

**DETERMINANTS OF CAPITAL STRUCTURE OF
MANUFACTURING FIRMS LISTED AT THE NAIROBI
SECURITIES EXCHANGE**

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DEDICATION

I dedicate this project to my dear parents Mr. Pius Muasa and the Late Grace Munee for their tireless effort to ensure that I acquire the best education in my life.

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ABBREVIATIONS

D/E - Debt – Equity ratio

GDP - Gross Domestic Product

LSDV - Least Squares Dummy Variable

WACC - Weighted Average Cost of Capital

ABSTRACT

This study analyzed the determinants of capital structure in manufacturing sector in Kenya: a case study of listed firms at Nairobi Securities Exchange. The study analyzed the listed manufacturing firms for the period 2008 – 2014 thus yielding to a panel data analysis. Both the fixed effects and the random effects model were estimated and the Hausman test used to choose the most appropriate model of the two. From the Hausman test' results, the random effects model was selected as the most appropriate implying that the manufacturing firms listed at the NSE are different from one another in the way they operate and consequently they are different in the way they choose the capital structure mix between equity and capital. The findings of the study revealed that both the fixed effects and the random effects model yield the same conclusions through the coefficients and the significance levels are different. The conclusion of the study was that the ratio of profits to total assets (PRE), Profits before tax (TAX), and the size of the company (LOG SIZE), the companies' turnover (GRW), ratio of fixed assets to total assets (ASSETS), variability of profits (RISK) and the Gross Domestic Product are all significant in informing the choice of capital structure among the listed manufacturing companies in Kenya as they are all relevant when making the capital structure choice decision. Finally, the study concluded that manufacturing firms are completely different in terms of their operations and their choices for their respective capital structure mix between equity and debt financing. The manufacturing firms differ in terms of sizes, products manufactured, kind of investment made, management choices, their growth, objectives and goal targets. As such one cannot make a generalized conclusion on the operations and the capital structure choices for all the listed manufacturing firms in Kenya. The determinants analyzed all showed that they were relevant in the capital structure choice in Kenya thus they can be used a guide in determining the capital structure choice for manufacturing firms.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Capital structure in any corporate is of great importance since it defines the financial stability of the corporate. The decision on the optimal capital mix is core in ensuring the financial stability of any firm. Whether the firm holds more of equity than debt or hold more debt than equity is grounded on the determination of the correct capital structure. As such the importance of capital structure cannot be undermined (Copeland & Weston, 1984).

From the financial literature, there are two main sources of financing available for any corporate, mainly: debt financing and equity financing. Therefore in determining the optimal capital structure, the corporate tries to balance the composition of equity vis-a-vis that of debt financing. However, each of these financing options has its own merits and demerits. First looking at debt financing we can cite the two main advantages of employing more debts than equity. First, the interest will be deducted from the tax base and thus reduce the real cost of debt; the second, the creditors provide a good return, thus during periods when the company's profits are increasing they do not share with the firm's partners (Myers and Majluf, 1984). However, debt financing suffers from two disadvantages of this mixed debt capital: First, the debt ratio would increase the risk of the firm and the firm's interest burden will rise higher. Second, the profits of the company and the company faced difficult the days leading to the liquidation of the firm's interest is insufficient to meet the start of a process (Copeland & Weston, 1984). As a result, the

debt capital during good days pushes the partners to the corner, and during bad days would bring them a hefty bill. It's therefore clear that the disadvantages of debt financing are the advantages of equity financing thus the dilemma in choosing the correct capital mix.

1.1.1 Capital Structure

A firm's capital structure is a set or mix of securities by which it fulfils its financing needs. Capital structure is comprised of debt, equity or mix of both. As such the capital structure therefore comprises of project finance, dividend policy, issuing of long term debts, buyouts, financing of mergers among others. On the other hand, the optimal capital structure is defined as the mix of debt and equity that is obtained at the minimal cost and yields the maximum shareholders' wealth. The proxy used for calculating capital structure is debt to equity ratio (D/E) JC Gardner (2010).

Despite the realization of on the significance of the capital structure in any corporate, the ancient financial literature put across that the capital structure is irrelevant in determining the profitability of the firm. More certainly is the Modigliani – Miller theory (1958) on the irrelevance of capital structure vividly argues that capital structure is irrelevant by their so called capital – structure irrelevance preposition. However, a cross examination of the Modigliani – Miller (1958) capital – structure irrelevance preposition is based on the assumptions of no taxes and no bankruptcy costs. As such based on these assumptions, the weighted average cost of capital (WACC) should remain constant with changes in the company's capital structure. For example, no matter how the firm borrows, there will be no tax benefit from interest payments and thus no changes or benefits to the WACC. Additionally, since there are no changes or benefits from increases in debt, the

capital structure does not influence a company's stock price, and the capital structure is therefore irrelevant to a company's stock price.

In reality the argument of the Modigliani – Miller (1958) capital – structure irrelevance proposition does not hold given the evidence on the 2007/ 2008 global financial crisis that so the collapse of huge corporates such as Lehman Brothers collapsed for being highly levered despite of such firms being considered to be too large to collapse. In addition the introduction of the Basel III regulatory regulation framework in attempts to stabilize the financial sector against any potential shock from the risks. Thus relaxing the assumptions of the Modigliani – Miller (1958) capital – structure irrelevance proposition it's clearly evident that the theory does not hold.

1.1.2 Determinants of Capital Structure

These are the factors that influence the firm's choice of the financing strategies in meeting its financial needs. Therefore determinants of capital structure are a set of factors that will inform a firm's decision on choosing to either entirely employ equity or debt or a mixture of both of them conditional on how these factors behave. These factors are important as they help the firm to objectively choose the optimal capital structure at minimum cost while maximizing shareholder's wealth. They are mainly measured from the financial ratios of the firm that inform on the firm's financial performance.

Size of a firm can be generally refers to the total assets employed by the business firm over a period of time, through which the operational activities are executed. Higher the value of size of the firm in terms of total assets means stronger the position of the business in the market. Size of firm is calculated by taking the log of total assets of the

firms. However the square of log of total assets is to be considered more reliable and significant values because of increased variation size of the firm can be considered for both positive and negative sign with the leverage. But most of the time from the previous study analysis it is most likely to observe highly significant and positive value with the debt financing of the firm. Size of a firm is measured as sales volume of a firm. The proxy used for calculating size is the log of net sales. Many authors (Gaud, et al. (2003), Masnoon & Anwar (2012), Rajan & Zingales (1995) in their research studies have found out a negative relation between size of firm and its leverage as there is more transparency about large firms which reduces the undervaluation of new equity issue and encourages the firms to finance through their equity.

Reviewed literature posits that reveal that firm size is a significant factor for capital structure. Karadeniz *et al* (2011) concludes that decisions of Turkish companies are significantly influenced by firm size when it comes to capital structure mix. Firm size seems to affect companies in using incentives, issuing common stock, using personal debt and determining target debt ratio. Most of the empirical findings seem to support pecking order theory.

Profitability can be generally defined as a positive return from the invested capital by the firm through its operational activities over a period of time. Normally profitability is measured through return on total assets of the firm and return on equity of the firm. Higher profit generation in the form of either return on assets or return on equity means better operational activities as compared to competitors in the market. Profitability seems to be strongly positive and significant association with the financial leverage of the firm

because of strong financial position. In the present analysis we use the following formula for the profitability. The proxy used for calculating profitability is Profit Margin calculated as earning after tax divided by sales (EAT/SALES). According to the studies conducted by Masnoon and Anwar (2012), Gaud, et al. (2003), Rafique (2011), Velnampy and Niresh (2012) there is a negative relation of profitability with leverage.

