

**TESTING THE PECKING ORDER THEORY OF CAPITAL
STRUCTURE AMONG KENYAN FIRMS**

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DECLARATION

I, the undersigned, declare that this is my original work and that it has not been submitted to any other college, institution or university other than the University of Nairobi for academic credit.

Signed _____

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APPROVAL

Supervisor

This project has been presented for examination with my approval as the appointed supervisor

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LIST OF ABBREVIATIONS

AIMS	-	Alternate Investment Market Segment
CBK	-	Central Bank of Kenya
CMA	-	Capital Markets Authority
FISMS	-	Fixed Income Securities Market Segment
FSR	-	Financial Stability Report
GDP	-	Growth Domestic Product
GMM	-	Generalized Method of Moment
JSE	-	Johannesburg Stock Exchange
KES	-	Kenya Shilling
KFS	-	Kenya Financial Sector
KSE	-	Kuwait Stock Exchange
M&M	-	Miller & Modigliani
MIMS	-	Main Investment Market Segment
NIA	-	Net Income Approach
NOIA	-	Net Operating Income Approach
NPV	-	Net Present Value
NSE	-	Nairobi Securities Exchange
NYSE	-	New York Stock Exchange
POT	-	Pecking Order Theory
PPE	-	Property, Plant & Equipment
SMEs	-	Small Medium Enterprises
TA	-	Traditional Approach
TOT	-	Trade-off Theory
TSE	-	Taiwan Stock Exchange

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ABSTRACT

The main aim of this study was testing the Pecking Order Theory of capital structure among firms in Kenyan listed firms, with the Nairobi Securities Exchange, for the period 2011-2016. According to this theory, firms always prefer retained earnings first, followed by debt and finally equity as the last resort. To investigate this, the study used data from a sample of 37 firms across 8 sectors that consistently traded between 2011 and 2016.

The study used a panel regression model to investigate the relationship between changes in debt and financial deficit. Through a fixed effect model on the pecking order model, the study found a very strong support for the pecking order theory among firms in Kenya. In addition, the study found a positive relation between changes in debt and investments and a negative relationship between changes and debt and financial cash flows. This meant that Kenyan firms that invest heavily are likely to borrow more, and those with enough cash flows are likely to borrow less.

Overall, the findings of this study will be useful to financial managers, investors and financial market policymakers. The results will help them factor in the costs of information asymmetries associated with financing when making capital structure decisions. This in turn will help them minimize the costs of financing while at the same time maximizing the benefits of a well-balanced capital structure.

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CHAPTER ONE

INTRODUCTION

1.0 Background of the Study

The term capital structure refers to the various ways in which a firm finances its investments and growth through optimal mix of debt and equity (Brigham, Fama, & Daves, 1992)). Capital structure may also mean a blend of different securities to finance business operations. Capital structure remains a key decision because it determines the financial performance of a firm (Abor & Biekpe, 2005). The main goal of optimal capital structure is to maximize the market value of a firm (Brigham, Fama, & Daves, 1992). Hence, capital structure is a problem that is determined by the market. (Brealey, Myers, & Allen, 2003)

Theory of capital structure dates back in the 1950s with the traditional theorists of capital structure. The traditional view was highly criticised by traditional theorists among them, Modigliani and Miller (M&M henceforth). M&M devised the irrelevance theory of capital structure. Their assertion was contradictory. M&M said that valuation of the firm was not because of capital structure that a firm chose. Instead, the value of the firm was dependent on the operating profits of the firm and the quality of investments a firm undertook. In 1963, M&M revised their theory to include tax benefits of using debt-debt is tax-deductible. They advised that firms should use as much debt as possible in order to maximize their value. Other scholars like Stiglitz (1969), Miller (1977), Ross (1977), Jensen and Meckling (1980), Myers (1984), Rajan and Zingales (1995), Myers (2001) among others later contributed towards refining capital structure through the various theories known today.

Myers (1984) introduced the Trade-off Theory (TOT henceforth) that brought a new different look at capital structure. According to the TOT, firms compare both the costs and benefits of using debt. The benefits of using debt include the tax-shields of interest on accrued on debt while the costs are the agency costs as well the bankruptcy costs. Myers and Majluf (1984) modified the work of Donaldson (1961) to refine the Pecking Order Theory (POT henceforth). According to POT, firms prefer internal sources of finance to external sources of finances. This is mainly because internal sources of finance are less prone to costs of information asymmetry (resulting from managers knowing more than outsiders do) unlike the external sources of finance. Hence, firms opt for retained earnings first to finance their operations. If the retained earnings were not enough, then firms would borrow to bridge the

deficit. In the event that the deficit persists, firms would then issue equity to raise funds as the last resort. In short, according to the POT, there exists a hierarchy of financing business operations. Other theories of capital structure like TOT, Agency theory, Signalling Theory, and Market Timing theory are extensively been reviewed under Chapter 2 this study.

Donaldson (1961) did not agree with TOT ideas that firms could have an optimal combination of debt and equity that minimizes their weighed cost of capital. In addition, the TOT had no explanation as to why profitable firms used less leverage and issued debts more than they issued equity. In short, TOT was not able to factor in the information asymmetry costs associated with use of debt and equity. This information asymmetry exists due to the information gap between the insiders (Managers) and outsiders (Investors).

Myers and Majluf (1984) refined Donaldson's work to refine the POT as presently known. According to the POT, firms always have a plan in procuring financing of their investments. Firms would always opt to use retained earnings first, followed by issuance of debt with the equity issues being the last resort. This defines the pecking order hierarchy of capital structure. This order exists because POT factored in the problem of information asymmetry. According to the POT, retained earnings are considered safest as they have no adverse selection problems and hence a cheap source of finance. Debt has less informational costs as compared to equity, which has biggest adverse selection problems. Hence, firms (Fama & French, 2002) consider debt second and if financial deficits remain, firms resort to equity.

The POT has proven a key theory of capital structure for various reasons. First, the theory is a good signal to the outsiders how well a firm is doing. If the firm is using retained earnings to finance investments, then such a firm is doing well. If a firm is using debt to finance its operations, then such a firm in the eyes of the financiers is well able to meet its debt and interest obligations and this gives the general public confidence. On the other hand, if the firm is issuing stocks, then this sets in uncertainty on whether the firm has undervalued its stocks and investors may not only question the internal financial strength of such a firm, but also the ability of the management to manage debt and this may raise questions on the future value of such a firm.

The empirical testing of the POT has been extensive but the results have been conflicting. These conflicts result from different statistical powers (Leary & Roberts, 2004). Studies by Rajan and Zingales (1995), Titman and Wessles (1988), and Fama and French (2002), among

others found a negative relationship between profitability and leverage hence empirically supporting the POT. However, Hennessy and Whited (2004) and Strebulaev (2008) in their theoretical studies found a negative relationship between profitability and leverage.

