in the case of bankruptcy. The more tangible the firm's assets, the greater its ability to issue secured debt and the less information revealed about future profits (Booth, Aivazian, Demirguc-Kunt, and Maksimovic, 2001). Thus a positive relation between tangibility and leverage is predicted.

On the other hand, firms with higher future growth opportunities should use more equity financing, because a higher leveraged company is more likely to pass up profitable investment opportunities (Myers, 1977), i.e. such an investment effectively transfers wealth from stockholders to debt holders (Huang and Song, 2002).

According to the trade-off theory, a company with a higher tax rate should use more debt and therefore should have higher leverage, because it has more income to shield from taxes.

Other items apart from interest expenses, which contribute to a decrease in tax payments, are labeled as non-debt tax shields (for example the tax deduction for depreciation). Ceteris paribus, decrease in allowable investment-related tax shields will increase the amount of debt that firms employ. In cross-sectional analysis, firms with lower investment related tax shields (holding before-tax earnings constant) will employ greater debt in their capital structures (Angelo and Masulis', 1980).

Volatility may be understood as a proxy for risk of a firm (probability of bankruptcy). Therefore it is assumed that volatility is negatively related to leverage. However, various studies, including Kim and Sorensen (1986) and Huang and Song (2002) indicate a positive relation between volatility and leverage. Conversely, a negative relation is found by Bradley, Jarrell and Kim (1984), and Titman and Wessels (1988).

Finally, some empirical studies identify a statistically significant relationship between industry classification and leverage. Drugs, Instruments, Electronics, and Food have

consistently low leverage. On the other hand, Paper, Textile Mill Products, Steel, Airlines, and Cement have consistently large leverage (Harris and Raviv, 1991).

Other factors that may determine capital structure include capital market conditions, period of financing and cost of financing. Capital market conditions refers to the lifetime of the company, the market price of the shares has got an important influence. During the depression period, the company's capital structure generally consists of debentures and loans. While in period of boons and inflation, the company's capital should consist of share capital generally equity shares. On the other hand, under period of financing, when company wants to raise finance for short period, it goes for loans from banks and other institutions; while for long period it goes for issue of shares and debentures. As a final point, under cost of financing in a capital structure, the company has to look to the factor of cost when securities are raised. It is seen that debentures at the time of profit earning of company prove to be a cheaper source of finance as compared to equity shares where equity shareholders demand an extra share in profits ("Capital Structure - Meaning and Factors Determining Capital Structure," n.d.).

2.4 Review of Empirical Studies

A number of studies have been undertaken both locally and internationally touching on capital structure. While these studies have been useful in advancing understanding in the study area, there are gaps which this, and other future studies can address. Largely, these studies have centered on whether there is an optimal capital structure for an individual firm or whether the proportion of debt usage is irrelevant to the individual firm's value.

Hatfield, Cheng and Davidson (1994) from their tests of DeAngelo and Masulis' (1980) theory that a firm would seek an "optimum debt level," and that a firm could increase or decrease its value by changing its debt level so that it moved toward or away from the industry average, concluded that there was no evidence to support this.

However, in the case of Mwangi, Omollo and Amenya (2012), they concluded that firms in Kenya do have target capital structure in their study which sought to determine whether firms in Kenya have an optimal target leverage, whether an adjustment towards this target takes place and finally to ascertain the speed of adjustment towards this target leverage.

Given, from previous studies, that there is no consensus on presence of an optimal capital structure, what determines a firm's capital structure? Bancel and Mittoo (2002) concluded that financial flexibility, credit rating and tax advantage of debt are the most important factors influencing the debt policy while the earnings per share dilution is the most important concern in issuing equity. They also concluded that the level of interest rate and the share price are important considerations in selecting the timing of the debt and equity issues respectively.

Bauer (2004) in his study, based on data availability, eight potential determinants of capital structure were analysed in this paper – size, profitability, tangibility, growth opportunities, tax, non-debt tax shields, volatility, and industry classification. The study concluded that leverage of Czech listed firms is positively correlated with size; this result supports the view of size as an inverse proxy for the probability of bankruptcy. This

finding is consistent with the pecking order hypothesis rather than with static trade-off models.

