

**EFFECTS OF CAPITAL STRUCTURE ON THE COST OF CAPITAL OF THE
COMPANIES LISTED IN THE NAIROBI SECURITIES EXCHANGE**

BY

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B211-1598/2011

**A RESEARCH THESIS SUBMITTED TO DEDAN KIMATHI UNIVERSITY OF
TECHNOLOGY IN PARTIAL FULFILLMENT FOR THE AWARD OF A DEGREE
MASTER IN BUSINESS ADMINISTRATION (FINANCE OPTION)**

APRIL, 2014

DECLARATION

This research thesis is my original work and has not been presented to any other institution for an award of a degree.

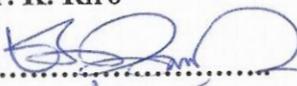
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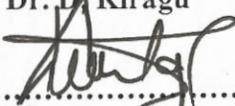
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DEDICATION

I would like to dedicate this research thesis to my wife Mrs. Lucy Wanjiku Muriithi and my daughter Abegael Wanjiru Muriithi who have supported me immensely throughout this research process.

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ACKNOWLEDGEMENT

I wish to thank God almighty for the gift of life and strength to go through the entire course and in particular this research thesis.

I am grateful to my supervisors Dr.G.K Riro and Dr. Kiragu who professionally and skillfully supported me in this research thesis. My sincere gratitude also goes to the management and lecturers of D.K.U.T for their patience and efforts to guide me through the course.

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TABLE OF CONTENT

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENT	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATION	x
ABSTRACT	xi
CHAPTER ONE	1
1.1 Background of the study.....	1
1.2 Problem statement.....	3
1.3 Objectives of the study.....	4
1.3.1 General objective.....	4
1.3.2 Specific objectives.....	4
1.4 Research questions.....	4
1.5 Significance of the study.....	4
1.6 Limitations of the study.....	5
1.7 Assumptions of the study.....	5
CHAPTER TWO	5
LITERATURE REVIEW	5
2.1 Introduction.....	5
2.2 Empirical evidence on effect of capital structure on the cost of capital of companies.....	5
2.3 Thin capitalisation.....	24
2.3.1 Credit risk.....	24

2.3.2 Tax issues.....	24
2.3.3 Thin capitalisation rules and corporate leverage.....	25
2.3.4 Thin capitalisation rules.....	26
2.3.5 Thin capitalisation rules on leverage.....	26
2.4 Theoretical review of capital structure.....	5
2.4.1 The Modigliani-Miller Theorem.....	6
2.4.2 The Trade-Off Theory.....	9
2.4.3 Static trade-off theory.....	10
2.4.4 The Dynamic Trade-off Theory.....	11
2.4.5 The Pecking Order Theory.....	13
2.4.6 The Market timing theory.....	14
2.5 Conceptual framework.....	28
2.6 Operational framework.....	29
CHAPTER THREE	30
RESEARCH METHODOLOGY	30
3.1 Introduction.....	30
3.2 Research design.....	31
3.3 Target population.....	32
3.4 Sampling design.....	33
3.5 Data sources.....	35
3.6 Method of data analysis.....	36
3.7 Ethical issues.....	37
CHAPTER FOUR	38
DATA ANALYSIS AND FINDINGS	38
4.1 Introduction.....	38

4.2 Comparison of Debit/Equity Ratio across counters	38
4.3 Comparison of WACC across counter	39
4.4 Comparison of cost of debt and cost of equity	41
4.5 Test of relationship.....	42
CHAPTER FIVE	49
SUMMARY, CONCLUSION AND RECOMMENDATIONS	49
5.1 Introduction.....	49
5.2 Summary of the key findings	49
5.3 Conclusion	50
5.4 Recommendation	51
5.5 Suggestion for further research.....	51
REFERENCES.....	52

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 TECHNOLOGY

LIST OF TABLES

Table 1: Analysis of the firms listed in the Nairobi Securities Exchange

Table 2: Research objectives and their research methodology

Table 3: Comparison of debt/equity ratio across counters

Table 4: Comparison of WACC across counters

Table 5: Comparison of cost of debt and cost of ordinary share capital

Table 6: Correlation between debt/equity ratio and WACC

Table 7: Descriptive statistics for model variables

Table 8: Correlation for model variables

Table 9: Model summary

Table 10: Model analysis of variance output

Table 11: Model analysis of coefficient of variables

LIST OF FIGURES

Figure 1: Conceptual Framework for effects of capital structure on the cost of capital

Figure 2: Operational Framework for the effects of capital structure on the cost of capital

Figure 3: Comparison of Debt/Equity Ratio across counters

Figure 4: Comparison of WACC across counters

Figure 5: Comparison of cost of equity and the cost of debt

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LIST OF ABBREVIATION

CAP	: Capitalisation
CAPM	: Capital asset pricing model
DKUT	: Dedan Kimathi University of Technology
FM	: Financial Management
M&M Theory	: Modigliani and Miller Theory
NSE	: Nairobi Securities Exchange
WACC	: Weighted Average Cost of Capital

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ABSTRACT

This study was undertaken to investigate the effect of capital structure on the cost of capital of the companies listed in the Nairobi Securities Exchange. The purpose of this study focuses on the financing function of a finance manager of any firm where before a business initiates, it needs money for operation purposes. There has been a contradiction where debt is referred as being cheaper than equity yet practically many firms avoid debt. This is an issue experienced in many companies hence the need for this study. An optimal capital structure is the mix of the available finances at the most minimal cost possible. All firms normally want to reduce on cost in their operations hence the need to study the effect of capital structure on the cost of capital. Furthermore there has never been an optimal capital structure mix that has ever been established for companies to use hence creating a need of this research. There are various theories explaining the capital structure and also some researchers have realized that there is a relationship between capital structure and the cost of capital while others have realized there is no relationship between capital structure and cost of capital. The study employed descriptive survey design study where this involved collection of information by looking at the financial statements of the forty sampled firms quoted in the Nairobi Securities Exchange. From the analysis of the forty companies listed in the Nairobi Securities Exchange, they were grouped in terms of market category and trend of debt/equity ratio and WACC for each sector were established where the AIMS sector recorded the highest debt/equity ratio and also the lowest WACC. The relationship between the capital structure and the cost of capital was established where a correlation of -0.151 was established indicating that there was negative relationship between the capital structure and cost of capital where an increase in debt there was a decrease on the cost of capital (WACC). From the findings, it was recommended that financial managers should go for more debt for their companies and reduce on the equity financing so as to reduce the company's cost of capital.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Financing decision is one function of a finance manager in an organization, it involves the acquisition of finances for an organization hence it is one of the most critical areas for a finance manager. There are various sources of capital that mainly include the debt and equity, a good finance manager has to have the right mix of debt and equity. The financing decision has direct impact on the cost of capital of the companies since each kind of finance has its own cost (Akinlo, 2011).

According to Akinsulire (2002), the capital of a company is a stock of money possessed by a person or a business firm that could be invested from time to time in order to earn income, but for which it is intended not to diminish. Uremadu (2004) sees the capital of an organization as those pool of funds that the company commits to its fixed assets, to inventories, to a account receivables and to cash or marketable securities to lead to corporate growth. An economist views capital as any material or item which can be consumed in the production process to create wealth. These materials or items are said to be factors of production which are usually grouped into man, machine and money (including information as the fourth category) (Efobi, 2008).

For capital to be well structured and effectively utilized, a business firm must be able to devise various ways for selecting the best components of its capital which would be used in the company's operation to raise its productivity and achieve performance. This process should be based on the criteria well drawn up by the finance manager after making a careful financial planning and control for the company (Uremadu, 2004). The ability of the company to effectively choose adequate sources of capital to finance its operations will differentiate a good capital structure management and a poorly managed capital structure (Efobi, 2008).

Capital structure is the relationship which exists between the various classes of capital used by the firm in financing its operations (Uremadu, 2004). Capital structure thus refers to the

interaction between the firm's internal reserve, the debt capital, the equity capital and preferred stock.

Research on capital structure is a research that continues to keep researchers pondering hence the need to study the impact of capital structure on the cost of capital. Capital structure is directly related with the financing decision of the company, primarily, it consists of the debt and equity used to finance the firm (Damodaran, 2001). Researchers continue to analyze capital structures and try to determine whether optimal capital structures exist. An optimal capital structure is usually defined as one that will minimize a firm's cost of capital while maximizing shareholder's wealth, hence, capital structure decisions have great impact on the cost of capital of the firm (Damodaran, 2001).

Morris (1975) wrote the first paper in this field in which he focused on US companies. Mitchell (1993) Saheir and Hulburt (2001), Stohs and Mauer (1996) and Barclays and Smith (1995) also cover mainly US FIRMS. While Ooi (1999) and Ozkan (2002, 2000) studied UK firms. But as far as developed countries are concerned, the firms can easily choose between short term debt and long term debt and both types of debt are available because capital markets as well as banking industry are developed and competitive.

In this research, we will empirically determine the effects of capital structure on the cost of capital as most of the research have focused on the effects of capital structure and the value and performance of the firms Mogara (2012), Mwangi (2010), Kitony (2007) , Muia (2008) and other researches.. So far in Kenya there is limited research conducted on effects of capital structure on the cost of capital. Most firms prefer equity so this research will have to answer the question whether debt is cheaper than equity contributing to the empirical literature the research will provide evidence of how Kenya firms make a choice in the optimal capital structure decision. There is no empirical evidence for Kenya market. This research presents evidence for the NSE firms which can be seen as good representation of the Kenya firms.

Although there has been a great deal of research on the subject of capital structure, this study makes a contribution to the literature in this area because it is an attempt to unfold the capital structure practices of companies operating in the Nairobi Securities Exchange (Desai, 2007). This study provides a unique opportunity to examine the validity of the above statement and whether the cost of capital of the companies listed in the Nairobi Securities Exchange can be explained by capital structure. Survival and growth needs of firms normally needs financial resources that are provided by various providers normally the debt and equity holders. Providers of these financial resources are related with different levels of risk, benefit and control, hence their expected returns are not the same therefore, the cost of each capital differ (Elosegui, 2003).

Debt leads to tax savings but there are payments of interests, stock holders wealth increases the value of expected returns of share holders so financing expenses will also be high, thus, a capital structure is important as means a merger of sources of finance so as to minimizes the average costs of capital and lead to good financial performance (Dimitris and Psillaki, 2008).

1.2 Problem statement

A firm's capital structure refers to the mix of its finances and has long been an important issue from the strategic management as it is linked with a firm's ability to meet the demands of various stakeholders. Debt and equity are the two major classes of capital, each of these is associated with different levels of risk, benefits, and control. While debt holders exert lower control, they earn a fixed rate of return and are protected by contractual obligations with respect to their investment. Equity holders are the residual claimants, bearing most of the risk and have greater control over decisions.