Shyam-Sundars and Myers (1999) came-up with an almost comprehensive empirical way of testing the POT using a simple regression model. They concluded that POT provides a good way of examining financial structure behaviours. They were not perfect. Chirinko and Singha (2000) proved that the hypothesis used by Shyam-Sundars and Myers (1999) suffered from Statistical power problems and this may have invalidated the inferences that they made. Frank and Goyal (2003) highlighted that Shyam-Sundars and Myers' model showed that POT fails for small firms. However, Fama and French (2003) found that large firms still violate the financing hierarchy. Then, Lemmon and Zender (2003) showed that as long firms were able to account for financial slack, then Frank and Goyal would be right in their position. Nevertheless, Shyam-Sundars and Myers' model still suffer power problems. To try to escape this, this study aims at using firms listed with the Nairobi Securities Exchange (NSE henceforth) that at minimum are not small as required by NSE before listing. Nevertheless, this model provides the best empirical test for the POT.

1.1 Kenya Financial Sector

Over the last few decades, the Kenya Financial Sector (KFS henceforth) in line with Vision 2030 has gone through major transformations (CBK, 2016). There has been a significant decline in barriers to entry into the KFS, increased technological and innovative financial solutions and instruments target the low-income earners and expansive infrastructure across the country. Businesses, Small Medium Enterprises (SMEs henceforth), and individual start-ups have easy access to credit and this has resulted to increase in loan facilities from KES. 7.8 million to over KES 2.2 billion as at 2016.

Moreover, the KFS has seen increased commercial banks' payable tax, over 53,000 agent banks outlets, increased employment by the banking sector to over 33000 employees, increased number of depositors, increased use of technology by banks in provision of financial services, increased use of the mobile-money transfer by many low-income population, and increasing demand for credit bureaus to provide credit reports. Today, Kenya boasts of the most liberal financial system in East and Central Africa having a banked over 75.3% of the population as at 2016. This has been possible through mobile financial services.

Today Kenya has over 160,000 mobile agents, over 32 million customers, and over 456.7 million transactions valued at KES 1.2 trillion as at December 2016. This has grown businesses, increased economic activities and reduced poverty levels in Kenya.

Financial Stability Report (FSR), 2015, KFS has grown tremendously and has a significant contribution towards the overall Growth Domestic Product (GDP henceforth). As at December 2015, the KFS assets as a share of nominal GDP stood at 83.27%. The KFS has been resiliently stable supported by strong macroeconomic stability. The stability can be attributed to key financial reforms like the Microfinance Act (2006), that supported financial inclusivity, AML Act (2009) that came to support strengthen the stability and integrity of the KFS, as well as the National Payment System Act (2011) that was enacted to ensure safe and sound national payment system. The latest move by the government to amend the Banking Act (2016) and capping the interest rate 4% above the Central Bank Rate (CBR henceforth) has big met with mixed emotions with the opposers being banks who argue that this may bring rigidity in the KFS with low income earners with low credit worthiness being locked out in accessing credit. On the other hand, the proposers argues that this move would make credit easily accessible to all and reducing the actions by financial institutions to exorbitantly earn big spreads at the expense of poor Kenyan population. All the above show how the KFS has evolved and has changed for the better. Any actions to make it better and stable only lays a strong foundation to make the Kenyan economy a hub for all to thrive.

1.2 The Nairobi Securities Exchange (NSE)

Initially, NSE was an association of stockbrokers and helped in developing the securities market and regulating trading activities. It is officially registered under the Societies Act (1954). The Capital Markets Authority of Kenya (CMA henceforth), established in the year 1990 regulates NSE. Today, NSE is the biggest bourse East and Central Africa providing the biggest market for equity and bond securities. The sole reason of setting up CMA was to promote and spearhead the development of an organized and efficient capital market in Kenya. NSE market branches into the Main Investment Market Segment (MIMS), Alternate Investment Market Segment (AIMS) and Fixed Income Securities Market Segment (FISMS). MIMS represents the main market where quotations take place. AIMS provides alternative sources of capital to small, young and rising firms. FISMS provides a Standalone market for fixed income securities such as treasury bonds, corporate bonds, preference shares and debenture stocks. Overall, the key roles of NSE are encouraging savings and investments as

well as proving easy access to cost-friendly capital for both local and international investors by bringing together investors and borrowers.

Year 2014 saw NSE demutualise itself and now is as listed at the Nairobi Securities Exchange Ltd. NSE has 68 listed firms as at June 2017. The firms are distributed across 13 sectors namely Agricultural, Automobiles & Accessories, Banking, Commercial and Services, Construction and Allied, Energy and Petroleum, Insurance, Investment, Investment Services, Manufacturing and Allied, Telecommunication and Technology, Real Estate and Investment Trust, and Exchange Traded Fund(NSE, 2016).

In summary, NSE plays a vital role in the Kenyan economy by providing a platform where those with surplus capital can lend to those in deficit. This provides an avenue where debt securities trade takes place. Hence, a good platform to measure leverage (Ayot, 2013).

1.3 Problem Statement

Capital structure remains a key decision that every business must make Capital structure determines the returns of a firm to its shareholders as well the reason as to why a firm can withstand the storms from either a recession or depression. In seeking to explain capital structure, a few theories have been advanced, explained and tested. One of these theories is POT. According to POT, firms have a hierarchical financing preference where internal financing is preferred first, followed by debt and equity last.

POT has not been widely tested in Kenya. This makes many firms adopt haphazard capital structures without really caring why they do so. This study, through its findings, aimed at enlightening those at the helm of leadership in firms that hierarchy depicted by POT can be useful in a world of asymmetric information. Mostly, capital structure studies conducted in Kenya have focused more on factors that determine capital structure, financing behaviours and performance across different industries and sectors. Such studies include Kamere (1987), Omondi (1996), Kiogora (2000), Nyang'oro (2003), Ngugi (2008), Muema (2012) Leonard and Mwasa (2014), Githire and Muturi(2015) among others. Gachoki (2005) attempted empirical testing of the POT in Kenya but with key focus on the effect of profitability on capital structure. Gachoki took a panel of 1998 to 2003. Since, then no other study has studied POT in Kenya and yet much have changed and especially in Kenya's financial structure. For this, this remains a unique study.

1.4 Study Objectives

The general objective of this study was to investigate the extent to which the POT of capital structure provides a satisfactory account of the financing behaviour of publicly traded firms over the 2011 to 2016 period.

Specifically, the study sought to;

- i. Provide evidence on the broad patterns of financing activity in Kenya.
- ii. Examine a number of implications of the pecking order in the context of Kenyan listed firms.
- iii. Investigate whether the pecking order theory receives greater support among firms that face particularly severe adverse selection problems.

1.5 Significance of the Study

This study provides great empirical insights in testing POT theory in among the listed Kenyan firms and the findings and recommendations are useful to many parties. First, it will inform the investors on the general financing trend in Kenya and hence provide a good base for investment decisions. Based on the empirical evidence of the POT hierarchical financing, firm management will learn the key form of capital to consider first by comparing the weights of informational costs. Secondly, the study adds to the existing literature on the testing of the POT on both the developing and developed economies. Hence, will provide good reference to scholars with passion for capital structure and as far as Kenyan firms are concerned. . Finally, this study improves the work Gachoki (2005) who tried to test POT in Kenya by testing in a different longer period. Gachoki tested POT for period 1998-2003 but this study test 2011-2016. This means the findings of this study may have more relevance in the forever-changing Kenya financial sector.