Song (2005) concluded that while debt ratio is significantly related to tangibility, profitability, size, and income variability, non-debt tax shield is only related to the short and long-term forms of debt (and not to total debt ratio). Uniqueness and growth are not related to any of the three debt measures (total debt ratio, long-term debt ratio, and short-term debt ratio).

The study also concluded that there exist significant differences between short-term and long-term debt ratios in three cases; while tangibility is positively related to long-term debt (and total debt as well), it is negatively related to short-term debt. Furthermore, while non-debt tax shield has a positive effect on short-term debt ratio, it is negatively correlated with long-term debt ratio. Finally, while size is positively related to both total debt and short-term debt ratio, it is negatively correlated with long-term debt ratio.

Based on the conclusion drawn, the study went further to suggest that future analysis of leverage determinants should be based on not only long-term or total debt ratios, but on short-term debt ratios as well.

Closer home in South Africa, Murangi (2009), in a study which looked at optimal capital structure for JSE listed companies, results indicated that in most sectors of the JSE companies could have used significantly more debt to finance their operations. By so doing these companies would have increased shareholder value over the years. However,

this study only proposed an increase in use of debt, as opposed to defining the optimal capital structure.

Joshua Abor (2008) in paper on Determinants of the Capital Structure of Ghanaian Firms, the study concluded that age of the firm, size of the firm, asset structure, profitability, risk and managerial ownership are important in influencing the capital structure decisions of Ghanaian firms. For the SME sample, it was found that factors such as the gender of the entrepreneur, export status, industry, location of the firm and form of business are important in explaining the capital structure choice.

Several studies in this area have also been undertaken in Kenya. Bitok, Kibet, Tenai and Mutwol (2011) reviewed the three leading theories of capital structure were reviewed; static trade off theory, pecking order theory and agency cost theory. In summary, the findings were that firm leverage is positively associated with both asset tangibility, profit, macro-economic and size, and negatively associated with firm-level profitability and non-tax debt tax shield. Leverage across the sample was typically lower for alternative investment market segment. Finally, this research suggested that the static trade-off hypothesis provides the most robust explanation of leverage for Kenyan listed firms from 2003 to 2008. This is a view supported by Mwangi, Omollo and Amenya (2012) that weighed heavily in favour of the trade off theory by firms in making their financial decisions, but insisted that the characteristics of market timing and pecking order theories should not be ignored nonetheless.

Ndung'u (2009) drew the conclusion that Financial Managers are likely to follow a financial hierarchy that adhere to target capital structures. As regards capital structure

theories, the results of the study support the pecking order model. If confronted with new growth opportunities which would force them to deviate from the target capital structure or the financing hierarchy, most firms would go for the growth opportunity. On the other hand, Kuria (2010) concluded that the determinants of capital structure are profitability and asset structure, with pecking order theory being partially accepted among listed companies.

On the other hand, Green, Kimuyu, Manos and Murinde (2002) concluded that the main determinants of debt and loan screening decisions are a mixture of conventional and heterodox variables. Among the conventional variables, measures of the tangibility of the owner's assets, and objective and subjective measures of income are particularly important, both in the debt and in the screening decisions. Among the more heterodox variables, the level of education and training of the owners have a significant positive impact on the probability of borrowing and of the resultant gearing level.

2.5 Conclusions from Literature Review

Capital structure, as has been noted, is at the core of modern finance. The capital structure decision entails a firm deciding on the mix of debt and equity to use so as to finance both its operations and growth plans.

There has not been consensus on the availability of an optimal capital structure, with various studies being ruling in favour of, or against, an optimal capital structure. Similarly, various theories have been advanced subsequent to the seminal paper of Modigliani and Miller (1958) – Fama and French (2002) would later argue that the two

competing models of financing decisions are the trade off theory and the pecking order theory.