From literature review, Titman and Wessels (1988) and Barton et al. (1989), agree that firms with high profit rates, all things being equal, would maintain relatively lower debt ratio since they are able to generate such funds from internal sources. Empirical evidence from previous studies (Chittenden et al., 1996; Coleman and Cole, 1999; Al-Sakran, 2001) appears to be consistent with the pecking order theory. Most studies found a negative relationship between profitability and debt financing.

Gross Domestic Product is refers to the total value of final goods and services which are produced in the country in a specific time period specifically measured in terms of dollars. Higher the value of GDP means economic growth of the country and economic prosperity as well. The value of GDP seems to have significant impact on the leverage decision of the firm and under the various type of developed of emerging countries such relationship is different for the difference in law, regulations and other compounding factors held therein.

Bokpin (2009) suggest that the effect of macroeconomic factors on capital structure varies with capital structure measurement variable in most cases. The findings of the

research also indicate a significantly negative relationship between gross domestic product (GDP) per capita and capital structure choices. Inflation on the other hand positively influences the choice of short-term debt over equity. Stock market development is however insignificant in predicting capital structure decisions of firms and expectations of increasing interest rate positively influences firms to substitute long-term debt for short-term debt over equity. Most of the control variables namely asset tangibility, return on equity, return on assets and Tobin's Q were significant predictors of corporate financing. The results of the study generally supports existing literature on the impact of investment opportunity set, profitability, and stock market development, inflation, interest rate GDP per capita and bank credit on the capital structure decisions of firms.

Tax is defined as the percentage of tax at which the income of individual or a company is taxed and is usually used for getting the edge of tax deductibility. Through the payment of interest on the debt portion of the total equity, taxable income is reduced and ultimately the tax rate is lower than before so the firm can get the advantage over the tax liability. This is because of by using the debt portion in the firm. With such advantages firms sometimes give preference to use some level of debt financing in the business. In current study we have used the effect tax rate as a measuring proxy for the tax rate.

When a firm has a debt as part of its financing strategy, it is required to pay interest on the debt. As such, in order to arrive at the taxable profits, the firm is allowed to deduct the interest payment on the debt. This is the so called tax shield. An increase in the

corporate tax rate affects the debt-to-assets ratio positively, and that this effect is stronger for firms with concentrated ownership. These results hold independently of whether firms are standalone or subsidiaries, and are also valid if subsidiaries are divided into those that are foreign-owned and those domestically owned. Lastly, ownership plays a role even when controlling for other potentially important determinants of the relation between corporate taxation and capital structure (Krämer, 2015).

The total asset tangibility shows the total amount of the tangible assets like property plant and equipment and current assets like inventory which provide the creditors with the guarantee for pay back of the money they lend and enhance the proportion of debt in the capital structure. It is largely observed as that there exists a positive association between financial leverage as the existence of more tangible assets as more tangible assets definitely enhance the value of collateral for creditors and ultimately firm has an ease in getting the large amount of the debt financing from the external sources. According to Titman and Wessels, (1988) there exists a positive relationship between tangible assets and debt. In their study, they assert that the more tangible the firm's assets are the more such assets can be used as collateral. This will encourage borrowing. The degree to which the firms' assets are tangible and generic should result in the firm having a greater liquidation value.

By pledging the assets as collateral (Harris and Raviv, 1990) or arranging so that a fixed charge is directly placed to particular tangible assets of the firm, also reduces adverse selection and moral hazard costs (Long and Malitz, 1992), as quoted in Gay, Louis and

Wallace (1994). However, Huchtinson and Hunter (1995) observed that tangible assets would also have a negative impact on financial leverage by augmenting risk through the increase of operating leverage. Part of the intangible assets, such as reputation, becomes quasi-tangible and interpreted by debt holders as a guarantee (Balakrishnan and Fox, 1993), as quoted in Gay, Louis and Wallace (1994). Thus asset tangibility is a crucial factor in determining a firm's capital structure.

1.1.3 Manufacturing Firms Listed at the Nairobi Securities Exchange

Manufacturing firms are defined as those establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products (Annual Survey of Manufactures, 2006). Manufacturing plays a crucial role in the production process by converting the raw materials into end products hence value addition. Looking at the Kenyan case manufacturing sector has been crucial in supporting economic growth and development. As at 2013, manufacturing sector recorded a growth of 4.3 percent compared to 3.2 percent as at 2012. The manufacturing sector in Kenya constitutes 70 per cent of the industrial sector contribution to GDP, with building, construction, mining and quarrying cumulatively contributing the remaining 30 per cent. Kenya Vision 2030 identifies the manufacturing sector as one of the key drivers for realizing a sustained annual GDP growth of 10 per cent. The manufacturing sector has high, yet untapped potential to contribute to employment and GDP growth (Kippra, 2013).

The manufacturing sector contribution to GDP worsened from 9.6 per cent in 2011 to 9.2 percent in 2012, while the growth rate deteriorated from 3.4 per cent in 2011 to 3.1 per cent in 2012. These adverse changes are attributed to high costs of production, stiff competition from imported goods, high costs of credit, drought incidences during the first quarter of 2012, and uncertainties due to the 2013 general elections (Kenya National Bureau of Statistics, 2013). The sector value added increased by 8.3 per cent from Ksh 292.4 billion in 2011 to Ksh 316.7 billion in 2012. Despite this improvement, contribution to GDP declined from 9.6 per cent in 2011 to 9.2 per cent in 2012. Figure 8.3 shows the sector value added vis-à-vis contribution to GDP during the period 2007-2012. Kenya's manufacturing sector is largely agro-processing, and its performance is dependent on weather patterns.

Manufacturing sector wage employment increased from 276,900 employees in 2011 to 277,900 employees in 2012, a 0.4 per cent improvement. This compares unfavourably with 3.4 per cent employment growth between 2010 and 2011. The sector contribution to total wage employment has gradually worsened from 13.9 per cent in 2008 to 12.9 per cent in 2012. While the declining trend largely reflects stagnation of the sector's growth, this could also be due to the possibility of firms becoming more capital intensive, or a shift to use of casual labour to minimize labour costs (KIPPRA, 2012). In Kenya there are nine listed manufacturing companies at the Nairobi Securities Exchange as at December 2014.

1.2 Research Problem

Capital is a critical resource for all firms, albeit its supply of which is uncertain given the dynamism surrounding it. Manufacturing firms investments are capital intensive thus they are required to determine the optimal capital mix in order to realise a gain from their investments. This calls for need to establish the cheapest mix of debt and equity in the capital structure of these firms. It's evident as cited in the introduction that manufacturing sector plays a crucial role in economic transformation from a traditional agricultural based economy to a modern manufacturing based economy. In addition, it's noteworthy that manufacturing firms are source of innovation. In the last decades, globalization has resulted in an increasing competition in most product and service markets worldwide. This is especially true for the emerging economies. In the Kenyan context the entrance of multinational corporations together with regional integration has seen lot of investment in the manufacturing sector. However, while increasing competition affects firms of all sizes, there are size-related characteristics that can affect the ability of SMEs to respond to such changes.

