

THE EFFECT OF CAPITAL STRUCTURE ON PROFITABILITY OF NON-FINANCIAL FIRMS LISTED AT NAIROBI SECURITY EXCHANGE

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MAY, 2016

DECLARATION

I declare that this dissertation is my original work and has not been previously published or submitted elsewhere for award of a degree. I also declare that this contains no material written or published by other people except where due reference is made and author duly acknowledged.

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THE EFFECT OF CAPITAL STRUCTURE ON PROFITABILITY OF NON-FINANCIAL FIRMS LISTED AT NAIROBI SECURITY EXCHANGE**ABSTRACT**

Good capital structures are critical for the survival of any business firms in any economic arrangement or set up. The current study's purpose was to investigate the effect of capital structure on profitability of non-financial firms listed at Nairobi Stock Exchange (NSE). The study tested the null hypotheses that there is no relationship between short term debt-equity ratio, long term debt-equity ratio and equity on profitability of non-financial firms listed at NSE. The theoretical basis of the study was on agency theory, static trade off theory, pecking order theory and MM capital structure irrelevance theorem. Descriptive research design was applied in this research study. The study applied the epistemology philosophy based on positivist paradigm. The target population for this study was all the listed non-financial firms in the NSE as at 31st March 2015. Data for these 41 companies for five years (2010 – 2014) was used in the study. Secondary data applied in this study was collected from the audited financial statements of the companies, NSE and the Capital Markets Authority. Panel data a1A regression (fixed effects) model was applied in analysis. Stata statistical software was utilized. The study findings indicate that short term debt equity ratio negatively and significantly affects ROA, ROE and ROCE. Long term debt equity ratio has a negative effect on return on assets and return on equity but has an insignificant effect on ROCE. Equity has a positive and significant relationship with ROE and ROCE but has an insignificant effect on ROA. The following recommendations are made. First, though short term debt is a source of quick liquidity for the firm during emergencies, they bring shocks and added riskiness to the firm and hence managers should apply these sources of financing with caution. Secondly, managers should establish the level of debt to equity that is optimum for the firm and seek to achieve this optimum level. Firms should however, mostly rely on retained earnings for expansion and growth. Thirdly, the study recommends to managers in non-financial firms to effectively manage the amount of debt capital in the firms' capital structure since high debt levels will translate to more interest payments and hence cash outflows from the firm.

Key words: Capital structure, equity, profitability, long term debt, short term debt.

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TABLE OF CONTENTS

DECLARATION.....	ii
ABSTRACT.....	iii
ACKNOWLEDGEMENT.....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
ACRONYMS AND ABBREVIATIONS.....	viii
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background to the Study.....	1
1.2 Statement of the Problem.....	4
1.3 Objectives of the Study.....	6
1.4 Research Hypothesis.....	6
1.5 Significance of the Study.....	7
1.6 Justification of the Study.....	8
1.7 Scope and Limitations of the Study.....	8
CHAPTER TWO: LITERATURE REVIEW.....	9
2.1 Introduction.....	9
2.2 Theoretical Review.....	9
2.3 Empirical Review.....	13
2.4 Summary of Literature Review.....	19
2.5 Conceptual Framework.....	20
2.6 Interpretation and measurement of variables.....	20
CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY.....	23
3.1 Introduction.....	23
3.2 Research Design.....	23
3.3 Population of the Study.....	24
3.4 Data Collection.....	24
3.5 Data Analysis and Presentation.....	25
3.6 Model Specification.....	27
CHAPTER FOUR: FINDINGS AND DISCUSSION.....	29
4.1 Introduction.....	29
4.2 Descriptive Data Analysis.....	29
4.3 Diagnostic Analysis.....	34
4.4 Panel Data Analysis.....	35
CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS.....	43
5.1 Introduction.....	43
5.2 Conclusion.....	43
5.3 Recommendations.....	44
REFERENCES.....	46
APPENDICES.....	Error! Bookmark not defined.
Appendix I: Quoted non-financial Firms at NSE.....	50
Appendix II: Studies Reviewed and research gaps.....	51

LIST OF TABLES

TABLE 1: Independent Variables And their Measurement.....	21
TABLE 2: Dependent Variable And Its Measurement	21
TABLE 3: Control Variable and Its Measurement	22
TABLE 4: Descriptive Statistics of the Study Variables.....	30
TABLE 5: Correlation Matrix of the Study Variables.....	33
TABLE 6: Test for Multicollinearity using VIF	34
TABLE 7: Modified Wald Test for Groupwise Heteroskedasticity (standard errors) ...	35
TABLE 8: Modified Wald Test for Groupwise Heteroskedasticity (robust errors)	35
TABLE 9: Woodridge Drukker Test For Serial correlation	35
TABLE 10: Hausman Test Results	36
TABLE 11: Test for fixed time effects	36
TABLE 12: Fixed Effects Panel Regression on Return on Assets.....	36
TABLE 13: Fixed Effects Panel Regression on Return on Equity	39
TABLE 14: Fixed Effects Panel Regression on Return on Capital Employed	40

LIST OF FIGURES

FIGURE 1: Conceptual Framework	20
FIGURE 2: Trend lines of short term debt equity ratio	31
FIGURE 3: Trend lines of Long term debt equity ratio	32
FIGURE 4: Trend lines of Log of Equity	32

ACRONYMS AND ABBREVIATIONS

Co	Company
DER	Debt Equity ratio
DAR	Debt Asset Ratio
CMA	Capital Market Authorities
NSE	Nairobi Securities Exchange
ROA	Return on Assets
ROE	Return on Equity
ROCE	Return on Capital Employed

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Good capital structures are critical for the survival of any business firms in any economic arrangement or set up (Velnampy & Niresh, 2012). Capital structure in the current study is taken to mean the mix of debt and equity that a firm uses in its total capital. Related studies have been carried out on financial structures, debt structure or financial leverage. These terms have erroneously been used interchangeably in some instances.

Generally, it is quite challenging for business firms to establish the right or exact combination of borrowed capital and owners' equity. However, such decisions are important in order to maximize returns to organizations and hence lead to corporate growth (Shubita & Alsawalhah, 2012). Debt capital may be cheap when combined with owners' equity. However, there is an optimal level beyond which, the same debt capital could be costly. Determining the optimum capital structure is also important because of the impact such a decision has on a firm's ability to cope with its competitors. A firm can make a choice among many alternative capital structures. The Board of Directors or the financial manager of a company should always endeavour to develop a capital structure that would be beneficial to the equity shareholders in particular and to the other groups such as employees, customers, creditors and society in general (Pandey, 2009).

Conventional external sources of funding businesses can generally be classified under two broad headings - equity (which is commonly called ordinary capital) and debt. In most of the cases, it is a combination of the two (Yusuf et al., 2014). Equity refers to a right to participate in the business and equity holders are considered as owners of the business. They are expected to contribute money, which would be repaid to them only at the winding up of the business, incase the business has some surplus. They would be given dividends if the

business generates profits. Such clauses make equity a risky form of investment from the investors' point of view (Chisti, Ali & Sangmii, 2013). Since equity is right of ownership, distribution of profits to equity holders is not a tax-deductible expense but an appropriation of profits.

Debt refers to borrowings made by the business from outsiders who are paid a periodic interest on the money rendered (Ahmad, Salman & Shamsi, 2015). Lenders do not have participation rights but are given priority as to the repayment of interest and principal. Their money is secured by creating a charge on the business assets. A charge on asset means that in the event of default, debt providers can sell company's assets to recover their dues. While this reduces the risk element for the investor, it creates an extra burden on the company to generate sufficient profits to be able to meet the debt obligations on time (Ulzanah & Murtaqi, 2015). Since debt providers are outsiders, the payment of interest on debt is treated as a tax-deductible business expense.

An important decision which firms' managers must make relates to the relative amounts of debt and equity that they should use in their capital structure. In a seminal study, Modigliani and Miller (1958) proposed that managers should stop worrying about the proportion of debt and equity securities because in perfect capital markets (no taxes, no transaction costs, and symmetric information), any combination of debt and equity securities is as good as another. Although their debt irrelevance theorem is based on restrictive assumptions which do not hold in the real world, when these assumptions are removed then the choice of debt-equity becomes an important value determining factor. For instance, by relaxing the assumption of taxes, Modigliani and Miller (1963) proposed that firms should use maximum debt in their capital structure because of tax deductible interest payments. Thus, maximum use of debt has a positive impact on firm performance.

There has been lot of research available on capital structure. Safieddine and Titman (2009) have discussed the increased leverage by the companies and the impact thereof. They suggest that leverage-increasing targets act in the interests of shareholders when they terminate takeover offers and that higher leverage helps firms remain independent because it commits managers to making the improvements that would be made by potential raiders. Bjuggren and Per-Olof (2013) have emphasized that firms do not resort to debt financing to avoid the cost of financial distress.

Chisti et al. (2013) states that due to the problems associated with the concept for financial distress, the question of an optimal capital structure is an open agenda for research. Miao (2014) has provided a competitive model of capital structure and industry dynamics. He states that the capital structure choice reflects the trade off between the tax benefits of debt and the associated bankruptcy and agency costs. Miao's paper is similar to the analysis being done here to the extent that both focus on the relationship between financing decision and probability. However, the study by Miao is not industry focused while the current study has specifically picked up examples from the non-financial firms that are listed in the Nairobi Securities Exchange (NSE). Miao's analysis is one of the implications of this study, not the conclusion. Research by Ross (2009) on capital structure and cost of capital provides an inter-temporal synthesis of the basic neoclassical theory of capital structure as a tradeoff between tax effects and bankruptcy cost. Ross's study comprehensively discusses the models related to capital structure and the formulae for computation of cost of capital and debt. The study however, does not specifically relate the concept of cost of capital to the operations of firms.

The literature on the relationship between capital structure and firm performance is immense and mainly refers to developed countries, however, empirical evidence yields contradictory and inconsistent results (Margaritis & Psillaki, 2010). Alternatively, empirical

research to understand the impact of capital structure on performance has received much less attention in developing countries (Lin & Chang, 2011).