With respect to determinants of capital structure, various studies have been undertaken both locally and internationally. Whereas there is no consensus on these, some of the conventional determinants identified that influencing the capital structure decision include size of the firm, tangibility of the owner's assets, profitability, macro-economic factors, managerial ownership, income variability, financial flexibility, credit rating, and tax advantage of debt. Many of these studies however seem to dispute the importance of non-debt tax shield in the determination of capital structure.

Some of these studies have also identified heterodox variables key to the capital structure decision, including level of education, training of the owners, gender of the entrepreneur, export status, industry, location of the firm, and form of the business.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter sets out the research methodology that was used in meeting the objectives of this study. It discusses the choice of research design, the study population, the sample and sampling techniques, data collection methods, and data analysis and presentation techniques that was employed in the study.

3.2 Research Design

This research study made use of descriptive statistics since the method allows collection of large amounts of data from the target population as compared to other methods. The study involved collection of data from the financial statements of companies listed at the NSE, with data being statistically analysed. This study also made use of correlation and regression analysis. In particular, this study aimed at understanding the relationship between the independent variables against Leverage (dependent variable).

3.3 Target Population

This study undertook a census on all companies listed in the main investments market segment of the Nairobi Securities Exchange (Appendix I).

3.4 Sampling

Whereas the study was a census on the determinants of capital structure of companies listed in the main investments market segment of the NSE, the study was restricted to non-financial and non-insurance companies only. This restriction was necessitated by the complexities of capital structure and heavy regulation in financial and insurance companies. Thirty four (34) companies were studied as listed in Appendix II.

3.5 Data Collection

The study was primarily administered through the use of secondary data obtained from the financial statements of these companies. Individual company websites and the NSE website were particularly useful in obtaining data for this study.

3.6 Data Analysis

The study made use of SPSS version 18 in analysis of data. Financial data was collected over a period of five (5) years running from 2007 to 2011, and coded to facilitate statistical analysis. This was then analysed using descriptive statistics including mean and mode. Resultant data was subsequently presented using appropriate methods.

In particular, this study aimed at determining the relationship between various independent variables of interest (Size, Profitability, Tangibility {Asset structure}, Growth Opportunity, Tax, Non-debt tax shields, and Risk of a firm {Income Variability}), and the dependent variable (Leverage {Capital Structure}). Towards this end, correlation analysis and multiple regression techniques will be used. This was useful

in determining which independent variables are useful in determining the outcome of a dependent variable.

The multiple regressions equation will be of the form:-

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \beta 7X7 + \varepsilon$$

Where:

Y – Leverage = Debt/Equity
X1 – Size = natural logarithm of sales
X2 – Profitability = EBIT/Total Assets
X3 – Tangibility = Tangible Assets/ Total Assets
X4 – Growth Opportunity = Market-to-Book Ratio
X5 – Tax = (EBT-EAT)/EBT
X6 – Non-debt tax shields = Depreciation/ Total Assets
X7 – Risk of a firm = Standard Deviation of Return on Assets, and
E – Error Term.

Bauer (2004) used the natural logarithm of sales to proxy size, return on assets (defined as earnings before interest and taxes divided by total assets) to proxy profitability, tangibility is defined as tangible assets divided by total assets, market-to-book ratio is used as a proxy for growth opportunities, tax effects on leverage is proxied using the difference between earnings before taxes and earnings after taxes, scaled by earnings before taxes, depreciation divided by total assets is used in order to proxy for non-debt tax shields in this study, and standard deviation of return on assets is used as a proxy for volatility. Song (2005) based its analysis on a similar argument. This study was based on these measures too.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter contains details and analysis of the findings of the study as the secondary data reviewed. It has been summarized in form of tables and narratives. The study aimed at achieving specific objectives, i.e. to ascertain the determinants of capital structure in company listed at the NSE, and to explore whether any one particular theory best explains preferred capital structure at the. The findings of the study are presented and discussed in line with the objectives of the study.

The sample comprised a total of thirty four (34) companies listed in the main investments market segment of the NSE within the period from 2007 to 2011 (i.e. non-financial and non-insurance companies) (Appendix II).