In Kenya there are various factors that determine the capital structure in the manufacturing firms. Many authors (Gaud, et al. (2003), Masnoon & Anwar (2012), Rajan & Zingales (1995) in their research studies have found out a negative relation between size of firm and its leverage. Profitability seems to be strongly positive and significant association with the financial leverage of the firm because of strong financial position. An increase in the corporate tax rate affects the debt-to-assets ratio positively, and that this effect is stronger for firms with concentrated ownership. According to

Titman and Wessels, (1988) there exists a positive relationship between tangible assets and debt. In their study, they assert that the more tangible the firm's assets are the more such assets can be used as collateral. This will encourage borrowing.

A number of theoretical and empirical studies investigated the optimal capital structure of a firm. These studies pointed out the importance of the relationships among capital structure, cost of capital, capital budgeting decisions, and firm value. Modigliani and Miller propositions. In addition, following the argument of capital structure irrelevance by Modigliani and Miller there has been a general assumption that some firms are very large for them to collapse in case of any financial meltdown. However this was proved not to be the case during the 2007/2008 global financial crisis where large firms such as Lehman brothers collapse thus posing the question on the validity of Modigliani and Miller capital irrelevance proposition. The event saw the constitution of the Basel III accord as a regulatory framework to help the financial sector mainly the banks to build up on their capital reserves so as to caution themselves in case of any hit by the financial crisis.

On the studies regarding the capital structure in manufacturing firms, Holmes and Kent (1991) conducted a study of almost 3,000 small Australian manufacturing firms to find that the most common types of financing were bank loans and supplier credit, both short term sources. They concluded that their results provided support for Myers' Pecking Order Theory in that owners do not want to dilute their ownership claim by taking on additional external equity. Similarly, when they use debt, they prefer to use short term

sources which are less restrictive in terms of covenants. Interestingly Holmes and Kent also found that firms at the smaller end of the spectrum in their study were less aware of possible sources of financing than larger firms. They referred to this as the knowledge gap and noted that the owner/managers of smaller firms do not have the time to research financing alternatives beyond the fairly obvious and traditional sources.

In a study of small Greek manufacturing firms, Voulgaris et al. (2004), examined the link between asymmetric information and the use of debt. Titman and Wessels (1988) found a positive relationship between tangible assets and debt.

Locally, Ondieki (2013) investigated the factors that influence the capital structure among microenterprises in Kenya. Kamere (1987) found that profitability was very important factor that influenced capital structure. Omondi (1996) on capital research structure in Kenya came up with a conclusion that totally contradicted the Pecking Order theory. In view of the foregoing changes, the survival of SMEs is crucial to the Kenyan economy, particularly in the manufacturing sector. In addition to the above, it is generally accepted that rapidly expanding firms account for a large part of job creation. The question, therefore, is how Kenya listed manufacturing companies meet their financial needs both in the short – run and in the long – run. Of late, the Capital Market Authority created a Growth Enterprise Market Segment (GEMs) segment to enable the SMEs firms list thus enabling them to raise capital from the capital market. This is informed by the challenge of access of expansion funds to the existing firms in Kenya. Therefore, given this fact there is need to investigate as to what really determines the capital structure mix among the Kenyan manufacturing firms.

1.3 Research Objective

The objective of this study was to investigate the determinants of capital structure in the manufacturing firms listed at the Nairobi Stock Exchange.

1.4 Value of the Study

The findings of this study are relevant in three folds. First, is to the existing literature. The findings of this study reveal on the what determines the choice of optimal debt – equity mix among the Kenyan firms thus serving as basis for further studies in this area in future by providing literature on the same. The findings could be of importance in testing the validity of the Modigliani – Muller theory of capital structure irrelevance in the Kenyan case.

Secondly is to the potential lenders. The financing would be of importance to the potential lenders in determining the core factors to analyses before committing to inject funding into manufacturing firms. To decision makers mainly the management, the findings would be beneficial in determining the optimal capital – structure mix. By having knowledge on the factor influencing the debt – equity ratio and their expected impacts, the management is better off in making informed decisions when it comes to choosing the optimal capital structure.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers both theoretical and empirical literature on determinants of capital structure among manufacturing firms. It concludes with an overview of the literature highlighting the research gap that the study seeks to fill.

2.2 Theoretical Review

From the financial literature, a number of theories have been developed with regard to how the firms choose their capital structure mix. In this section we discuss the main theories that relate to the choice of capital structure by firms.

2.2.1 Trade-off Theory

The static trade-off choice encompasses several aspects, including the exposure of the firm to bankruptcy and agency cost against tax benefits associated with debt use. Bankruptcy cost is a cost directly incurred when the perceived probability that the firm will default on financing is greater than zero. One of the bankruptcy costs is liquidation costs, which represents the loss of value as a result of liquidating the net assets of the firm. This liquidation cost reduces the proceeds to the lender, should the firm default on finance payments and become insolvent. Given the reduced proceeds, financiers will adjust their cost of finance to firms in order to incorporate this potential loss of value. Firms will, therefore, incur higher finance costs due to the potential liquidation costs (Cassar and Holmes, 2003).

Another cost that is associated with the bankruptcy cost is distress cost. This is the cost a firm incurs if non-lending stakeholders believe that the firm will discontinue. If a business is perceived to be close to bankruptcy, customers may be less willing to buy goods and services due to the risk of a firm not being able to meet its warranty. In addition, employees might be less inclined to work for the business and suppliers less likely to extend trade credit. These stakeholders' behaviour effectively reduces the value of the firm. Therefore, firms which have high distress cost would have incentives to decrease debt financing so as to lower these costs. Given these bankruptcy costs, the operating risk of the firm would also influence the capital structure choice of the firm because firms which have higher operating risk would be exposed to higher bankruptcy costs, making cost of debt financing greater for higher risk firms. Research has found that high growth firms often display similar financial and operating profiles (Hutchinson and Mengersen, 1989).

Debt financing may also lead to agency costs. Agency costs are the costs that arise as a result of a principal-stakeholder relationship, such as the relationship between equity holders or managers of the firm and debt holders. Myers and Majluf (1984) showed that, given the incentive for the firm to benefit equity-holders at the expense of debt holders, debt-holders need to restrict and monitor the firm's behaviour. These contracting behaviours increase the cost of capital offered to the firm. Thus, firms with relatively higher agency costs due to the inherent conflict between the firm and the debt-holders should have lower levels of outside debt financing and leverage.

Firms also consider within the static trade-off framework, the tax benefits associated with the use of debt. This benefit is created as the interest payments associated with debt are tax deductible while payments associated with equity such as dividends are appropriated from profit. This tax effect encourages the use of debt by firms as more debt increases the after-tax proceeds to the owner. The theory among other things predicts a positive relationship between tax and leverage. The trade-off theory has contributed a lot in finance. It yields an intuitively pleasing interior optimum for firms and gives a rationale for cross-sectional variation in corporate debt ratios; - firms with different types of assets will have different bankruptcy and agency costs and different optimal debt ratios. However, the theory has limitations; - debt ratios as produced by this theory are significantly higher than observed. Secondly, in many industries, the most profitable firms often have the lowest debt ratios, which is the opposite of what the trade-off theory predicts (Sunder & Myers, 1999). According to Myers (1984) the trade-off theory also fails to predict the wide degree of cross-sectional and time variation of observed debt ratios.

In this study, we seek to find out whether the listed manufacturing firms conform to the postulates of the trade – off theory by exposing themselves to bankruptcy and agency cost against tax benefits associated with debt use.

