

**IMPACT OF PROFITABILITY ON CAPITAL STRUCTURE OF  
COMPANIES LISTED AT THE NAIROBI STOCK EXCHANGE**

**BY**

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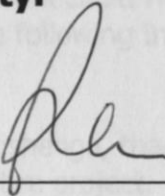
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**DECLARATION**

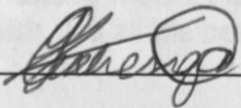
**This project is my original work and has not been submitted for a degree in any other university.**

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Date 29/11/06

**This project has been submitted for examination with my approval as the University supervisor.**

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## CHAPTER ONE

### 1.0 Introduction

#### 1.1 Background of the study

#### **ABSTRACT**

The objective of this study was to ascertain whether there exists a relationship between a firm's profitability and its source of finance.

This study was based on secondary data collected on the companies based on Nairobi Stock Exchange . This data covered a period of six years that is January 1999 to December 2004.

From this data all the variables relevant to the study were calculated that is values representing the determinants of debt and profit.

This data was then analyzed using regression analysis and tested the hypothesis derived from the objective by use of F- significance ANOVA to determine the nature and magnitude of the relationship between the profitability and firm capital structure.

The findings of the study confirmed that there is a weak positive relationship between capital structure and profitability of firms quoted on the Nairobi stock exchange from the period 1999-2004.

It was also established that firms listed on the Nairobi Stock Exchange during this period relied more on external funding rather than retained earnings.

# CHAPTER ONE

## 1.0 Introduction

### 1.1 Background of the study

Weston and Copeland (1986) define capital structure as the permanent financing of the firm as represented by long-term debt, preferred stock and common equity. It is a firm's mix of debt and equity financing. Capital structure perspectives have sparked a lot of controversies and criticism from academicians and practitioners. The greatest capital structure question remains whether there is an optimal capital structure. Empirical evidence from all around the world has provided inconclusive and contradictory findings about various capital structure facets. For instance, Myers (1984) found out that firms with valuable intangible assets tend to borrow less than those holding mostly intangible assets; Brigham and Gapenski (1990) found out that firms with very high rates of return on investments used relatively less debt.

Myers (1984) and Myers and Majluf (1984) popularized the pecking order theory of capital structure as a result of the inadequacies of the trade off theory of capital structure. The latter holds that firms make a trade off between tax shield benefits as a result of debt financing and costs of financial distress. They trade off the benefits of debt financing with higher interest rates and bankruptcy costs (Myers, 1984). The pecking order theory holds that firms would prefer internal sources of funds than external sources of financing due to information asymmetry between firm managers and outside investors who are less informed. Firms would therefore opt to finance themselves first from internal sources of financing (retained earnings) then debt and lastly equity. Due to information costs associated with external financing, firms would prefer to use their retained earnings as sources

financing and if they are inadequate, debt would be the next best alternative and upon exhaustion, a hybrid of securities such as convertible bonds would be issued and then perhaps equity as the last resort (Myers, 1984).

Modigliani and Miller (1958) made enormous contribution in academic research and theory on capital structure. They contended that there exists no optimal capital structure that is it does not matter how a firm is financed. They supported their contentions by giving propositions. They therefore disputed the traditional view which held that there was an optimal capital structure that would increase the value of a firm. Their criticism of the traditional view was based on the assumption that the cost of equity remained the same by leverage up to some reasonable limit. This did not give sufficient justification for such an assumption. Modigliani and Miller used arbitrage proof to support their argument on the ground that in a perfect capital market, with a set of assumptions on place arbitrageurs' activities would ensure that the value of the levered firm was the same as that of the unlevered firm. If two companies differed only in the way in which they were financed and in the total market values, then investors will buy more of the undervalued firm's stocks and sell more of the overvalued firms stocks until equilibrium is achieved. In 1963, the two incorporated the impact of tax on the value of a firm: leverage increased the value of a firm due to tax shield benefits emanating from debt financing (Modigliani and Miller, 1963).

Titman and Wessels (1988) have highlighted various determinants of capital structure choice. They include profitability, asset structure, non-debt tax shields, growth, uniqueness, industry classification, size, earnings volatility. Firms with assets that can be pledged as collateral will issue more debt

take advantage of the opportunity; firms with large non-debt tax shields relative to their expected cash flows include less debt in their capital structure; firms producing unique products are expected to be using less debt; firms manufacturing machines and equipment should finance themselves with relatively less debt. They indicate further that large firms are highly leveraged due to the fact that they are less prone to bankruptcy; a firm's optimal debt level is a decreasing function of the volatility of earnings; expected future growth is negatively related to long-term debt levels; highly profitable firms do not finance themselves with much debt since they are able to finance themselves with retained earnings.

Debt financing is preferred to equity financing due to a number of reasons. There are tax shield benefits associated with debt financing; information costs relating to debt financing are much lower than those of issuing new equity. The amount of debt a firm issues at a particular point in time is solely explained by the amount of internal deficit of funds the firm is facing at the same time period. Myers and Majluf (1984) indicate that equity financing becomes necessary when leverage is already high enough to make debt expensive due to financial distress costs. Since managers possess better information about their shares than outside investors, they will only issue shares when they know that they are fairly priced and not when they are undervalued.

Despite these academic recommendations, very few studies have been carried out in Kenya to ascertain the link between various organizational factors and financing decisions. Studies done show that the debt/equity levels of companies and factors considered significant in determining capital structure in other economies are significant in Kenya too. Local NGOs tend to have a high debt/equity ratio than foreign owned enterprises which have the lowest debt/equity ratios. Kiogora (2000)



## 1.2 Statement of the problem

Academicians have highlighted various factors that would make financial managers have a hierarchy of financing options. However, empirical evidence has revealed that those factors are not always applicable to all organizations in designing the financing pecking order. For instance Booth et al. (2001) found out that factors affecting capital structure decisions in developed and developing countries are the same. However, the findings of Rutterford (1985) indicate that Japanese firms relied heavily on debt financing while US and UK firms relied more on equity financing. Factors influencing capital structure decisions are mostly firm specific or market based. Empirical evidence relating to implications and the significance of such factors among firms quoted at the Kenyan stock exchange is scanty. This research will therefore endeavor to ascertain the impact of one of those factors. (Profitability) on financing decisions of quoted companies.

Allen (1993) notes that the pecking order theory suggests that managers display a hierarchy of preferences with respect to funding sources due to information asymmetry. Since debt has little information asymmetry problems, most organizations would opt to finance themselves with it after the exhaustion of retained earnings then use equity as the last resort.