4.2 Descriptive Statistical Analysis

Seven possible determinants of leverage are observed and analyzed in this study. The table below explains the descriptive statistics.

		2007					2008				
	Obs	Mean	Median	Min	Max	SD	Mean	Median	Min	Max	S
Size	34	70.58	71.50	60.91	77.69	4.93	71.56	70.78	61.32	81.29	5.
Profitability	34	0.13	0.09	-0.07	0.32	0.11	0.15	0.13	0.04	0.35	0.
Tangibility	34	0.38	0.33	0.01	0.86	0.29	0.37	0.36	0.02	0.86	0.
Growth Opp.s	34	61.47	18.60	1.00	300.00	85.25	56.80	18.10	2.90	352.00	82
Tax Effects on Leverage	34	0.30	0.31	-0.01	0.48	0.12	0.21	0.30	-0.92	0.39	0.
Non-debt Tax Shields	34	0.03	0.06	0.00	0.12	0.04	0.03	0.09	-0.04	0.13	0.
Risk	34	0.09	0.00	0.01	0.23	0.07	0.10	0.00	0.03	0.24	0

		2009					2010				
	Obs	Mean	Median	Min	Max	SD	Mean	Median	Min	Max	S
Size	34	72.06	71.32	61.37	79.85	4.98	72.45	71.95	61.59	80.08	4.
Profitability	34	0.12	0.08	-0.05	0.32	0.09	0.13	0.09	0.02	0.32	0.
Tangibility	34	0.38	0.30	0.02	0.85	0.29	0.38	0.37	0.02	0.76	0.
Growth Opp.s	34	45.16	22.20	2.20	287.00	66.51	74.53	36.00	2.90	530.00	121
Tax Effects on Leverage	34	0.18	0.30	-1.48	0.55	0.43	0.19	0.28	-1.00	0.35	0.
Non-debt Tax Shields	34	0.02	0.06	-0.08	0.13	0.04	0.03	0.06	0.00	0.13	0.
Risk	34	0.09	0.00	0.03	0.23	0.06	0.09	0.00	0.02	0.23	0.

		2011				
	Obs	Mean	Median	Min	Max	SD
Size	34	73.41	73.04	63.25	83.47	4.93
Profitability	34	0.15	0.11	0.04	0.34	0.10
Tangibility	34	0.38	0.36	0.02	0.81	0.29
Growth	34	66.57	25.00	2.30	328.00	94.45
Tax Effects on Leverage	34	0.28	0.29	-0.02	0.56	0.13
Non-debt Tax Shields	34	0.03	0.08	0.00	0.14	0.03
Risk	34	0.10	0.00	0.02	0.24	0.07

Table1: Descriptive statistics for five years

Size was measured by natural log of sale. On average there is growth in sales of the companies observed at NSE between 2007 with a mean of 70.58 and 2011 with a mean of 73.41. In terms of Profitability, in 2009 lowest average mean of (0.12) was observed. The overall mean was 0.14. Tangibility is the ratio of tangible assets to total assets. This ranged between 0.37 and 0.38 within the five years. Also same small margin range is observed in standard deviation with a range between 0.28 and 0.29 within same period of five years. The highest growth was in 2010 at mean of 74.537 while the lowest growth was in 2009 at a mean of 45.16. With respect to Taxation, 2007 had highest mean at 0.30 while 2009 and the lowest at 0.18. Non-debt tax shields was measured by the ratio of fixed assets to total assets. 2009 had the lowest mean at (0.02). Risk was measured by

standard deviation of the profitability. 2008 and 2011 had the highest average risk (mean 0.10).

4.3 Correlation and Multiple Regression Analysis

4.3.1 Relationship between Different Determinants of Capital Structure

The following table shows the Pearson correlation of the different determinants of capital structure, the findings show that most of the factors are significantly correlated at 95% Confidence Interval.