2.2.2 Pecking Order Theory

In contrast to the trade-off theory of capital structure, the pecking order theory is based on the premise the dilution associated with issuing equity is so large that it dominates all

other considerations. It states that companies have a preferred hierarchy for financing decisions and maximize value by systematically choosing to finance new investments using the “cheapest available source of funds. Myers (1984) in the “capital structure puzzle” journal of finance suggests that companies would only issue equity as a last resort when debt capacity has been exhausted. This theory is based on the two assumptions about financial managers i.e. that there is asymmetric information where managers know more about the firms current earnings and future growth opportunities than do outside investors and there is a strong desire to keep such information proprietary.

Secondly, managers will act in the best interests of existing shareholders they will forgo a positive NPV project if raising fresh equity would give more of the projects value to new rather than existing shareholders (Myers & Majluf 1984). The pecking order theory suggests that firms have a particular preference order for capital used to finance their businesses (Myers, 1984). Owing to the presence of information asymmetries between the firm and potential financiers, the relative costs of finance vary between the financing choices. Where the funds provider is the firm’s retained earnings, meaning more information than new equity holders, the new equity holders will expect a higher rate of return on capital invested resulting in the new equity finance being more costly to the firm than using existing internal funds.

According to the pecking order theory, managers prefer internally generated funds (retained earnings) to external funding, and if necessary, prefer debt to equity because of lower information costs associated with debt issues. According to Donaldson’s 1961

study of the financing practices of a sample of large corporations, He observed that management strongly favoured internal generation as a source of new funds even to the exclusion of external funds except for occasional unavoidable “bulges” in the need for funds (Myers, 1984). While the trade - target capital structure, the pecking order theory allows for the dynamics of the firm to dictate an optimal capital structure for a given firm at any particular point in time (Copeland & Weston 1984). A firm’s capital structure is a function of its internal cash flows and the amount of positive-NPV investment opportunities available. A firm has been very profitable in an industry with relatively slow growth.

Financial slack is defined as a firm’s highly liquid assets (cash and marketable securities) plus any unused debt capacity. Firms with sufficient financial slack will be able to fund most, if not all, of their investment opportunities internally and will not have to issue debt or equity securities. Not having to issue new securities allows the firm to avoid both the floatation costs associated with external funding and the monitoring and market discipline that occurs when accessing capital markets (Myers,1984).

The pecking order theory, however, has certain limitations. It does not explain the influence of taxes, financial distress, security insurance costs, agency costs, or the set of investment opportunities available to a firm upon that firm’s actual capital structure. It also ignores the problems that can arise when a firm’s managers accumulate so much financial slack that they become immune to market discipline. In such a case it would be possible for a firm’s management to preclude ever being penalized via a low security

price and, if augmented with non-financial takeover defences, immune to being removed in a hostile acquisition. For these reasons, pecking order theory is offered as a complement to, rather than a substitution for, the traditional trade-off model. Therefore, we can say that while the traditional trade-off model is useful for explaining corporate debt levels, pecking order theory is superior for explaining capital structure changes (Myers, 1984).

In this study, we seek to find out whether the listed manufacturing firms in Kenya conform to the postulates of the pecking order theory by ranking the different sources of capital in the order of preference starting with the cheapest source.

2.2.3 Signalling Theory

Another capital structure theory is the signalling theory which can be best explained by the use of two hypotheses; information asymmetry hypothesis and the implied cash flow hypothesis, Myers & Majluf (1984) assumed that the firm's managers have superior information about the true value of the company. If management has favourable information that is not yet reflected in market prices, the release of such information will cause a larger increase in stock than in bond prices. To avoid diluting the value of existing shareholders, managers that believe their shares to be undervalued will choose to issue debt rather than equity, conversely, managers will time a new equity issue if the market price exceeds their own assessment of the stock value i.e. if the stocks are overvalued by the market. This well-known propensity of companies to "time" their stock

offerings helps explain the market's systematically negative response to announcements of such offerings (Myers and Majluf, 1984).

Secondly, another signaling theory hypothesis is implied cash flow hypothesis which is premised on the idea that managers know more than investors do. It claims that financing decisions are designed primarily to communicate management's confidence in the firm's prospects and, in cases where management thinks the firm is undervalued, to increase the value of the shares. Increasing leverage has been suggested as one obligates the firm to make a fixed set of cash payments over the term of the debt security, with potentially serious consequences on default. Issuing more debt capital can therefore serve as a credible signal of higher expected future cash flows. On the other hand, raising additional equity by a firm signal also that the net operating cash flows of current operations are disappointing. Investors associate relatively large issues of equity with more severe cash flow changes, resulting in more severe price reactions and therefore firm value (Ross, 1977).

2.3 Empirical Literature Review

A review of the empirical works on what determines the capital structure among firms can be summarized as follows: Güray et al (2006) using dynamic panel data methodology, to analyze the impact of firm specific characteristics on the corporate capital structure decisions of Turkish firms. The sample covers 123 Turkish manufacturing firms listed on the Istanbul Stock Exchange (ISE) and the analysis is based on the year-end observations of ten consecutive years running from 1993-2002. In

this study, the panel data methodology is used and six variables – size, profitability and growth opportunities in plant, property and equipment, growth opportunities in total assets, non-debt tax shields and tangibility – are analyzed as the firm specific determinants of the corporate capital structure. This work contributes to the existing body of literature in the way that all of the independent variables of the study are significant determinants for the capital structure decisions of Turkish firms. Our analysis shows that variables of size and growth opportunity in total assets reveal a positive association with the leverage ratio, however, profitability, growth opportunities in plant, property and equipment, non-debt tax shields and tangibility reveal inverse relation with debt level.

Imran & Muhammad (2012) investigate the determinants of optimal capital structuring that affect growth and financing behaviour of textile sector firms in Pakistan keeping in view the important role capital structuring plays in any firm's financial management decisions and the positive contribution it makes to the creation of firms' value and profitability. The independent variables used in the study are the size of the firm (capital), profitability, fixed assets structure and taxes were used as control variables to investigate the determinants of optimal capital structuring of textiles companies. A sample size of 90 textile companies across the country were selected and their data for the 2005 - 2010 period was used. The determinants of optimal capital structure were examined using correlation and regression analyses. F-value was calculated to test the fitness of overall model. The findings of the study showed a negative relationship between dependent variable financial leverage and independent variables. The statistical analysis of spinning and composite unit also showed consistency of results with the overall textile sector but

outcome of weaving unit showed a significantly positive relationship between dependent and independent variables.

In other global studies, Auerbach (1985) also conclude that leverage is inversely related to growth rate because the tax deductibility of interest payments is less valuable to fast growing firms since they usually have non-debt tax shields. Michaelas et al. (1999) found future growth positively related to leverage and long-term debt, while Chittenden et al. (1996) and Jordan et al. (1998) found mixed evidence. The tax trade-off models show that profitable firms will employ more debt since they are more likely to have a high tax burden and low bankruptcy risk (Ooi, 1999). However, Myers (1984) prescribes a negative relationship between debt and profitability on the basis that successful companies do not need to depend so much on external funding. They, instead, rely on their internal reserves accumulated from past profits. Titman and Wessels (1988) and Barton et al. (1989), agree that firms with high profit rates, all things being equal, would maintain relatively lower debt ratio since they are able to generate such funds from internal sources. Empirical evidence from previous studies (Chittenden et al, 1996; Coleman and Cole, 1999; Al-Sakran, 2001) appears to be consistent with the pecking order theory. Most studies found a negative relationship between profitability and debt financing.