There has been a contradiction where debt is referred as being cheaper than equity yet practically many firms avoid debt. This is an issue experienced in many companies hence the need for this

study. An optimal capital structure is the mix of the available finances at the most minimal cost possible. All firms normally want to reduce on cost in their operations hence the need to study the effect of capital structure on the cost of capital. Furthermore there has never been an optimal capital structure mix that has ever been established for companies to use hence creating a need for this research.

1.3 Objectives of the study

1.3.1 General objective

The broad objective of this study was to investigate effect of capital structure on the cost of capital of the firms listed on the stock exchange in Kenya.

1.3.2 Specific objectives

- i. To establish the level of capital mix in the companies listed in the NSE.
- ii. To establish whether cost of debt is cheaper than cost of equity in the companies listed in the NSE as per the capital structure theory.
- iii. To investigate the relationship between capital structure and cost of capital.

1.4 Research questions

- i. What is the level of capital mix in the companies listed in the NSE?
- ii. Is the Cost of debt cheaper than cost of equity in the companies listed in the NSE as per the capital structure theory?
- iii. What is the relationship between capital structure and cost of capital?

1.5 Significance of the study

This study will be of great significance to financial manager to enable them become better managers in the function of acquiring finance in the lowest cost possible.

This study will also be of importance to researchers and scholar in matters concerning capital structure.

1.6 Limitations of the study

With the use of the secondary data, the researcher was limited to the information made public by the listed companies.

Some of the companies listed in the Nairobi Securities Exchange are listed for a period of few years as compared to the time period under study hence the study could not take into account some companies.

1.7 Assumptions of the study

The researcher assumed that the listed company would provide the research data as requested by the researcher and that the company had a given capital structure mix.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter sets out the review of past study in relation to the study research. It describes the empirical literature, theoretical literature and the conceptual framework of the research.

2.2 Theoretical review of capital structure

Several theories have been derived in establishing the capital structure decisions, among these are;

2.2.1 The Modigliani-Miller Theorem

Modigliani and Miller (MM) (1958) Theory illustrates that under certain key assumptions, firm's value is unaffected by its capital structure. Capital market is assumed to be perfect in Modigliani and Miller's world, where insiders and outsiders have free access to information; no transaction cost, bankruptcy cost and no taxation exist; equity and debt choice becomes irrelevant and internal and external funds can be perfectly substituted. The M-M theory argued that the value of a firm should not depend on its capital structure, the theory argued further a firm should have the same market value and the same weighted average cost of capital at all capital structure levels because the value of a company should depend on the return and risks of its operation and not on the way it finances those operations that.

If these key assumptions are relaxed, capital structure may become relevant to the firm's value. So, research efforts have been contributed to relaxing the ideal assumptions and describing the consequences. This theory was criticized on the ground that perfect market does not exist in real world. Attempts to relax these assumptions particularly the no bankruptcy cost and no taxation led to the static trade off theory.

Since the publication of the Modigliani and Miller's (1958) "irrelevance theory of capital structure", the theory of corporate capital structure has been a study of interest to finance economists.

The theory of business finance in a modern sense starts with the Modigliani and Miller (1958) capital structure irrelevance proposition. Before them, there was no generally accepted theory of capital structure. Modigliani and Miller start by assuming that the firm has a particular set of expected cash flows. When the firm chooses a certain proportion of debt and equity to finance its assets, all that it does is to divide up the cash flows among investors. Investors and firms are assumed to have equal access to financial markets, which allows for homemade leverage. The investor can create any leverage that was wanted but not offered, or the investor can get rid of any leverage that the firm took on but was not wanted. As a result, the leverage of the firm has no effect on the market value of the firm.

Their paper led subsequently to both clarity and controversy. As a matter of theory, capital structure irrelevance can be proved under a range of circumstances. There are two fundamentally different types of capital structure irrelevance propositions. The classic arbitrage-based irrelevance propositions provide settings in which arbitrage by investors keeps the value of the firm independent of its leverage. In addition to the original Modigliani and Miller paper, important contributions include papers by Hirshleifer (1966) and Stiglitz (1969). The second irrelevance proposition concludes that “given a firm’s investment policy, the dividend payout it chooses to follow will affect neither the current price of its shares nor the total return to its shareholders” (Miller and Modigliani, 1961). In other words, in perfect markets, neither capital structure choices nor dividend policy decisions matter.

The 1958 paper stimulated serious research devoted to disproving irrelevance as a matter of theory or as an empirical matter. This research has shown that the Modigliani-Miller theorem fails under a variety of circumstances. The most commonly used elements include consideration of taxes, transaction costs, bankruptcy costs, agency conflicts, adverse selection, lack of reparability between financing and operations, time-varying financial market opportunities, and investor clientele effects. Alternative models use differing elements from this list. Given that so many different ingredients are available, it is not surprising that many different theories have been proposed. Covering all of these would go well beyond the scope of this paper. Harris and Raviv (1991) provided a survey of the development of this theory as of 1991.

As an empirical proposition, the Modigliani-Miller irrelevance proposition is not easy to test. With debt and firm value both plausibly endogenous and driven by other factors such as profits, collateral, and growth opportunities, we cannot establish a structural test of the theory by regressing value on debt. But the fact that fairly reliable empirical relations between a number of factors and corporate leverage exist, while not disproving the theory, does make it seem an unlikely characterization of how real businesses are financed.

A popular defense has been to argue as follows: “While the Modigliani-Miller theorem does not provide a realistic description of how firms finance their operations, it provides a means of finding reasons why financing may matter.” This description provides a reasonable interpretation

of much of the theory of corporate finance. Accordingly, it influenced the early development of both the trade-off theory and the pecking order theory.

Modigliani and Miller, two professors in the 1950s, studied capital-structure theory intensely. From their analysis, they developed the capital-structure irrelevance proposition. Essentially, they hypothesized that in perfect markets, it does not matter what capital structure a company uses to finance its operations. They theorized that the market value of a firm is determined by its earning power and by the risk of its underlying assets, and that its value is independent of the way it chooses to finance its investments or distribute dividends. The basic M&M proposition is based on the following key assumptions: No taxes, No transaction costs, No bankruptcy costs, Equivalence in borrowing costs for both companies and investors, Symmetry of market information, meaning companies and investors have the same information and No effect of debt on a company's earnings before interest and taxes.

Of course, in the real world, there are taxes, transaction costs, and bankruptcy costs, differences in borrowing costs, information asymmetries and effects of debt on earnings. To understand how the M&M proposition works after factoring in corporate taxes, however, we must first understand the basics of M&M proposition I and II without taxes.

The M&M capital-structure irrelevance proposition assumes no taxes and no bankruptcy costs. In this simplified view, the weighted average cost of capital (WACC) should remain constant with changes in the company's capital structure. For example, no matter how the firm borrows, there will be no tax benefit from interest payments and thus no changes or benefits to the WACC. Additionally, since there are no changes or benefits from increases in debt, the capital structure does not influence a company's stock price, and the capital structure is therefore irrelevant to a company's stock price.

However, as we have stated, taxes and bankruptcy costs do significantly affect a company's stock price. In additional papers, Modigliani and Miller included both the effect of taxes and bankruptcy cost. The tradeoff theory assumes that there are benefits to leverage within a capital structure up until the optimal capital structure is reached. The theory recognizes the tax benefit from interest payments - that is, because interest paid on debt is tax deductible, issuing bonds effectively

reduces a company's tax liability. Paying dividends on equity, however, does not. Thought of another way, the actual rate of interest companies pay on the bonds they issue is less than the nominal rate of interest because of the tax savings. Studies suggest, however, that most companies have less leverage than this theory would suggest is optimal. In comparing the two theories, the main difference between them is the potential benefit from debt in a capital structure, which comes from the tax benefit of the interest payments. Since the MM capital-structure irrelevance theory assumes no taxes, this benefit is not recognized, unlike the tradeoff theory of leverage, where taxes, and thus the tax benefit of interest payments, are recognized.

In summary, the MM I theory without corporate taxes says that a firm's relative proportions of debt and equity don't matter; MM I with corporate taxes says that the firm with the greater proportion of debt is more valuable because of the interest tax shield. MM II deals with the WACC. It says that as the proportion of debt in the company's capital structure increases, its return on equity to shareholders increases in a linear fashion. The existence of higher debt levels makes investing in the company more risky, so shareholders demand a higher risk premium on the company's stock. However, because the company's capital structure is irrelevant, changes in the debt-equity ratio do not affect WACC. MM II with corporate taxes acknowledges the corporate tax savings from the interest tax deduction and thus concludes that changes in the debt-equity ratio do affect WACC. Therefore, a greater proportion of debt lowers the company's WACC.

2.2.2 The Trade-Off Theory

The term trade-off theory is used by different authors to describe a family of related theories. In all of these theories, a decision maker running a firm evaluates the various costs and benefits of alternative leverage plans. Often it is assumed that an interior solution is obtained so that marginal costs and marginal benefits are balanced.

The original version of the trade-off theory grew out of the debate over the Modigliani-Miller theorem. When corporate income tax was added to the original irrelevance, this created a benefit

for debt in that it served to shield earnings from taxes. Since the firm's objective function is linear, and there is no offsetting cost of debt, this implied 100% debt financing.

Several aspects of Myers' definition of the trade-off merit discussion. First, the target is not directly observable. It may be imputed from evidence, but that depends on adding a structure. Different papers add that structure in different ways. Second, the tax code is much more complex than that assumed by the theory. Depending on which features of the tax code are included, different conclusions regarding the target can be reached. Graham (2003) provides a useful review of the literature on the tax effects.

Third, bankruptcy costs must be deadweight costs rather than transfers from one claimant to another. The nature of these costs is important too. Fourth, transaction costs must take a specific form for the analysis to work. For the adjustment to be gradual rather than abrupt, the marginal cost of adjusting must increase when the adjustment is larger. Leary and Roberts (2005) describe the implications of alternative adjustment cost assumptions.

Trade-off theory allows the bankruptcy cost to exist. It states that there is an advantage to financing with debt (namely, the tax benefits of debt) and that there is a cost of financing with debt (the bankruptcy costs and the financial distress costs of debt). The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade-off when choosing how much debt and equity to use for financing. Empirically, this theory may explain differences in D/E ratios between industries, but it doesn't explain differences within the same industry.

2.2.3 Static trade-off theory

Myers (1984) proposed the Static Trade-off Theory that supports the relevance of capital structure. This theory suggested that firms have optimal capital structure and they move towards the target. It further emphasized that when debt is employed in capital structure, firms are faced with the challenge of tax benefit and bankruptcy cost, thus the need for trade-off between the two.