1.2 Statement of the Problem

Ideally a firm can issue many different types of securities in countless combinations. However, it should try to find the combination that will maximize its overall market value. Chathoth and Olsen (2007) analyzed the data of 48 firms in the US restaurant industry in order to estimate the impact of environmental risk, corporate strategy, and financial structure on corporate performance. They found that variables representing the environmental risk, corporate strategy, and financial structure explain a significant variance in firm performance. Another study in a developed economy was by Margaritis and Psillaki (2010) who investigated the relationship between efficiency, financial leverage and ownership structure using a sample of French manufacturing firms. The study found that higher financial leverage was associated with improved efficiency over the entire range of observed data.

In the developing economies, Abor (2007) has analyzed the data of small and medium enterprises in Ghana and South Africa. He observed that all measures of capital structure are negatively related to return on assets, in the case of Ghanaian firms. However, in the case of South-African firms, short-term debt and trade-credits are positively, whereas total debt and long-term debt are negatively related to return on assets. In Pakistan, Sheikh and Wang (2013) in a study of non-financial listed firms established that all measures of capital structure (total debt ratio, long and short-term debt ratio) were negatively related to return on assets. Moreover, total debt ratio and long-term debt ratio were negatively related to market-to-book ratio.

Previous empirical studies on the relationship between financial structure and profitability of firms have produced diverse results. Most of these studies were carried out in the developed countries including Asia, Europe and United States among others (Chisti et al.,

2013). Some researchers argue that there exists an optimum capital structure that maximizes shareholder wealth, as a result of the return on their investment and basing on the trade-off theories of capital structure. Other authors on the other hand argue that there is no optimum capital structure and that the performance of a firm is not related to the structure of its financing (Abor, 2007).

There has been previous research work done in Kenya on capital structure and its impact on profitability. Yegon, Cheruiyot, Sang and Cheruiyot (2014) conducted a study on the effects of capital structure on profitability of commercial banks in Kenya. The study established that there is a significant positive relationship between short term debt and profitability whereas there was a statistically significant negative relationship between long term debt and profitability. Total debt as a whole had no association with the firm's performance. Mwangi and Birundu (2015) conducted a study on the Effect of Capital Structure on the Financial Performance of Small and Medium Enterprises (SMEs) in Thika Sub-County, Kenya. The findings revealed that there was no significant influence of capital structure, asset turnover and asset tangibility on the financial performance of SMEs. Another study on the effects of capital structure on financial performance of listed firms in Kenya was conducted by Githire and Muturi (2015). The study established that equity and long term debt have a positive and significant effect on financial performance, while short term debt has a negative and significant effect on financial performance.

Non-financial firms, (Eveready, Kenya Airways, Uchumi) have experienced poor performance (NSE, 2014). Debt levels at Kenya Airways have been linked to poor performance and the airline appointed a financial adviser to tackle the mix of debt and make it efficient. This was meant to establish prudent ways of Kenya Airways returning to profitability (Mutegi, 2014a). Eveready, has closed its manufacturing plants in Kenya after operations hit 25% of capacity (Mutegi, 2014b). Uchumi Supermarkets was revived after an

agreement between the government, suppliers and debenture holders: the company has recently reported profits (Mutegi, 2014b). The non-financial firms are noted to have issues with the mix of debt and equity. Empirical studies on the effect of financial structure on performance (e.g. Kuria, 2010; Sang, 2011; Anyango, 2011) had provided mixed findings. The current study hence sought to establish whether capital structure has any effect on profitability of non-financial firms. This would inform policy and practice on the role played by capital structure in the poor performance of the firms analyzed

1.3 Objectives of the Study

1.3.1 General objective

To investigate the effect of capital structure on profitability of non-financial firms listed at Nairobi Stock Exchange

1.3.2 Specific objectives

- i. To determine the relationship between short term debt-equity ratio and profitability of non-financial firms listed at Nairobi Stock Exchange (NSE).
- ii. To determine the effect of long term debt-equity ratio on profitability of listed non-financial firms at the NSE.
- iii. To establish the effect of equity on profitability of non-financial firms listed at NSE.

1.4 Research Hypothesis

H₁: There is no relationship between short term debt-equity ratio and profitability of non-financial firms listed at Nairobi Stock Exchange (NSE)

H₂: Long term debt-equity ratio has no effect on profitability of non-financial firms listed at the NSE

H₃: Equity has no effect on profitability of non-financial firms listed at NSE

1.5 Significance of the Study

1.5.1 Management

Managers will be able to appreciate and pursue the concept of achieving a capital structure level which will impact on profitability to enable their firms to meet shareholders' wealth maximization goal. Also, it will enable them to institute sound strategic capital structure policies which will assist in gauging management performance.

1.5.2 Shareholders

This study will have findings that will be of value to shareholders. It will enable them to have adequate knowledge on the level of investment to be held at any particular time. Shareholders invest in profitable firms to maximize their wealth.

1.5.3 Potential investors

It will enable them to critically analyze potential firms in different perspective before they make investment decisions. It will also enable investors to transfer their investment to well manage and performing firms. This is because financial structure management is critical and this in turn results into increase in liquidity or profitability of a firm.

1.5.4 Academicians and scholars

Students and other Scholars at large will be able to recognize the impact of capital structure on Profitability. This will inform and stimulate their urge for further research in the area of optimal capital structures.

1.5.5 Government institutions and other business regulators

The Government sector and other essential Institutions like the Nairobi security exchange will be able to use this research to institute sound policies and guidance/advice on capital structures to be held by business firms.

1.6 Justification of the Study

Previous research work done in Kenya on financial structure and impact on profitability had produced mixed results. Further, few researches had concentrated on specific sectors of the economy. Most of the studies carried out had been conducted on the whole lot of firms that were listed in the NSE. This research focused on non-financial firms since these companies carry a large percentage of funds in form of equity, debt and other forms of securities.

1.7 Scope and Limitations of the Study

The study focused on the effect of financial structure on profitability and other control variables that impact on profitability. It considered twenty five non-financial firms quoted at the NSE from different sectors that deal with commercial activities in the economy. The study covered these firms quoted in Kenya between 2010 and 2014.

The limitation from this study is that results from the study only apply to the non-financial firms that are quoted in the NSE. The findings may not be generalizable to other smaller non-financial firms. Further, the study findings may not be generalizable to other firms in other sectors of the economy. This is because the non-financial sector has circumstances that are different (such as competition) from those in other sectors of the economy.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of previous studies done on capital structures, profitability and management of capital structures. It contains five sections namely: Introduction, theoretical review, empirical review, summary of literature review and conceptual framework.

2.2 Theoretical Review

Evaluation and determination of the optimum mix of capital is critical for success and growth of non-financial firms. These firms should have capital valuation policies and mechanisms to determine the best capital financing options. Good capital valuation will consequently address the issue of profitability and levels of various capitals that should be maintained to maximize shareholders' wealth. Theories on financial structures have been discussed in detail below.

2.2.1 Agency cost theory

Jensen and Meckling (1976) advanced the agency cost theory which states that a firm has an optimal capital structure that stimulates optimum performance. This optimum capital structure is obtained by ensuring that agency costs that arise from the conflicts between the managers and owners of the business are reduced by having a certain proportion of debt in the capital structure. This lowering of agency conflicts would lead to reduction in agency costs which would lead to improved profitability. The use of debt in the firm as observed by Jensen and Meckling can be used to control and monitor managers in the firm to ensure that they follow objectives that are beneficial to the firm.

Buferna et al. (2005) supported this theory by indicating that inclusion of debt in the capital structure provides a motivation for managers to improve profitability of the company so as to have cash flows that would satisfy repayments of debts. This leads to the

enhancement of the firm's profitability. This theory postulates that short term debt and any other form of debt that the firm uses reduces agency conflicts between managers and shareholders of the firm and hence improves profitability. The current study sought to find out whether the amount of short term debt applied has an influence on profitability and sought to find out whether the agency cost theory applied in the non-financial sector in Kenya.

2.2.2 The Modigliani-Miller theorem (MM Theory)

Modigliani and Miller (1958) advanced the capital structure irrelevance theory. They were the first scholars to advance a theory on capital structure as before them, there was no generally accepted theory on effects of capital structure on firm value or on how firms came up or decided their capital structures. Two capital irrelevance propositions were advanced by MM. The first proposition was the arbitrage-based irrelevance proposition which indicated that investors would engage in arbitrage to ensure that the value of the firm would not be affected by its leverage. However, the classic arbitrage based irrelevance proposition had serious limitations that challenged its applicability since it ignored crucial factors such as transaction costs, taxes, adverse selection, agency conflicts, investor clientele effects, bankruptcy costs and the integration between financing and operations of the firm. The theory also assumed symmetric information among the various classes of investors in perfect capital markets.

Miller and Modigliani (1963) advanced the second capital structure irrelevance proposition that posited that when a firm chooses a given investment policy, the financing structure it will select would not influence its value. This however assumed perfect markets. This study tested whether firms in the non-financial sector in the NSE follow the capital structure irrelevance theory. It tested whether the mix of long term debt that non-financial firms apply in their financial structure influences their profitability.

2.2.3 Pecking order theory

Pecking order theory was advanced by Myers and Majluf (1984) when they argued that equity is a less preferred means of raising capital because when managers (who know better about the true status 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 overvaluation. As a result, investors will place a lower value to the new equity issuance. This theory states that the cost of financing increases with asymmetric information (one-way or one sided information). The preferences of internal sources of finance over external sources of finance is attributed to assumption that internal sources of capital are less expensive than external sources of capital due to transaction costs. This makes firms to prefer to use internal sources of capital so as to have a positive effect of shareholder wealth.