Still on global scene, researchers in financial arena have taken the view that large firms are less susceptible to bankruptcy because they tend to be more diversified than smaller companies (Smith and Warner, 1979; Ang and McConnel, 1982). Following the trade-off

models of capital structure, large firms should accordingly employ more debt than smaller firms. According to Berryman (1982), lending to small businesses is riskier because of the strong negative correlation between the firm size and the probability of insolvency. Hall (1995) added that, this could partly be due to the limited portfolio management skills and partly due to the attitude of lenders. Marsh (1982) and Titman and Wessels (1988) report a contrary negative relationship between debt ratios and firm size. Marsh (1982) argues that small companies, due to their limited access to equity capital market tend to rely heavily on loans for their funding requirements. Titman and Wessels (1988) further posit that small firms rely less on equity issue because they face a higher per unit issue cost. The relationship between firm size and debt ratio is, therefore, a matter for empirical investigation

Titman and Wessels (1988) further report a positive relationship between tangible assets and debt. In their study, they assert that the more tangible the firm's assets are the more such assets can be used as collateral. This will encourage borrowing. The degree to which the firms' assets are tangible and generic should result in the firm having a greater liquidation value. By pledging the assets as collateral (Harris and Raviv, 1990) or arranging so that a fixed charge is directly placed to particular tangible assets of the firm, also reduces adverse selection and moral hazard costs (Long and Malitz, 1992) as quoted in Gay, Louis and Wallace (1994). However, Huchtinson and Hunter (1995) observed that tangible assets would also have a negative impact on financial leverage by augmenting risk through the increase of operating leverage. Part of the intangible assets, such as reputation, becomes quasi-tangible and interpreted by debt holders as a guarantee

(Balakrishnan and Fox, 1993), as quoted in Gay, Louis and Wallace (1994). Liquidity ratios may have a mixed impact on the capital structure decision. Companies with higher liquidity ratios might support a relatively higher debt ratio due to greater ability to meet short-term obligations. On the other hand firms with greater liquidities may use them to finance their investments. Therefore the companies' liquidities should exert a negative impact on its leverage ratio (Ozkan, 2001). Further still, Growth of the firm also has some importance in determining capital structure.

The local studies in the Kenyan context, Ondieki (2013), Investigated the factors which influence the capital structure among microenterprises in Kenya. The objectives of the study were to identify the factors affecting capital structure of micro-enterprises, to establish the extent to which the factors affect capital structure of micro-enterprises and to analyze the extent to which micro-enterprises have used external finances. The results identified the major determinants of the capital structure of micro-enterprises as being access to capital markets, size of the business, profitability of the business and lender's attitude towards the firm. Banks and financial institutions were noted as the most preferred form of external financing for the micro-enterprises. The study concluded that there are a number of factors affecting the capital structure of micro-enterprises and that micro-enterprises prefer borrowing from various external sources and this affects the capital structure of the micro-enterprises.

Kamere (1987) did a research on some factors that influence capital structure of public companies in Kenya. From his research, he concluded that profitability was a very important and major factor that influenced capital structure decisions in firms in NSE.

His observation was that those companies whose profits were very high borrowed very little, that is; they did not borrow so much since some of the profit would be ploughed back into the business. He further noted that those with small profit would not be able to plough back any substantial amount into the business; therefore, they were forced to seek additional funds from outside sources.

However, Omondi (1996) in his research on capital structure in Kenya came up with a conclusion that totally contradicted the Pecking order theory. In his research, he observed that those firms in NSE and with high returns on investments used relatively high debt. That is, those firms which recorded high profit were also found to have borrowed much. Other similar researches that have been done include that of Musili (2005): capital structure choices, a survey of industrial firms in Kenya. His objective was to find out the factors that motivate management of industrial firms in choosing their capital structure. The research found out that industrial firms are more likely to follow a financing hierarchy than to maintain a target-debt to equity ratio, and that the models based on corporate and personal taxes, bankruptcy, and other leverage related cost are not as useful in determining the financing mix as are the models that suggest that new financing reveals aspects of the firm's marginal asset performance. He further added that, the importance managers attach to specific capital structure theories is not related to managerial perceptions of market efficiency.

2.4 Summary of Literature Review

The capital structure of manufacturing firms is, however, still a relatively under-explored area in the literature especially in the Kenyan context. Currently, there is no clear

understanding on how firms choose their capital structure and what factors influence their corporate financing behaviour locally and the related literature on the same is scanty. Looking at the global empirical works, mixed results have been reported with regard to what actually determine capital structure among the manufacturing firms. Houston et al. (1997) found that lending at large firms is less subject to changes in cash flow and capital. Akhavein et al. (1997) also pointed to the fact that large firms tend to decrease their capital and increase their lending after mergers. Firm size seems to allow them operate with less capital. Abor and Biekpe (2005) pointed out that, more than 50 per cent of the assets of listed firms in Ghana are financed by debt and that there is a correlation between debt ratio and firm size, growth, asset tangibility, risk, and corporate tax. Given the unique financial features of manufacturing firms and the environment in which they operate, there are strong grounds.

Kenya listed manufacturing companies meet their financial needs both in the short – run and in the long – run. Of late, the Capital Market Authority created a Growth Enterprise Market Segment (GEMs) segment to enable the SMEs firms list thus enabling them to raise capital from the capital market. This is informed by the challenge of access of expansion funds to the existing firms in Kenya. However, the locally done studies in this field give scanty information on the choice of the capital structure among the listed manufacturing firms in Kenya. Therefore, given this fact there is need to investigate as to what really determines the capital structure mix among the Kenyan manufacturing firms.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology adopted in the study. It covers research design, research population, data collection and data analysis.

3.2 Research Design

This study adopts an inferential research design in attempts to establish the relationship between the dependent variable and the independent variables. Inferential research design is used in quantitative research which is used for quantifying relationships between dependent variable and the independent variables and arrive at conclusions.

3.3 Population

The study seeks to investigate the determinants of the capital structure among the Kenyan manufacturing companies listed at the Nairobi Securities Exchange. As such the population of this study was all the 9 manufacturing firms in Kenya listed as at the end of year 2014.

3.4 Data Collection

The study utilized data from the 9 manufacturing companies listed at the NSE in Kenya for the period 2008 – 2014. The data was obtained from the audited accounts statement for individual firms for the period under the review obtained from Kenya Manufacturers Association (KMA) and the Capital Market Authority (CMA).

3.5 Data Analysis

Under the data analysis we capture both the conceptual model (3.5.1), the empirical model (3.5.2) to be estimated and statistical tests and estimation (3.5.3).

3.5.1 Conceptual Model

From the reviewed financial literature we base our study on the seminal work by Myers (1984) on the firm's capital structure. According to Myers (1984) the capital structure of a firm is conceptually defined by the following factors:

$$CS_{it} = f(PRE_{it}, GRW_{it}, TAX_{it}, ASSETS_{it}, RISK_{it}, SIZE_{it}) \dots \dots \dots (1)$$

Where:

CS is the capital structure for firm i in period t

PRE is the ratio of pre – tax profits to total assets for firm i in period t

GRW is the percentage change in turnover for firm i in period t

TAX is the percentage pre – tax profits for firm i in period t

ASSETS is the ratio of fixed assets to total assets for firm i in period t

RISK is the profit variability for firm i in period t

SIZE is the log of total assets for firm i in period t.