Correlations Matrix

		Size	Profitability	Tangibility	Growth	Tax Effects on Leverage	Non-debt Tax Shields	Risk
Size	Pearson Correlation	1	0.034	0.149	.291**	0.093	.308**	0.02
	Sig. (2-tailed)		0.741	0.149	0.004	0.372	0.002	0.79
	N	34	34	34	34	34	34	34
Profitability	Pearson Correlation	0.034	1	0.159	-0.049	0.1	.353**	.984*
	Sig. (2-tailed)	0.741		0.123	0.637	0.336	0.000	0.0
	N	34	34	34	34	34	34	34
Tangibility	Pearson Correlation	0.149	0.159	1	-.338**	0.017	.446**	0.17
	Sig. (2-tailed)	0.149	0.123		0.001	0.872	0.000	0.08
	N	34	34	34	34	34	34	34
Growth	Pearson Correlation	.291**	-0.049	-.338**	1	0.012	-0.062	-0.0
	Sig. (2-tailed)	0.004	0.637	0.001		0.908	0.552	0.49
	N	34	34	34	34	34	34	34
Tax Effects on leverage	Pearson Correlation	0.093	0.1	0.017	0.012	1	0.011	0.09
	Sig. (2-tailed)	0.372	0.336	0.872	0.908		0.916	0.35
	N	34	34	34	34	34	34	34
Non-debt Tax Shield	Pearson Correlation	.308**	.353**	.446**	-0.062	0.011	1	.414*
	Sig. (2-tailed)	0.002	0.000	0.000	0.552	0.916		0.0
	N	34	34	34	34	34	34	34
Risk	Pearson Correlation	0.027	.984**	0.179	-0.07	0.096	.414**	1
	Sig. (2-tailed)	0.796	0.000	0.083	0.497	0.352	0.000	
	N	34	34	34	34	34	34	34

** Correlation is significant at the 0.01 level (2-tailed).

Table2: Pearson correlation

Correlation takes up the ranges between -1 and 1, where factors which have a correlation close to -1 mean that they are inversely related (An increase in one factor results to a decrease in the other factor) while those with a correlation close to 1 mean they are directly related. (An increase in one factor results to an increase in the other factor).

Size is positively correlated with two leverage measure namely Growth and Non-debt Tax Shields. Profitability is also positively correlated with the two. Also a significant difference is observed at 0.01 confidence level. Tangibility is also highly statistically significant in Growth and Non-debt Tax Shields as a measure of leverage. From theoretical point of view, a positive relationship is expected between leverage and tangibility which is shown by the results of the study. There is no relationship between all other measures examined.

4.3.2 Multiple Regression Analysis

The last statistical test that was performed in this research is multiple regression analysis. This was done in order to study the relationship between a continuous dependent variable and a set of independent variables. This data was used as a new variable that was called "leverage" and this variable was set as the dependent continuous variable. As independent variable or predictors, Size, Profitability, Tangibility, Growth, Tax Effects on Leverage, Non-debt Tax Shields and Risk were used. The purpose behind the multiple regression analysis was to explore how well the predictor variables, previously described, are able to predict the difference in Capital Structure (Leverage).

4.3.3 Assumptions of Multiple Regression Analysis

There are a number of assumptions that have to be respected while performing a multiple regression analysis. One of these assumptions is the multi-collinearity one – this refers to the correlation between the independent variables, if they are highly correlated, usually r=0.7or more, then there is multi-collinearity and the regression model can be negatively affected (Pallant, 2007). In the current model it can be seen that the correlation between the independent variable are all below 0.7 and that there is a relationship between the dependent variable (Leverage) and the set of independent variables. Therefore, these results suggest that there is no multi-collinearity.