Under trade-off theory, the firms with high growth opportunities should borrow less because it is more likely to lose value in financial distress. This is because trade-off theory predicts that safe firms i.e. firms with more tangible assets and more taxable income to shield, should have high debt ratios. While risky firms i.e. firms with more intangible assets that the value will disappear in case of liquidation, ought to rely more on equity financing.

The static trade-off theory affirms that firms have optimal capital structures, which they determine by trading off the costs against the benefits of the use of debt and equity. One of the benefits of the use of debt is the advantage of a debt tax shield. One of the disadvantages of debt is the cost of potential financial distress, especially when the firm relies on too much debt. Already, this leads to a trade-off between the tax benefit and the disadvantage of higher risk of financial distress.

There are more cost and benefits involved with the use of debt and equity. One other major cost factor consists of agency costs. Agency costs stem from conflicts of interest between the different stakeholders of the firm and because of ex post asymmetric information Meckling (1976) and Jensen (1986). Hence, incorporating agency costs into the static trade-off theory means that a firm determines its capital structure by trading off the tax advantage of debt against the costs of financial distress of too much debt and the agency costs of debt against the agency cost of equity. Many other cost factors have been suggested under the trade-off theory, and it would lead to far to discuss them all. Therefore, this discussion ends with the assertion that an important prediction of the static trade-off theory is that firms target their capital structures, i.e. if the actual leverage ratio deviates from the optimal one, the firm will adapt its financing behaviour in a way that brings the leverage ratio back to the optimal level.

2.2.4 The Dynamic Trade-off Theory

Constructing models that recognize the role of time requires specifying a number of aspects that are typically ignored in a single-period model. Of particular importance are the roles of expectations and adjustment costs. In a dynamic model, the correct financing decision typically depends on the financing margin that the firm anticipates in the next period. Some firms expect to pay out funds in the next period, while others expect to raise funds. If funds are to be raised,

they may take the form of debt or equity. More generally, a firm undertakes a combination of these actions.

An important precursor to modern dynamic trade-off theories was Stiglitz (1973), who examines the effects of taxation from a public finance perspective. Stiglitz's model is not a trade-off theory since he took the drastic step of assuming away uncertainty. Schwartz (1984). analyzed continuous time models with uncertainty, taxes, and bankruptcy costs, but no transaction costs. Since firms react to adverse shocks immediately by rebalancing costlessly, firms maintain high levels of debt to take advantage of the tax savings.

Dynamic trade-off models can also be used to consider the option values embedded in deferring leverage decisions to the next period. Goldstein *et al.* (2001) observe that a firm with low leverage today has the subsequent option to increase leverage. Under their assumptions, the option to increase leverage in the future serves to reduce the otherwise optimal level of leverage today. Strebulaev (2007) analyzed a model quite similar to that of Fischer *et al.* (1989) and Goldstein *et al.* (2001). Again, if firms optimally finance only periodically because of transaction costs, then the debt ratios of most firms will deviate from the optimum most of the time. In the model, the firm's leverage responds less to short-run equity fluctuations and more to long-run value changes.

Certain ideas are fairly general in dynamic models. The optimal financial choice today depends on what is expected to be optimal in the next period. In the next period, it may be optimal to raise funds or to pay them out. If raising new funds, it might be optimal to raise them in the form of debt or in the form of equity. In each case, what is expected to be optimal in the next period will help to pin down the relevant comparison for the firm in the current period.

Much of the work on dynamic trade-off models is fairly recent and so any judgements on their results must be somewhat tentative. This work has already fundamentally altered our understanding of mean reversion, the role of profits, the role of retained earnings, and path dependence. As a result, the trade-off class of models now appears to be much more promising than it did even just a few years ago.

2.2.5 The Pecking Order Theory

The pecking order theory does not take an optimal capital structure as a starting point, but instead asserts the empirical fact that firms show a distinct preference for using internal finance (as retained earnings or excess liquid assets) over external finance. If internal funds are not enough to finance investment opportunities, firms may or may not acquire external financing, and if they do, they will choose among the different external finance sources in such a way as to minimize additional costs of asymmetric information. The latter costs basically reflect the “lemon premium” (Akerlof, 1970) that outside investors ask for the risk of failure for the average firm in the market. The resulting pecking order of financing is as follows: internally generated funds first, followed by respectively low-risk debt financing and share financing.

In Myers and Majluf model (1984), outside investors rationally discount the firm's stock price when managers issue equity instead of riskless debt. To avoid this discount, managers avoid equity whenever possible. The Myers and Majluf model predicts that managers will follow a pecking order, using up internal funds first, then using up risky debt, and finally resorting to equity. In the absence of investment opportunities, firms retain profits and build up financial slack to avoid having to raise external finance in the future.

The pecking order theory regards the market-to-book ratio as a measure of investment opportunities. With this interpretation in mind, both Myers (1984) and Fama and French (2000) note that a contemporaneous relationship between the market-to-book ratio and capital structure is difficult to reconcile with the static pecking order model. Iteration of the static version also suggests that periods of high investment opportunities will tend to push leverage higher toward a debt capacity. To the extent that high past market-to-book actually coincides with high past investment, however, results suggest that such periods tend to push leverage lower.

Pecking Order theory tries to capture the costs of asymmetric information. It states that companies prioritize their sources of financing (from internal financing to equity) according to the law of least effort, or of least resistance, preferring to raise equity as a financing means “of last resort”. Hence: internal financing is used first; when that is depleted, then debt is issued; and when it is no longer sensible to issue any more debt, equity is issued. This theory maintains that

businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required (equity would mean issuing shares which meant 'bringing external ownership' into the company). Thus, the form of debt a firm chooses can act as a signal of its need for external finance. The pecking order theory is popularized by Myers (1984) when he argues that equity is a less preferred means to raise capital because when managers (who are assumed to know better about true condition of the firm than investors) issue new equity, investors believe that managers think that the firm is overvalued and managers are taking advantage of this over-valuation. As a result, investors will place a lower value to the new equity issuance.

The pecking order theory which was developed by Stewart C. Myers in 1984. It states that companies prioritize their sources of finance (from internal financing to equity) according to the law of least effort or least resistance, preferring to raise equity as a financing means of the last resort. Hence internal funds are used first, and when that is depleted, debt is issued, and when it's not sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources.

2.2.6 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 firm's capital structures. There are two versions of equity market timing that lead to similar capital structure dynamics.

The first assumes economic agents to be rational. Companies are assumed to issue equity directly after a positive information release which reduces the asymmetry problem between the firms. The pecking order theory was first introduced by Donaldson (1961), in a survey study among American firms. Helwege and Liang (1996) find that the probability of raising external finance is unrelated to the internal funds deficit, and that firms that could have obtained bank loans often choose to issue equity instead. This also contrasts with the static pecking order model,

management and stockholders. The decrease in information asymmetry coincides with an increase in the stock price. In response, firms create their own timing opportunities.

The second theory assumes the economic agents to be irrational (Baker and Wurgler, 2002). Due to irrational behaviour there is a time-varying mispricing of the stock of the company. Managers issue equity when they believe its cost is irrationally low and repurchase equity when they believe its cost is irrationally high. It is important to know that the second version of market timing does not require that the market actually be inefficient. It does not ask managers to successfully predict stock returns. The assumption is simply that managers believe that they can time the market. In a study by Graham and Harvey (2001), managers admitted trying to time the equity market, and most of those that have considered issuing common stock report that "the amount by which our stock is undervalued or over-valued" was an important consideration.

This study supports the assumption in the market timing theory mentioned above which is that managers believe they can time the market, but does not immediately distinguish between the mispricing and the dynamic asymmetric information version of market timing.

Baker and Wurgler (2002) provide evidence that equity market timing has a persistent effect on the capital structure of the firm. They define a market timing measure, which is a weighted average of external capital needs over the past few years, where the weights used are market to book values of the firm. They find that leverage changes are strongly and positively related to their market timing measure, so they conclude that the capital structure of a firm is the cumulative outcome of past attempts to time the equity market.

The Traditional Theory of capital structure which believes strongly on the relevance of optimal capital or level of gearing is adopted in this work. According to the traditional theory, debt capital is cheaper than equity and that as such a company can increase its value by borrowing up to a reasonable limit.

2.3 Empirical evidence on effect of capital structure on the cost of capital of companies.

The cost of capital is derived from the minimum rates of return that investors expect on their invested capital. The cost of capital of the Group and the industrial divisions comprises the cost of equity as well as the costs of debt (El-Sayed, 2009).

According to Kathleen and Shastr (2004), the cost of equity is calculated according to the capital asset pricing model (CAPM), using the interest rate for long-term risk-free securities plus a risk premium reflecting the specific risks of an investment. The cost of debt is derived from the required rate of return for obligations entered into by the Group with external lenders. The group's cost of capital is the weighted average of the individually required or expected rates of return. The cost of capital is a term used in the field of financial investment to refer to the cost of a company's funds (both debt and equity) or from an investor's point of view, the shareholder's required return on a portfolio company's existing securities. It is used to evaluate new projects of a company as it is the minimum return that investors expect for providing capital to the company, thus setting a benchmark that a new project has to be met.

For an investment to be worthwhile, the expected return on capital must be greater than the cost of capital. The cost of capital is the rate of return that capital could be expected to earn in an alternative investment of equivalent risk. If a project is of similar risk to a company's average business activities it is reasonable to use the company's average cost of capital as a basis for the evaluation. A company's securities typically include both debt and equity, one must therefore calculate both the cost of debt and the cost of equity to determine a company's cost of capital. However, a rate of return larger than the cost of capital is usually required (Akinlo, 2011).

According to Babenko (2003), the cost of debt is relatively simple to calculate, as it is composed of the rate of interest paid. In practice, the interest-rate paid by the company can be modeled as the risk-free rate plus a risk component (risk premium), which itself incorporates a probable rate of default (and amount of recovery given default). For companies with similar risk or credit ratings, the interest rate is largely exogenous (not linked to the cost of debt), the cost of equity is broadly defined as the risk-weighted projected return required by investors, where the return is largely unknown. The cost of equity is therefore inferred by comparing the investment to other investments (comparable) with similar risk profiles to determine the cost of equity. It is commonly equated using the CAPM formula although articles such as Stulz (1995)

question the validity of using a local CAPM versus an international CAPM- also considering whether markets are fully integrated or segmented (if fully integrated, there would be no need for a local CAPM). Once cost of debt and cost of equity have been determined the weighted-average cost of capital (WACC) can be calculated. This WACC can then be used as a discount rate for a project's projected cash flows.

When companies borrow funds from outside or take debt from financial institutions or other resources the interest paid on that amount is called cost of debt. The cost of debt is computed by taking the rate on a risk free bond whose duration matches the term structure of the corporate debt, then adding a default premium. This default premium will rise as the amount of debt increases since all other things being equal, the risk rises as the amount of debt rises. Since in most cases debt expense is a deductible expense, the cost of debt is computed as an after tax cost to make it comparable with the cost of equity (earnings are after-tax as well). Thus, for profitable firms, debt is discounted by the tax rate. The formula can be written as $(R_f + \text{credit risk rate})(1 - T)$, where T is the corporate tax rate and R_f is the risk free rate. The yield to maturity can be used as an approximation of the cost of debt (El-Sayed, 2009).