According to this theory, financing is supposed to be derived from three types of funds namely, internal funds (retained earnings), issue of new equity shares and debt. In the process of searching for funds, firms will prefer their sources of financing in the following order; The first consideration should be given to internal funds, followed by borrowed capital (debt), lastly raising equity through issue of share should be the last option (Fauzi, Basyith & Idris, 2013). It will therefore be observed that internal financing will be used first; when that is depleted, debt is then issued and when debt no longer adds value, equity is finally issued. This theory also states that businesses should give preference to internal financing when available, and further, debt should be preferred over equity if external financing is required; It is assumed that the issue of equity capital would bring external ownership into the company and thus dilute the ownership of present shareholders. Basically the form of borrowed capital a firm selects can act as a signal of its need for external funding.

Fauzi et al. (2013) whilst studying New Zealand firms contended that size of the firm supports the pecking order theory meaning that large sized firms have higher tendency to

have a significant debt component in their capital structure. Large sized firms can be approximated to firms with large market capitalization and this is achieved by continuously creating value for investors by continuously aggravating bottom-line in terms of profits. Not only profits, but profitability also matters meaning higher increase in profits compared to sales. Ramirez, Calvo and Rodriguez (2012) in their study of small companies in Spanish footwear sector argue that debt is directly correlated with growth opportunities as rapidly growing companies find it difficult to finance themselves internally. This theory is applied in this study as it hypothesizes that firms will prioritize the different capital sources in financing their growth opportunities and thus indicating that high growth high profit firms will have high debt ratio in their capital structure.

However, the pecking order theory has some limitations that challenge its application. First, it fails to account for taxation, financial distress, agency costs or how the investment opportunities that are available may influence the choice of finance. The second limitation is that the theory is an explanation of what businesses actually practice rather than what they should do (Ramirez et al., 2012).

The pecking order theory was applied in this study to establish whether high profitable firms in the non-financial sector select to have retained earnings as their preferred mode of financing projects. If this theory applies in the non-financial firms listed in the NSE, it was expected that profitable firms would have lower interest payments since they are expected to use equity (retained earnings) as their major source of financing. The ones that are not highly profitable are expected to use more debt and hence pay more in interest expenses. The study hence sought to prove whether the pecking order theory apply in the non-financial firms listed at NSE.

2.2.4 Static trade-off theory

The trade-off theory was advanced by Myers (1984) who intimated that firms choose between the different sources of financing to take advantages of tax benefits of debt and also reduce the costs associated with agency and bankruptcy. This theory indicates that there is an optimum capital structure for a firm where the firm equates the tax benefits of debt with the leverage costs such as financial distress costs. The company therefore mixes the amount of debt in the capital structure with equity to have an optimum mix which would strike an effective balance between the benefits of debt in taxation and the costs associated with leverage risks. Factors which are considered by companies in arriving at the optimum mix of debt and equity include chance of bankruptcy, profitability level of the company and the form and quality of assets that the firm owns.

This theory therefore posits that the capital structure that a firm chooses has an effect on the value and profitability of the company. There is an optimum mix of debt and equity in the capital structure that firms should strive to achieve so as to have a balance between the benefits and the costs of debt. This theory however, indicates that the optimum capital structure depends on the specific type and decision of a particular company (Myers, 2001). This theory indicates that the most important function of the finance manager in a firm is to get the optimum balance between debt and equity in the capital structure. The static trade off theory will be applied in the study to test whether the proportion of assets that are financed by debt in a firm have an influence on profitability. The current study sought to establish whether the quoted non-financial firms in Kenya have an optimum mix of debt and equity that provides them with the highest profitability.

2.3 Empirical Review

There are various factors related to the capital structure that have an effect on the profitability of a company. This study however, focuses on four factors only. These are short term debt-

equity ratio, long term debt-equity ratio interest expenses and total debt-asset ratio. This section reviews empirical studies that have been previously conducted which have related capital structure and profitability.

2.3.1 Short term debt and profitability

In Jordan, Shubita and Alsawalhah (2012) carried out a study that sought to determine the relationship that existed between capital structure and profitability. The study focused on industrial firms that were quoted in thirty nine companies was used as the study sample and multiple linear regression and correlation analysis were applied to analyze the data. This study used short-term debt to total assets ratio, long-term debt to total assets ratio and total debt to total assets ratio as measures of capital structure. The measure of profitability used was ROE. The study established that there was a significantly negative relationship between profitability and short-term debt to asset ratio. The findings also indicated that there was a significantly negative relationship between long term debt to asset ratio and profitability. Additionally, a significant negative relationship between total debt to asset ratio and profitability was established in the study. The conclusion made in the study was that increase in both short and long term debt in the industrial firms in Jordan would result in lower profitability.

Short term debt has been observed by various scholars and researchers to have an effect on profitability. Baum, Schaafer and Talavera (2006) cited that firms can make use of short term financing which may have an effect on the profitability of the firm depending on the cost of the source of financing to that particular firm. Baum et al. (2006) observed that firms may have a certain ration of short term liabilities its financing structure which they feel are optimum in enhancing performance and profitability. In the case of Germany, Baum et al. observed that firms which had high short term debt levels when compared to their long term debt performed better than their peers.

Tailab (2014) also observed that use of short term liabilities such as trade payables and accruals can have a positive effect on a firm's profitability since such sources of financing may be less costly to the business than the longer term sources of funds. Further, short term sources of funds may have a positive influence on profitability due to the reduced contractual engagements that are involved. However, the notion of short term credit having a positive influence on profitability is refuted by Zeituna and Tianb (2007) who observe that the short maturity of short term debt may prove expensive to the firm hence increasing its cost of capital. This has an effect of influencing profitability negatively.

2.3.2 Long term debt and profitability

Mohammadzadeh *et al.* (2013) conducted a study in Iran on how capital structure affects the profitability of firms in the pharmaceutical industry. The study focused on firms that were quoted in the Tehran Stock Exchange (TSE). The purpose of the study was to establish the effect of short term debt and long term debt on profitability of the pharmaceutical companies. The study revealed that both short term and long term debt had significant negative effects on profitability of the pharmaceutical companies. Moreover, the study determined that pharmaceutical firms in Iran followed the pecking order theory where they preferred financing their activities using in-house generated funds rather than using external funds and also preferred using debt rather than issuing stock.

Long term liabilities involve strict contractual covenants between the firm and issuers of debt which is usually associated with high agency and financial distress costs (Tailab, 2014). Shubita and alsawalhah (2012) observe that high long term debt levels in the firm are not conducive for the effective operations of the firm since they increase the risk of bankruptcy. This is because high debt levels increase the amount of interest payments that are expected to be paid regularly which may incapacitate the liquidity levels of the company.

In India, Chisti, Ali and Sangmii (2013) studied the effect of Capital Structure on Profitability of firms that were listed in the country. The study by Chisti et al (2013) was based on secondary data for five years from 2007 to 2011. Data was collected from the sample companies' websites, financial reports and data. Ten firms from the automobile industry were considered in the study. The study established that DER had a negative correlation with profitability while DAR and interest coverage ratio had a positive and significant relationship with profitability ratios. These findings imply that when firms increased the proportion of debt in their capital structure, they eroded their performance. However, having no debt in the capital structure has been observed to lead to opportunity costs due to the foregone interest tax shield of debt capital. Azhagaiah and Gavoury (2011) therefore indicated that there is no universal effect of debt capital on profitability and the effect dependent on the particular circumstances of the firm and the amount of debt capital employed in the capital structure.

A study conducted in Nigeria by Chechet and Olayiwola (2014) sought to reveal that influence of capital structure on profitability of firms that are quoted in Nigeria. The study sought to establish whether the agency cost theory applied to these firms. Of the 245 firms listed at the Nigerian Stock Exchange, the study sampled 70 firms which were used in the study. Data for ten years for the firms were used which included the periods between 2000 and 2009. The study used the fixed effects panel data model to analyze the data. Variables used in the model included debt ratio and equity over the period which represent capital structure while profitability was measured through return on assets. The study results revealed that debt ratio was negatively related to profitability while equity over the period was positively related to profitability. These findings went against the agency cost theory which indicated that more use of debt in the capital structure would motivate managers to improve firm profitability.

2.3.3 *Equity capital and profitability*

In US, Tailab (2014) empirically tested the Effect of Capital Structure on Profitability of Energy Firms. Two main sets of variables were used. For profitability, return on assets (ROA) as the ratio of net income to total assets, and return on equity (ROE) as the ratio of net income to total shareholders' equity were adopted as a proxy for financial performance. To indicate capital structure, short-term debt, long-term debt, total debt, debt to equity ratio, and firm's equity were used. A sample of 30 Energy firms for a period of nine years from 2005 – 2013 was considered. Secondary data were collected from financial statements which were taken from Mergent online. The data were analyzed by using Smart PLS (Partial Least Square) version 3. Multiple regressions indicated that 10% of ROE and 34% of ROA were predicted by the independent variables. An insignificant either positive relationship was observed between shareholders equity and profitability. However, due to the small sample size and the selection of manufacturing firms, generalization of the findings is limited.

In Indonesia, Ulzanah and Murtaqi (2015) conducted a study on the impact of earnings per share, debt, equity and current ratio towards the profitability of companies listed in LQ45 from 2009 to 2013. The method used to analyze the impact was multiple linear regression. The sample used for this research was 22 companies that listed consistently on LQ45 Index during 2009–2013 period. The study results showed that equity has a positive and significant impact towards profitability (ROA). This study however applied multiple linear regression which is not able to indicate the panel effects of the data.

A study by Ahmad, Salman and Shamsi (2015) in Pakistan assessed the impact of financial leverage on firms' profitability. This study was an investigation of the cement sector of Pakistan. For this purpose 18 cement manufacturers out of 21 were incorporated in the study and six years annual data from 2005 to 2010 regarding financial leverage and profitability of the said firms were taken into consideration. The sample size for eighteen

firms for six years consisted of 108 observations. An ordinary least square model was applied on the data to establish a causal relationship between the variables. The study found that financial leverage had a statistically significant inverse impact on profitability at 99% confidence interval. The study findings also established that high equity levels were associated with higher profitability.