4.3.4 Interpretation of the Results of Multiple Regression Analysis

According to Pallant (2007), in order to evaluate the regression model, one should look at the R-square in the Model Summary table. In the current model the R-square displays a value of 0.503 which means that the current model explains 50.3% of the variance in capital structure. As the sample used in this study is quite small, the adjusted R-square should be reported as it gives a better estimation. The value obtained in the current model for the adjusted R-square is 0.253. Furthermore, it can be seen that the p-value of the current model is 0.027 which is statistically significant at a 5% level. After evaluating the power and the significance of the model, it is interesting to find out which independent variable contributed the most in predicting the dependent variable. For this, we can look at the Coefficient table of our output and check the Beta under the standardized coefficients column.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.503[a]	.0.253	-.121	5,42945E15

a. Predictors: (Constant), Size, Profitability, Tangibility, Growth Opportunity, Tax, Non-debt tax shields, and Risk of a firm

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7,975E31	7	1,994E31	,676	.,027[b]
	Residual	2,358E32	26	2,948E31		
	Total	3,156E32	33			

a. Dependent Variable: Leverage

b. Predictors: (Constant), Size, Profitability, Tangibility, Growth Opportunity, Tax, Non-debt tax shields, and Risk of a firm

Table3: Statistical representation of the Model

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.196	.508		2.353	.021
	Size	-.009	.007	-.136	-1.234	.020
	Profitability	6941	5.848	-.498	1.187	.029
	Tangibility	.137	.135	.118	1.010	.316
	Growth	-.378	2.313	.679	-.164	.084
	Tax Effects on Leverage	-.003	.113	-.003	-.027	.979
	Non-debt Tax Shield	.552	1.214	.059	.455	.650
	Risk	0.096	.176	.217	546	..073

a. Dependent Variable: Leverage

Table4: Results of Regression Analysis

4.4 Discussion

This study investigated the determinants of capital structure in non-financial and non-insurance companies listed at the Nairobi Securities Exchange. A total of 34 companies were analysed between 2007 and 2011 (Appendix II). Based on data available seven determinants of capital structure (size, profitability, tangibility, growth opportunities, tax, non-debt shields and risk) were analyzed. The comparison between 2007 and 2011 shows there was average increase in growth of sales among the companies at the NSE. On average, companies in 2009 were slightly profitable compared to others years. On average there was very slight difference on tangibility between 2007 and 2011. The average tax is higher in 2007 while is the lowest in 2009 and also the value of non-debt tax shields is lowest in 2009.

From correlation analysis, size is positively correlated with two leverage measure namely Growth and Non-debt Tax Shields. Profitability is also positively correlated with the two. Also a significant difference is observed at 0.01 confidence level. Tangibility is also highly statistically significant in Growth and Non-debt Tax Shields as a measure of leverage. From theoretical point of view, a positive relationship is expected between leverage and tangibility which is shown by the results of the study. There is no relationship between all other measures examined.

The results of the multiple regression analysis indicate that the data that contributed the most is growth with a beta of 0.679 and the risk variable with a beta of 0.217. The third variable is Profitability with 0.498 and fourth variable is Size with a beta of -0.136. Fifth

variable is Tangibility with a beta of 0.118 and sixth variable is Non-debt Tax Shield with a beta of 0.59. Final variable is Tax with a beta of -0.03 which did not bring much to the model. Three of the seven independent variables are significant at a 5%. In short, these findings suggest that three of the chosen predictor variables namely; size, profitability and growth are able to predict the variation in the capital structure.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the Findings

This study investigated the determinants of capital structure in non-financial and non-insurance companies listed at the Nairobi Securities Exchange. A total of 34 companies (Appendix II) were analysed between 2007 and 2011. The results of the correlation analysis reflect a positive correlation between size, profitability, and tangibility on the one hand, and growth and non-debt tax shields on the other. There is no relationship between all other measures examined. The results of the multiple regression analysis indicate that three (size, profitability and growth) of the seven independent variables are significant at a 5%.

5.2 Conclusion and Recommendations

This study investigated the determinants of capital structure in companies listed at the NSE. The results of this study show that there is a significant relationship between size, profitability and growth, and leverage. On the other hand, growth and risk displays a positive but insignificant relationship with capital structure. The study suggests that there is no positive relationship between leverage and the other measures examined, namely; tax effects on leverage and non-debt tax shield. It can be stated that no significant difference hence negative correlation on leverage to tangibility. There were no relationship between leverage and tax. It may thus be concluded that size, profitability

and growth are able to predict the variation in the capital structure. The results of this study seem to concur with results of prior studies including Bauer (2004).