1.6 The Scope and Organization of the Study

This paper focused on empirically testing the POT among the Kenyan firms listed with NSE and taking a panel of data between 2011 and 2016. From an initial list of 68 listed firms, the study dropped all banks because they are highly regulated and all other firms that had no data. Therefore, the analysis of this study is solely based on 37 firms that made it to the final sample. These firms were distributed across 8 sectors.

The rest of the study will have chapter 2 having a comprehensive literature reviews while chapter three will discuss the research methodology employed with a key focus on the Shyam-Sunders and Myers (1999) model of empirically testing the POT. Chapter 4 will present the empirical results of the model while chapter will give us the culmination of the study by presenting the policy implications of the study as shall be advised by the study findings.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed both theoretical and empirical literature on capital structure that includes relevance of capital structure, history of capital structure and the major focus shall be the evolution of the capital structure theories. Overview of The literature review that identifies the research gap concluded the chapter

2.2 Theoretical Literature

2.2.1 Relevance of Capital Structure

The term capital structure refers to the various ways in which a firm finances its investments and growth through optimal mix of debt and equity (Brigham, 2004). Capital structure may also mean a blend of different securities to finance business operations. Capital structure remains a key decision because it determines the financial performance of a firm (Abor, 2005). The main goal of optimal capital structure is to maximize the market value of a firm (Weston and Brigham, 1992). According to Brealey and Myers (2003), capital structure is a problem that is determined by the market. The biggest debate that has persisted even today—the big question is whether optimal capital structure exists and if it does, does it matter? Are there some capital structures that are better than others? (Maria & Demetrios, 2009).

The controversy on whether capital structure really matters came to life with the seminal working paper of Miller and Modigliani (1958) when they went against the traditional view of capital structure theorists. Kamere (1987) described the traditional views of capital structure as the views of the financial gurus before 1958. The traditional financial theorists asserted that optimal capital structure existed and that the value of the firm was well maximized when the cost of capital is minimized through careful use of debt as a source of finance. They believed that the value of the firm solely depended on its net operating income and the value of risk pegged to it. Hence, the optimal capital structure was the point where there was sagacious mix of debt and equity (Pandey, 1999).

Miller and Modigliani (1958) argued that the assertions of the traditional view of capital structure did not hold water. To them, capital structure was irrelevant and did not define the value of a firm. They believed that the value of the firm depended on the quality of investments undertaken. With assumptions of perfect capital markets, similar risks and no

taxes, Miller and Modigliani termed capital structure irrelevant. This was a big controversy and many scholars like Durand (1959) questioned the theory on the realms of how applicable arbitrage was as well as how the world was considered riskless yet as we know it, the world is full of myriads of risks.

Miller and Modigliani (1963) amended their theory and included taxes-interest on taxes was tax-shielded. Hence, firms would now employ debt more in their capital structure in order to get tax relief on interest on debt. The inclusion of debt within capital structure was to be faced by the risks of bankruptcy and high interest on debt, which increases as debt-equity ratio increases (Baxter, 1967). In addition, application of debt increases the variance of earnings and this means that investors ask for greater returns on their investments (Maria & Demetrios, 2009). This would only mean one thing; that firms would seek capital structure that maximizes tax benefits as result of use more debt while minimizing probability and possibility of bankruptcy costs. After all, a capital structure so good reduces the overall cost of capital.

Several studies have been conducted have confirmed existence of optimal financing through mix of equity and debt. Stiglitz (1972) cadenced that optimal structure was possible under certain assumptions but did not discount the ramifications of bankruptcy especially on the value of the firm. Kraus and Litzenberger (1973), who highlighted corporate taxes and bankruptcy penalties in their optimal capital structure model, echoed the same. Brennan and Schwartz (1978) also clarified that the eminence of bankruptcy costs brought in a lot of uncertainty in accrual of tax savings and this led to optimal capital structure.

Concisely, determination of optimal capital structure remains a key decision that managers of firms must make. Hence, a very relevant and crucial point that must be taken if growth and profitability of business is something to go by. The next section discusses the evolution of capital structure through theories that have been advanced to try to elucidate the importance of capital structure.

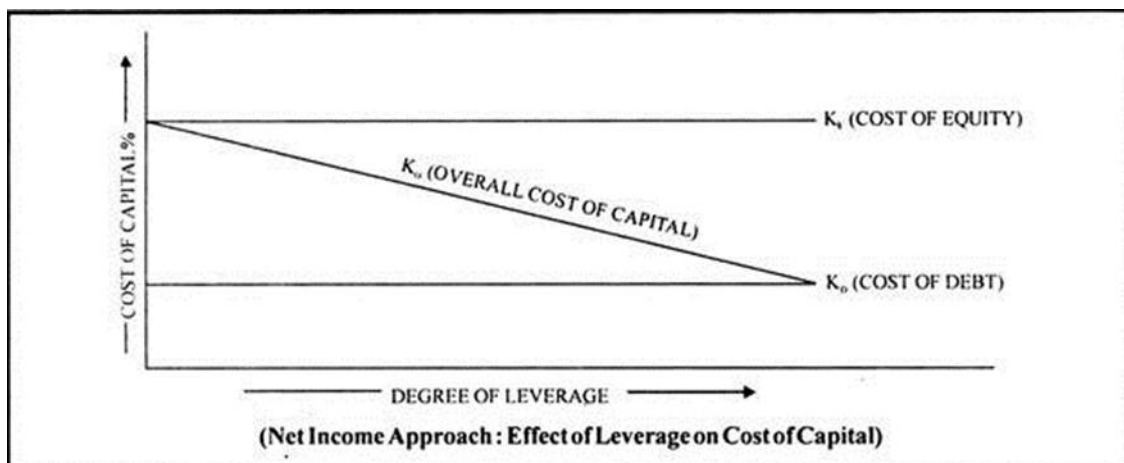
2.2.2 The History of Capital Structure

The capital structure puzzle has been evolving over time and there are theories that seem to offer optimal solutions.

The Traditional Theories of Capital Structure

The traditional capital structure theories include the Net Income Approach (henceforth NIA), Net Operating Income Approach (henceforth NOIA) and the Traditional Approach (henceforth TA). According to the NIA, the costs of using debt and equity remain unchanged with the variation of debt-equity ratio (Durand, 1952). This lucidly means that the average cost of capital declines as debt-equity ratio increases as well as the value of the firm increases. The NIA is illustrated in Figure 1 below.