In Iran, Mohammadzadeh, Rahimi, Rahimi, Aarabi and Salamzadeha (2013) assessed the effect of capital structure on the profitability of pharmaceutical companies. For this purpose, top 30 Iranian pharmaceutical companies were defined as study sample and their financial data were gathered for the period of 2001-2010. In this study, equity levels among other variables were used as indicators of capital structure while net profit margin was used as a measure of profitability. The study applied sales growth as a control variable. Results showed that there was significant positive relationship between the profitability and the equity levels of firms which meant that the pharmaceutical companies had established a Pecking Order Theory and the internal financing had led to more profitability.

Chechet and Olayiwola (2014) assessed capital structure and profitability of Nigerian quoted firms using the agency cost theory perspective. A sample of seventy 70 out of population of 245 firms listed on the Nigerian Stock Exchange (NSE) for a period of 10 (2000 – 2009) with the aid of the NSE Fact Book covering the period under review was selected. Panel data for the firms were generated and analyzed using fixed-effects, random-effects and Hausman Chi Square estimations. Two independent variables which served as surrogate for capital structure were used in the study: debt ratio and equity while profitability was the only dependent variable. The results showed that equity is directly related with profitability. These findings showed consistency with prior empirical studies and provided evidence against the agency cost theory.

Salawu & Awolowo (2009) in another study in Nigeria conducted a study on the listed firms in the country. The study investigated the influence of capital structure on profitability of quoted companies in Nigeria. The study used secondary data from 1990 to 2004 collected from the selected Annual Report and Accounts of 50 non-financial quoted companies, and Fact Books published by the Nigerian Stock Exchange. The Pooled Ordinary Least Squares (OLS) model, Fixed Effect Model (FEM) and Random Effect Model (REM) were used in the analysis. The results indicated that profitability presented a positive correlation with equity. The study suggested that companies should take interest in the issue of capital structure and constantly monitor its form and adaptability.

Yegon, Cheruiyot, Sang and Cheruiyot (2014) assessed the Effects of Capital Structure on Firm's Profitability by focussing on Kenya's Banking Sector. No significant relationship could be found between equity and profitability. The positive relationship ($B = 0.0998$) was not significant ($t = 1.0728$) enough to justify any proposition. The reason traced out is the opposite relationship that exists between individual elements of this variable with the dependent variable (ROE). The P-value of (0.2838) also revealed that the relationship was not statistically significant. Therefore the impact of equity on profitability as a whole contains no any significant value in explaining profitability of the banks considered in the study.

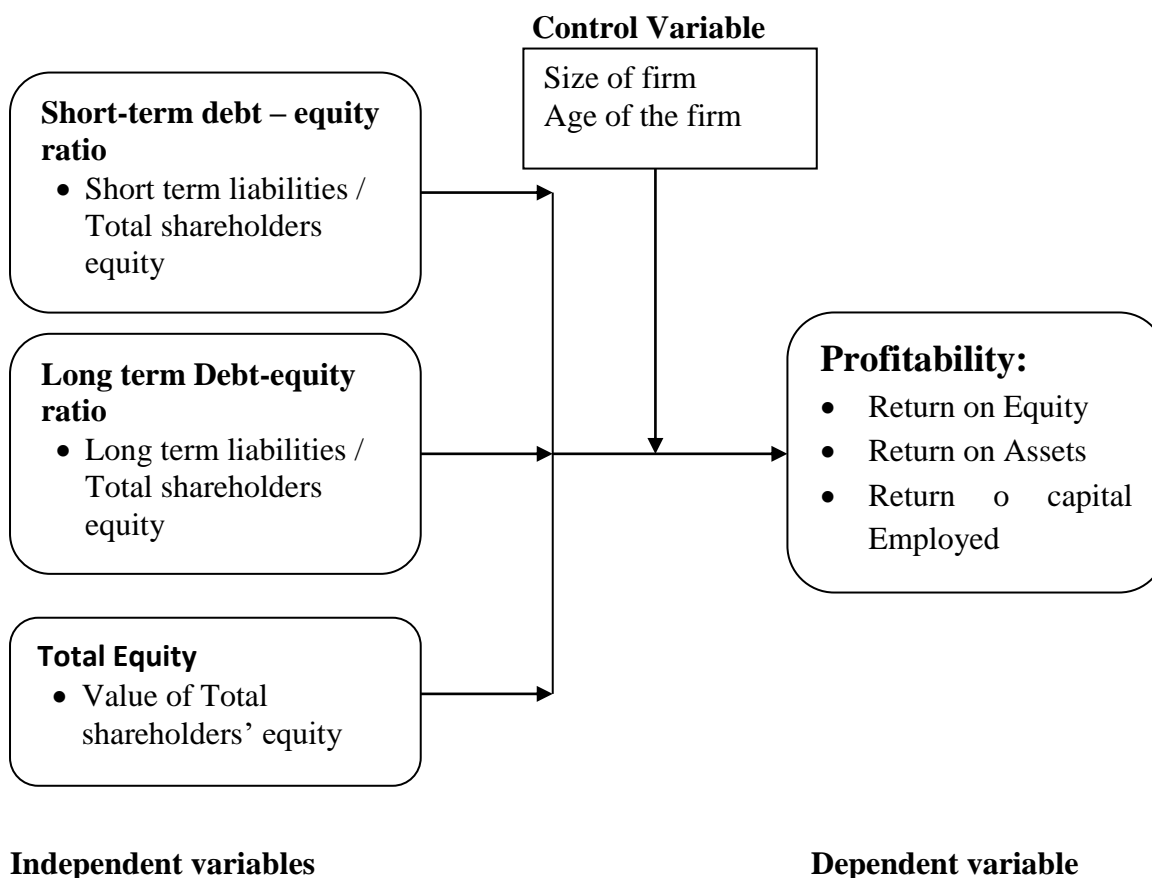
2.4 Summary of Literature Review

Following the research reviewed it can be observed that capital structure is critical for the firm in its seeking to enhance profitability. Capital structure can be designed in the most efficient structure to enable the firm realize the highest possible profits and hence increasing the firms growth. Prudent firms deliberately select their sources of capital finances after evaluating the most profitable types. Firms that are basically large and making huge profits may use more of the retained earnings and thus have a bias towards the pecking order theory. Appendix II represents the summary of studies that have been reviewed.

2.5 Conceptual Framework

A review of literature enabled the researcher to have a conceptual framework which guided the study. Figure 1 shows the conceptual framework.

FIGURE 1
Conceptual Framework



2.6 Interpretation and measurement of variables

The study will have independent, dependent and control variables to enable the determination of the effect of capital structure on profitability. The independent variables will be short-term debt – equity ratio, long term debt-equity ratio, interest expense as a ratio of total expenses and total debt-asset ratio. Short term debt equity ratio indicates that value of short term liabilities that the firm has applied in the business as a ratio of the total equity share capital of the firm. Long term debt-equity ratio is a ratio that indicates the level of long term liabilities

that a firm has in the capital structure stated as a ratio of the total shareholders capital. Shareholders' equity indicates the amount of owners' equity that is in the business. This includes all capital that belongs to the owners including contributed share capital, retained earnings and other reserves. This will be measured using the logarithm to base 10 of the equity. Figure 1 indicates the independent variables and their measurement.

TABLE 1**Independent Variables And their Measurement**

Variable	Measurement
Short-term debt – equity ratio	Current liabilities/shareholders equity
Long term Debt-equity ratio	Long term liabilities / Shareholder's Equity
Shareholders' equity	Log of total shareholder's equity

Dependent variable will be profitability which will have three measures including return on equity (ROE), return on assets (ROA) and return on capital employed (ROCE). ROA indicates how efficient a firm is in applying its assets to generate profit for the shareholders. ROE indicates the ability of the firm to provide returns on the capital contributed by the shareholders of the firm. ROCE indicates the ability of the firm to generate returns on all the capital that has been employed in the business both from equity holders and debt holders. The measurement of the variables is as indicated in Table 2.

TABLE 2**Dependent Variable And Its Measurement**

Variable	Measure	Measurement
Profitability	Return on assets	Net income/total assets
	Return on equity	Net Income/Shareholder's Equity
	Return on capital employed	Earnings Before Interest and Tax (EBIT) / Capital Employed

There are other variables that can significantly influence profitability of the firms under study. they therefore need to be controlled since they will have an influence on the capital structure – profitability relationship. The control variables in this study that can have an effect on profitability are age of the firm and size of the firm. Table 3 presents the control variable and indicates how it was measured.

TABLE 3
Control Variable and Its Measurement

Variable	Measurement
Size of the firm	Value of total assets owned by the company
Age of firm	Years since inception

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was applied to carry out the study. The chapter presents the research design that was applied, the population that was targeted in the study, the sample size that participate in the study and the data collection methods that were applied. Additionally, presented in the chapter are the techniques of data analysis and the model that was applied in data analysis to get the required output. The methodology applied was expected to enable the researcher to establish the effect of capital structure on profitability among the non-financial firms that have been quoted in the NSE.

3.2 Research Design

Descriptive research design was applied in this research study. Saunders, Lewis and Thornhill (2013) observe that a descriptive study in business and economics provides information about characteristics that are naturally occurring without affecting the environment in any way. Further, a descriptive study is conducted to demonstrate associations between various variables of interest. In the current study, the descriptive research design was selected since the study is concerned with providing a description of the relationship between capital structure and profitability. The study aims to establish the association between short term debt, long term debt, interest expenses and debt-asset ratio and profitability of non-financial firms quoted in the NSE.