Cost of equity = Risk free rate of return + Premium expected for risk
Cost of equity = Risk free rate of return + Beta x (market rate of return - risk free rate of return)
where Beta = sensitivity to movements in the relevant market
The risk free rate is taken from the lowest yielding bonds in the particular market, such as government bonds. Retained earnings are a component of equity, and therefore the cost of retained earnings (internal equity) is equal to the cost of equity. Dividends earnings that are paid to investors are a component of the return on capital to equity holders and influence the cost of capital through that mechanism (El-Sayed, 2009).

The Weighted Average Cost of Capital (WACC) is used in finance to measure a firm's cost of capital. The total capital for a firm is the value of its equity for a firm without outstanding warrants and options, this is the same as the company's market capitalization plus the cost of its debt, where the cost of debt should be continually updated as the cost of debt changes as a result of interest rate changes. Equity in the debt to equity ratio is the market value of all equity, not the

shareholders' equity on the balance sheet. To calculate the firm's weighted cost of capital, we must first calculate the costs of the individual financing sources: Cost of Debt, Cost of Preference Capital and Cost of Equity Cap. Calculation of WACC is an iterative procedure which requires estimation of the fair market value of equity capital (Kathleen and Shastr, 2004).

Because of tax advantages on debt issuance, it will be cheaper to issue debt rather than new equity (this is only true for profitable firms, tax breaks are available only to profitable firms). At some point, however, the cost of issuing new debt will be greater than the cost of issuing new equity. This is because adding debt increases the default risk and thus the interest rate that the company must pay in order to borrow money. By utilizing too much debt in its capital structure, this increased default risk can also drive up the costs for other sources such as retained earnings and preferred stock as well. Management must identify the optimal mix of financing where the cost of capital is minimized so that the firm's value can be maximized (Johannes and Dhanraj, 2007).

The structure of capital should be determined considering the weighted average cost of capital. Modigliani & Miller (1958) show the impact of debt-equity ratio on firm value in their capital structure theory. Economist and financial researchers have spent time to develop new thoughts around this theory. Despite their effort the Modigliani & Miller (MM) model is still in vague. According to Kathleen (2005), a company applies its assets in its business to generate a stream of operating cash flows. After paying taxes, the firm makes distributions to the providers of its capital and retains the balance for use in its business. If company is all equity financed, the entire after-tax operating cash flow each period accrues to the benefit of its shareholders in the form of dividend and retained earnings. If instead the company has borrowed a portion of its capital, it must dedicate a portion of the cash flow stream to service this debt. Moreover, debt holders have the senior claim to a company's cash flow; shareholders are only entitled to the residual. The company's choice of capital structure determines the allocation of its operating cash flow each period between debt holders and shareholders.

The debate over the significance of a company's choice of capital structure is esoteric but in essence, it concerns the impact on the total market value of the company that is the combined value of its debt and its equity by splitting the cash flow stream into a debt component and earn equity component. Financial experts traditionally believed that increasing a company's leverage that is increasing the proportion of debt in the company's capital structure, would increase value up to a point. But beyond that point, further increases in leverage would increase the company's overall cost of capital and decrease its total market value (Abdul, 2007).

Modigliani and Miller challenged that view in their famous 1958 article where they argued that if the company's capital investment program is held fixed and certain other assumptions are satisfied, the combined market value of a company's debt and equity is independent of its choice of capital structure. Since Modigliani and Miller published their capital structure irrelevancy paper, much attention has focused on the reasonableness of these other assumptions which include the absence of taxes, bankruptcy costs, and other imperfections those exist in the real world. Because of these imperfections, a company's choice of capital structure undoubtedly does affect its total market value; the significance of corporate leverage is reflected in the articles that have appeared in the financial press.

The essence of financial management is the minimization of the firm's cost and creation of shareholder value. According to Ehrhard and Bringham (2003), the value of a business based on the going concern expectation is the present value of all the expected future cash flows to be generated by the assets, discounted at the company's weighted average cost of capital (WACC). From this it can be seen that the WACC has a direct impact on the value of a business.

The choice between debt and equity aims to find the right capital structure that will minimize the firm's cost and maximize stockholder wealth. WACC is used to define a firm's value by discounting future cash flows. Minimizing WACC of any firm will maximize value of the firm (Messbacher, 2004).

Debt policy and equity ownership structure differs between firms with few positive net present value projects (McConnel and Servaes, 1995). Leland and Pyle (1977) propose that managers will take debt-equity ratio as a signal, by the fact that high leverage implies higher bankruptcy

risk (and costs) for low quality firms. Since managers always have information advantage over the outsiders, the debt structure may be considered as a signal to the market. Ross's (1977) model suggests that the values of firms will rise with leverage, since increasing the market's perception of value.

In their second seminal paper on corporate capital structure, Modigliani and Mill (1963) show that firm value is an increasing function of leverage due to the tax deductibility of interest payments at the corporate level. In the 30 years since enormous academic effort has gone into identifying the relevant costs associated with debt financing that firms presumably trade off against this substantial corporate tax benefit.

Recent studies examining capital structure response to change in corporate tax exposure provide evidence supporting the trade-off theory (Mackie-Mason, 1990). Myers (1984) argues that the trade-off theory also fails to predict the wide degree of cross-sectional and time variation of observed debt ratios.

Return on stock increases for any announcement of issuer exchange offers. Overall, 55 percent of the variance in stock announcement period returns is explained (Masulis, 1983). Under some conditions capital structure does not affect the value of the firm. Splitting a fund into some mix of shares relating to debt, dividend and capital directly adds value to the company (Gemmille, 2001).

The issue of whether financial structure influences cost of capital and economic growth or not through heterogeneous panel, it was found that significant effects of financial structure on real per capita output, which is in sharp contrast to some recent findings (Arestis and Luintel, 2004). Firms have increased their level of debt relative to their profit. As a result, firm debt in general has risen substantially. They found that those firms having lower debt have higher value than the firm, which has high debt. Thus, firm can maximize its value by choosing low debt or zero debt (Kinsman and Newman, 1998). When the firm's investment is large, countervailing incentives lead both high and low cost firms to choose the same capital structure in capital structure in equilibrium, thus decoupling capital structure from private information. When investment is small or medium size, the model may admit separating equilibrium in which high cost firms

issued greater equity and low cost firms rely more on debt financing (Spiegel and Spulber, 1997). The presence of corporate tax shield substitutes for debt implies that each firm has a unique interior optimum leverage decision and when firms which issue debt, are moving toward the industry average from below, the market will react more positively than when the firm is moving away from the industry average. The overall finding is that the relationship between a firm's debt level and that of its industry does not appear to be of concern to the market (Hatfield *et al.*, 1994). Debt ratios are found to be decreasing in cash flow or profitability and increasing in the investment of the firm in both countries. The study found positive with pecking order approach and generally inconsistent with the tradeoff approach (Benito, 1999). The firm-specific nature of strategic assets implies that they should be financed primarily through equity; other less specific assets should be finance through debt.

Firms are likely to suffer increased costs and decrease performance if they do not adopt suitable governance structures in their transactions with potential suppliers of funds (Kochhar, 1997). It is considered customer driven financial distress where prices for the firm output decline whenever firm has poor financial status. Employee driven financial distress originates from loss of intangible assets when firm revenue decline. Babenko (2003) examines the state tax effect on optimal leverage and yield spreads to find out the optimal capital structure at the time of financial distress. A negative relationship exists between the ownership of shareholders with large blocks, on the one hand, and the degree of control, on the other hand, with regard to firm value, the second relationship being significant. However, endogenous treatment of these variables then reveals a positive effect for the ownership of the major shareholders on firm value.

Suppose there is no agency problem, that is, management acts in the interest of all shareholders, the manager will minimize cost of capital and maximize company value by choosing the optimal capital structure; highest possible debt ratio. High-quality firms need to signal their quality to the market, while the low-quality firms' managers will try to imitate. According to this argument, the debt level should be positively related to the cost of capital and value of the firm (Leland and Pyle, 1977).

Assuming information asymmetry, the pecking order theory, Myers and Majluf, (1984) predicts that firm will follow the pecking order as an optimal financing strategy. The reason behind this theory is that if the manager act on behalf of the owners, they will issue securities at a higher price than they are truly worth. The more sensitive of the security, the higher the cost of equity capital, since the action of the manager is giving a signal to the market that the securities is overpriced. Stulz (1990) argues that debt can have both a positive and negative effect on the cost of capital of the firm and its value (even in the absence of corporate taxes and bankruptcy cost). He develops a model in which debt financing can both alleviate the overinvestment problem and the underinvestment problem. Stulz (1990) assumes that managers have no equity ownership in the firm and receive utility by managing a larger firm. The power of managers may motivate the self interested managers to undertake negative present value project. To solve this problem, shareholders force firms to issue debt but if firms are forced to pay out funds, they may have to forgo positive present value projects. Therefore, the optimal debt structure is determined by balancing the optimal agency cost of debt and the agency cost of managerial discretion.

El-Sayed (2009) examined the impact of capital structure choice on firm performance in Egypt, using a Multiple Regression Analysis in estimating the relationship between leverage level and firm's performance, the study cover between 1997 and 2005. Three accounting based measures of financial performance (return on Equity, return on Assets and gross profit margin) were used. The result revealed that capital structure choice decision in general, has a weak-to-no impact on firm's performance.

Chowdhury and Chowdhury (2010), attempted to empirically support the argument of Modigliani and Miller (MM). Their work test the influence of debt-equity structure on the value of shares given different sizes, industries and growth opportunities with the companies incorporated in the Dhaka Stock exchange (DSE) and Chittagong Stock Exchange (CSE) of Bangladesh. Or the robustness of the analysis samples was drawn from the four most dominant sectors of industry: engineering, food and allied, fuel and power and chemical and pharmaceutical to provide a comparative analysis. A strong positive correlation association is evident from the empirical findings when stratified by industry.

On the issue of whether financial structure influences economic growth or not, through heterogeneous panel it was found that significant effects of financial structure on real per capita output, which is in sharp contrast to some recent findings (Arestis *et al.* 2004). Firms have increased their level of debt relative to their profit. As a result, firm debt in general has risen substantially. They found that those firms having lower debt have lower firm cost and higher value than the firm, which has high debt. Thus, firm can maximize its value by choosing low debt or zero debt (Kinsman and Newman, 1998).