Despite these academic recommendations, very few studies have been carried out in Kenya to ascertain the link between various organizational factors and financing decisions. Studies done show that the debt/equity levels of companies and factors considered significant in determining capital structure in other economies are significant in Kenya too. Local NGOs tend to have a high debt/equity ratio than foreign owned enterprises which have the lowest debt/equity ratios. Kiogora (2000)

## CHAPTER TWO

sought to find out whether the capital structures of companies could provide evidence on existence of optimal capital structures in Kenya and to find the relationship between capital structures and returns of the companies. He found out variations in capital structures among industry groups.

### 2.1 Introduction

The main proposition of the pecking order theory is that profitable firms will rely more on internally generated sources of financing than non-profitable firms. This study used the NSE database to test the validity of this proposition.

### 1.3 Objective of the study

To inquire into the relationship between profitability and sources of financing of quoted companies at the Nairobi Stock Exchange.

### 1.4 Importance of the study

1. Academicians- the findings of this study will make contributions to the existing paradigm on pecking order theory of capital structure in Kenyan companies.
2. Organizations- financial managers of organizations will be able to apprehend various factors that influence financing decisions using the pecking order theory of capital structure; they will be able to make more informed financing decisions based on information from this study.
3. Investors- they will be able to make more informed investment decisions due to the fact that they will be made aware of information asymmetry and misapprehensions instigated by it; they will be in a better position to monitor the signaling effect of managers' decisions.

## CHAPTER TWO

### 2.0 Literature Review

#### 2.1 Introduction

Financing decision can have significant influence over the future of any firm; such decisions are crucial and should therefore involve various pertinent considerations. Various studies, both local and foreign, have been done to ascertain the best possible combination that would maximize the value of the firm but the conclusions have always proved contentious. For instance Williamson (1963) noted that firms that had growth opportunities had lower leverage policies while the traditional schools were categorical that there was an optimal capital structure. Proponents of the trade off theory of capital structure argue that there is such an optimal policy that will be ascertained by trading off the tax shield benefits emanating from debt financing and financial distress costs. However, empirical evidence testing the applicability of the trade-off theory proved inconclusive; Myers (1984) therefore popularized the pecking order theory of capital structure as a result of the inadequacies of the trade off theory of capital structure.

A number of factors influence the financing decisions of firms. Most of those decisions are industry of firm specific. Due to such a leeway in the choice of capital structure, it has become increasingly difficult to recommend a comprehensive and conventional capital structure policy for firms. Such contentions surrounding capital structure have been termed by Myers (1984) as the "capital structure puzzle" which he believes is tougher than the "dividend puzzle". Academicians have come up with different perspectives to try and address various facets of capital structure but still, subsequent scholars have always documented limitations of earlier studies.

Proponents of the pecking order theory of capital structure were concerned with the limitations of the trade-off theory of capital structure. They took issue with the fact that the trade-off theory could not give an explanation as to why most profitable firms used less debt and the fact that firms issue debt frequently but rarely issue equity (Kiogora, 2000). The pecking order theory recommends a financing hierarch that is based on the fact that asymmetric information between firm managers and less informed outside investors would make firms to prefer internal financing first before going for external debt then external equity which is regarded to be more costly than debt: (Myers & Majluf, 1984).

Various factors play a significant role in the capital structure decisions of publicly quoted companies (Omondi, 1996), Aggarwal and Baliga (1987), found out that country and industry were significant determinants of capital structure in most Latin American firms while Kamere (1987) noted that asset structure, stability of future cash flows, level of interest rates, firms tax advantage of debt and the maturity of debt were relevant in capital structure choice. Jariland and Harris (1984) found out that in most US firms, financing decisions were interdependent and firms size, interest rate conditions and stock price levels affected speeds of adjustments to capital structure hence influencing capital structure decisions.

Various scholars have also adopted various perspectives in addressing the capital structure puzzle. Modigliani and Miller (1958) compared to other scholars, Introduced corporate taxes into the capital structure equation and spurred more debate on the subject. Miller (1977) also introduced

personal taxes into the equation. Subsequent development also introduced financial distress costs, agency, costs and signaling aspects of capital structure of firms.

## **2.2 Different Perspectives Of Capital Structure**

### **2.2.1 The Traditional View**

Scholars/proponents of these views contend that firms can substitute debt for equity to lower their cost of capital; maximizing the cost of capital structure can therefore be ascertained and can maximize the value of a firm. Pandey (1981) indicates that the value of a firm can be increased or a judicious mix of debt and equity capital can reduce the cost of capital. The optimal capital structure can be ascertained when the cost of capital is minimum or the value of the firm is maximum.

The traditionalists are not agreed on the shape of the cost of capital curve. Some see it as V-shaped while empirical evidence suggests that it is U-shaped.

### **2.2.2 Modigliani & Miller (1958)**

Based on arbitrage proof, Modigliani & Miller (1958) disputed the traditionalists view by contending that with the existence of a perfect capital market, the capital structures decisions would have no impact on the value of a firm; Arbitrage, they argued, would ensure that an individual's exposure to risk would not change because home-made leverage was as good as corporate leverage (Modigliani & Miller, 1958). Arbitrage refers to the simultaneous buying and selling of similar assets at different prices. However, Duraud (1959) reacted to MM's irrelevance

theory and questioned the applicability of arbitrage process and the assumptions of the risk less world that are somehow unrealistic.

### **2.2.3 Modigliani & Miller (1963).**

One important limiting assumption with MM (1958) was the assumption of a Zero corporate tax rate. The introduction of corporate tax into the capital structure equation was a correction of the (1958) contention. The two authors argued that levered firms will be more value than unlevered firms due to the fact that debt is a tax deductible expense. This means that more of a leveraged firm's operating income flows to investors (Modigliani & Miller, 1963). The value of a levered firm will be the value of an unlevered firm in the same risk class plus the gain from leverage which is the value of the tax savings defined by the corporate tax rate times the amount of debt that the firm uses. The two authors however warned against maximizing debt in the capital structure as other sources of finance like retained earnings may be cheaper when personal income taxes are incorporated into the capital structure as other sources of finance like retained earnings may be cheaper when personal income taxes are incorporated into the capital structure equation.

### **2.2.4 The Miller Model – (1977).**

Since Modigliani and Miller (1963) made an oversight of the impact of personal taxes, Miller (1977) made a significant contribution by correcting the (1963) contention. Relying on a number of assumptions, Miller (1977) introduced a model designed to show how leverage affects a firm's value.

benefits (debt is a tax deductible expense), there is a limit to which firms can use debt financing: excessive borrowing may lead to bankruptcy.