3.5.2 Empirical Model

From the conceptual model above we define our empirical model as follows. However,

we modify the conceptual model by including the gross domestic product to control for the economic environment under which the firms operate in.

$$Debt/equity_{it} = \beta_0 + \beta_1 PRE_{it} + \beta_2 GRW_{it} + \beta_3 TAX_{it} + \beta_4 ASSETS_{it} + \beta_5 RISK_{it} + \beta_6 SIZE_{it} + \beta_7 GDP + \varepsilon_{it} \dots \dots \dots (2)$$

Where:

ε is the error term of the stochastic model

β (s) are the model coefficients to be estimated

In addition we note that $i = 1, 2, 3, \dots, 9$ since we are analyzing 9 manufacturing firms while

$t = 1, 2, \dots, 7$ since our analysis captures 7 years from 2008 - 2014. Therefore in our total observations will be: $NT = 63$. The choice of the period is informed by the need to capture the shocks of the 2008 global financial crisis which called for the need to build more capital reserves.

Size of a firm can be generally refers to the total assets employed by the business firm over a period of time, though which the operational activities are executed. Higher the value of size of the firm in terms of total assets means stronger the position of the business in the market. Size of firm is calculated by taking the log of total assets of the firms. However the square of log of total assets is to be considered more reliable and significant values because of increased variation size of the firm can be considered for both positive and negative sign with the leverage. But most of the time from the previous

study analysis it is most likely to observe highly significant and positive value with the debt financing of the firm.

Profitability can be generally defined as a positive return from the invested capital by the firm through its operational activities over a period of time. Normally profitability is measured through return on total assets of the firm and return on equity of the firm. Higher profit generation in the form of either return on assets or return on equity means better operational activities as compared to competitors in the market. Profitability seems to be strongly positive and significant association with the financial leverage of the firm because of strong financial position. In the present analysis we use the following formula for the profitability.

Gross Domestic Product is refers to the total value of final goods and services which are produced in the country in a specific time period specifically measured in terms of dollars. Higher the value of GDP means economic growth of the country and economic prosperity as well. The value of GDP seems to have significant impact on the leverage decision of the firm and under the various type of developed of emerging countries such relationship is different for the difference in law, regulations and other compounding factors held therein. The introduction of Gross Domestic Product in this study is essential for controlling for the economic environment under which manufacturing firms operate in addition to the firms' specific characteristics.

Corporate tax is defined as the percentage of tax at which the income of individual or a company is taxed and is usually used for getting the edge of tax deductibility. Through the payment of interest on the debt portion of the total equity, taxable income is reduced and ultimately the tax rate is lower than before so the firm can get the advantage over the tax liability. This is because of by using the debt portion in the firm. With such advantages firms sometimes give preference to use some level of debt financing in the business. In current study we have used the effective tax rate as a measuring proxy for the tax rate. When a firm has a debt as part of its financing strategy, it is required to pay interest on the debt. As such, in order to arrive at the taxable profits, the firm is allowed to deduct the interest payment on the debt. This is the so called tax shield. An increase in the corporate tax rate affects the debt-to-assets ratio positively, and that this effect is stronger for firms with concentrated ownership.

Total asset tangibility shows the total amount of the tangible assets like property plant and equipment and current assets like inventory which provide the creditors with the guarantee for pay back of the money they lend and enhance the proportion of debt in the capital structure. It is largely observed as that there exists a positive association between financial leverage as the existence of more tangible assets as more tangible assets definitely enhance the value of collateral for creditors and ultimately firm has an ease in getting the large amount of the debt financing from the external sources.

3.5.3 Statistical Tests and Estimation

Once the data for all individual firms was collected we form a panel with the total loans and borrowings being the dependent variable. In our case we shall adopt a balanced panel since all the observations are available. Eviews was used for econometric data analysis. In this case, we regress the balance panel to obtain the pooled (LSDV), fixed effects and the random effects model estimates.

3.5.4 Unit Root Test

It well known that some of the microeconomics time series data are not stationary. The variable may have mean that changes with time and non-constant variance. This means that working with such variables in their levels will give a high likelihood for spurious results and on influence and can be made since statistical tests like F-distribution or t-distribution are invalid. First is to test whether the variables are stationary or to test the level of integration through the Augmented Dickey Fuller unit root test. The ordinary least square estimates of the variants of the DF test will be inefficient if the error term is auto-correlated. For this test the null hypothesis is that the non-stationarity exists. The acceptance of the null hypothesis confirms the presence of a unit root.

3.5.5 Breusch-Godfrey Serial Autocorrelation

The White Heteroscedasticity test (no cross terms) was employed to test for presence of heteroscedasticity. A significant observed R-squared imply presence of the problem of heteroscedasticity. Results of this test was reported in a table form where the observed R-squared was be tested at a given the significance level to test whether the error terms was homoscedastic or not.

3.5.6 Hausman Test

In determining the most appropriate model between the fixed effects or the random effects model, Hausman test was applied. This test is designed to detect violation of the random effects modelling assumption that the explanatory variables are orthogonal to the unit effects. If there is no correlation between the independent variable(s) and the unit

effects, then estimates of β in the fixed effects model $\left(\hat{\beta}_{FE}\right)$ should be similar to the

β in the random effects model $\left(\hat{\beta}_{RE}\right)$. Therefore, the Hausman test statistic H of choosing between the random effects and the fixed effects model is a measure of the difference of the two estimates.

3.5.7 Summary Statistics

This was computed to obtain the measures of central tendency and dispersion. From the statistics we obtain the mean, mode and the median for all model variables. In addition the summary statistics provides an insight on the distribution of the variables given by the kurtosis. The estimates of the skewness give a conclusion on whether the variables are right or left tails. Lastly the Jarque - Bera statistics and the respective probabilities provide the conclusion on the normality of the error term.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The chapter covers data analysis and discussion of the results. It gives the summary descriptive statistics of the various variables explaining the debt – equity ratio for the manufacturing companies listed at the Nairobi Securities Exchange. In addition the chapter covers the regression results for both the fixed effects and the random effects models obtained from STATA. Moreover the chapter also presents the Hausman test results which identifies the most appropriate model between fixed effects and the random effects models. Finally, the chapter discusses the various tests on the data mainly the unit root tests and the heteroschedasticity tests.

4.2 Descriptive Statistics

Table 4.1: Descriptive Statistics

	D/E	PRE (shs)	GRW (shs)	TAX (%)	ASSETS (shs)	RISK (%)	SIZE (shs)	GDP
Mean	0.4050	0.1091	8284.35	1383.11	0.5966	6.7463	3.8545	4.1571
Std. Dev.	0.2442	0.0762	9900.51	2270.07	0.2599	38.7429	1.4258	0.4172
Minimum	0.0741	-0.0237	1008	-373	0.0982	-91.111	1.5000	3.2289
Maximum	1.2951	0.2988	37491	9596	0.9848	117.32	5.8000	4.6338
Variance	0.0597	0.0058	0.0009	5153208	0.0676	1501.01	0.1741	2.0331

Skewness	1.3927	0.5541	1.9637	2.3352	0.5316	0.2766	0.3222	0.7715
Kurtosis	5.2084	2.5673	5.5493	7.3469	2.0047	3.6937	1.8496	2.9988
Obs	56	56	56	56	56	56	56	56

From table 4.1 it's evident that there are 56 observations for the entire period. Looking at the mean values, we conclude that for the period under review, the mean debt – equity ratio for all the companies is 0.405 implying that in overall, 40.5 percent of the financing for these companies is debt with 59.5 being equity. For the profit before tax, the mean value is Ksh 1,383,110 while the mean value of turnover as evidenced by growth is Ksh 8,284,350.