When the firm's investment is large, countervailing incentives lead both high and low cost firms to choose the same capital structure in capital structure in equilibrium, thus decoupling capital structure from private information. When investment is small or medium size, the model may admit separating equilibrium in which high cost firms issued greater equity and low cost firms rely more on debt financing (Spiegel and Spulber, 1997). The presence of corporate tax shield substitutes for debt implies that each firm has a unique interior optimum leverage decision and when firms, which issue debt, are moving toward the industry average from below, the market will react more positively than when the firm is moving away from the industry average. The overall finding is that the relationship between a firm's debt level and that of its industry does not appear to be of concern to the market (Hatfield, *et al.* 1994). Debt ratios are found to be decreasing in cash flow or profitability and increasing in the investment of the firm in both countries. The study found positive with pecking order approach and generally inconsistent with the tradeoff approach (Benito, 1999). The firm specific nature of strategic assets implies that they should be financed primarily through equity; other less specific assets should be finance through debt.

Hatfield, *et al.* (1994) proposes that managers will take debt/equity ratio as a signal, by the fact that high leverage implies higher bankruptcy risk (and cost) for low quality firms. Suppose there is no agency problem, i.e. management acts in the interest of all shareholders, the manager will maximize company value by choosing the optimal capital structure; highest possible debt ratio. High-quality firms need to signal their quality to the market, while the low-quality firms managers will try to imitate.

2.4 Thin Capitalisation

A company is said to be thinly capitalised when its capital is made up of a much greater proportion of debt than equity, i.e. its gearing, or leverage, is too high. This is perceived to create problems for two classes of people: creditors bear the solvency risk of the company, which has to repay the bulk of its capital with interest; and revenue authorities, who are concerned about abuse by excessive interest deductions.

2.4.1 Credit Risk

If the shareholders have introduced only a nominal amount of paid-up share capital, then the company has lower financial reserves with which to meet its obligations. If all or most of the company's capital comes from debt, which (unlike equity) needs to be serviced, and ultimately repaid, it means that the providers of capital are ultimately competing with the company's trade creditors for the same capital resources. At the risk of generalising, most traditionally common law countries do not tend to employ thin capitalisation rules generally in relation to raising and maintenance of capital. However, a number of civil law jurisdictions do. However, in almost all jurisdictions there are certain types of regulated entity which require a certain amount, or a certain proportion, of paid-up share capital to be licensed to trade. The most common examples of this are banks and insurance companies. This is because if such companies were to fail and go into liquidation the economic effect of such failures can lead to a domino effect, which can have catastrophic consequences for other businesses and, ultimately, regional economies. (Blouin, J., H. Huizinga, L. Laeven, and G. Nicodème, 2013),

2.4.2 Tax Issues

Even where countries' corporate laws permit companies to be thinly capitalised, revenue authorities in those countries will often limit the amount that a company can claim as a tax deduction on interest, particularly when it receives loans at non-commercial rates (e.g. from connected parties). However, some countries simply disallow interest deductions above a certain level from all sources when the company is considered to be too highly geared under applicable tax regulations. Some tax authorities limit the applicability of thin capitalisation rules to corporate groups with foreign entities to avoid "tax leakage" to other jurisdictions. The United States

“earnings stripping” rules are an example. Hong Kong protects tax revenue by prohibiting payers from claiming tax deductions for interest paid to foreign entities, thus eliminating the possibility of using thin capitalisation to shift income to a lower-tax jurisdiction. Thin capitalisation rules determine how much of the interest paid on corporate debt is deductible for tax purposes. Such rules are primarily of interest to private-equity firms, which use significant amounts of debt to finance leveraged buyouts. (Blouin, J., H. Huizinga, L. Laeven, and G. Nicodème, 2013),

2.4.3 Thin Capitalisation Rules And Corporate Leverage

Multinationals take advantage of heterogeneity in tax deduction rules by reallocating debt to high-tax countries. This reduces tax revenue and distorts the trade-off between debt and equity financing. Some countries have enacted thin capitalisation rules that restrict deductibility when the debt-to-leverage ratio exceeds a certain threshold. Such rules are only effective when restrictions are automatic, rather than allowing for government discretion. A company’s interest expense generally is deductible from its taxable corporate income. This provides firms with an incentive to finance their operations through debt rather than equity, especially if the corporate tax rate is high. Correspondingly, leverage tends to be positively related to the corporate tax rate (Graham 2003, and Feld et al. 2013).

Multinationals can reduce their worldwide tax incidence by concentrating their debt in relatively high-tax countries. Hence, the leverage of a multinational firm is particularly sensitive to a jurisdiction’s tax rate (Huizinga et al. 2008), and tax authorities face declining corporate tax receipts from multinational firms that use excessively high leverage and concomitant interest deductions.

To counter this base erosion, many countries have instituted thin capitalisation rules that restrict the deductibility of interest from taxable corporate income. Typically a thin capitalisation rule denies complete interest deductibility if a particular leverage ratio reaches a certain limit. Thin capitalisation rules are found to have a substantial impact on affiliate leverage. However, their effectiveness is severely reduced if tax authorities can use discretion in their application, taking

into account information on leverage at other firms instead of applying the rules automatically (Jennifer Blouin, Harry Huizinga, Luc Laeven, Gaëtan Nicodème, 2014).

2.4.4 Thin Capitalisation Rules

In a research done by Jennifer Blouin, Harry Huizinga, Luc Laeven, Gaëtan Nicodème, (2014), 27 countries – exactly half of the countries covered in their analysis – had enacted a thin capitalisation regime that restricted interest deductibility if a debt ratio exceeded a certain limit. Two main categories of thin capitalisation rules can be distinguished. First, 16 countries restricted interest deductibility if the *total debt-to-equity ratio* exceeded a certain numerical value. The United Kingdom, for instance, maintained a maximum total debt-to-equity ratio of one. Alternatively, 11 countries restricted the ratio of *internal debt-to-equity*, where internal debt means debt to the parent firm or another related party. Germany, for instance, had a maximum ratio of internal debt-to-equity of 1.5.

Thin capitalisation regimes differ in whether their application on reaching the maximum debt ratio is automatic or instead discretionary. In the latter case, indebtedness above the maximum allowed ratio triggers an investigation by the tax authorities of whether the indebtedness is indeed deemed excessive (leading to reduced interest deductibility), taking into account the leverage of other comparable firms. Only 17 countries applied their thin capitalisation rule automatically, while 10 countries could use some discretion in the application of their thin capitalisation rule.

2.4.5 Thin Capitalisation Rules On Leverage

On average, a restriction on the total debt-to-equity ratio (which also constrains the firm's total debt-to-assets ratio) reduces the total debt-to-assets ratio of the affiliates of multinational firms by 1.9%. The decline in the total debt-to-assets ratio is larger if the maximum allowed total debt-to-equity ratio is more restrictive. Thin capitalisation rules that instead limit the internal debt-to-equity ratio on average reduce this leverage ratio by 6.3%, while the decline is larger if the maximum allowed debt ratio is lower. The sensitivity of the affiliates' internal debt ratio to thin

capitalisation rules may reflect that multinationals can easily substitute internal equity for internal debt in case the tax advantage of internal debt is diminished on account of a thin capitalisation rule. This also suggests that thin capitalisation rules can be effective instruments to counter tax planning activities via the use of internal debt. (Buettner, T., M. Overesch, U. Schreiber, U. and G. Wamser, 2012)

The effectiveness of thin capitalisation rules depends importantly on whether they are applied automatically or with discretion. A thin capitalisation rule reduces the total debt-to-assets ratio by an average of 2.8% if it is automatically applied, but only by 1.1% if it is applied with discretion. The possibility of using discretion reduces the efficacy of thin capitalisation rules, perhaps because tax authorities find it too burdensome to enforce thin capitalisation rules that are not automatic. Our evidence suggests that such rules would only be effective in reducing leverage – and in increasing tax revenues – if their application upon reaching the maximum leverage ratio is automatic. If instead, discretion is made a feature of a common thin capitalisation regime, then tax policy makers may appear to have succeeded by adopting a seemingly coordinated policy – but in reality the multinationals would continue to benefit from interest deductions, thus reducing tax revenues. (Feld, L., J. Heckemeyer, and M. Overesch, 2013)

Some specific considerations may include:

There are a number of options under the thin capitalisation regime that can be explored to improve an entity's thin capitalisation position. These include alternative methods for determining the maximum allowable debt (such as the arm's length debt amount), different methods for calculating average amounts, and a choice to revalue certain assets for tax and/or accounting purposes.

In the absence of a transitional rule for existing debt, it is likely that the proposed changes have a direct impact on financial models and structures for existing and proposed funding requirements. Accordingly, it may be worth reconsidering the mix of debt and equity funding that is utilised.

Capitalising existing debt may have other adverse tax outcomes that should be carefully considered. These may include realisation of taxable foreign exchange gains, reduction in the ability to utilise certain tax losses within a tax consolidated group and implications under the commercial debt forgiveness provisions. The overseas tax implications will also need to be addressed.

The thin capitalisation regime applies to all types of entities including companies, trusts, partnerships and even individuals. The proposed changes, however, are likely to have a bigger impact on some industries than others. For example, infrastructure projects can usually support a higher level of debt. A reduction in the amount of debt that is able to be utilised by such entities would impact the returns to investors and increase the cost of funding for such projects.

Any deductions that are denied as a result of the lower thin capitalisation ratios not only will have a direct additional income tax cost but will also have additional costs in that the excess interest may continue to be subject to non-resident interest withholding tax

The proposed changes to the thin capitalisation regime are just one aspect of this year's Federal Budget announcements that directly affect the cost of funding – refer to the additional proposed reforms to limit debt deductions on funding certain offshore investments and changes to the foreign dividend participation exemption. Combined, these changes are estimated to raise \$1.5 billion over the four year forward estimates. (Buettner, T., M. Overesch, U. Schreiber, U. and G. Wamser, 2012)

2.5 Conceptual framework

The conceptual framework contains the independent variable and the dependent variable.

The independent variable contains the capital structure of the firm while the dependent variable contains the cost of capital. Capital structure involves decision making between debt and equity. Nicole (2009) in his scholarly work on the financial structure influence on the cost of capital and enterprise value uses debt and equity to indicated the capital structure hence consistent with the research. Variables also consistent with Kitony (2007) research on the test of relationship between capital structure and agency cost.