When both personal and corporate taxes are taken into account. His model suggests that in that market equilibrium, corporate tax advantages are cancelled out by the effects of personal taxes hence capital structure irrelevance (Kigora, 2000). Miller notes further that with the introduction of personal taxes, the usable income available to investors reduces when dividends are paid, thus reducing the value of the unlevered firm.

Omondi (1996) highlights Taggart (1980) who extended Millers analysis to conditions of incomplete capital markets and special costs associated with corporate debt. He concluded that Millers findings could be upheld and all equity capital structures are seen as perfectly rational for at least some firms.

## **2.3 Important Considerations In Capital Structure**

### **2.3.1 Costs Of Financial Distress**

Emery (1988) defined financial distress as the disruption of normal operating and financing conditions as a result of impending insolvency. Such a situation can lead to bankruptcy. Excessive borrowing could lead to financial distress, which is ordinarily reflected in legal and administrative costs. Such costs can affect the cost of debt and the cost of equity. Altman (1984) found out that distress were peculiar to leveraged firms and they could be high especially in companies with fixed costs. This companies become financially distressed when its cash inflows are insufficient to cover its capital requirements. In principle, as much as debt financing could present firms with tax shield benefits (debt is a tax deductible expense), there is a limit to which firms can use debt financing: excessive borrowing may lead to bankruptcy.

from bondholders. This implies that public utilities would be expected to have higher debt ratios. Brigham and Gapenski (1990) enumerate some events that may occur when a firm is faced with financial distress. These include: arguments between claimants often delay the liquidations of assets thus leading to obsolescence of inventory and fixed assets, legal fees, court costs and administrative expenses could absorb a large part of a firm's value, employees of a firm generally lose their jobs when a firm fails and stakeholder (line customers and suppliers) may take evasive action when they realize that a firm is facing financial difficulties. The higher the financial distress costs, the lower the value of firm. Non-optimal managerial actions associated with financial distress, as well as costs imposed by customers, suppliers and capital providers are referred to as indirect costs of financial distress.

### **2.3.2 Agency Costs & Capital Structure**

Stockholders, because of their rights, may take undue advantage over bondholders in an attempt to maximize their fortunes in a firm. Bondholders are therefore compelled to protect themselves from such contingencies. Such covenants adversely affect the corporation's legitimate operations to some extent. The costs of lost efficiency and other costs. Although Modigliani and Miller (1963) recommend that firms should maximize their debt financing opportunities, such a situation does not hold in the long run due to such agency problems between stakeholders. Therefore, costs related to protective covenants are substantial and rise with the increase in debt financing. Jensen and Meckling (1976) contend that regulated firms such as utilities face lower debt costs as regulating authorities restrict the ability to shift its investment plan and thus expropriate wealth.

(1990) notes that changes in financial leverage affect the firm's value since the trade off theory of



from bondholders. This implies that public utilities would be expected to have higher debt ratios than other companies.

### 2.3.3 Signaling Theory and Capital Structure

Ross (1978) was the protagonist of this theory. He contends that managers can use capital structure and dividends to give signals about the firm's future prospects. Investor's investment decisions will influence, to a great extent, on their perceptions of the firm's capital structure mix and dividend policies. Increasing the amount of debt or dividends may be interpreted as a sign of confidence in the firm's future. The judicious mix of debt and equity in and endeavor to send positive signals may amount to an agency problem as a result of failure to control management actions. Managers do not always behave in the best interest of investors. If investors are uncertain about the quality of management and the efficacy of business strategy, they can use debt to generate information about these aspects. One would therefore expect a debt-equity ratio that is balanced between the demands of the firm and the expectation of the investors and the public in general (Omondi, 1996).

### 2.3.4 The Pecking Order Theory Of Capital Structure

Myers (1984) gives a general definition of the pecking order theory as a situation where firms prefer internal sources of financing when available and they would prefer debt over equity when they have to get external financing that is when external financing is used, debt will be at the top of a firm's financing pecking order due to its low information costs. Ross Westerfield and Jaffe (1990) notes that changes in financial leverage affect the firm's value since the trade off theory of

capital structure could not explain why most profitable firms used less debt and the fact that most firms preferred issuing debt more often as compared to issuing equity. Myers (1984) and Myers and Majluf (1984) were therefore justified to popularize the pecking order theory due to such inadequacies. Although issuance of new equity has no financial distress costs like those associated with issuance of debt instruments, there are floatation costs, which are quite high due to information asymmetry. Equity will be issued only when debt capacity of the firm is exhausted. Floatation costs and a higher required rate of return combined make issuance of new equity a prohibition for smaller concerns (Archer and Faerber, 1996)

In this study ratios were used to conclude as to what firms prefer as their source of financing

Various reasons were put forward to justify debt financing ahead of issuance of new equity. Equity is considered strictly riskier than debt financing therefore demanding a higher rate of return than debt. Similarly, due to financial distress costs associated with debt financing, retained earnings would be considered a much better source of financing than debt. The activities of managers often lead to adverse selection: investors learn and react to manager's decisions and if they are noisy, they will make investments that will not maximize their value. For instance, informed managers would refrain from issuing stock when they believe that their shares are undervalued and would do so when they are correctly priced. Investors interpret such a decision to issue stock as bad news. When retained earnings are inadequate enough to meet financing needs for a firm since an internal funds flow deficit would occur. The amount of funds that a firm would borrow from external sources would therefore depend solely on the amount of internal funds deficit (Shyam Sunder and Myers 1999).

The pecking order theory has also been tested. Shyam-Sunder and Myers (1999) formulated a testable simple regression model, which assumes that the variation in net debt is explained by a single variable that is the internal deficit in funds. They tested the theory by testing 157 firms that had been traded continuously in the New York stock exchange between 1971 and 1989. Fama and French (2002) conducted a similar test that gave the same results but studies by Murray and Vidham (2003) showed otherwise i.e. were inconsistent with those of Fama and French (2002).

## 2.4 Key Ratios In The Choice Of Capital Structure

In this study ratios were be used to conclude as to what firms prefer as their source of financing and capital structure their firms adopted.

The ratios used in analyzing this were:

**Leverage ratios:** This measured the extent of a firms total debt burden. It reflected a company's ability to meet its short and long term obligations. This study used the debt ratio as it tends to take into account total debt and equity which is the stock holders investment items found from the balance sheet.

**Profitability ratios:** This measures the success of a firm as a net return on sales or investment. Since profit is the prime objectives of company's then if not adequately achieved would probably result in firms being heavily indebted and eventually going out of business.

This profitability can be defined as the ability of an enterprise to apply its resources and above its expenses.