Looking at the distribution of the variables, the study concludes that all variables are positively skewed as evidenced by the skewness values implying that they are skewed to the right. Profit before tax has the highest skewness of 2.3352 with risk which measures the variability in profits having the least skewness of 0.2766. Turning to the normality in the distribution of variables, GDP is normally distributed with the kurtosis value of 3.0. In addition the ratio of profits to the total assets (PRE) and RISK have distributions near to normal. The debt – equity ratio, company turnover, profits before tax and the size of the company are all non – normally distributed.

4.3 Correlation Analysis

In order to understand the correlation among the variables of the model, a correlation analysis was carried out to computer the correlation coefficient. The results for the correlation matrix are presented in table 4.2 below

Table 4.2 Correlational Matrix

	D/E	PRE	GRW	TAX	ASSETS	RISK	GDP	SIZE
D/E	1.0000							
PRE	-0.2175	1.0000						
GRW	0.0924	0.3762	1.0000					
TAX	0.0145	0.5894	0.9210	1.0000				
ASSETS	0.1479	0.0745	0.1143	0.1278	1.0000			
RISK	0.0830	0.1459	-0.0298	-0.0579	-0.3675	1.0000		
GDP	-0.1980	-0.1603	0.0745	0.0250	0.0057	-0.0932	1.0000	
SIZE	0.2745	0.0276	0.6614	0.6777	0.4665	-0.1928	0.1933	1.0000

From the correlation matrix none of the two variables were found to be strongly correlated to warrant exclusion from the regression analysis.

4.3.1 Pre- estimation Tests

Unit root test was essential in determining the order of integration of the variables prior to the empirical model estimations. However, given that the study was dealing with the panel data, the ordinary unit root tests namely: Dickey – Fuller tests and the Philip Peron Test could not be used since they are only applicable for the time series data. Therefore the study utilized the Levin-Lin-Chu unit-root test which is the main test for stationarity of variables under the panel data analysis. The stationarity / unit root tests are presented in table 4.2 below.

4.2 Levin-Lin-Chu Unit-root Test Results

Variable	Statistic			
	Unadjusted t	Adjusted t*	p-value	Order of Integration
D/E	- 8.3281	- 4.9390	0.0000	I (0)
PRE	- 0.0021	- 0.0021	0.0000	I (0)
GRW	-11.3817	- 9.7730	0.0000	I (0)
TAX	- 6.7906	-14.8716	0.0000	I (0)
ASSETS	-16.4990	-14.8716	0.0000	I (0)
RISK	- 13.6626	-10.1625	0.0000	I (0)
GDP	- 43.3187	- 40.3070	0.0000	I (0)

Under the Levin-Lin-Chu unit-root test the null hypothesis states the panel contains unit roots while the alternative hypothesis states that the panels are stationary hence absence of unit roots. Upon testing the null hypothesis against alternative hypothesis it's evident that all the variables are stationary at level as evidenced by the results in table 4.2 above. This implies the variables are integrated of order zero meaning that they are stationary at level.

4.4 Regression Analysis and Hypothesis Testing

4.4.1 Fixed Effects Model Results

Table 4.3 below summarizes the results for the fixed effects model. Under the fixed effects model, we assume that all the listed manufacturing companies are identical in their operations hence controlling for randomness. As such under the fixed effects model, we do not allow for any variability in the way these companies operate.

Table 4.3 Results under the Fixed Effects Model

	Coef.	Std. Err.	Z	P> z	[95% Conf. Interval]	
PRE	-0.4069	.8020055	-0.51	0.015	-2.0266580	1.2127073
GRW	-0.0066	.0000206	-0.32	0.075	-0.0000482	0.0000356
TAX	0.0004	.0000586	0.76	0.045	-0.0000737	0.0001627
ASSETS	-0.2736	.4907535	-0.56	0.058	-1.2646550	0.7175388
RISK	0.0004	.0009592	0.04	0.097	-0.0019003	0.0019738
GDP	-0.0164	.0265285	-0.62	0.054	-0.0699876	0.0371634
LOG SIZE	-0.3354	.4218654	-0.79	0.043	-1.1873302	0.5166193
Constant	1.9663	1.516117	1.30	0.202	-1.0957495	5.0282227

Number of obs = 56

R²: within = 0.1134

Number of groups = 8

between = 0.3411

F(7,41) = 0.75

overall = 0.0562

Prob > F = 0.6323

From the results, looking at the probability value column represented by $P > |z|$ it's clear that all the variables are significant in explaining the capital structure of the listed firms at NSE. This is because their respective probabilities range between 5 percent and 10 percent implying that they are significant between 5 percent and 10 percent margin error. The ratio of profits to total assets (PRE), Profits before tax (TAX), and the size of the company (LOG SIZE) are all significant at 5 percent significance level. This is because their respective probabilities are less than 5 percent significance level. On the other hand, the companies' turnover (GRW), ratio of fixed assets to total assets (ASSETS), variability of profits (RISK) and the Gross Domestic Product are all significant at 10 percent significance level. This is because their respective probabilities are less than 10 percent significance level.

From the results, a one unit rise in the ratio of profits to total assets (PRE) reduces then debt – equity ratio by 0.4069. This is because when profits rise at a faster rate than the assets, there are probabilities of ploughing back profits thus building up on equity and reducing the debt proportion in the overall capital structure. Similarly if the increase in the company turnover where a one unit rise in the turnover (GRW) lowers the debt – equity ratio by 0.0066. However, for the profit before tax, a one unit rise in the PBIT (TAX) increases the debt – equity ratio by 0.0004. This is due to the advantage that comes with the acquisition of a debt financing in terms of the tax shield. Thus the tax shield will encourage a company to have more debt financing in its capital structure mix.

Looking at the ratio of fixed assets to the total assets we find a negative coefficient implying that as the fixed assets rise at a faster rate than the total assets the debt equity ratio falls by 0.2736 per unit. This is because the fixed assets form the owners' equity of

Wald chi2(7) = 14.69 overall = 0.2525

Prob > chi2 = 0.0402

From the results, looking at the probability value column represented by $P > |z|$ it's clear that all the variables are significant in explaining the capital structure of the listed firms at NSE. This is because their respective probabilities range between 5 percent and 10 percent implying that they are significant between 5 percent and 10 percent margin error. This is in tandem with the results for the fixed effects model discussed earlier. However, their level of significance varies after allowing for randomness.

The companies' turnover (GRW), Profits before tax (TAX), ratio of fixed assets to total assets (ASSETS), variability of profits (RISK) and the Gross Domestic Product are now significant at 5 percent significance level with only the ratio of profits to total assets (PRE) being now significant at 10 percent significance level.