Capital structure decisions are at the core of modern finance thinking. Opler, Saron, and Titman (1997) noted that whereas capital structure decisions offer opportunities to create value for shareholders, these opportunities are often neglected because of difficulties in identifying the optimum capital structure that will maximise shareholder value. Business leaders therefore need to consider the conclusions drawn from this and other studies in determining an appropriate capital structure for their firms.

5.3 Limitations of the Study and Suggestions for Further Research

The study looked at a total of 34 non-financial and non-insurance companies listed at the NSE. This is a relatively small sample for consideration in a multiple regression analysis, hence some of the data might have been unclear and/or statistically insignificant. On the other hand the study did not consider banking and insurance companies listed at the NSE. Also, companies listed in the Alternative Investments Market (AIMs) of the NSE were not considered.

The findings of this study suggest that future studies could delve deeper into each of the measures of study to determine their individual relationship with Leverage. These findings also suggest that future analysis of determinants of leverage should take cognizance of short-term debt ratios in addition to long-term debt ratios. Future studies may also consider the determinants of capital structure in financial companies and companies listed in the AIMs, in addition to considering non-listed companies. Bigger samples should also be considered in future, probably by considering a period longer than five years.

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APPENDICES

Appendix I: Companies Listed in the NSE

Ordinary Shares	Par Value
Agricultural Sector	
Eaagads Ord 1.25 AIMS	1.25/=
Kakuzi Ltd Ord 5.00	5/=
Kapachorua Tea Co. Ltd Ord 5.00 AIMS	5/=
The Limuru Tea Co. Ltd Ord 20.00 AIMS	20/=
Rea Vipingo Plantations Ltd Ord 5.00	5/=
Sasini Ltd Ord 1.00	1/=
Williamson Tea Kenya Ltd Ord 5.00 AIMS	5/=
Automobiles & Accessories Sector	
Car & General (K) Ltd Ord 5.00	5/=
CMC Holdings Ltd Ord 0.50	0.50/=
Marshalls (E.A.) Ltd Ord 5.00	5/=
Sameer Africa Ltd Ord 5.00	5/=
Banking	
Barclays Bank of Kenya Ltd Ord 0.50	0.50/=
CFC Stanbic of Kenya Holdings Ltd Ord 5.00	5/=
Diamond Trust Bank Kenya Ltd Ord 4.00	4/=
Equity Bank Ltd Ord 0.50	0.50/=
Housing Finance Co. Kenya Ltd Ord 5.00	5/=
Kenya Commercial Bank Ltd Ord 1.00	1/=
National Bank of Kenya Ltd Ord 5.00	5/=
NIC Bank Ltd Ord 5.00	5/=
Standard Chartered Bank Kenya Ltd Ord 5.00	5/=
The Co-operative Bank of Kenya Ltd Ord 1.00	1/=
Commercial and Services	
Express Kenya Ltd Ord 5.00 AIMS	5/=
Hutchings Biemer Ltd Ord 5.00	5/=
Kenya Airways Ltd Ord 5.00	5/=
Longhorn Kenya Ltd Ord 1.00 AIMS	1/=
Nation Media Group Ltd Ord 2.50	2.50/=
Scangroup Ltd Ord 1.00	1/=
Standard Group Ltd Ord 5.00	5/=
TPS Eastern Africa Ltd Ord 1.00	1/=
Uchumi Supermarkets Ltd Ord 5.00	5/=
Construction & Allied	
Athi River Mining Ord 5.00	5/=
Bamburi Cement Ltd Ord 5.00	5/=
Crown Paints Kenya Ltd Ord 5.00	5/=
E.A.Cables Ltd Ord 0.50	0.50/=
E.A.Portland Cement Co. Ltd Ord 5.00	5/=