Lumbayo (1977) states that firms should avoid expanding the firm's size if it is not profitable and its endeavor to do so a firm should aim at increasing returns from

## 2.5 Key Variables In The Choice Of Capital Structure

-Profitability

-Debt ratio

### 2.5.1 Profitability

Omondi (1996) found out that Kenyan firms tend to borrow more when profits were high and that quoted firms with high returns on investments used relatively high debt. In the Commercial and Allied sector, he found a significantly positive correlation between profitability and capital structure while in the Agricultural sector, profitability was insignificantly and negatively correlated with capital structure that is when profits were high, the debt/equity ratios were low. In the Industrial and Allied sector profitability was negatively correlated with capital structure. Combining all the sectors, he found out that profitability was the highest correlated factor when compared to all the other variables he sought to measure that is growth of asset value, growth in turnover, Asset structure, Age, Turnover, Changes in movement of working capital and interest. He further notes that when firms' asset values increase, its debt/equity ratio increases; as firms grow in size, it may have to use more debt to finance its growth. Brigham and Gapenski (1990) indicate that firms with very high rates of return on investments use relatively less debt.

Profitability of a firm is also used as a measure of performance in relation to other measures such as return on investment, or earning per share.

Thus profitability can be defined as the ability of an enterprise to generate more income far and above its expenses.

Lumbasyo (1977) states that firms should aim at maximizing the wealth of its shareholders and in its endeavor to do so a firm should earn sufficient returns from its operations.

Thus profitability of firms can be measured in a variety of ways as follows

Calculating profit before tax.

Calculating profitability after tax.

Calculating earnings before interest and tax.

Calculating net income.

For the purpose of this research net income will be considered.

### **2.5.2 Debt Ratio**

This refers to the percentage of debt in capital structure of a firm.

According to scott (1982) he states that by selling secured debt firms increase the value of their equity by expropriating wealth from existing unsecured creditors. This shows that more often than not debt is long term and used to acquire non current assets

Pandey (2001) states that short term creditors are more concerned with a firms debt payment capability through current assets . Long term creditors tend to be concerned with long term financial stability and use of non current assets in the future to meet its obligations.

Capital structure is also influenced by debt ration in that it determines the amount of fixed assets acquired through debt and the amount of current assets like cash can be used to service the debts requirements such as interest payments.

In this research we shall use the ratio of total assets and total debt as a measure of debt ratio.

### **2.6.3 Asset Structure**

Maltz (1983) found a significant positive relationship between the rate of capital expenditure in fixed plant and equipment and the level of borrowing. Myers (1984) asserts that firms holding

## 2.6 Key Determinants Of Capital Structure

Titman and Wessels (1988) enumerated key attributes in determining capital structure. They include asset structure, growth, uniqueness, industry classification, size, earnings, and volatility. Other authors have documented other factors determining capital structure choice by firms.

### 2.5.1 Growth

Kamere (1987) found out that firms in Kenya did not follow the pecking order theory in their capital structure decisions. He found out that predictions of growth on capital structure were in contrast with the theory's predictions. Titman and Wessels (1988) concluded that expected future growth should be negatively related to long term debt levels.

### 2.6.2 Size

Titman and Vessels (1988) concluded that large firms should be highly leveraged. They are categorical that there is a link between size of a firm and use of debt. The costs of issuing debt and equity are much more with small firms than large firms. This implies that small firms may be more leveraged than large firms hence preferring to borrow short term rather than long-term debt because of fixed costs associated with this alternative. Kamere (1987) found a positive correlation between size and long-term debt.

### 2.6.3 Asset Structure

Malitz (1983) found a significant positive relationship between the rate of capital expenditure in fixed plant and equipment and the level of borrowing. Myers (1984) asserts that firms holding

valuable intangible assets tend to borrow less than firms with tangible assets. Myers and Majluf (1984) indicate that firms consider it necessary to sell secured debt.

#### **2.6.4 Industry Classification**

Industry classification implies the business operated within the sector of the economy for example manufacturing industry. A firm in this kind of industry will have most of its assets to be fixed unlike a firm in the service industry like banks will have most of its asset in liquid form to enable it meet the obligations of its customers.

#### **2.6.5 Earnings**

Earnings in a firm is evident in many ways like increase in turnover, net assets, through mergers and acquisition activities.

Pandey( 1999) states that a growing firm needs to invest in fixed assets in order to sustain its growing production in sales. This will in turn increase investment in current assets to support enlarged scales operations.

Growth indications can also include capital expenditure over assets and the growth of total assets measured as a percentage change in total assets.

### **2.7 Empirical Studies Capital Structure**

Various interesting and appalling empirical results have been ascertained with regards to capital structure policies. Both local and international evidence is available with this respect. Most of the findings have proved contentious due to their inconsistencies with the prescriptions of academic

literature. Kiogora (2000) notes that Shwartz and Aronson (1967) investigated the effect of one factor industry on the proportion of common equity in a firm's financial structure and concluded that industries have developed optimum financial structures conditioned by their inherent business risk. Rutterford (1985) found out that Japanese firms depend heavily on debt whereas UK and US firms preferred to finance themselves more with equity than debt. Scott (1972) investigated twelve industries covering 77 firms and concluded that various industries, subject to varying degrees of business risk, have indeed developed characteristically different financial structures. Booth et al. (2001) studied the capital structure choices of firms in ten developing countries (India, Pakistan, Thailand, Malaysia, Turkey, Zimbabwe, Mexico, Brazil, Jordan and Korea) and concluded that their capital structure decisions were affected by the same variables as those affecting firms in developed countries.

There are other studies that have been carried out in different countries. A brief overview of such studies is presented by Omondi (1996). He notes that Schwarts and Aronson (1967) found out that in a capital market where sources of funds may be somewhat segregated, various categories of firms have developed financial structures that are optimal for their operational risks and asset structures. Altmom (1984) working on a sample of 26 bankrupt firms found out that bankruptcy costs often exceeded 20% of the firms, such as utilities, faced lower debt costs. Hodder and senbet (1990) analyzed the international setting with corporate and personal taxes based on Miller (1997); they found out that an international taxation with capital market conditions that are otherwise analogous to those required for Miller equilibrium. They also found that although inflation and exchange rate movements existed, there was no induced preference for corporate



borrowing in a particular currency. Brigham and Gapenski (1990) found out that firms with large part of assets to be pledged as collateral used debt more often same as firms with growth opportunities. Barclay, Smith and Watts (1995) tested the trade-off theory by examining the association between company market to book ratios and their use of financial leverage. They found out that the high market to book ratio companies will use less leverage to avoid the distress costs. Haugen and Senbet (1978) found out that bankruptcy costs were not significant enough to influence capital structure decision of firms.