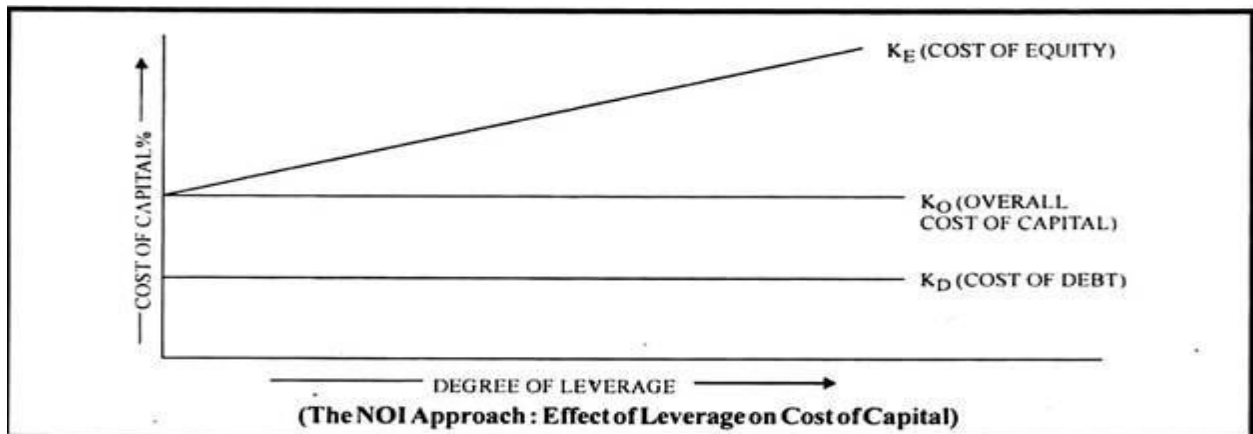
Figure 1: Net Income Approach-Effect of Leverage on Cost of Capital.



Source: *Wikipedia*

From the above diagram, it is vivid that as the degree of leverage increases, the overall cost of capital decreases, because debt increases with capital structure. The NIA is however flawed and has no basis in reality. This is because the optimum capital structure under NIA would be 100% debt financing and this is rarely the case. On the other hand, NOIA asserted that the value of a firm and the capital cost are not related to capital structure (Keshar, 2004). Hence, the firm cannot alter its value even through a judicious mix of debt and equity. Figure 2, shown below, shows this.

Figure 2: The Net Operating Income Approach- Effect of Leverage on the Cost

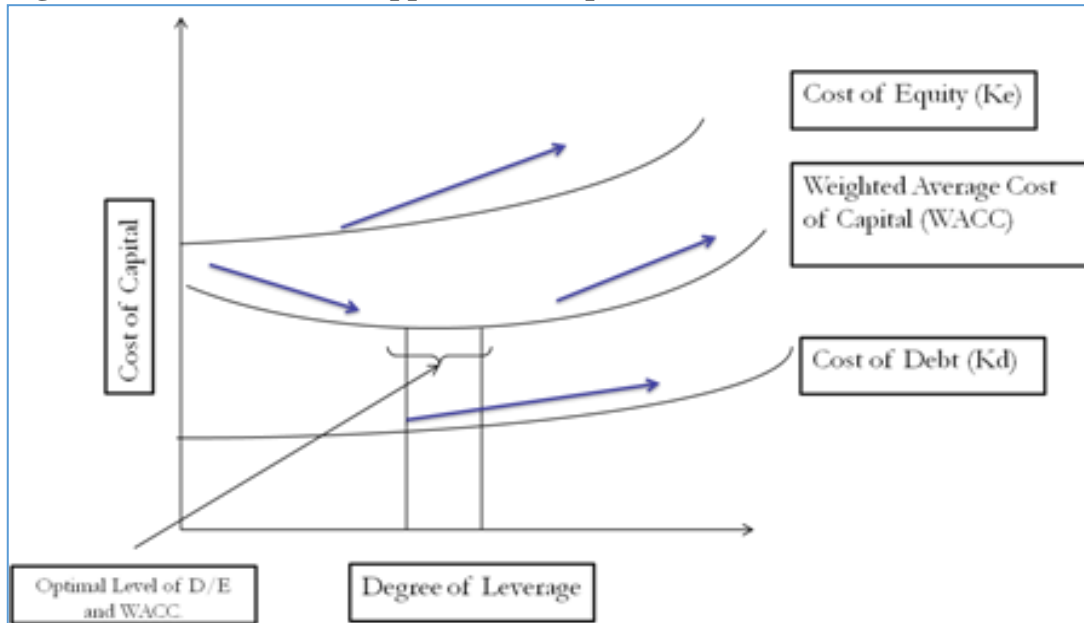


Source: Wikipedia

According to the above diagram, the overall cost of capital is constant at all levels of degree of leverage and hence the divide between equity and debt is irrelevant. On this regard, the rise in the use of debt is off-set by the escalation in the capitalization rate. This happens majorly because investors in shares in a firm seek a higher compensation as they are exposed to greater risk because of increase in the degree of leverage. Hence, according to the NOIA, the market value of a firm solely depends on the net operating income and business risk (Durand, 1959).

The TA is attributed to Solomon who developed it as an intermediate approach in 1963. According to the TA, the value of the firm increases with leverage up to a certain definite point, then remains constant with moderate use of leverage and finally falls (Solomon, 1963). This is illustrated in Figure 3 below. Hence, the main thesis of TA is that the cost of capital is dependent on capital structure and overall, there exists an optimal capital structure. The TA was had been supported by Staking and Babbel (1955) as their findings showed that the market value of equity at first grows and later goes down as leverage increases.

Figure 3: The Traditional Approach to Capital Structure



Source: *Wikipedia*

The traditional view of capital structure has highly been criticized especially based on the shape of the cost of capital curve (Gachoki, 2005). Some have viewed the shape as V-shaped insinuating that there is an exact solution to capital structure. Others have viewed the curve as U-shaped indicating a range of degrees of leverage. The traditional view also had different view on the shape of the equity function. Some considered it horizontal while others saw it as a function that rises slightly slowly at first and then at a fast rate later (Pandey, 1999). Overall, those who are of the traditional view have one great point of concession that as debt increases cost of capital decreases.

In addition, the premise that the market value of the firm depends on the net operating income and risk attached to it has been questioned. Brealey and Myers (1998) argue the desired form of financing does not change the net operating income or even the risk but only affects the manner in which income is distributed between those who hold shares and those who hold debt. Miller and Modigliani (1958) also were against the point that the cost of equity remains unaffected by degrees of leverage up to some point.

However, according to Omondi (1996) the traditional view has led to critical thinking and have been pivotal to evolution of new ways of looking at capital structure, a good example being signalling theory by Ross (1977) and agency cost theory by Jensen (1976). In summary, despite the various challenges, the traditional view of capital structure has greatly

contributed to the continuing debate whether real optimal capital structure exists (Gachoki, 2005).

The Modern Theories of Capital Structure

The year 1958 marked a new epoch when Miller and Modigliani (henceforth M&M), highly criticized the traditional views of capital structure and actually termed them as incorrect. A new modern error of capital structure theories was to begin with their highly regarded paper of 1958. Discussed below are the modern theories of capital structure.

The Irrelevance Theorem

M&M (1958) attacked the traditional view of capital structure by offering a justification for having the cost of capital remain constant at all degrees of leverage. They agreed with the net operating income approach (Keshar, 2004). In their contention, they put forward their first proposition that the value of the firm was independent of its capital structure or financing decision. That is, the value of the firm is not affected by debt-equity ratio (Agha et al, 2013). This proposition is considered as the initial theory about capital structure according to Hashemi and Shivaraj (2014). In addition, they considered the value of the firm as the discounted free cash flows until that point that is present with related rate of return that was commensurate with the risk class.