3.2.1 Research Philosophy

The study applied the epistemology philosophy. Epistemology is that part of philosophy that seeks to understand what knowledge we can acquire and what we can know from the happenings around us (Kahneman & Tversky, 1981). It seeks to establish a way of getting to real knowledge rather than having mere opinions. The current study sought to establish how

capital structure affects profitability of non-financial firms listed in the NSE. This would prevent the study from making mere opinions as per previous empirical studies and get to understand how the specific cause and effect relationship between capital structure and firm profitability

The study applied a positivist paradigm. Positivism is based upon values of reason, truth and validity and there is a focus purely on facts, gathered through direct observation and experience and measured empirically using quantitative methods (such as surveys and experiments) and statistical analysis (Eriksson and Kovalainen, 2008). As observed by Saunders, Lewis and Thornhill (2013), the positivist approach is usually applied when testing hypothesis that has been developed from existing theory through measurement of observable social realities. In the current study, the aim was to test four hypotheses that had been developed from the four capital structure theories (Kahneman & Tversky, 1981).

3.3 Population of the Study

The target population for this study was all the listed firms in the NSE as at 31st March 2015. Data for these companies for five years (2010 – 2014) was used in the study (NSE, 2015). Those firms that were listed after 2010 were excluded from the study. This is because they did not have data for the entire period. The study was a census of all the 41 firms in the non-finance sectors of the NSE.

3.4 Data Collection

Secondary data was applied in this study. Data was collected from the audited financial statements of the companies, NSE and the Capital Markets Authority. Statements that were applied to source the data required were statements of financial performance, statement of financial positions and statements of changes in equity. The study also applied online sources of data where the companies' websites were a source of some of the information. Data for five years (2010 – 2014) was collected. The data that was collected include total assets, total

liabilities, interest expenses, and shareholder equity. Further data on profitability of the firms including net income and earnings before interest and tax (EBIT) were collected.

To establish the relationship between capital structure and profitability, the most current data was used which ensured that the findings are relevant and up-to-date. To ensure reliability and validity of the collected data, data from published financial statements, CBK and CMA were used. Further, five years were selected as the study period since Rafique (2012) observed that a business cycle usually lasts for five years and any evident characteristic is usually observable in any business cycle of five years. This therefore justified the selection of five years since any relationship between capital structure and profitability was expected to be observed from the data collected.

3.5 Data Analysis and Presentation

The study applied descriptive statistics and panel data analysis model. Descriptive statistics that were used to analyze the data include means, range, minima, maxima and standard deviation.

Panel data analysis model was also applied due to the fact that the data collected was longitudinal and cross sectional in nature as it relate to 41 non-financial firms for five years. Panel data (also known as longitudinal or cross sectional time-series data) is a dataset in which the behavior of entities is observed across time. In the current study, these entities were 42 non-financial firms listed at the NSE.

Panel data allowed the control for variables that the researcher cannot observe or measure like management efficiency or variables that change over time but not across entities (i.e. monetary policies, regulations, economic condition etc.). This provided the study the ability to account for individual heterogeneity.

The study used panel data analysis and applied either the fixed effects or random effects model. The fixed-effects model controls for all time-invariant differences between the

individual firms, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics (Eriksson & Kovalainen, 2008). Fixed effects model explore the relationship between independent and dependent variables within an entity. It implies that each entity has its own individual characteristics that may or may not influence the independent variables. When using fixed effects model, the assumption is that something within the entity may impact or bias the independent or dependent variables and this needs to be controlled. The fixed effects model hence removes the effect of those time-invariant characteristics so that the net effect of the independent variables on the dependent variable can be assessed.

The random effects model assumes that the variation across entities is assumed to be random and uncorrelated with the independent variables included in the model. Random effects has the rationale that the entity's error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables.

In random-effects the researcher need to specify the individual characteristics that may or may not influence the predictor variables. The problem with this is that some variables (such as management efficiency and efficiency of processes) may not be available therefore leading to omitted variable bias in the model (Eriksson & Kovalainen, 2008). To determine the model to apply, a Hausman test was conducted which determined which of the two models (fixed and random effects) was appropriate.

Apart from the panel data analysis model, data was also analyzed using descriptive statistics such as mean, range and standard deviation. This indicated the distribution of the data for all the companies. To do the analysis, the researcher applied Stata analysis software. The statistics that were derived from the descriptive, correlation and panel data analysis were presented using tables.

3.6 Model Specification

The reviewed theoretical and empirical literature indicated that there exists some form of relationship between capital structure and profitability. To establish what kind of relationship that exists in the non-financial firms quoted in the NSE, the study applied panel data analysis model (fixed effects) that was capable of establishing the influence of capital structure on profitability. In the model, the t-tests were able to establish whether the four independent variables considered have a causal relationship with the dependent variable.

Since the measures of profitability were three, the model was applied in three stages and the effect of capital structure on each of the profitability measures was tested. The analytical models were derived from the notation of Sola, Teruel and Solano (2008) and are depicted below.

$$Y_{it} = \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \alpha_i + u_{it}$$

Where;

α_i ($i = 1 \dots 9$) is the unknown intercept for each entity.

Y_{it} = the dependent variable (ROA, ROE and ROCE)

i = entity

t = time.

X_1 = Short-term debt – equity ratio

X_2 = Long term Debt-equity ratio

X_3 = Equity

B_i = The coefficients of independent variables

u_{it} = The error term

Each hypothesis was tested at 5% significance level. The coefficient and the r^2 of each independent variable in the whole model was applied to test its significance. This was used to test each hypothesis that related to each independent variable. The hypotheses were tested

through the t-tests. Further, correlation was determined using the Pearson correlation coefficients for all the variables considered in the study.

However, before analysis of the data, various diagnostic tests were performed on the data to establish whether the data is suitable for analysis through the indicated model. The data was multicollinearity, heteroscedasticity, and autocorrelation. If the data failed any of the tests, it would be transformed to make it suitable for analysis through the panel model.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 Introduction

Presented in this chapter are the findings from the study after a secondary analysis of the data on short-term debt – equity ratio, long term debt-equity ratio, interest expense as a ratio of total expenses, total debt-asset ratio and how these related to profitability of the 42 non-financial firms listed in the NSE. Presented first are descriptive characteristics of the data. After descriptive analysis, diagnostic analysis of the data is presented. This entails test of heteroscedasticity, serial correlation and multicollinearity. Findings on correlation analysis are also presented followed lastly by the panel data analysis which establishes the effect of the four independent variables on profitability of the firms.

4.2 Descriptive Data Analysis

Descriptive analyses of the data were done and here in below the results are provided. Data analysis began with exploration of the study data. Results that follow present descriptive analysis of the ROA, ROE and ROCE of the 41 non-financial firms listed in the NSE between 2010 and 2014 (Table 4). The within and between firm behaviour of ROA, ROE, ROCE was assessed and the table provides the statistics over the study period. Further, statistics on short term debt equity ratio (STDER), long term debt equity ratio (LTDER) and equity (LEQ) are also presented. The results are presented in Table 4.

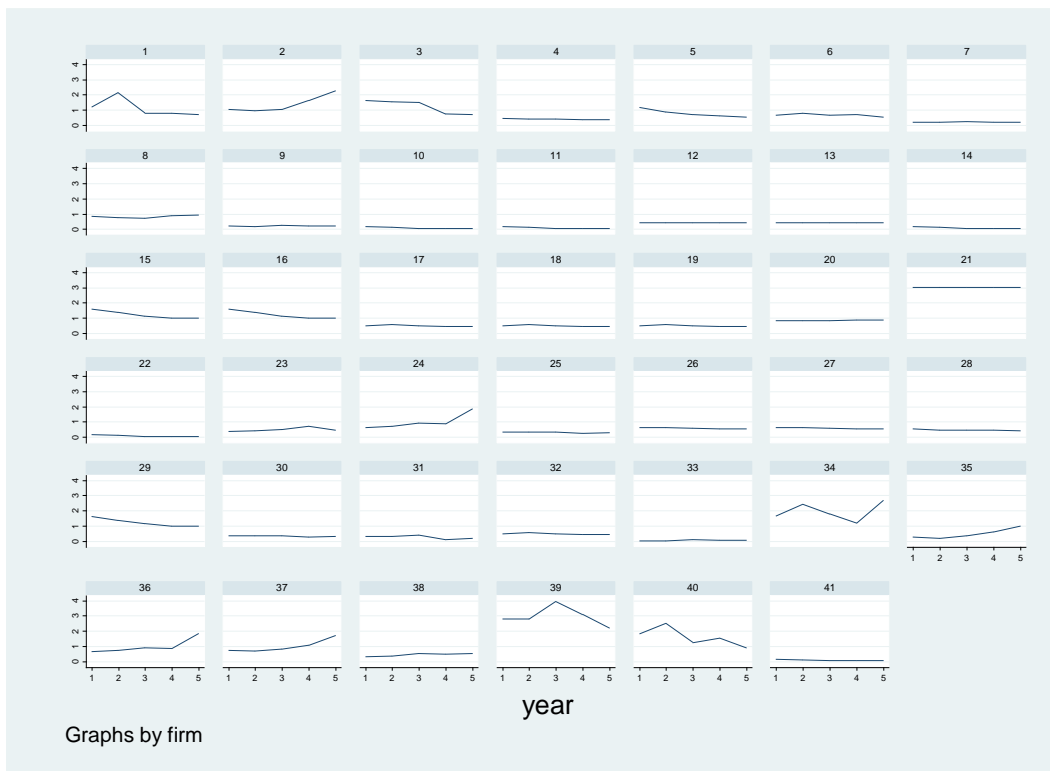
The results in Table 4 indicate that short term debt equity ratio for the 41 firms over the 5 years averaged 0.77 while long term debt equity ratio averaged 0.44. Further, average of log of equity was 6.65. The other variables averages were ROA (5.82%), ROE (11.05%) and ROCE (21.43%).