Various studies have been carried out to ascertain various capital structure facets in Kenyan firms. Kamere (1987) found out that stability of future cash flows, level of interest rates in an economy, asset structure of a firm, the need for outside capital, lender attitudes towards a firm and attitudes of management towards risk adjust towards some target debt-equity ratios. Omondi (1996) also found out that the mean debt-equity ratios were not significantly different for firms studied. He tested quite a number of factors (industry class, asset structure, profitability, interest charges, size, growth, changes in cash flows, age and ownership) and found out that industrial class was not statistically significant and that the capital structure of firms on the sectoral basis were quite different. Kiogora (2000) sought to find out whether capital structures of quoted companies were consistent over time and to ascertain whether companies quoted on Nairobi Stock Exchange in the same industry had similar capital structures. She found out that there were differences in capital structure among industry groups: there was a negative relationship between returns of firms quoted on Nairobi Stock Exchange and their level of leverage and that companies in the Agricultural sector had consistent levels of equity from year to year. Firms within a given

sector tended to cluster towards some target equity/total assets ratio implying that an optimal capital structure exists. He also found out that returns increased with increased leverage hence supporting the traditionalists' view of an optimal capital structure.

### 3.1 Research Design

This research was carried out as a census survey of all the quoted companies at the Nairobi Stock Exchange. This enabled the generalization of the research findings on the financing decisions of all the quoted companies.

The key variables for the study were profitability and debt/equity ratios. Profitability was ascertained by analyzing the profit after tax income of the companies while debt/equity ratios was ascertained from the variations in debt and equity financing of the companies.

### 3.2 Population Of The Study

The population of the study was all the forty eight companies quoted at the Nairobi Stock Exchange. At the moment there are fifty two companies quoted on the stock exchange four of which have been suspended namely Hutchings Belmer, Kenya national mills, East African packaging and the African lakes

A full list of companies forming the population is attached on the appendix.

### 3.3 Period Of The Study

This study was carried over a period of six years January 1999 to December 2004

## CHAPTER THREE

### 3.0 Research Methodology

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This study was carried over a period of six years January 1999 to December 2004

DATA ITEM	NATURE OF VARIABLE	RATIO OF MEASUREMENT
Debt ratio (X)	dependent	Total debt/Total assets
Profitability (Y)	Independent	NI/Total assets

it is assumed that the five year period is enough to demonstrate whether the pecking order theory is applied in determining financing in the quoted firms.

### 3.4 Data Collection

Quantitative secondary data was used for the study. Annual financial reports of the companies were obtained from the Nairobi Stock Exchange. Financial reports for six year (1999-2004) were analyzed for the purpose of meeting the research objectives: More specifically the data was obtained from the firms income statements, balance sheets, and cash flow statements. These reports provided information on the companies' net profit after tax income (profitability), debt/equity ratios (trend of the companies' financing patterns) over the years. This shed light on the profitability of the companies over the six year period. Inferences were drawn based on the findings on the key variables (profitability and financing patterns).

### 3.5 Data Specifications

The collected data was analyzed into specific items then inferenced to the main variable of the capital structure in relation to the pecking order theory

DATA ITEM	NATURE OF VARIABLE	RATIO OF MEASUREMENT
Debt ratio (Y)	dependent	Total debt/Total assets
Profitability (X)	independent	NI/Total assets

### 3.6 Data Analysis

This involved testing the null hypothesis that,

Profitability in companies does not influence capital structure of a company.

Regression was used to analyze the data. Once the financial statements for the six year period were obtained, a careful analysis was done using trend analysis to gauge the financing patterns (debt/equity ratios) of the companies over the six year period. Profitability and financing patterns extracted from the financial statements were ascertained for purposes of meeting the objectives.

Bryman (1998) states that regression has become one of the most widely used techniques in the analysis of such data. This ultimately brought out the relationship between dependent and independent variables. A line of best fit was eventually achieved and hence predictions were made about financing in this firms.

#### 3.6 Determination Of The Regression Model

From the above the simple regression was

❖  $Y = a + bx$ .

❖ The mean of the data from the companies was found by averaging the net income for the sample companies for the six year period

Coef  $NI + NI_2 + NI_3 + NI_4 + NI_5 + NI_6 / 6$ .

This also applied to the debt ratio values for the respective companies in the sample which  $DR + DR_1 + DR_2 + DR_3 + DR_4 + DR_5 + DR_6 / 6$ .

- ❖ Where "Y" is the dependent variable which is the mean debt ratio values for each company for the period of five years.
- ❖ Where "b" represents the gradient of the slope.
- ❖ Where "X" is the independent variable which is the mean profitability values for each company for the period of six years.

### **3.7 How Data Will Be Manipulated**

The different values of "Y" and "X" will thus enabled us analyze how the companies relate when the different values are substituted In the simple regression equation.

Each of the above mean values was then be substituted in the simple regression equation to then solve for the gradient of the slope.

### **3.8 Determination Of The Regression Model**

It involved the use of computerized statistical packages for social sciences SPSS.

This enabled analysis of data to be done in an efficient and effective way in relation to different scenarios.

#### **Coefficient of determination**

This measured line of best fit and also measures that portion of the total deviation (amount by which the actual value of Y differs from the mean of all values for the dependent variable).

Simple regression has the coefficient of determination as  $r^2$  and measures the explanatory strength of the linear relationship between the two variables.

#### 4.0 Data Analysis, Findings And Discussions

### Testing the strength of the independent and dependent variable

#### 4.1 Introduction

This was done by the use of simple regression analysis where each independent variable was regressed against the dependent variable so as to generate a model which will be tested through correlation to test for its strength of the relationship.

Correlation in the above measures how strong a relationship between two variables is and regression just describes the basic nature of the relationship, whether positive or negative. This research involved the use of SPSS packages for calculation purposes.

Linear regression assumptions for the independent and dependent variables were first verified. The response variable (Mean Debt Ratio) was tested for normality conditions. The constant variance of the distribution of the dependent variable (Mean Debt Ratio) was also checked for constant for all values of the independent variable (Mean Profitability Ratio). The relationship between the dependent variable and each independent variable was also checked for linearity through curve fitting. The linear regression assumptions tests are presented as below:

The distribution of the response variable (Mean Debt Ratio) was found to be negatively skewed meaning that the normality assumption was not satisfied calling for transformation of firm value data before linear regression analysis is conducted. Figure 4.1 presents the normal curve for the Mean Debt Ratio data.