According Gordon (1989), capital structure irrelevance theorem was applicable under certain restrictive assumptions that he termed as perfect markets. Actually according to Agha et al (2013), they described their assumptions as hardly true in the real world. The assumptions include; capital markets are ideal without transaction and bankruptcy costs; there exists no different classes of risk; corporate tax is the only tax that matters; all cash flows are considered perpetuities; no information asymmetry; managers work towards maximizing shareholders' wealth and that firms have only two sources of capital to finance their operations(risky equity and riskless debt). These assumptions evoked many criticisms towards the M&M (1958) theorem. The existence of market imperfections led to further research on their position.

Durand (1959) reacted to M&M irrelevance theory when he candidly questioned arbitrage and how applicable it was. It was at that point that M&M (1963) revised their initial hypothesis and relaxed the assumption of no taxes. They went on to explain that levered firms

would have a higher value than unlevered firms would. This was because debt was a tax deductible and this was a good shield to the levered firms. In this work, the value of the firm now became a function of leverage and the tax rate. Hence, firms could now maximize their value through use of more debt (Abor, 2005).

On the other hand, M&M had overlooked personal taxes. Miller believed that MM's original proposition was actually valid in a world of corporate and personal taxes. It was for this reason that Miller (1977), on his own, introduced a model that would clearly capture how changes in leverage affects a firm's value when personal and corporate taxes are factored in. In fact, things become a bit complex when non-debt tax shield come into play (DeAngelo & Masulis, 1980). He concluded that both personal and corporate taxes capital structure decisions by a firm are irrelevant. That is, in a situation where a market equilibrium exists, personal taxes effects (Van Horne, 1997) cancel out merits by corporate taxes. Taggart (1980) did extrapolate Miller's findings through use of imperfect and incomplete capital markets and specific costs associated with corporate debt. He found that Miller's findings could actually be true to the level that tax savings from corporate debt were perceived as less valuable than before. In addition, all equity based capital structures were considered very rational especially to a few group of firms (Gachoki, 2005).

This theorem had its fair share of shortcomings. This theorem is only valid if the perfect capital market assumptions, which underlie its analysis, hold. Any relaxation of those assumptions invalidates the theorem. In fact, the real world we live in is furnished with imperfections like taxes, bankruptcy costs, agency costs, information asymmetries, and such anomalies have been the pedestal upon which many studies and theories have evolved. M&M theory advocates for exclusive application of debt but in reality, this may not always be the case because an increase in leverage increases the cost of debt. Hence, firms can always use debt solely. But all must agree that more current theories on capital structure owes a lot to the path-breaking work of M&M (1958) that laid the foundation of capital structure.

Agency Cost Theory

This theory is credited to Jensen and Meckling (1976). They first came up with the concept of agency costs. According to them, any capital structure models, that skipped to address the issue of agency costs, were considered incomplete. According to this theory, there exists two conflicts of interests. One, conflict between managers and shareholders and two, conflict

between shareholders and managers. This theory does put into account that the interests of managers and the shareholders may not always coincide. This means that managers may make financial decisions that may not always be optimal to the shareholders. The big question is thus, how can these conflicts between managers and shareholders be minimized and arbitrated? Theory does advocate use of tools such a compensation contracts, managerial investment in equity, and strict monitoring by the board of directors and key shareholders (Mehran, 1992). However, the monitoring and controlling is very expensive (Hashemi & Shivaraj, 2014). Control is vital as it helps to minimize the opportunistic behaviour by the agent. When these two conflicts are harmonized, then optimal capital structure is determined and this allows maximization of the value of the firm.

Gordon Donaldson (1984) while studying 12 large Fortune 500 firms came to a succinct conclusion that managers of the firms were more inclined to maximization of corporate wealth and not towards the maximization of the value of the firm. Michael C. Jensen (1986) noted that managers do have the ability to grow their firms beyond the optimal size. By doing so, they get more power through increase in resources under their disposal management. This in return increases their compensation as compensation is directly related to growth in the amount of revenue (Murphy, 1985). In addition, managers could be given incentives to work harder, in the interest of the shareholders, through designed contracts that compensates them by the value of a firm's shares. At this point, an agency problem arises, as now the manager owns a fraction of the firm. This may partially introduce inefficacy as managers no longer work as hard as before. This causes a conflict between the managers and the shareholders.

Therefore, the agency theory does offer solution to this conflict by advocating use of debt. Indebtedness instils managerial discipline as there has to be regular payment of interests and this acts a good controlling policy to manage investments by managers. Failure to pay the interest rates may come with severe bankruptcy costs and no managers want to lender a firm bankrupt and lose their personal reputation. The use of debt also is a good yardstick for shareholders to discipline their agents. On the other side, the use of debt comes with demerits. Shareholders may end up giving up projects that have positive Net Present Value (NPV). In addition, use of debt can prompt shareholders to invest in very risky projects and finally in it is expensive for shareholders to monitor the kind of debt employed by their agents. Hence, to be able to maximize the value of a firm, there is need to resolve these conflicts and according

Jensen and Meckling (1976), this is the point where the marginal of costs of debt and benefits of debts are equal

The Signalling Theory

This theory is credited to Ross (1977) who thought that, if managers have inside information concerning a firm, then the choice of their capital structure would signal crucial information in the market. The key premise was that debt can be used as an expensive signal to differentiate firms when it comes to obtaining financial leverage. Hence, according to this theory capital structure itself is a signal. Increases in the use of debt is considered a positive signal that managers are seeing a bright future ahead. While issuing equity sends a negative signal that managers are not positive about the future. Therefore, there exists great cost of information asymmetry that consequently influences capital structure.

Signalling can be an expensive venture according to Spence (1973), Leland and Pyle (1977), Ross (1977) and Talmor (1981). It is expensive if either a lot of resources are used to generate it or it leads to loss of welfare especially when resources are distributed unequally. On the other hand, Bhattacharya and Heinkel (1982), Rennan and Kraus (1984) also posit that signalling can be costless if generation of such signals does not lead to welfare loss and the firm benefits from the use such signals through improved stock prices and hence firm's value.

The Trade-Off Theory

Myers (1984) explained that firms behave in such a way that they compare the costs and benefits from the use of debt. The benefit of using debt is the tax deductibility of interest while the cost of debt is the financial distress from bankruptcy and the agency costs that may result between owner and financial investors (Mira, Francisco & Jose, 2003). In support of the trade-off models, DeAngelo and Masulis (1980) asserted that firms' quest for optimal capital structure is only achieved when there is a balance between the benefits and costs of using debt as a financing option. Kraus and Litzenberger (1973) also posit that optimal leverage is a clear picture of the trade-off existing between tax benefits of debt and deadweight bankruptcy costs. Hence, optimal capital structure would be achieved when there is a balance between interest tax shields and bankruptcy costs (Ayot, 2013).