Energy & Petroleum	
KenGen Co. Ltd Ord 2.50	2.50/=
KenolKobil Ltd Ord 0.05	0.50/=
Kenya Power & Lighting Co. Ltd Ord 2.50	2.50/=
Total Kenya Ltd Ord 5.00	5/=

Insurance	
British-American Investments Co. (K) Ltd Ord 0.10	0.10/=
CFC Insurance Holdings Ltd Ord 1.00	1/=
CIC Insurance Group Ltd Ord 1.00	1/=
Jubilee Holdings Ltd Ord 5.00	5/=
Kenya Re Insurance Corporation Ltd Ord 2.50	2.50/=
Pan Africa Holdings Ltd Ord 5.00	5/=

Investment	
Centum Investment Co. Ltd Ord 0.50	0.50/=
City Trust Ltd Ord 5.00 AIMS	5/=
Olympia Capital Holdings Ltd Ord 5.00	5/=
Trans-Century Ltd Ord 0.50 AIMS	0.50/=

Manufacturing & Allied	
A.Baumann & Co Ltd Ord 5.00 AIMS	5/=
B.O.C Kenya Ltd Ord 5.00	5/=
British American Tobacco Kenya Ltd Ord 10.00	10/=
Carbacid Investments Ltd Ord 5.00	5/=
East African Breweries Ltd Ord 2.00	2/=
Eveready East Africa Ltd Ord 1.00	1/=
Kenya Orchards Ltd Ord 5.00 AIMS	5/=
Mumias Sugar Co. Ltd Ord 2.00	2/=
Unga Group Ltd Ord 5.00	5/=

Telecommunication & Technology	
AccessKenya Group Ltd Ord 1.00	1/=
Safaricom Ltd Ord 0.05	0.05/=

Appendix II: Study Sample Companies

Ordinary Shares	Par Value
Agricultural Sector	
Kakuzi Ltd Ord 5.00	5/=
Rea Vipingo Plantations Ltd Ord 5.00	5/=
Sasini Ltd Ord 1.00	1/=
Automobiles & Accessories Sector	
Car & General (K) Ltd Ord 5.00	5/=
CMC Holdings Ltd Ord 0.50	0.50/=
Marshalls (E.A.) Ltd Ord 5.00	5/=
Sameer Africa Ltd Ord 5.00	5/=
Commercial and Services	
Hutchings Biemer Ltd Ord 5.00	5/=
Kenya Airways Ltd Ord 5.00	5/=
Nation Media Group Ltd Ord 2.50	2.50/=
Scangroup Ltd Ord 1.00	1/=
Standard Group Ltd Ord 5.00	5/=
TPS Eastern Africa Ltd Ord 1.00	1/=
Uchumi Supermarkets Ltd Ord 5.00	5/=
Construction & Allied	
Athi River Mining Ord 5.00	5/=
Bamburi Cement Ltd Ord 5.00	5/=
Crown Paints Kenya Ltd Ord 5.00	5/=
E.A.Cables Ltd Ord 0.50	0.50/=
E.A.Portland Cement Co. Ltd Ord 5.00	5/=
Energy & Petroleum	
KenGen Co. Ltd Ord 2.50	2.50/=
KenolKobil Ltd Ord 0.05	0.50/=
Kenya Power & Lighting Co. Ltd Ord 2.50	2.50/=
Total Kenya Ltd Ord 5.00	5/=
Investment	
Centum Investment Co. Ltd Ord 0.50	0.50/=
Olympia Capital Holdings Ltd Ord 5.00	5/=
Manufacturing & Allied	
B.O.C Kenya Ltd Ord 5.00	5/=
British American Tobacco Kenya Ltd Ord 10.00	10/=
Carbacid Investments Ltd Ord 5.00	5/=
East African Breweries Ltd Ord 2.00	2/=
Eveready East Africa Ltd Ord 1.00	1/=
Mumias Sugar Co. Ltd Ord 2.00	2/=
Unga Group Ltd Ord 5.00	5/=
Telecommunication & Technology	
AccessKenya Group Ltd Ord 1.00	1/=
Safaricom Ltd Ord 0.05	0.05/=