TABLE 4
Descriptive Statistics of the Study Variables

Variable		Mean	Std. Dev.	Min	Max	Observations	
stder	overall	.7669787	.7205713	.0311429	3.931414	N =	205
	between		.6834358	.0543303	3.017351	n =	41
	within		.2475825	.0096328	1.785607	T =	5
ltder	overall	.4423464	.5840623	.0027907	2.890329	N =	205
	between		.5787145	.0055234	2.890329	n =	41
	within		.1130715	-.0987503	.9678634	T =	5
leq	overall	6.650188	.5558271	5.255774	7.960166	N =	205
	between		.5526508	5.347669	7.866186	n =	41
	within		.0975169	6.326956	6.91796	T =	5
roa	overall	5.823912	8.12647	-29.87593	34.84189	N =	205
	between		6.484738	-9.169968	21.65938	n =	41
	within		4.981189	-14.88204	26.61092	T =	5
roe	overall	11.05668	19.32021	-97.49989	79.63605	N =	205
	between		15.26881	-14.66661	78.78141	n =	41
	within		12.02936	-82.83614	45.49398	T =	5
roce	overall	21.43136	21.19894	-18.74983	103.2054	N =	205
	between		18.8811	-3.208603	83.00584	n =	41
	within		9.994472	-25.58113	71.0633	T =	5

Further the trends of the study variables were explored with the findings being as presented in the figures that follow. First, the trend lines of short term debt equity ratio for the 41 firms are presented in Figure 2. The trend lines indicate that short term debt equity ratio remained relatively constant for the firms over the five years except for firms 1, 2, 3, 15, 24, 29, 34, 39 and 40. Firms 1, 34 and 39 showed highly fluctuating levels of the ratio of short term debt over equity.

FIGURE 2
Trend lines of short term debt equity ratio



The trend lines of long term debt equity ratio presented in Figure 3 indicate that firms 1, 2 and 34 showed an increasing trend of long term debt equity ratio while firms 24 and 36 showing a decreasing trend. Further, firm 38 showed a fluctuating trend. However, all the firms indicated a trend that was relatively constant.

FIGURE 3

Trend Lines of Long Term Debt Equity Ratio

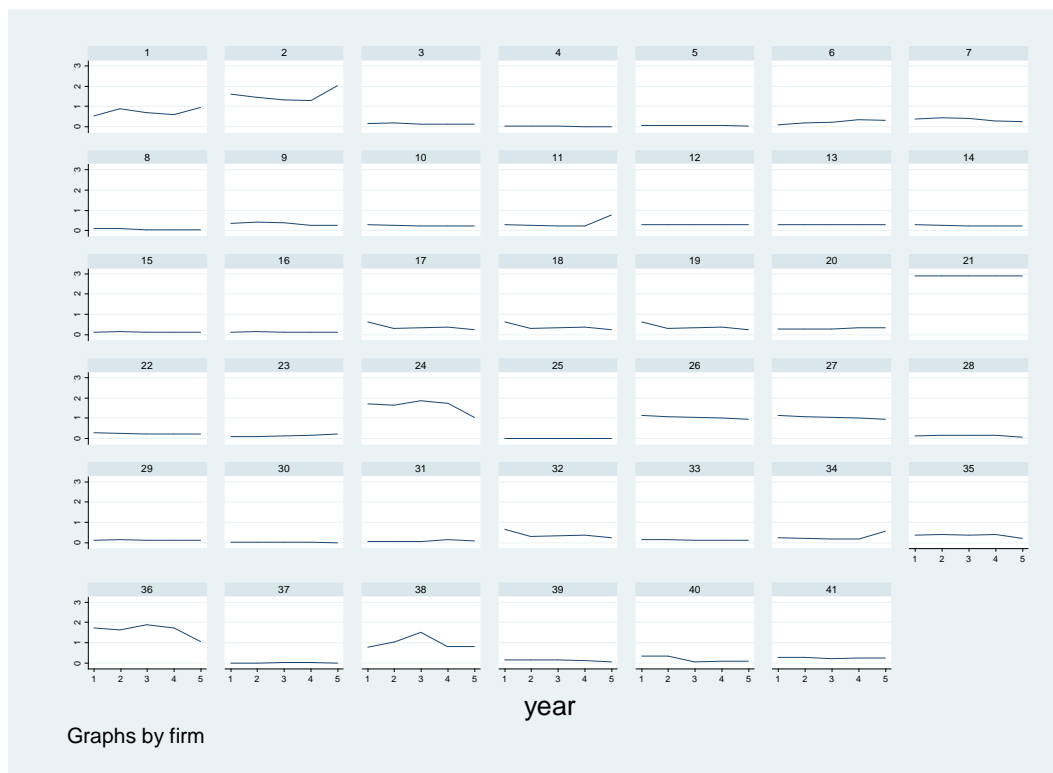
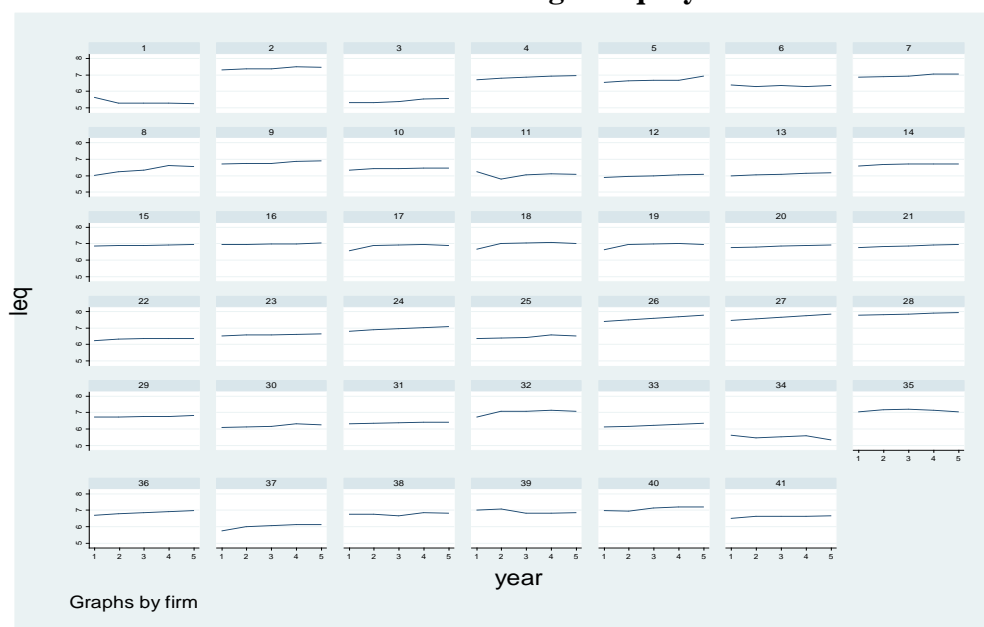


Figure 4 presents the trend lines of the log of equity. The findings indicate that the firms had relatively constant equity over the five years.

FIGURE 4

Trend lines of Log of Equity



4.3: Correlation Matrix of the Study variables

To establish the linear relationship of the different variables under study a correlation analysis was conducted. The purpose of the correlation analysis was to establish the relationship among the variables. The study results presented in Table 5 indicate that short term debt equity ratio was moderately correlated with long term debt equity ratio ($r = 0.384$; $p < 0.05$). Further, ROA was highly correlated with ROE ($r = 0.763$; $p < 0.05$). Moreover, log of assets was highly correlated with log of equity ($r = 0.959$; $p < 0.05$).

TABLE 5
Correlation Matrix of the Study Variables

	STDER	LTDER	LEQ	Age	LA	ROA	ROE	ROCE
Pearson Correlation	1							
STDER Sig. (2-tailed)								
N	205							
Pearson Correlation	.384**	1						
LTDER Sig. (2-tailed)	.000							
N	205	205						
Pearson Correlation	.004	.258**	1					
LEQ Sig. (2-tailed)	.952	.000						
N	205	205	205					
Pearson Correlation	.011	.034	-.290**	1				
Age Sig. (2-tailed)	.878	.625	.000					
N	205	205	205	205				
Pearson Correlation	.250**	.438**	.959**	-.268**	1			
LA Sig. (2-tailed)	.000	.000	.000	.000				
N	205	205	205	205	205			
Pearson Correlation	-.289**	-.093	.047	.092	-.039	1		
ROA Sig. (2-tailed)	.000	.186	.504	.190	.583			
N	205	205	205	205	205	205		
Pearson Correlation	.026	.330**	.146*	.108	.161*	.763**	1	
ROE Sig. (2-tailed)	.713	.000	.037	.122	.022	.000		
N	205	205	205	205	205	205	205	
Pearson Correlation	.392**	.125	.136	.099	.196**	.384**	.506**	1
ROCE Sig. (2-tailed)	.000	.074	.052	.157	.005	.000	.000	
N	205	205	205	205	205	205	205	205

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

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

4.3 Diagnostic Analysis

Presented in this section are the diagnostic tests that were carried out on the panel data. The errors that were used for diagnostic test were generated using fixed effects panel regression. First, the test of multicollinearity was done using the variance inflation factor (VIF). This tests whether any two variables are highly correlated. The higher the VIF, the higher the correlation between the variables with the higher VIFs. VIF values of 10 and above indicate presence of multicollinearity. The test results presented in Table 6 indicate that values for log of assets and log of equity were way above 10 indicating that there was strong multicollinearity between the two variables. Since log of assets was a control variable and log of equity an independent variable, a decision was made to remove log of assets from the model.

TABLE 6
Test for Multicollinearity using VIF

Variable	VIF	1/VIF
logassets	124.94	0.008004
leq	108.08	0.009252
stder	6.11	0.163613
ltder	3.18	0.314264
age	1.11	0.898456
Mean VIF	48.69	

Further, the second test done was to test the data for homoscedasticity. This is where all variances of residuals are assumed to be constant. The Modified Wald test for groupwise heteroskedasticity was applied. The results presented in Table 7 indicate that there was heteroscedasticity in all the three models as the significance for all of them was below 0.05.