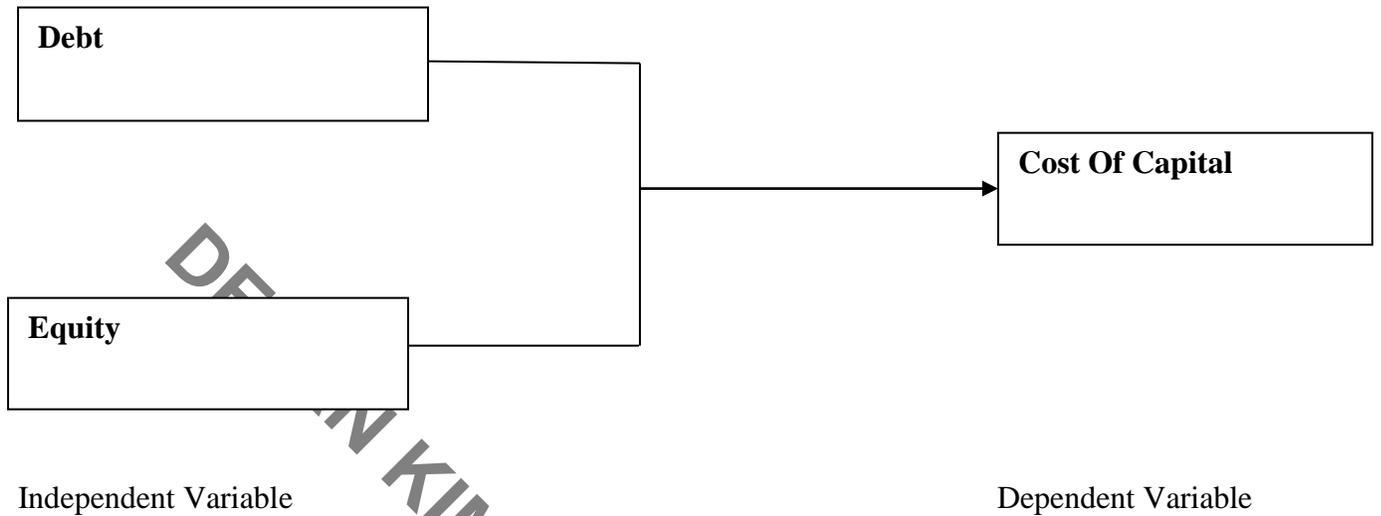
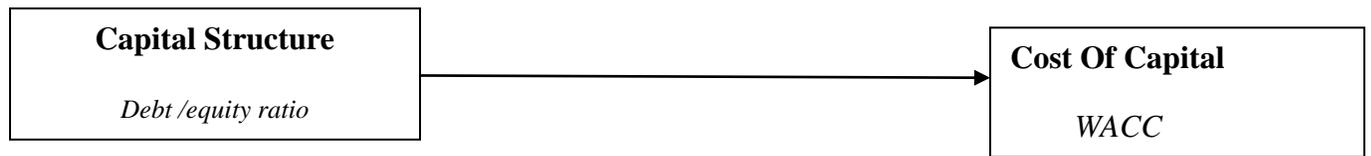


Figure 1: Conceptual Framework for effects of capital structure and the cost of capital

2.6 Operational framework

The operational framework contains the independent variable, the dependent variable and the measurable parameters which are the debt/equity ratio and the weighted average cost of capital (WACC).



Independent Variable

Dependent Variable

Figure 2: Operational Framework for the effects of capital structure on the cost of capital

DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out the methodology and design of the study. It describes the sources of data, method of collection and a summary of the analysis that was carried out.

3.2 Research design

According to Mugenda & Mugenda (2003), a research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure or it is the conceptual structure within which research is conducted, it constitutes the blue print for the collection, measurement and analysis of data

A research design is the guideline of the study. The design of a study defines the study type (descriptive, correlational, semi-experimental, experimental, review, meta-analytic) and sub-type (e.g., descriptive-longitudinal case study), research question, hypotheses, independent and dependent variables, experimental design, and, if applicable, data collection methods and a statistical analysis plan. Research design is the framework that has been created to seek answers to research questions.

A research design basically means the plan or technique of shaping the research, or as Hakim (1987) puts it “design deals mainly with aim, purposes, motives and plans within the practical constraints of location, time, money and availability of staff”. The possibilities of success of a research study is significantly improved when the “beginning” is properly defined as a precise statement of goals and justification.

Research design offers the investigator an opportunity to carry out different research operations efficiently. This makes research as valuable as possible producing maximum information with minimum effort, time and money. Researcher needs to consider all necessary precautions when preparing the design, as any error may upset the whole project. The reliability of result, which a researcher is looking, is proportional with design that constitutes a firm foundation of entire body of research work.

Research design carries an important influence on the reliability of the results attained. It therefore provides a solid base for the whole research. It is needed due to the fact that it allows for the smooth working of the many research operations. This makes the research as effective as possible by providing maximum information with minimum spending of effort, money and time. For building of a car, we must have a suitable blueprint made by an expert designer. In a similar fashion, we require a suitable design or plan just before data collection and analysis of the

research project. Planning of design must be carried out cautiously as even a small mistake might mess up the purpose of the entire project. The design helps the investigator to organize his ideas, which helps to recognize and fix his faults, if any. In a good research design, all the components go together with each other in a coherent way. The theoretical and conceptual framework must be in line with the research goals and purposes. In the same way, the data gathering method must fit with the research purposes, conceptual and theoretical framework and method of data analysis

Descriptive survey design was adopted in conducting this study. This involved collection of information by looking at the financial statements of all the firms quoted in the Nairobi Securities Exchange. The design was appropriate as it allowed the researcher to describe, record, analyze and report conditions that existed. Thus, the researcher was able to obtain data useful in evaluating present practices and providing basis for decision. The decision allowed the researcher to generate both numerical and descriptive data utilizable in measuring correlation coefficient between variables.

3.3 Target population

According to Mugenda and Mugenda (2003), a target population refers to a group of individuals, objectives or items from which a sample is drawn. A population entails all the cases or individuals that fit specifically for being sources of the data required in addressing the research problem. Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. The target population usually has varying characteristics and it is also known as the theoretical population.

Brenda G Cox (2003) defines the target population for a survey is the entire set of units for which the survey data are to be used to make inferences. Thus, the target population defines those units for which the findings of the survey are meant to generalize. Establishing study objectives is the first step in designing a survey. Defining the target population should be the second step. Target populations must be specifically defined, as the definition determines whether sampled cases are eligible or ineligible for the survey.

Neil (1991) defines a population as a group of potential participants that has one characteristics. A target population is a complete set of elements (persons or objects) that possess some common characteristic defined by the sampling criteria established by the researcher. The entire group of people or objects to which the researcher wishes to generalize the study findings

In creating a new service, startups need to focus on fundamentals such as solving a problem or addressing a need in a new or different way. As important is identifying the businesses or individuals who will buy their product – otherwise known as target audiences. At a high level, target audiences can be quickly defined. For example, the target audience for accounting software could be people who want to organize their finances to operate their businesses more efficiently. This offers a good starting point to create messaging to drive marketing and sales. In most cases, however, there has to be a more granular approach to target audiences. Why? The reality is a product can appeal to a variety of buyers who may have different needs and goals. It means a one-size-fits-all marketing and sales approach may not work because it's not focused enough. To get a strong handle on target audiences, startups need to identify the different types of buyers. One of the best ways to make this happen is looking at who actually makes or influences the buying decision. From there, you look at what their needs or problems, what they're trying to achieve, how they can be successful, and their budgets. What you may discover is slight, but important, differences that will impact how the product should be pitched so a prospect can be pushed down the sales funnel. By clearly identifying target audiences, it becomes easier to capture someone's attention because their needs and goals are front and centre.

This study targeted firms listed in Nairobi Securities Exchange, the firms listed were forty nine in number as in table 1. These firms quoted in NSE were used as they normally publish their data to public.

3.4 Sampling method and size

A sample is the group of people who take part in the investigation. The people who take part are referred to as “participants” in statistics, quality assurance, & survey methodology, sampling is concerned with the selection of a subset of individuals from within a statistical population to estimate characteristics of the whole population. Each observation measures one or more

properties (such as weight, location, color) of observable bodies distinguished as independent objects or individuals. In survey sampling, weights can be applied to the data to adjust for the sample design, particularly stratified sampling. Results from probability theory and statistical theory are employed to guide practice. In business and medical research, sampling is widely used for gathering information about a population. (David S. Moore and George P. McCabe, 2005).

According to Neil (1991), a sample is a representation of only part of a population but is used to generalize back to the population. Sampling method refers to the rules and procedures by which some elements of the population are included in the sample. Some common sampling methods are simple random sampling, stratified sampling, and cluster sampling

Sample size determination is the act of choosing the number of observations or replicates to include in a statistical sample. The sample size is an important feature of any empirical study in which the goal is to make inferences about a population from a sample. In practice, the sample size used in a study is determined based on the expense of data collection, and the need to have sufficient statistical power. In complicated studies there may be several different sample sizes involved in the study: for example, in a survey sampling involving stratified sampling there would be different sample sizes for each population. In a census, data are collected on the entire population, hence the sample size is equal to the population size. In experimental design, where a study may be divided into different treatment groups, there may be different sample sizes for each group (Emmel, 2013).

Determining sample size is a very important issue because samples that are too large may waste time, resources and money, while samples that are too small may lead to inaccurate results. In many cases, we can easily determine the minimum sample size needed to estimate a process parameter, such as the population mean.

The researcher used stratified random sampling method to identify the sample. A total of forty companies were used as the sample size where the companies were derived from each strata using simple random sampling. The purpose of stratified random sampling was to derive a sample that was heterogeneous so that the result could be of value.

Table 1: Analysis of the firms in Nairobi Securities Exchange

Sector	Total Number Of Companies		Sample	
	Frequency	Percent	Frequency	Percent
Agricultural	4	11	3	7.5
Commercial and Services	9	6	7	17.5
Financial and Investment	12	18	11	27.5
Industrial and Allied	17	15	12	30
Alternative Investment Market	7	8	7	17.5
Total Number	49	100	40	100

3.5 Data Collection Instrument

In order to achieve the stated objectives of the study, secondary data was employed. The secondary data was obtained from the Capital Markets Authority's library, company's annual reports and statement of accounts of the firms listed in the NSE.

The period to be covered was five years, from 2003 to 2007. This period was chosen because of accessibility to the financial statements.

3.6 Method of data analysis

The quantitative data collected was subjected to a statistical analysis. The objectives of this study were analyzed as follows;

Table 2: Research objectives and their research methodology

Objective	Methodology
Level of debt/equity ratio	Descriptive Statistics
To establish whether debt is cheaper than equity	Descriptive Statistics
To investigate the relationship between capital structure and the cost of capital	Inferential Statistics

The methods of data analysis for each objective were different where level of debt/equity ratio used descriptive statistics. To establish whether debt is cheaper than equity, the researcher used descriptive statistics. To investigate the effects of capital structure on the cost of capital, the researcher used regression analysis. The research uses leveraged measured using book value throughout the analysis because of data constraint. Barclays et. El. (2003) argue that book leverage is an instrument for the ratio of debt to a equity. Firms are likely to be more concerned about book leverage ratio because bank loans covenants are written in terms of book value.