Figure 4.1: Distribution of the response variable (Mean Debt Ratio)

## CHAPTER FOUR

### 4.0 Data Analysis, Findings And Discussions

#### 4.1 Introduction

This empirical study sought to establish the relationship between profitability and sources of financing of quoted companies at the Nairobi Stock Exchange. The hypothesis that there is no significant relationship between profitability and capital structure was tested using linear regression analysis. Secondary data was used in computing the Mean Debt Ratios and Profitability Ratios (appendix i) for the 48 companies was collected for 6 years covering 1999 to 2004.

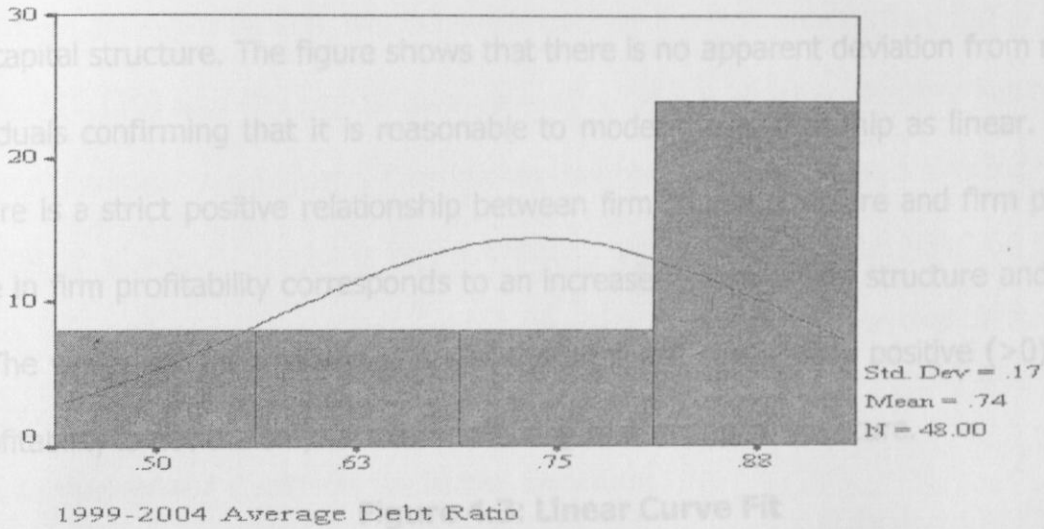
#### 4.2 Regression Assumptions

Linear regression assumptions for the independent and dependent variables were first verified. The response variable (Mean Debt Ratio) was tested for normality conditions. The constant variance of the distribution of the dependent variable (Mean Debt Ratio) was also checked for constant for all values of the independent variable (Mean Profitability Ratio). The relationship between the dependent variable and each independent variable was also checked for linearity through curve fitting. The linear regression assumptions tests are presented as below:

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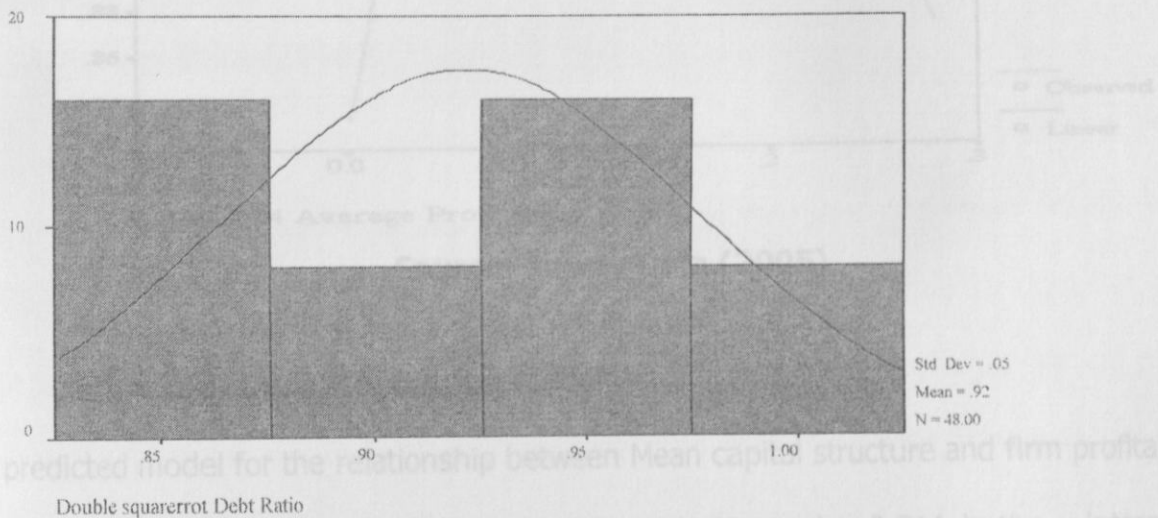
**Figure 4.1: Distribution of the response variable (Mean Debt Ratio)**



**Source: Survey Data (2006)**

Distribution of the normalized transformed curve for the double square root Mean Debt Ratio satisfies normality assumptions (Figure 4.2).

**Figure 4.2: Square root transformed mean debt ratio (response variable)**

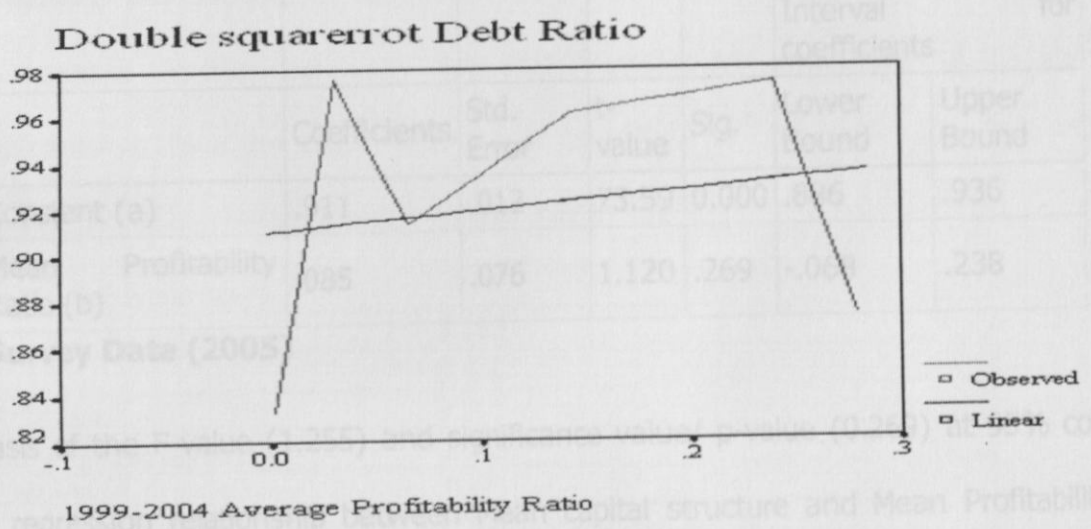


**Source: Survey Data (2005)**

Linearity assumption is achieved for the relationship between the dependent variable (double square root Mean Debt Ratio) and the independent variable (Mean Profitability Ratio) implying

that linear regression analysis can be adopted to test the relationship between firm profitability and its capital structure. The figure shows that there is no apparent deviation from randomness in the residuals confirming that it is reasonable to model the relationship as linear. The fit shows that there is a strict positive relationship between firm capital structure and firm profitability. An increase in firm profitability corresponds to an increase in firm capital structure and vice versa. The values for the y-intercept for all the firms are consistently positive (>0) implying that firm profitability is not the only factor contributing to firm capital structure.