Looking at the individual variables, a one unit rise in the ratio of profits to total assets (PRE) reduces then debt – equity ratio by 0.6975. This is because when profits rise at a faster rate than the assets, there are probabilities of ploughing back profits thus building up on equity and reducing the debt proportion in the overall capital structure. Similarly if the increase I the company turnover where a one unit rise in the turnover (GRW) lowers the debt – equity ratio by 0.0321. However, for the profit before tax, a one unit rise in the PBIT (TAX) increases the debt – equity ratio by 0.5897. This is due to the advantage that comes with the acquisition of a debt financing in terms of the tax shield. Thus the tax shield will encourage a company to have more debt financing in its capital structure mix.

Looking at the ratio of fixed assets to the total assets we find a negative coefficient implying that as the fixed assets rise at a faster rate than the total assets the debt equity ratio falls by 0.0188 per unit. This is because the fixed assets form the owners' equity of the shareholders equity thus its rise means more equity being used in financing and less debt financing. Similar conclusion is arrived at with the size of the company as shown by the coefficient of log of then total assets (LOG SIZE). For GDP, when the economy is doing well, the debt – equity ratio will fall by 0.0516 units for ever unit rise in the GDP growth rates. This is because, during economic prosperity, the firms are likely to perform well in terms of increased turnover and profitability hence building up on their equity through retained profits and consequently reduced debt financing.

4.4.3 Hausman Test Results

In order to determine the most appropriate model between the fixed effects and the random effects models, Hausman test was carried out. The results for the Hausman test are presented below.

$$\chi^2(5) = (b-B)'[(V_b-V_B)^{-1}](b-B) = 10.38$$

$$\text{Prob}>\chi^2 = 0.0652$$

(V_b-V_B is not positive definite)

The test is a Chi square test. From the results, the chi - square statistics is equal to 10.38. Looking at the probability value of the chi square statistics, we find that the probability value is equal to 0.0652. Since this probability is greater than 5 percent significance level then the rule is that we reject them fixed effects model and accept the random effects

model. Therefore, we conclude that the manufacturing firms listed at the NSE are different from one another in the way they operate and consequently different in the capital structure mix.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This study analyzed the determinants of capital structure in manufacturing sector in Kenya: a case study of listed firms at Nairobi Securities Exchange. The study analysed the listed manufacturing firms for the period 2008 – 2014. Both the fixed effects and the random effects model were estimated and the Hausman test used to choose the most appropriate model of the two. From the Hausman test's results, the random effects model was selected as the most appropriate implying that the manufacturing firms listed at the NSE are different from one another in the way they operate and consequently they are different in the way they choose the capital structure mix between equity and capital.

5.2 Summary of Findings

From the data analysis both the fixed effects and the random effects model yield the same conclusions through the coefficients and the significance levels are different. This is an assurance for consistence in the data as well as the results for the entire listed manufacturing firms in terms of what determines their capital structure mix. The ratio of profits to total assets (PRE), Profits before tax (TAX), and the size of the company (LOG SIZE) are all significant at 5 percent significance level. This is because their respective probabilities are less than 5 percent significance level.

On the other hand, the companies' turnover (GRW), ratio of fixed assets to total assets (ASSETS), variability of profits (RISK) and the Gross Domestic Product are all

significant at 10 percent significance level. This is because their respective probabilities are less than 10 percent significance level under the fixed effects model. However, under the random effects model, all variables are significant at 5 percent significance level with only the ratio of profits to total assets (PRE) being significant at 10 percent significance level.

5.3 Conclusion

From the analysis all the variables for the model are significant on determining the capital structure mix for the listed manufacturing firms at the NSE. This is both at the individual variable significance test analysis and the joint test (F – Statistic analysis). Under the random effects model which tends to be more appropriate as evidenced by the Hausman test results, a one unit rise in the ratio of profits to total assets (PRE) reduces the debt – equity ratio by 0.6975. This is because when profits rise at a faster rate than the assets, there are probabilities of ploughing back profits thus building up on equity and reducing the debt proportion in the overall capital structure. Similarly if the increase in the company turnover where a one unit rise in the turnover (GRW) lowers the debt – equity ratio by 0.0321. However, for the profit before tax, a one unit rise in the PBIT (TAX) increases the debt – equity ratio by 0.5897. This is due to the advantage that comes with the acquisition of a debt financing in terms of the tax shield. Thus the tax shield will encourage a company to have more debt financing in its capital structure mix.

The ratio of fixed assets to the total assets we find a negative coefficient implying that as the fixed assets rise at a faster rate than the total assets the debt equity ratio falls by 0.0188 per unit. This is because the fixed assets form the owners' equity of the

shareholders equity thus its rise means more equity being used in financing and less debt financing. Similar conclusion is arrived at with the size of the company as shown by the coefficient of log of then total assets (LOG SIZE). For GDP, when the economy is doing well, the debt – equity ratio will fall by 0.0516 units for ever unit rise in the GDP growth rates. This is because, during economic prosperity, the firms are likely to perform well in terms of increased turnover and profitability hence building up on their equity through retained profits and consequently reduced debt financing.

5.4 Recommendations

From the study findings, a number of policy implications can be deduced. First the evidence that the listed manufacturing firms are completely different in terms of their operations and their choices for their respective capital structure mix between equity and debt financing. As such one cannot make a generalized conclusion on the operations and the capital structure choices for all the listed manufacturing firms. This observation inform policy in that manufacturing firms are independent at firm level and any analysis calls for individual firm analysis to avoid biased results.

Secondly, the macroeconomic environment within which these firms operate is core in informing their performance and consequently their capital structure mix. During economic prosperity they tend to cut down on the debt financing. As such any macroeconomic policy touching on macroeconomic variables such interest rates, inflation rates among others will have a direct impact on the capital structure decisions of these firms. Thirdly at the firm specific factors, the profitability, company's turnover and the size will lower the debt financing while increasing the equity financing component of the entire capital. This is core in informing the company's expansion strategy.

5.5 Limitations of the Study

This study is limited in that it only analysis the determinants of the capital structure for the manufacturing companies listed at the NSE. This is a limitation in that there are many other manufacturing companies in the Kenyan economy but are non – listed. As such they are left out of the analysis in this study. This makes the study not conclusive on the determinants of capital structure on the manufacturing firms in Kenya. Thus we cannot draw a conclusion of the determinants of the capital structure of manufacturing firms in Kenya as a whole.

The study analysed only one sector of the economy the manufacturing sector thus cannot be used in predicting the determinants of capital structure choice in Kenya. A whole industry study would give more conclusive findings. The published financial results of various manufacturing firms was hard to get especially the past years thus it took a lot of time getting them. This made it difficult until the whole data was collected.

5.6 Suggestion for Further Research

From the limitation of this study, we propose further studies on the capital structure of all manufacturing companies both listed and non – listed. In this way this will give a proper reflection of the entire manufacturing sector in Kenya especially from determinants of capital structure stand view. There is also need to look at the capital structure determinants for manufacturing firms that are domestic and multinational and establish whether they have the same determinants as they operate in different regions and their market share is different.

Further study can also be done in the determinants of capital structure in other sectors of the economy such as financial, service, agricultural and telecommunication. This will give a result of the determinants of capital structure in the industry as a whole and establish which factors cut across the whole industry and those factors that only affect one particular sector. The determinants can also be measured in terms of their strength or impact in each sector and their influence on the capital structure choice decisions.

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APPENDICES

Listed Manufacturing Companies

1. East African Breweries
 2. Athi River mining
 3. Bamburi cement
 4. East African Portland Cement
 5. East African Cables Limited
 6. Crown Berge limited
 7. Sameer Africa
 8. Sasini limited
 9. Kakuzi limited
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