This theory suggests existence of target capital structure that maximizes the value of the firm (Abdeljawad et al, 2013). Firms have capital leverage target and they adjust over time

towards that (Carmen and Joseph, 2009). This adjustment process is estimated using standard partial adjustment models where changes in debts are monitored over time. However, Myers (1984) is quick to point out that adverse selection has a domino-effect on factors that determine optimal leverage within the trade-off theory. In fact, this is in tandem with Fischer, Heinkel, and Zechner (1989) and Leland (1994, 1998) who all found out that market imperfection can derail firms from the target leverage. These deviations may be prompted by the need by business managers either to take advantage of the market equity conditions or to evade information asymmetry frictions.

The TOT can further be broken into Static and dynamic trade-off. According to the static TOT, firms' optimal capital structures emanate from trading-off costs against the benefits of using debt and equity. Other costs stemming from the use of debt and equity are agency costs. These costs are as result of asymmetric information and lack of harmony of interests amongst different stakeholders of the firms (Jensen and Meckling, 1976; and Jensen, 1986). Dynamic trade-off theory explains that firms allow their debt ratios to fluctuate within the optimal region (Dudley, 2017).

The TOT considerations of cost and benefits of using debt are vital in capital structure. This is important to firms as they structure their finances to weigh the costs and benefits of using debt and equity. On the other side, the TOT not put into consideration information asymmetry (Shahar et al, 2015). The theory cannot also explain the negative relationship between leverage and profitability as well as the conservative nature of using debt by many businesses. Overall, TOT is among the best theories of capital structure.

The Pecking Order Theory

Unlike the trade-off the trade-off theory, the POT postulates that there is no target capital structure. According to Myers (1984), Myers and Majluf (1984) and Shyam-Sunder and Myers (1999), firms have a hierarchy and preferences in financing. They observed that, firms preferred internal funds first, then debt and final resort being equity to finance their operations. According to this theory, the managements of firms make financial decisions that causes them the least difficulties. This theory takes a behavioural approach in explaining capital structure (Abdikadir, 2015). This kind of behaviour is informed by the presence of costs of new equity issues in the world of asymmetric information (Donaldson, 1961). According to Akerlof (1970), the costs associated with asymmetric information are a true

reflection of the “Lemon Premium” that investors may demand to compensate for the risk they take to invest in a firm in the event of failure of such firm. Hence, if firms used retained earnings to finance, new investments, this would provide a solution to the information asymmetries (Myers and Majluf, 1984). Therefore, the POT remains internal funds first, safe debt, risky debt and finally equity (Mania and Ismael, 2014).

Moreover, the POT asserts a negative relationship between leverage and profitability. This means that profitable firms always preferred less leverage and instead used their retained earnings. Various works of Titman and Wessels (1988), Rajan, have supported this as well as Zingales (1995), Antonio et al (2002) and Bevan and Danbolt (2002) who carried out these studies in developed countries. In developing countries, Booth et al (2001), Pandey (2001), Um (2001), Chen (2004) all find a negative relationship between profitability and leverage. Therefore, one can correctly conclude that profitable firms prefer retained earnings first, then debt and equity as their last option (Irina and Maria, 2007).

This theory forms the basis for this paper. Following Shyam-Sunder et al (1999) and Adedeji (2002) models, it is easier to estimate this theory in Kenyan context. This is because their models present a clear research methodology and the fact that Adedeji (2002) work was improving Shyam-Sunder and Myers (1999) work. This paper endeavours to see if the firms in Kenya follow the POT.

POT has been criticized for not being able to show first-class order importance in determining firm’s optimal capital structure although some authors have credited it as being closer to approximating reality. Goyal and Frank find that POT fails in cases of small and high-growth firms that suffer information asymmetry a lot. However, Chan and Song try to counteract this position by asserting that small and high growth firms tend issue equity due to the financial constraints that they face and not contradicting the POT. Moreover, Fama, French, and Shyam-Sunder support POT by saying that the POT than trade-off theory explains some features of the data better.

Market-Timing Theory

Baker and Wurgler (2002) observed that firms do time the perfect time to invite the public to subscribe to their stocks. According to this theory, stocks are issued when they are undervalued and bought back when they are overvalued (Ayot, 2013). This clearly depicts that the pricing of the stocks do affect the way firms structure their capital. Hence, this theory

is vital in observing the performance of firms during the period of putting their finances in order Rehman et al. (2014). This theory has two views of capital structure. Firstly, that is that economic agents are rational (Myers and Majluf, 1984). This means that managers issue stocks when there is good information going around and this reduces information asymmetry between firm managers and stockholders. This in return raises share prices. Secondly, Baker and Wurgler (2002) assumed the economic agents to be irrational being. This would then mean variations in the stock prices. Therefore, managers would issue stocks when during low costs and repurchase then during high cost periods. Many evidences have supported this theory especially where managers are strategic and time when it is favourable to issue stocks to the public. However, studies in this area lack theoretical models to elucidate their positions. There are claims that many authors have different perceptions of market timing really means.

2.3 Empirical Literature Review

The root of capital structure dates back in 1958 with MM's position that the value of a firm is independent of capital structure. In short, capital structure was irrelevant. This would later change in 1963 when M&M corrected their contention that capital structure did not matter. This time, they incorporated debt that brought in tax implications and hence affected the value and performance of the firm (Ukaegbu, 2015). Durand (1959) questioned how applicable arbitrage was and termed the assumptions made by M&M as unrealistic. However, as alluded to by Muriu (2015), increasing the use of debt monotonically would result to increased bankruptcy costs and mostly when a firm's profits are low and cyclical. With later evolution of the trade-off proponents, the academic discourse shifted from the static to dynamic trade-off propositions and this provided a foundation for the POT as well known today.

The TOT and the POT theories have been tested under both the developed and developing economies. Some of the studies that have tested these theories include Jiran et al. (2012) who tested the POT and TOT in Pakistan using non-financial firms using panel-data regression analysis for period 2001 to 2008. They found that firms in Pakistan follow the POT. Matemilola et al. (2012) also tested the TOT against the POT in a nested model-using panel, Generalized Method of Moment (GMM) estimation techniques in South Africa. Results from the GMM indicated that fixed assets and profits are key determinants of capital structure. From the empirical results, it was established that the TOT and POT were compatible in a

nested model. Ramjee (2012) using a sample of 178 firms listed with JSE estimated a target adjustment model using a generalized method of moments technique to determine the cost and speed of adjustment towards a target debt ratio. The study found that firms in South Africa follow both the TOT and POT in determining capital structure. Chen and Jung studied how POT explains capital structure in Taiwan. They investigated POT using 305 Taiwan electronic companies quoted in the Taiwan Stock Exchange (TSE) of 2009. They used hierarchical regression model of estimation. They found that profitability and firm growth rate to be key determinants of capital structure with profitability having a negative relationship with capital structure and growth rate a positive relationship. This study aims to test the POT in the Kenyan firms' context.