TABLE 7

Modified Wald Test for Groupwise Heteroskedasticity (standard errors)

Model	Dependent variable	χ^2 - value	p-value
1	ROA	8.97	0.0217
2	ROE	7.69	0.0319
3	ROCE	5.66	0.0412

To deal with heteroscedasticity, robust errors were used in place of standard errors. This was applied since the heteroscedasticity was not very serious as the p values were not very small. This solved the problem of heteroscedasticity as indicated in Table 8.

TABLE 8: Modified Wald Test for Groupwise Heteroskedasticity (robust errors)

Model	Dependent variable	χ^2 - value	p-value
1	ROA	4.11	0.0981
2	ROE	2.81	0.1752
3	ROCE	1.92	0.2140

Lastly, a test for serial correlation was conducted using the Woodridge Drukker statistic to establish whether the error terms were serially correlated. The results in Table 9 indicate that all the models did not exhibit the problem of serial correlation and hence the data as it was suitable for panel data regression.

TABLE 9

Woodridge Drukker Test For Serial correlation

Model	Dependent	F-value	p-value
1	ROA	3.534	.0674
2	ROE	0.048	.8281
3	ROCE	1.129	.2138

4.4 Panel Data Analysis

The data set in this study contained 5 year time series data and cross sectional data for 41 non-financial firms. The panel regression model was applied for the study. However before deciding whether to use the fixed effects (FE) model or random effects (RE) model a

Hausman test was performed. This test was used to determine the model that was more reliable and consistent for the data between the FE model and RE model. The outcome of the test is presented in Table 10. The chi squares for all the models were significant ($p < 0.05$) indicating that the fixed effects model was appropriate for the three models relating to the three measures of profitability.

TABLE 10
Hausman Test Results

Model	Dependent variable	Chi ²	Prob > Chi ²
1	ROA	159.05	0.0000
2	ROE	36.73	0.0000
3	ROCE	163.12	0.0000

Lastly, after the FE model was selected, the study sought to establish whether time fixed effects were needed when running the FE model. This tests whether the dummies for all years are equal to 0. If they are equal to zero, then, no time fixed effects are needed. The results are presented in Table 11. The results indicate that the null hypothesis that the coefficients for all years are jointly equal to zero, was not rejected and therefore no time fixed time effects were required.

TABLE 11
Test for Fixed Time Effects

Model	Dependent variable	F	Prob > Chi ²
1	ROA	1.21	0.3058
2	ROE	2.78	0.2756
3	ROCE	1.95	0.2981

This therefore led to running of the panel data model with the independent variables being short term debt equity ratio (STDER), long term debt equity ratio (LTDER) and log of equity (LEQ). The control variables were age (AGE) and size of the firms (log of total ASSETS). The dependent variable was firm profitability (ROA, ROE and ROCE). The results of the fixed effects panel regression are presented in Table 12 to 14.

TABLE 12

Fixed Effects Panel Regression on Return on Assets

Fixed-effects (within) regression		Number of obs	=	205		
Group variable: firm		Number of groups	=	41		
R-sq: within	= 0.3042	Obs per group: min	=	5		
between	= 0.0063	avg	=	5.0		
overall	= 0.0018	max	=	5		
corr(u_i, Xb) = -0.9885		F(4,160)	=	17.49		
		Prob > F	=	0.0000		
roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
stder	-8.412313	1.336127	-6.30	0.000	-11.05103	-5.773594
ltder	-6.397659	3.219284	-1.99	0.049	-12.75543	-.0398888
leq	1.499918	4.662175	0.32	0.748	-7.707419	10.70725
age	-1.391778	.2946567	-4.72	0.000	-1.973696	-.8098603
_cons	89.215	25.61866	3.48	0.001	38.62068	139.8093
sigma_u	46.650165					
sigma_e	4.6916035					
rho	.98998697	(fraction of variance due to u_i)				
F test that all u_i=0:		F(40, 160) =	9.98	Prob > F = 0.0000		

The findings in Table 12 indicate that the model was significant in explaining the change in profitability of listed non-financial firms ($f = 17.49$; $p < 0.05$). The study established that the within r squared was 0.3032. This indicates that the model explains 30.42% of the change in profitability within the 41 non-financial firms that were included in the study. Further, the between r-squared was 0.0063. This indicates that the model explains only 0.63% of the change in profitability between the 41 firms. Moreover, the overall r squared was 0.0018. This indicates that if the data was not arranged in panel, the model could have explained only 0.18% of the change in ROA. This is an indication that using the fixed effects model provided better estimates.

In the model, short term debt equity ratio had a significant negative effect on ROA ($\beta = -8.41$; $t = -6.30$; $p < 0.05$). This finding indicates that increase in short term debt equity ratio will cause a significant decrease in ROA. These findings concur with results by

Mohammadzadeh *et al.* (2013) that both short term and long term debt had significant negative effects on profitability of the pharmaceutical companies.

Moreover, the effect of long term debt equity ratio on return on assets was negative ($\beta = -6.40$; $t = -1.99$; $p < 0.05$) and significant. This indicates that increase in the level of long term debt in relation to equity would have a negative effect on ROA. These findings were contrary to Miller and Modigliani's (1963) capital structure irrelevance theorem which posited that when a firm chooses a given investment policy, the financing structure it will select would not influence its value. This study tested whether firms in the non-financial sector in the NSE follow the capital structure irrelevance theory. It tested whether the mix of short term debt that non-financial firms apply in their capital structure influences their profitability and noted that capital structure was no irrelevant in determining value. These findings, however, support the pecking order theory by Myers and Majluf (1984). The study established that firms with lower debt to equity ratios performed better than their peers. The preferences of internal sources of finance over external sources of finance is attributed to assumption that internal sources of capital are less expensive than external sources of capital due to transaction costs. This could be seen to make non-financial firms to prefer to use internal sources of capital so as to have a positive effect on profitability.

Similarly, these findings support the trade-off theory (Myers, 1984). This is indicated by the finding that firms that selected different levels of debt and equity financing had significant differences in profitability. This is supported by the tradeoff theory which indicates that there is an optimum capital structure for a firm where the firm equates the tax benefits of debt with the leverage costs such as financial distress costs to have an optimum structure that will provide maximum performance benefits.

Further results indicate that log of shareholders' equity (LEQ) had a positive but insignificant influence on ROA ($\beta = 1.50$; $t = 0.32$; $p > 0.05$). These findings show that

increase in equity in the firm would have a positive but insignificant effect on ROA. These findings concur with findings from a study by Tailab (2014) in US which had established that there was an insignificant but positive relationship between shareholders equity and profitability (ROA). However, the findings disagree with findings by Ulzanah and Murtaqi (2015). Ulzanah and Murtaqi had used multiple linear regression on data from 22 companies that listed consistently on LQ45 Index during 2009–2013 period. The study results showed that equity has a positive and significant impact towards profitability (ROA).

TABLE 13

Fixed Effects Panel Regression on Return on Equity

Fixed-effects (within) regression		Number of obs	=	205		
Group variable: firm		Number of groups	=	41		
R-sq: within	= 0.3369	Obs per group: min	=	5		
between	= 0.0237	avg	=	5.0		
overall	= 0.0103	max	=	5		
corr(u_i, Xb) = -0.9928		F(4,160)	=	20.32		
		Prob > F	=	0.0000		
roe	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
stder	-20.9673	3.150081	-6.66	0.000	-27.1884	-14.7462
ltder	-8.982909	7.589854	-1.18	0.238	-23.97212	6.006305
leq	28.41765	10.99164	2.59	0.011	6.710239	50.12507
age	-4.052629	.6946889	-5.83	0.000	-5.424571	-2.680687
_cons	86.96706	60.39909	1.44	0.152	-32.31519	206.2493
sigma_u	139.62978					
sigma_e	11.061024					
rho	.99376383	(fraction of variance due to u_i)				
F test that all u_i=0:		F(40, 160) =	9.64	Prob > F = 0.0000		

The findings in Table 13 show that the model was significant in explaining the change in profitability of listed non-financial firms ($f = 20.32$; $p < 0.05$). The within r squared is 0.3369. This indicates the goodness of fit measure for the individual mean de-trended data

which disregards all the between information in the data. This indicates that the model explained 33.69% of the change in ROA considering the used independent variables. The between r squared was 0.0237 indicating that if the time component was removed from the data, the resultant model could have explained the change in ROA by 2.37%. Moreover, the overall r squared was 0.0103 indicating that if the data was pooled ignoring time and entity component, the model could have explained only 1.03%. This indicates that using the fixed effects model optimized the model.

In the model, short term debt equity ratio had a significant negative effect on ROE ($\beta = -20.97$; $t = -6.66$; $p < 0.05$). This finding indicates that increase in short term debt equity ratio will cause a significant decrease in ROE.

The effect of long term debt equity ratio on return on equity was negative ($\beta = -8.98$; $t = -1.18$; $p > 0.05$) and not significant. This indicates that increase in the level of long term debt in relation to equity would have a negative but insignificant effect on ROE. This does not concur with findings by Chechet and Olayiwola (2014) that debt ratio was negatively and significantly related to profitability.

Lastly, the study results indicate that log of equity had a positive and significant effect on ROE ($\beta = 28.42$; $t = 2.59$; $p < 0.05$). These findings indicate that increase in equity would cause a significant increase in ROE. These findings disagree with findings from a study by Yegon et al. (2014) which established that equity had a positive but insignificant effect on ROE in the Kenya banking sector. The current study findings, however, agreed with findings from a study by Tailab (2014). Tailab analyzed data using Smart PLS (Partial Least Square) version 3 and established that equity had an insignificant but positive relationship with ROE.