The general form of the model to be used was:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

Where,

Y is the firm cost of capital which will be measured by the accounting evaluation model.

α is the constant term

β is a vector of regression slope

X_1 is cost of ordinary share capital

X_2 is cost of retained earnings

X_3 is cost of loan

The error term (α) represents the effect of the dependent variable (cost of capital) of all variables other than the once included in the study. Even if the variable to be included was the only identifiable variable influencing the dependent variable, it was not expected that the variable would stay year after year. The error term therefore was included to allow for the basic random unpredictability of human behaviour. The model will be first estimated on a year to year basis and then estimated by pooling all data for all years. The model is consistent with Pavel (2007) research model. The model is also consistent with Robert (2013) research model. Sajid et al. (2012), uses regression model for his study of the determination of corporate debt maturity structure.

3.7 Ethical issues

To ensure appropriate data analysis, all sources and methods used to obtain and analyze data were fully disclosed. The data used was a true representation of the population. The researcher credited the author of various references used. For the researcher to maintain ethical stand, he did not alter any information obtained from the financial statement of the companies listed in the Nairobi Securities Exchange hence his findings were reported fairly.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

After gathering necessary data, they were analysed by Excel where the variables were calculated for each of the companies studied. The debt/equity ratio, the cost of ordinary share capital, the cost of retained earnings, the cost of loan and the weighted average cost of capital for each company was calculated and later grouped to market sector. The variables were entered in SPSS software and then correlation between dependent and independent variables were measured by using Pearson correlation coefficient.

4.2 Comparison of Debit/Equity Ratio across counters

The outputs of analyzing debit/equity are demonstrated in the following table 3.

Table 3: Comparison of Debt/Equity Ratio across counters

Category	2003	2004	2005	2006	2007
Agricultural Sector	1.0174	1.5033	1.1464	1.2824	1.2533
Commercial and Services	0.8029	1.0371	2.0479	3.0539	3.4326
Financial and Investment	0.2166	0.028	0.0683	0.0249	0.0096
Industrial and Allied	2.0227	1.1094	1.3329	1.6561	1.5757
AIMS	3.7948	4.9491	4.5471	4.4035	4.1592

From the table 3 above, AIMS has the highest debt/equity ratio over the five years meaning that the AIMS category in the market at the period of study were the biggest borrowers hitting a high of 4.949. The financial and investment category in the market at the period of study had the lowest debt/equity ratio meaning that this sector avoided borrowing capital hitting a low of 0.0249. This analysis is consistent with Chebii, Kipchumba, Wasike (2006), in their relationship between firms capital structure and dividend payout ratio. These values for the debt/equity ratio were consistent with the values found by Rajan and Zing (1995) for the firms listed in the NSE. Parvin (2007) found out that firms in transition economies seem to have a similar pattern in the debt maturity structure. These debt equity values refute with Kiogora (2000) research where he found out that the debt equity ratio in the NSE dropped substantially.

The value of debt/equity ratio in table 3 were used to draw graph in figure 3 below.

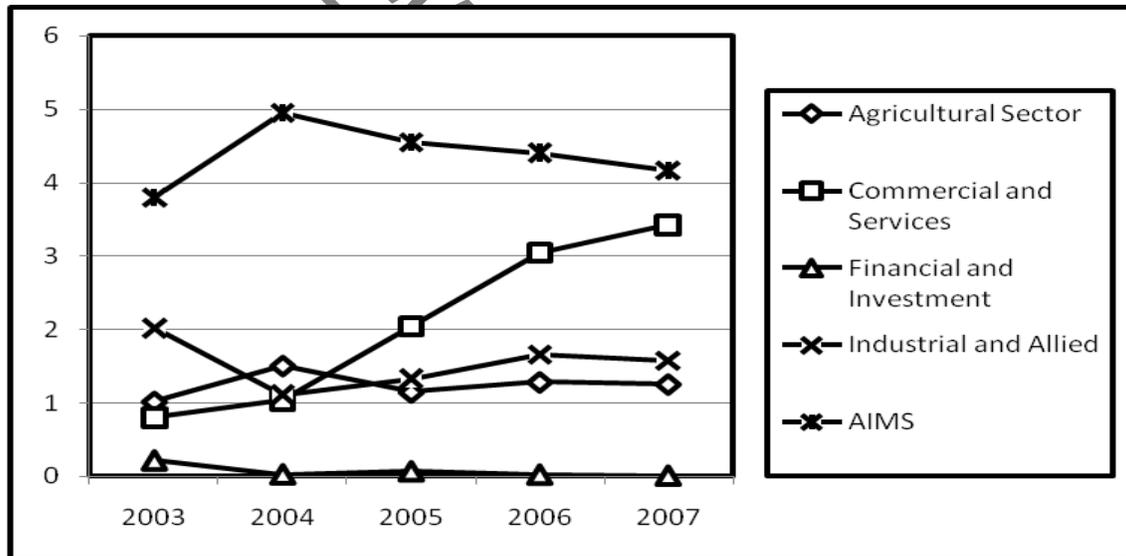


Figure 3: Plot of Debt/Equity Ratio for different companies

4.3 Comparison of WACC across counter

The outputs of analyzing WACC are demonstrated in the following table 4.

Table 4: Comparison of WACC across counter

Category	2003	2004	2005	2006	2007
Agricultural Sector	0.1139	0.1124	0.0966	0.0919	0.0908
Commercial and Services	0.266	0.2507	0.2588	0.2369	0.1748
Financial and Investment	0.1753	0.177	0.1691	0.158	0.1893
Industrial and Allied	0.1912	0.1883	0.1528	0.1423	0.1465
AIMS	0.1076	0.0982	0.0854	0.0897	0.0897

From the table 4 above, Commercial and Services has the highest WACC over the five years meaning that the Commercial and Services category in the market at the period of study had the highest WACC hitting a high of 0.266. The AIMS category in the market at the period of study had the lowest WACC meaning that this sector had the lowest WACC hitting a low of 0.0854. . This analysis is consistent with Chebii, Kipchumba, Wasike (2006), in their relationship between firms capital structure and dividend payout ratio

This research is consistent with Smith (1995) research. Barclays, Morellec and Smith (2003), in their scholarly work on the debt capacity had consistent results on the comparison of their variables across countries.

The value of WACC in table 4 were used to draw graph in figure 4 below.

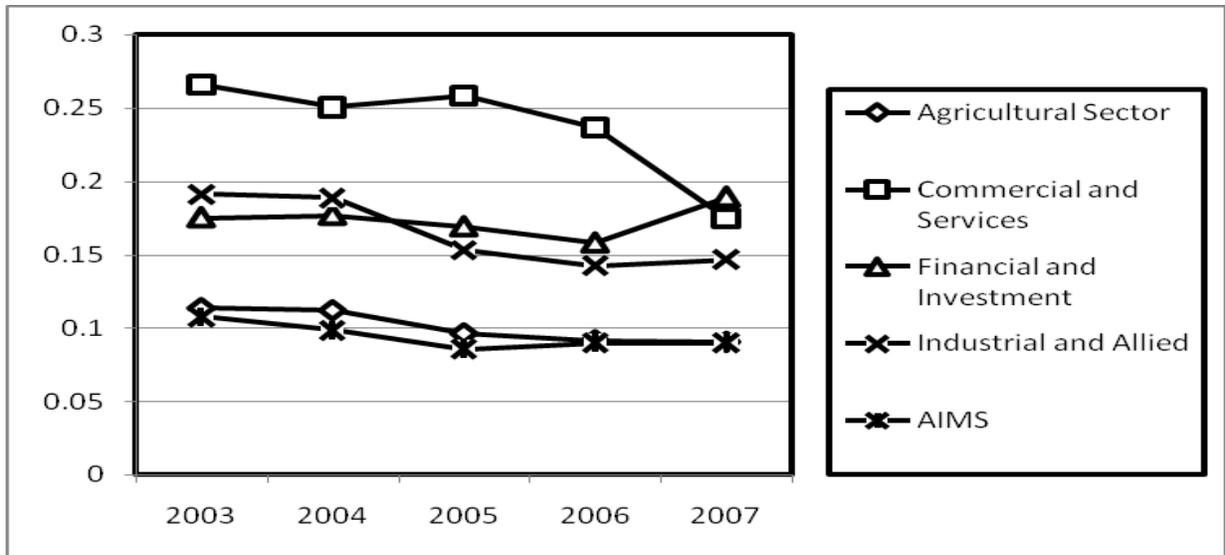


Figure 4: Comparison of WACC across counter

4.4 Comparison of cost of debt and cost of equity

The outputs of analyzing cost of debt and cost of equity are demonstrated in the following table 5.

Table 5: Comparison cost of equity and cost of debt

Category	Cost Of Equity	Cost Of Debt
All Market Sectors	0.168151	0.099338

From the table 5 above, the cost of debt which is 0.099338 is the lower cost compared to cost of equity which is 0.168151. therefore, it is evident from the analysis that cost of debt is lower than the cost of equity hence making it cheaper. This results is consistent with the research by Manohar Singh and Ali Nejadmalayeri in their research on internationalisation, capital structure and cost of capital where high level of debt financing that directly results in the reduction of the overall cost of capital. This is consistent with Nicoleta (2009), research on the financial structure on the cost of capital and the enterprise value where he argues that due to the tax savings of debt, it becomes cheaper as compared to equity.

Parvin (2007), in his research, larger firms tend to have more long term debt since they are said to have lower agency cost, access to debtholders and stronger negotiation power. Leverage has been found to have a statistically significant positive impact on corporate debt maturity structure.

The value of cost of equity and cost of debt in table 5 were used to draw graph in figure 5 below where 1 depicts the cost of equity and 2 depicts the cost debt.

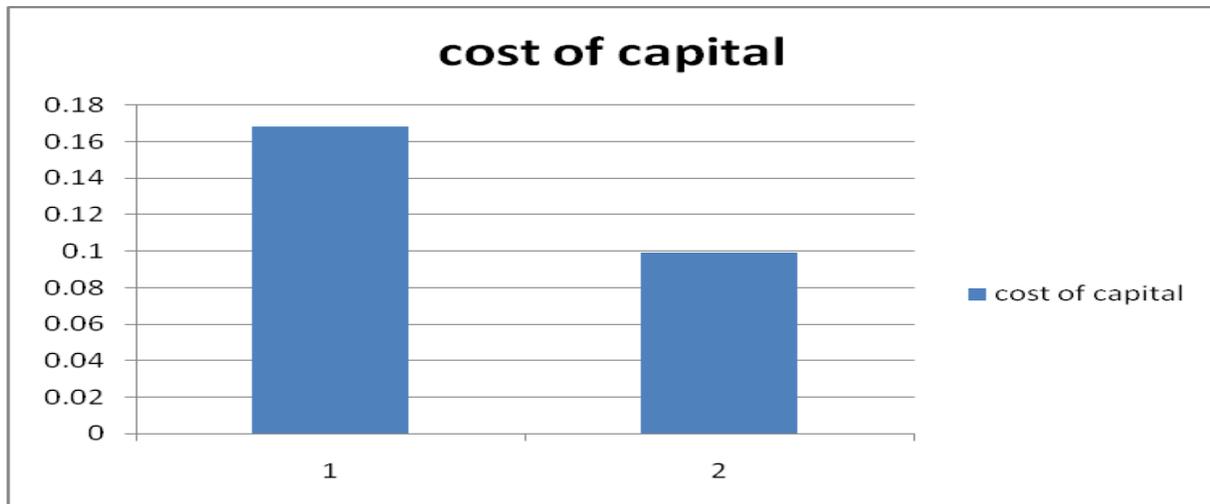


FIGURE 5: Comparison of cost of equity and cost of debt

4.5 Test of relationship

The relationship between debt/equity and WACC is demonstrated in the following table 5.