Recent empirical studies have also focused on testing determinants of capital structure. Some have focused on country specific factors like China (Chen, 2004), South Africa (Negash, 2002), Zimbabwe, (Green and Mutenheri, 2002) Kenya, (Ngugi, 2008; Nyang'oro, 2003) and Ghana, (Abor and Biekpe, 2005) while some have focused on developed economies like and with focus to Africa like De jong et al. (2008). Booth et al (2001) did a cross-country study on determinants of capital structure and found that similar factors affect the capital structure choices in developing and developed countries. The only variance being the manner in which country specific factors affected debt ratios. The key determinants that have been tested over the years include asset tangibility, profitability, firm size and growth, business risk, management composition, tax rate, among others. This study aims at refining these studies by including other macroeconomic factors like interest rates by testing the Shyam-Sunder and Myer's (1999) model in the Kenyan context.

Myers and Majluf (1984) assumed that managers always have inside information about the value of the firm and always act in the interest of shareholders. Therefore, the POT model predicts that firms prefer internal funds to external funds, and prefer safer securities to risky ones in raising capital leverage (Ukaegbu, 2015). The study of POT has taken center stage in many studies trying to test capital structure theories. This section endeavored to review the most recent and pertinent studies that have POT as the main theory and especially in the Kenyan context using firms listed with the NSE for the period 2011-2016.

The POT theorists Myers (1984), Myers and Majluf (1984), Shyam-Sunder and Myers (1999) agreed that firms preferred internal sources of finance that had the lowest cost of information asymmetry, then debt and later equity that had the highest cost of information asymmetry.

Big profitable firms have been found to prefer less of debt and hence the negative relationship between leverage and profitability (Kester, 1986; Harris and Raviv, 1991; Rajan and Zingales, 1995; Albert and Addie, 2002). They all found out that institutions do follow POT. The cost gap between internal and external sources of finance explains these preferences (Yegon et. al., 2014).

In Australia, Allen (1991) tested the financial perceptions of the managers on capital structure decisions. Field interviews were conducted on secretaries and senior financial offices for 48 listed firms. The results indicated that firms in Australia follow the POT especially with funding sources. Titman and Wessels (1988) using data from US for period 1974 to 1982 investigated what determines leverage choices and they established that debt was negatively related to the sector a business was. This coincided with what Wessels (1984) put across- that firms can charge customers highly when the liquidation is deemed to have lower debt ratios. In short, they all explained that transaction costs is an important determinant of capital structure choice.

There are a few studies in Kenya on capital structure. Most vital studies include Omondi (1996), Kamere (1997), and Odinga (2003). These studies focused on the determinants of capital structure. Omondi (1996) found that firms with high-income returns had used more debt. Kiogora (2000), on the other hand found a negative relationship between firm leverage and income returns and this was in tandem with the POT. Gachoki (2005), concluded that Kenyan firms did not follow the pecking order for the period 2008-2003. He focused on 31 firms that had been listed with NSE then and the sample may have been too small to elicit any statistical significance. This is one thing, which this study aimed at improving on by taking 37 firms. Ngugi (2008) supported a pecking order model that incorporated a speed of adjustment and in the study, non-debt tax shields, asymmetric information, and local capital market infrastructure greatly influenced financing behaviours.

Firms are under pressure to look for capital to fund their growing investment portfolios (Um 2001). In this regard, they are likely to run out of retained earnings and result to debt. This clearly conforms to the POT. Hence, a positive relationship exists between firms' growth and leverage. This is also what Pandey (2001) finds in Malaysia. Pettit and Singer (2005) also found that POT was relevant for firms in the manufacturing sector because the cost of internal financing was higher for them than for large firms.

Using Swiss Data, Drobetz and Fix (2003), tested TOT and the POT predictions. Their analysis contradicted the TOT. They found that profitable Swiss firms used less debt agreeing with the POT. They also found that capital leverage was intimately related to asset tangibility and earnings' volatility. Testing a dynamic panel model, it was established that Swiss firms had a target leverage ratio.

In Malaysia, Pandey (2004), set out to study the relationship existing between leverage and market structure using a sample of 208 companies between years 1994 and 2000. The study used Tobin's Q to measure market power and leverage and established a saucer shaped relationship between leverage and profitability occasioned by interlink play between cost external and internal finances as well as the debt tax shields.

While studying determinants of capital structure for Ghanaian firms (Abor 2008) noted that quoted and unquoted firms had larger debt ratios than the SMEs. This confirms the POT that large firms are likely to use more debt. The study also found that firm size, asset structure, profitability and management structure are key determinants of capital structure decisions in Ghana. POT was found to be the dominant theory in explaining capital structure theory in Ghana.

Firms in South Africa adjust fast towards target debt ratios Using 178 firms listed on the Johannesburg Stock Exchange (JSE henceforth) for the period 1998-2008, (Ramjee, 2012) established that asset tangibility, growth, size and risk are positively related to leverage, while profitability and tax are negatively related to capital leverage. Moreover, , large firms with greater proportion of tangible assets had higher debt ratios, more profitable firms operated at lower levels of leverage, bigger firms operated at higher levels leverage, and that fast growing firms prefer debt to equity when raising their capital The study also found that when firms require finance, they prefer internal to external sources of finance-to-finance their operations. These results indicated that listed firms at JSE follow the POT and TOT in making their financial decisions.

While investigating the determinants of capital structure in Kenya and the effect of corporate tax, Nyang'oro (2013) found that debt ratios were non-linear. This meant that the magnitude and significance of the capital structure determinants varied depending on the ratio of the debts that firms held. The study found size of the firm, asset tangibility and profitability to have significant effects on leverage and growth opportunities of firms completely

insignificant. The study established that debt ratios would rise for firms at lower debt quantiles following an increase in the tax rate. The study concluded that the nature and amount of debt held by firms in Kenya was determined by specific firm characteristics.

In addition, in Kuwait, Gharaibeh (2015) used a sample of 49 companies both in industrial and service industries to investigate the determinants of capital structure. The study was conducted for the period 2009 to 2013 and applied multiple regression using Ordinary Least Squares (Henceforth OLS). The study results indicated that growth opportunity, firms' age, liquidity, profitability, size, tangibility, and industry type have statistically significant relationship with firm's choice of leverage. Moreover, the study established that that firm's age, growth opportunities, liquidity, profitability, firm's size, tangibility, and type of industry are key determinants of capital structure of firms listed in Kuwaiti stock exchange (KSE) between 2009 and 2013.

In studying the effect of capital structure on the financial performance of Small and Medium Enterprises (SMEs henceforth), Mirie and Birundu(2015) and using multiple linear regression, found out that capital structure, asset turnover and tangibility had no significant effect on the financial performance of SMEs. Hence, other factors could affect financial performance of these SMEs. They also found a no-existence relationship between Return on Asset (ROA henceforth) and capital structure and this is consistent with the POT which asserts of non-existence of target capital structure.

According to Nyamasege et al. (2014), firms with large capital base had an easier time in accessing debt and any form of collateral in the form of tangible assets raised the lenders trust on providing credit. This was in agreement with studies by Rajan and Zingales (1995), Krempt et al.(1999), Frank and Goyal (2002), Frankling and Muthusamy (2011), Ramjee and Gwatidzo(2012), and Yadav(2014) that all found that asset tangibility was positively related to capital structure.