**Figure 4.3: Linear Curve Fit**



**Source: Survey Data (2005)**

**4.3 Estimated Linear Regression Model**

The predicted model for the relationship between Mean capital structure and firm profitability  $Y_i = 0.911 + 0.085X_i$ ,  $i= 1, 2, 3, \dots, 48$ . (Refer table 4.1). The value 0.911 is the y-intercept while 0.085 is the slope (gradient) for the regression model. The intercept value (0.911) represents the Mean debt ratio (proxy for capital structure) for all the 48 firms before factoring in firm profitability ratio (proxy for firm profitability). The implication of the findings is that firm

profitability may not be the only factor contributing to the capital structure of the firm. That is to say that there are other factors, which have impact on the firm structure on top of firm earnings. The t-value (1.120) and the significance value (0.269) for Mean Profitability Ratio indicate that slope is not statistically significant. This implies that though profitability is a factor in determining firm capital structure, its impact is not statistically significant. The interpretation of the slope is that there is a 0.085 increase in firm capital structure for every unit increase in firm profitability. Similar conclusions can be derived from the ANOVA Table in 4.2 below.

**Table 4.1: Variables/ Coefficients in the Equation**

	Coefficients	Std. Error	t-value	Sig.	95% Confidence Interval for coefficients	
					Lower Bound	Upper Bound
Constant (a)	.911	.012	73.59	0.000	.886	.936
Mean Profitability Ratio (b)	.085	.076	1.120	.269	-.068	.238

**Source: Survey Data (2005)**

On the basis of the F-value (1.255) and significance value/ p-value (0.269) at 95% confidence level, the regression relationship between Mean capital structure and Mean Profitability is not statistically significant. The implication of the finding is that firm profitability does not contribute significantly to firm capital structure. As a result, any change on the profitability will not have a significant impact on the firm capital structure. The null hypothesis (there is no significant relationship between firm profitability capital structure) is therefore accepted.

**Table 4.2: ANOVA (Analysis Of Variance):**

Source of variation	Sum of Squares	Df	Mean Square	F	Sig/ p-value.
Regression	.004	1	.004	1.255	.269
Residual	.137	46	.003		
Total	.141	47			

**Source: Survey Data (2005)**

Multiple R-value for all the 48 firms is 0.163 showing that there is a weak positive relationship between the firm capital structure and the corresponding firm profitability. As a result any change on the profitability will not have a significant impact on the firm capital structure. Therefore as firm profit increases the firm capital structure also increases and vice versa but not significantly. The interpretation is there are other factors that contribute to firm capital structure other than profits and that the latter remain a minor determinant.

**Table 4.3: Model Summary**

Multiple R	0.163
R Square	0.027
Adjusted R Square	0.005
Standard Error of the estimate	0.055
R Square Change	.027
F Change	1.255
Df 1	1
Df 2	46
Sig. F Change	.269

**Source: Survey Data (2005)**

## **CHAPTER FIVE** Results and Recommendations

### **5.0 Summary of Findings, Conclusions And Recommendations**

#### **5.1 Summary of findings, conclusions**

The objective of this study was to ascertain whether there exists a relationship between the profitability of a firm and sources of financing of firms quoted at the Nairobi Stock Exchange. The data used covers 6 years from 1999 to 2004 and was obtained from the Nairobi Stock Exchange records.

The research tested the hypothesis derived from the objective by use of F- significance ANOVA for to determine the nature and magnitude of the relationship between the profitability and firm capital structure.

#### **5.3 Limitations of the Study**

The regression relationship between capital structure and profitability is not statistically significant. Change on the profitability does not statistically impact on the firm capital structure. The null hypothesis is therefore accepted and it is concluded that there is a weak positive relationship between capital structure and profitability of the firms quoted at the Nairobi Stock Exchange for the period 1999 to 2004. Firm profitability remains a minor determinant of firm capital structure. There are therefore other factors that contribute to firm capital structure.

## **5.2 Implication of Results and Recommendations**

Studies on the relationship between capital structure profitability have yielded different results. The results of the current study are in tandem and concurrence with earlier researches and support the findings and conclusions but has revealed that there are more variables that could be in play other than profitability in determination of firm capital structure. It has also shown that profitability on its own does not exclusively account for variability in capital structure.

It can also be concluded that during the period 1999-2004, firms listed on the Nairobi Stock exchange relied more on external funding rather than retained earnings. This implies therefore that the firms couldn't rely entirely on profitability to enhance their capital structure and therefore the need to diversify funding sources. This further extends the pecking order theory.

## **5.3 Limitations of the Study**

The data available could only allow a period coverage of 6 years, possibly a large period could have yielded more reliable results.

Interpreting financial statements was a problem as the data given was in summary form giving fewer details in relation to individual subsidiaries in the case of consolidated statements.

The data collected comprised of book values only. Market values of Companies could possibly have yielded better results.

## 5.4 Suggestions for Further Research

To improve on this study it is suggested that:

A similar study could be carried out over a longer period of time to obtain more reliable findings.

A study should be carried out to find out the relationship between firm capital structure and other factors such as agency costs, information asymmetry, debt value, and external funding. The nature and magnitude of the relationship should be determined.

Since this study has used book values, a similar study using market values could be done and results compared.

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## Appendix 1

### Sectors And Companies

#### Agriculture

Brooke Bond Kenya Ltd.

Eaagads Ltd.

Kakuzi Ltd.

Kapchorua Tea Co. Ltd.

Kenya Orchads Ltd.

Limuru Tea Co. Ltd.

Rea Vipingo Plantations Ltd.

Sasini Tea Factory Ltd.

Williamson Tea (K) Ltd.

#### Commercial And Services

African Lakes Corporation Plc.

Car & General (Kenya) Ltd.

CMC Holdings Ltd.

Express Kenya Ltd.

Hutchings Biemer Ltd.

Kenya Airways Ltd.

Marshalls (East Africa) Ltd.