Table 6: Correlation between Debt/Equity Ratio and WACC

		Correlation	
		Weighted	
		Average cost	Debt/Equity
		Of capital	Ratio
Weighted average cost	Pearson	1	-.151
Of capital	Correlation		
	Sig. (2 tailed)		.351
	N	40	40
Debt/Equity Ratio	Pearson	-.151	1
	Correlation		
	Sig. (2 tailed)	40	40

Source: Generated from analysis using SPSS

This means that debt financing definitely has negative effect on cost of capital (WACC) since Pearson correlation is -0.15. This negative relationship means that an increase in the debt financing decreases the cost of capital (WACC). This results is consistent with the research by Manohar Singh and Ali Nejadmalayeri (2003), in their research on internationalisation, capital structure and cost of capital where high level of debt financing that directly results in the reduction of the overall cost of capital. This is consistent with Aswath (2003) research where he found out that as the debt ratio increased, the cost of capital increased. This is also consistent with Nicole (2009) reseach where an increase in debt decrease the risk which eventually leads to decrease in the cost of capital. This findings refute the pecking order theory.

Table 7: Descriptive Statistics for Models variables

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std Deviation
Weighted Average Cost of Capital	40	.0169	.9559	.1627	.1709
Capital Cost	40	.0505	1.3735	.3033	.2187
Retained Earnings Cost	40	.0000	.1062	.0330	.0256
Loan Cost	40	.0140	.2940	.0993	.0631

Source: generated from analysis using SPSS

From table 7, it is observed that the WACC ranged between 0.0169 and 0.9559 with a mean of 0.1627 and a standard deviation of 0.1709 from 2003 to 2007. The share capital cost ranged between 0.0505 and 1.3735 with a mean of 0.3033 and a standard deviation of 0.2187 from 2003 to 2007. The retained earning cost ranged between 0.0000 and 0.1062 with a mean of 0.0330 and a standard deviation of 0.0256 from 2003 to 2007. The loan cost ranged between 0.0140 and 0.2940 with a mean of 0.0993 and a standard deviation of 0.0631 from 2003 to 2007. The data set employed for the emperical evidence included the balamced panel data of 40 firms, each firm was provided with financial statement for 5 years 2003 – 2007 cosnsistent wth Pavel (2007) research. This analysis is also consitent with Chebii, Kipchumba and Wasike (2006), in their relationship between firms capital stucuture and dividend payout ratio.

Table 8: Correlations for model variables

		Correlation			
		Weighted			
		Average cost	Share Capital	Return	Loan Cost
		Of capital	Cost	Earning cost	
Weighted average	Pearson	1	.815	-.361	.288
Cost of Capital	Correlation				
	Sig. (2 tailed)		.000	.022	.072
	N	40	40	40	40
Share Capital	Pearson	0.815	1	-.164	.204
Cost	Correlation				
	Sig. (2 tailed)	0.000		.312	.207
	N	40	40	40	40
Retained Earning	Pearson	-.361	-.164	1	-.088
Cost	Correlation				
	Sig. (2 tailed)	.022	.312		.590
	N	40	40	40	40
Loan Cost	Pearson	.288	.204	-.088	1
	Correlation				
	Sig. (2 tailed)	.072	.207	.590	
	N	40	40	40	40

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

* . Correlation is significant at the 0.05 level (2-tailed).

Source: Generated from analysis using SPSS

From table 8 above, there is a strong positive relationship between cost of ordinary share capital and the WACC since the correlation it is at 0.815. There is a positive relationship between cost of loan and the WACC at a correlation of 0.288. Finally, there is also a negative relationship between cost of retained earnings and the WACC at a correlation of -0.361 though it is a weak relationship.

The table report the correlation matrix for the dependent and independent variables. The correlation are generally in line with the expectations of the regression model. This is consistent with Parvel (2007).

Table 9: Model Summary of the effects of capital structure on the cost of capital

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error Of the Estimate	Durbin Watson
	.854 ^a	.730	.707	.0924	2.135

a. Predictors: (Constant), Loan Cost, Return Earning Cost, Share Capital Cost

b. Dependent Variable: Weighted Average Cost of Capital

Source: Generated from analysis using SPSS

From table 9 above, the R square is 73% which indicates highly significant relationship between the variables as only 27% of variation is attributable to factors outside this study.

The value of co efficient of determination that is R square and adjusted R are considerably high in the equation. The ultimate cause is that the retained earning cost, share cost and the loan cost determine highly the WACC.

Results are significant enough to serve our purpose best. The results are consistent with existing research. The slight variation might because of other factors contributing to WACC.

Table 10: Model Analysis of Variance Output

ANOVA^b of the effects of capital structure on the cost of capital

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	.831	3	.277	32.370	.000 ^a
Residual	.308	36	.009		
Total	1.138	39			

a. Predictors: (Constant), Loan Cost, Return Earning Cost, Share Capital Cost

b. Dependent Variable: Weighted Average Cost of Capital

Source: Generated from analysis using SPSS

From the table 10 above, it indicates model analysis of variance output. The F value of 32.370 and Sig. value equal to 0.000 indicates that the regression is statistically significant.

Table 11: Model analysis of coefficients of the variables

Coefficients^a

Model	Unstandardised Coefficient		Standardized Coefficients		T	Sig.
	B	Std. Error	Beta			

Constant	0.003	.400		.081	.936
Share Capital Cost	.589	.070	.754	8.425	.000
Return Earning Cost	-1.513	.536	-.227	-2.580	.014
Loan Cost	.309	.240	.114	1.288	.206

a. Dependent Variable: Weighted Average Cost of Capital

Source: Generated from analysis using SPSS

From table 11 above, the regression model is

$$Y = 0.589X_1 - 1.513X_2 + 0.309X_3 + 0.003$$

Where

$Y =$ WACC.

$X_1 =$ Share Capital Cost

$X_2 =$ Retained Earning Cost

$X_3 =$ Loan Cost

From the model, a unit increase in Share Capital Cost result to an increase 0.589 in WACC, on the other hand, a unit increase in Retained Earning Cost results to decrease of 1.513 in WACC. Lastly, a unit increase in Loan Cost results to an increase of 0.309 in WACC. The error term has a value of 0.003. Robert (2013), in his scholarly works on the effects of capital on the financial performance of the firms listed in the NSE uses the regression model in his study.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the summary, conclusion and the recommendations of the research.

5.2 Summary of the key findings

The researcher guided by the objectives, was able to develop the following findings;

5.2.1 To establish the level of capital mix in the companies listed in the NSE.

With respect to the objectives set out, this study has established that companies listed at the Nairobi Securities Exchange generally maintain similar capital structure patterns for all the sectors/categories. AIMS sector however operates at high level of debt compared to other counters. The overall trend in debt/equity ratio is that there is a tendency to an increase and reduction overtime. This shows that most companies tend to borrow more relative to their equity over the years. The overall trend in WACC is that over the years that is 2003 to 2007, for all the sectors, there is reduction in the rate of WACC over the years since the objective of firms is to reduce the cost of capital.

5.2.2 To establish whether cost of debt is cheaper than cost of equity in the companies listed in the NSE as per the capital structure theory.

The cost of debt which is 0.099338 is the lower cost compared to cost of equity which is 0.168151 therefore, it is evident from the analysis that cost of debt is lower than the cost of

equity hence making it cheaper. Cost of debt is lower than the cost of equity hence, cost of debt is cheaper than the cost of equity.

5.2.3 To investigate the relationship between capital structure and cost of capital

Debt financing has a negative effect on cost of capital (WACC) since Pearson correlation is - 0.15. This negative relationship means that an increase in the debt financing decreases the cost of capital (WACC).

5.3 Conclusion

The decision for a specific capital structure must into account the cost of capital since the firms have to lower their cost of doing business at the lowest cost possible, hence important to examine the effects of capital structure on the cost of capital. Financial statement data and detailed financial reports for the firms were examined to test whether capital structure has an effect on the cost of capital.

Cross counter analysis using financial statements data which sought to establish the levels of debt/equity ratio in the companies listed in the NSE, it was found out that from the comparison of the debt/equity ratio across counters, there was no common debt/equity ratio used across counters but AIMS had the highest debt/equity ratio over the five years meaning that the AIMS category in the market at the period of study were the biggest borrowers hitting a high of 4.949. The financial and investment category in the market at the period of study had the lowest debt/equity ratio meaning that this sector avoided borrowing capital hitting a low of 0.0249.

Under tests to establish whether cost of debt is cheaper than the cost of equity in the companies listed in the NSE, it was found out through analyzing and comparing the cost of debt and cost of equity, the cost of debt which was 0.099338 was the lower cost compared to cost of equity which was 0.168151 therefore, was evident from the analysis that cost of debt was lower than the cost of equity hence making it cheaper.

Taken all together, our results indicate that the relationship between capital structure (debt/equity ratio) and cost of capital (WACC) is a negative relationship since the Pearson correlation was -

0.15 meaning that an increase in debt/ equity ratio lead to a reduction in the cost of capital. Hence firms should be considering debt for their business in terms of capital decions.

5.4 Recommendation

From the findings of this study it is highly recommended that financial managers in companies can minimize cost by engaging in optimal debt financing because there is a negative correlation between cost of capital and capital structure (debt/equity ratio). That is, as companies engage more and more debt towards optimal levels, the more it is likely to experience lower cost on capital.

The investors are also advised to use more of debt as a source of finance since debt is cheaper than equity hence in the long run the investor will reducing on cost and increasing their revenues more.

The financial advisors can also use this research in advising their clients in need of finance to opt for debt since it is cheaper than equity.

5.5 Suggestion for further research

The following related area can be researched on to add up to the knowledge of what this study has achieved as far as meeting the firms cost of capital. There is need for firms to reduce their cost in as much as possible. In this regard, an analysis could be improved by differentiating between long term and short term debt effect on the cost of capital.

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