TABLE 14

Fixed Effects Panel Regression on Return on Capital Employed

Fixed-effects (within) regression		Number of obs	=	205		
Group variable: firm		Number of groups	=	41		
R-sq: within	= 0.1950	Obs per group: min	=	5		
between	= 0.0179	avg	=	5.0		
overall	= 0.0116	max	=	5		
corr(u_i, Xb) = -0.9793		F(4,160)	=	9.69		
		Prob > F	=	0.0000		
roce	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
stder	-13.13389	2.88362	-4.55	0.000	-18.82875	-7.439023
ltder	5.12889	6.947838	0.74	0.461	-8.592405	18.85019
leq	26.30428	10.06187	2.61	0.010	6.433064	46.17549
age	-2.648845	.6359261	-4.17	0.000	-3.904737	-1.392954
_cons	14.33667	55.29001	0.26	0.796	-94.85565	123.529
sigma_u	95.068374					
sigma_e	10.125387					
rho	.98878363	(fraction of variance due to u_i)				
F test that all u_i=0:		F(40, 160) =	14.41	Prob > F = 0.0000		

The findings in Table 14 show that the model was significant in explaining the change in profitability of listed non-financial firms ($f = 9.69$; $p < 0.05$). The within r squared was 19.50 indicating that the model explained 19.50 of change in ROCE using the considered independent variables. This indicates that by using the fixed effects model, the r squared was optimized from between r squared of 0.0179 if the time effect was ignored and also from the overall r squared of 0.0116 if the time and entity effects were ignored.

In the model, short term debt equity ratio had a significant negative effect on ROCE ($\beta = -13.13$; $t = -4.55$; $p < 0.05$). This finding indicates that increase in short term debt to equity ratio will cause a significant decrease in ROCE.

The effect of long term debt equity ratio on return on capital employed was positive but insignificant ($\beta = 5.13$; $t = 0.74$; $p > 0.05$). This indicates that increase in the level of long term debt in relation to equity would have a positive but insignificant effect on ROCE.

Lastly, the study results indicate that log of assets debt to asset ratio, had a positive and significant effect on ROCE ($\beta = 26.30$; $t = 2.61$; $p < 0.05$). These findings indicate that

increase in equity would cause a significant increase in ROCE. This agrees with findings by Ahmad et al. (2015) in Pakistan that high equity levels were associated with higher profitability. The findings also concurred with findings by Mohammadzadeh et al. (2013) that there was significant positive relationship between the profitability and the equity levels of firms which meant that the companies had established a pecking order theory and the internal financing had led to more profitability.

CHAPTER FIVE**CONCLUSION AND RECOMMENDATIONS****5.1 Introduction**

Presented in this chapter is the conclusion and recommendations made after consideration of the study findings. The conclusions and recommendations are made in relation to the findings relating to capital structure and profitability of the 41 non-financial firms listed in the NSE. The independent variables in the study were short term debt to equity ratio, long term debt to equity ratio, debt to asset ratio and ratio of interest expenses to total expenses. The dependent variable in the study was profitability where three measures were applied; ROA, ROE and ROCE.

5.2 Conclusion

The study concludes that short term debt equity ratio negatively and significantly affects ROA, ROE and ROCE. These findings hence results to the summary conclusion that increase in the level of short term debt in relation to equity would have significant negative effects on the profitability of the firm as measured by either ROA, ROE and ROCE. The study hence does not accept the null hypothesis that there is no relationship between short term debt-equity ratio and profitability of non-financial firms listed at Nairobi Stock Exchange (NSE). The study hence accepts the alternate hypothesis that there is relationship between short term debt equity ratio and profitability of non financial firms listed in the NSE.

Secondly, the study concludes that long term debt equity ratio have a significant negative effect on return on assets but has an insignificant effect on ROE and ROCE. This therefore points to there being a disadvantage of having a high proportion of debt in relation to equity. This is expected to affect negatively the profitability of the firm as measured through ROA. However, long term debt equity ratio has no influence on ROE and ROCE.

The study therefore does not accept the null hypothesis that long term debt-equity ratio has no effect on profitability of non-financial firms listed at the NSE.

Lastly, the study concludes that log of equity positively affects ROE and ROCE but has no significant effect on ROA. This means that raising the level of assets financed by equity positively enhances returns to shareholders but does not significantly influence returns to all the stakeholders including the debt holders. Therefore the study fails to accept the null hypothesis that log of equity has no effect on performance of non-financial firms listed at NSE.

5.3 Recommendations

The following recommendations are made. First, though short term debt is a source of quick liquidity for the firm during emergencies, they bring shocks and added riskiness to the firm and hence managers should apply these sources of financing with caution. Short term sources of debt financing provide a firm with funds to stem out shortages, it is easier to negotiate, can be obtained without having to pledge assets as collateral, and cost of servicing short-term credit is manageable to a firm. However, the study established that short term debt as a ratio to equity is negatively related to profitability. This can be due to the pressure it puts on the firm since its servicing is in a period of a year or less and hence can put a strain on operations. This hence makes these forms of financing not suitable for financing long term plans or investments and hence managers should only apply them for short term purposes only.

Secondly, a high long term debt to equity ratio is expected to hurt the company's profitability. A high debt to equity ratio means the company is funding most of its ventures with debt. This therefore indicates that if this ratio is too high, the company is setting aside most of its cash flows to service debt and hence leaving little for reinvestment or distribution to shareholders. Managers should hence establish the level of debt of debt to equity ratio that

is optimum for the firm and seek to achieve this optimum level. Firms should however, mostly rely on retained earnings for expansion and growth.

Third, the study recommends to managers in non financial firms to effectively manage equity capital in the firms' capital structure as high debt levels will mean more interest payments and cash outflows from the firm. High equity levels were observed to be highly related to high performance in ROE and ROCE. Managers of non-financial firms should hence establish the optimum level of debt to equity ratio that their firms should have. Finally, managers should know that the firm serves various stakeholders and not only shareholders and hence the actions they take on capital structure should not only be informed by returns to shareholders but also returns to other stakeholders.

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Appendix I**Quoted Non-financial Firms at NSE**

1. Express Ltd
 2. Kenya Airways Ltd
 3. Nation Media Group
 4. Standard Group Ltd
 5. TPS Eastern Africa (Serena) Ltd
 6. Scangroup Ltd
 7. Uchumi Supermarket Ltd
 8. Longhorn Kenya Ltd
 9. Eaagads Ltd
 10. Kakuzi Company Ltd
 11. Kapchorua Tea Company Ltd
 12. Limuru Tea Company Ltd
 13. Rea Vipingo Plantations Ltd
 14. Sasini Ltd
 15. Williamson Tea Kenya Ltd
 16. Safaricom Ltd
 17. Car and General (K) Ltd
 18. CMC Holdings Ltd
 19. Sameer Africa Ltd
 20. Centum Investment Ltd
 21. City Trust Ltd
 22. Olympia Capital Holdings Ltd
 23. Trans-Century Ltd
 24. A. Baumann Company Ltd
 25. B.O.C Kenya Ltd
 26. British American Tobacco Kenya Ltd
 27. Carbacid Investments Ltd
 28. East African Breweries Ltd
 29. Eveready East Africa Ltd
 30. Kenya Orchards Ltd
 31. Mumias Sugar Company Ltd
 32. Unga Group Ltd
 33. Athi River Mining Ltd
 34. Bamburi Cement Company Ltd
 35. Crown Paints Ltd
 36. E.A. Cables Ltd
 37. E.A. Portland Cement Ltd
 38. KenGen Ltd
 39. KenolKobil Ltd
 40. Kenya Power & Lighting Company Ltd
 41. Total Kenya Ltd
- Source: CMA & NSE (2015)

Appendix II

Studies Reviewed and Research Gaps

Author	Year	Topic	Country	Objectives	Methodology	Findings	Research gaps
Chathoth and Olsen	2007	Impact of environmental risk, corporate strategy, and financial structure on corporate performance	USA	To establish effect of environmental risk, corporate strategy, and financial structure on corporate performance	Panel data analysis	Variables representing the environmental risk, corporate strategy, and financial structure explain a significant variance in firm performance.	Done in developed country
Margaritis and Psillaki	2010	Analysis of the relationship between efficiency, financial leverage and ownership structure	France	To assess how efficiency, financial leverage and ownership structure are related	Multiple stepwise regression	Higher financial leverage was associated with improved efficiency over the entire range of observed data	Done in France Used a different model than this study
Huyghebaert and D'Espallier	2010	Debt capital and performance of startup businesses in Belgium	Belgium	To assess the influence of debt capital on performance of startup businesses	GLM	Leverage firms also showed high revenue growth.	Used GLM
Abor	2007	Capital structure and profitability: a comparative analysis of SMEs in Ghana and South Africa.	Ghana and South Africa	To assess how capital structure in related to profitability.	Panel data analysis	All measures of capital structure are negatively related to return on assets, in the	Scope was SMEs

						case of Ghanaian firms. In the case of South-African firms, short-term debt and trade-credits are positively, whereas total debt and long-term debt are negatively related to return on assets	
Ebaid	2009	The impact of capital-structure choice on firm performance: empirical evidence from Egypt	Egypt	To establish the impact of capital-structure on firm performance	Multiple linear regression	Short-term debt and total debt are negatively related to return on assets.	Used a different model than the one used in this study
Shubita and Alsawalhah	2012	Relationship between capital structure and profitability of Jordanian quoted industrial firms	Jordan	To assess the relationship between capital structure and profitability of Jordanian quoted industrial firms	Multiple linear regression and correlation analysis	There was a significantly negative relationship between profitability and short-term debt to asset ratio	Focused on industrial firms Only used ROE as profitability measure
Chechet and Olayiwola	2014	Influence of capital structure on profitability of firms that are quoted in Nigeria	Nigeria	To analyze the influence of capital structure on profitability of firms that are quoted in Nigeria	Fixed effects panel data model	Debt ratio was negatively related to profitability while equity over the period was positively	Studied all quoted firms

						related to profitability	
Yegon, Cheruiyot, Sang and Cheruiyot	2014	The Effects of Capital Structure on Firm's Profitability: Evidence from Kenya's Banking Sector	Kenya	To establish how capital structure in commercial banks influenced their profitability	panel data analysis	There was a significant positive relationship between profitability and short term debt. There was a significant negative relationship between profitability and long term debt. There was no significant relationship between profitability and total debt	Studied commercial banks