Nation Media Group Ltd.

Standard Newspapers Group

TPS-serena

Uchumi Supermarkets Ltd.

#### Industrial and Allied

A. Baumann & Company Ltd.

Athi River Mining Ltd.

Bamburi Cement Co. Ltd.

B.A.T. (Kenya) Ltd.

BOC Kenya Ltd.

Carbacid Investments Ltd.

Crown-Berger Ltd.

Dunlop Kenya Ltd.

East African Cables Ltd.

E.A. Packaging Industries Ltd.

E.A. Portland Cement Co.

East African Breweries Ltd.

Firestone (E.A.) Ltd.

Kenya Oil Company Ltd.

K.P. & L.C. Ltd.

Total Kenya Ltd.

Unga Group Ltd.

#### Finance and Investment.

Barclays Bank of Kenya Ltd.

CFC Bank Ltd.

City Trust Ltd.

Diamond Trust Bank (K) Ltd.

Housing Finance Co. Ltd.

ICDC Investment Co. Ltd.

Jubilee Insurance Co. Ltd.

Kenya Commercial Bank Ltd.

National Bank of Kenya Ltd.

NIC Bank Ltd.

Pan African Insurance Co. Ltd.

Standard Chartered Bank Ltd.

Year	Mean Debt	Double square root mean Debt ratio
1984	0.87	0.93
1978	0.78	0.88
1982	0.82	0.91
1983	0.83	0.92
1984	0.84	0.93
1985	0.85	0.94
1986	0.86	0.95
1987	0.87	0.96
1988	0.88	0.97
1989	0.89	0.98
1990	0.90	0.99
1991	0.91	1.00
1992	0.92	1.01
1993	0.93	1.02
1994	0.94	1.03
1995	0.95	1.04
1996	0.96	1.05
1997	0.97	1.06
1998	0.98	1.07
1999	0.99	1.08
2000	1.00	1.09
2001	1.01	1.10
2002	1.02	1.11
2003	1.03	1.12
2004	1.04	1.13
2005	1.05	1.14
2006	1.06	1.15
2007	1.07	1.16
2008	1.08	1.17
2009	1.09	1.18
2010	1.10	1.19
2011	1.11	1.20
2012	1.12	1.21
2013	1.13	1.22
2014	1.14	1.23
2015	1.15	1.24
2016	1.16	1.25
2017	1.17	1.26
2018	1.18	1.27
2019	1.19	1.28
2020	1.20	1.29
2021	1.21	1.30
2022	1.22	1.31
2023	1.23	1.32
2024	1.24	1.33
2025	1.25	1.34
2026	1.26	1.35
2027	1.27	1.36
2028	1.28	1.37
2029	1.29	1.38
2030	1.30	1.39
2031	1.31	1.40
2032	1.32	1.41
2033	1.33	1.42
2034	1.34	1.43
2035	1.35	1.44
2036	1.36	1.45
2037	1.37	1.46
2038	1.38	1.47
2039	1.39	1.48
2040	1.40	1.49
2041	1.41	1.50
2042	1.42	1.51
2043	1.43	1.52
2044	1.44	1.53
2045	1.45	1.54
2046	1.46	1.55
2047	1.47	1.56
2048	1.48	1.57
2049	1.49	1.58
2050	1.50	1.59
2051	1.51	1.60
2052	1.52	1.61
2053	1.53	1.62
2054	1.54	1.63
2055	1.55	1.64
2056	1.56	1.65
2057	1.57	1.66
2058	1.58	1.67
2059	1.59	1.68
2060	1.60	1.69
2061	1.61	1.70
2062	1.62	1.71
2063	1.63	1.72
2064	1.64	1.73
2065	1.65	1.74
2066	1.66	1.75
2067	1.67	1.76
2068	1.68	1.77
2069	1.69	1.78
2070	1.70	1.79
2071	1.71	1.80
2072	1.72	1.81
2073	1.73	1.82
2074	1.74	1.83
2075	1.75	1.84
2076	1.76	1.85
2077	1.77	1.86
2078	1.78	1.87
2079	1.79	1.88
2080	1.80	1.89
2081	1.81	1.90
2082	1.82	1.91
2083	1.83	1.92
2084	1.84	1.93
2085	1.85	1.94
2086	1.86	1.95
2087	1.87	1.96
2088	1.88	1.97
2089	1.89	1.98
2090	1.90	1.99
2091	1.91	2.00
2092	1.92	2.01
2093	1.93	2.02
2094	1.94	2.03
2095	1.95	2.04
2096	1.96	2.05
2097	1.97	2.06
2098	1.98	2.07
2099	1.99	2.08
2100	2.00	2.09

## Appendix: 2

### Ratios

Mean Debt ratios	Profitability ratio	Square root Mean Debt ratio	Double square root mean Debt ratio
0.578799	0.278204	0.76	0.87
0.853241	0.142261	0.92	0.96
0.695529	0.063617	0.83	0.91
0.900851	0.239271	0.95	0.97
0.906003	0.029967	0.95	0.98
0.480867	0.001169	0.69	0.83
0.578799	0.278204	0.76	0.87
0.853241	0.142261	0.92	0.96
0.695529	0.063617	0.83	0.91
0.900851	0.239271	0.95	0.97
0.906003	0.029967	0.95	0.98
0.480867	0.001169	0.69	0.83
0.578799	0.278204	0.76	0.87
0.853241	0.142261	0.92	0.96
0.695529	0.063617	0.83	0.91
0.900851	0.239271	0.95	0.97
0.906003	0.029967	0.95	0.98
0.480867	0.001169	0.69	0.83
0.578799	0.278204	0.76	0.87
0.853241	0.142261	0.92	0.96
0.695529	0.063617	0.83	0.91
0.900851	0.239271	0.95	0.97
0.906003	0.029967	0.95	0.98
0.480867	0.001169	0.69	0.83
0.578799	0.278204	0.76	0.87
0.853241	0.142261	0.92	0.96
0.695529	0.063617	0.83	0.91
0.900851	0.239271	0.95	0.97
0.906003	0.029967	0.95	0.98
0.480867	0.001169	0.69	0.83
0.578799	0.278204	0.76	0.87
0.853241	0.142261	0.92	0.96
0.695529	0.063617	0.83	0.91
0.900851	0.239271	0.95	0.97
0.906003	0.029967	0.95	0.98
0.480867	0.001169	0.69	0.83
0.578799	0.278204	0.76	0.87
0.853241	0.142261	0.92	0.96
0.695529	0.063617	0.83	0.91
0.900851	0.239271	0.95	0.97
0.906003	0.029967	0.95	0.98
0.480867	0.001169	0.69	0.83