While studying the determinants of capital structure of internet service providers in Kenya, Njoroge and Nasieku (2016) established that firm growth, tangibility of assets, profitability and liquidity had a significant effect on levels of leverage. They found growth of the firm, profitability and asset tangibility to have a positive relationship with leverage while liquidity and size of the firm had a negative relationship with debt. The findings of this study was consistent with Panno (2003), Eriotis et al. (2009), Sheikh, and Wang (2011). Moreover,

Sheikh and Wang (2011), Ukaegbu and Oino (2013), found negative relationship between capital structure and liquidity, which confirmed the postulates of the POT that firms prefer internal financing to external financing while making capital structure decisions.

In empirically testing the POT theory, Shyam-Sundars and Myers (1999) laid a strong foundation. However, their inferences evoked many criticisms. Chirinko and Singha (2000) criticized the modelling and inferences by saying that the assumption that the slope coefficient was close to one was neither a necessary nor a sufficient condition to validate the POT. Also, Murray and Vidham (2002) tests using NYSE (New York Stock Exchange henceforth) US firms listed between years 1971 and 1998 found that firms actually employed equity more than debt hence contradicting POT. This was in line with what Graham (2000) had found.

Others studies by Fama and French (2002), Frank and Goyal (2003), Fama and French (2005), and Leary and Roberts (2007), question the ability of POT to explain financing decisions. Frank and Goyal (2003) make conclusions that the model by Shyam-Sundars and Myers (1999) fail to hold for small-high-growth firms as these firms issue a lot equity than debt. Fama, French (2005) supported their position, and this contradicts the POT. Lemmon and Zender (2008), through controlling debt capacities of the firms, find that the POT holds.

Harris and Raviv (1991) talk about the conventional set of factors that determine leverage and later Rajan and Zingales (1995) formulated the cross-sectional model, which Frank and Goyal (2002) used in their study. Frank and Goyal (2003) considers omitting variables that determine leverage a great mistake in estimating the pecking order model. However, this study only focused on the POT model as defined by changes in financial deficit.

2.4 Overview of Literature

From the reviewed literature, it is evident that capital structure is an important field that has evoked different theories. However, no theory has managed to define optimum capital structure single-handedly. This only means that studies around capital structure will continue to evolve and with divergent views on what explains the different capital structure adopted by firms in their financing strategies.

From the above review, key focus was on reviewing studies conducted in both developed and developing economies with key focus on conclusions made based on the POT. Key

outstanding studies conducted around testing the POT included Frank and Goyal (2002) in USA, Gachoki (2005) in Kenya, Christian and Marcel (2006) using 77 countries distributed across the world and Kenya included, Ukaegbu (2009) in Nigeria, and Ntongwa (2012) in Tanzania among others. The above studies have different conclusions on POT. This means that testing POT across economies is of interest. In summary, many have concluded that POT is strong in explaining hierarchy of financing adopted by firms across economies.

This goal of this study was to test POT among Kenyan firms. From the empirical studies reviewed above, this study borrowed much on different models tested across economies and leverage mostly on the fact few testing have been on the Kenyan firms. This is a key motivation for this study. Gachoki (2005) last tested POT in Kenya and since then, many others studies have focused on determinants of capital structure and performance. Furthermore, he only used a panel of data between 1998 and 2003. This study aims to stretch period of study by taking a panel of 2011-2016. During this period, a lot has changed in Kenyan financial sector. Key changes include increased financial liberalization and capping of interest rates. Therefore, it will be interesting to test POT and see if it stands its initial hypothesis. Moreover, it was also clear that majority of the studies have conducted descriptive and regression analysis using GMM among other modelling techniques. This study will be different and will be modelled using Shyam-Sunder and Myer's (1999) model.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter outlines the research methodology taken by the study. The chapter begins by describing the theoretical framework of the study. The next sub-section describes empirical model. Definition and measurement of variables follows in the subsequent sub-section followed by econometric approach and sources of data respectively.

3.1 Theoretical framework

According to Shyam-Sunder and Myers (1999), firms prefer internal financing first to external finances. Firms use retained earnings first and then debt and equity in that order. This defines a hierarchy of financing in capital structure. They based their model on two assumptions. First, the existence of internal financing deficit determined the amount of debt financing a firm opted for. Thus, internal finance deficit gap determined the amount of debt to fill this gap (Ngugi, 2008). Secondly, they assumed that the amount of debt used to fill the internal finance deficit gap should also minimize the costs of information asymmetry. Hence, if POT applies, the optimal level of debt applied is solely because of the existing internal financing deficit.

Moreover, the capital markets like the NSE have so much information asymmetries and this determine the different factors that determine capital structure modules adopted by firms (Stiglitz, 1998).

The study focused on testing the validity of the following hypothesis:

H₀: Firms listed with NSE do not follow POT in making the capital structure decisions

H₁: Firms listed with NSE follow POT in making the capital structure decisions

Shyam-Sunders and Myers (1999) came up with a simple regression model. In this model, they believed that net debt issue (ΔD_{it}) and financial deficit (DEF_{it}) had a positive relationship as illustrated by equation 1, which represents the pecking-order model.

$$\Delta D_{it} = \alpha + \beta_1 DEF_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

Where α and β_1 are constant parameters. From equation 1, β_1 represents the POT coefficient, ε_{it} is the error term, while the subscripts i and t represents firm's number and time respectively.

For POT to strictly apply $\beta_1 = 1$ and $\alpha = 0$. This implies that the amount of debt issued by a firm is equivalent to the existing deficit gap.

Shyam-Sunders and Myers (1999) alluded that the following simple aggregated model defines the financial deficit (Khan et al, 2015).

$$DEF_{it} = DIV_{it} + I_{it} + \Delta WC_{it} + R_{it} - CF_{it} = \Delta D_{it} + \Delta E_{it} \dots \dots \dots (2)$$

Where;

DIV_{it} : Cash dividends for firm i in year t

I_{it} : Net investment for firm i in year t (i.e. I_{it} = capital expenditures + increase in investments + acquisitions + other use of funds – sale of PPE – sale of investments). This referred to as capital expenditure in the existing literature.

ΔWC_{it} : Change in working capital for firm i in year t (ΔWC_{it} = change in operation working capital + change in cash and cash equivalents + change in current debt)

R_{it} : Current portion of long-term debt firm i in year t

CF_{it} : Cash flow after interest and taxes for firm i in year t (CF_{it} = income before extraordinary items + depreciation and amortization + extraordinary items and discontinued operations + deferred taxes + equity in net loss – earnings + other funds from operations + gain (loss) from sales of PPE and other investments).

ΔD_{it} : Net debt issued for firm i in year t (ΔD_{it} = long-term debt issuance - long-term debt reduction)

ΔE_{it} : Net equity issued firm i in year t (ΔE_{it} =common stock sales-stock repurchases)

Frank and Goyal (2002) modified equation 2 as follows:

$$DEF_{it} = DIV_{it} + I_{it} + \Delta WC_{it} - CF_{it} = \Delta D_{it} + \Delta E_{it} \dots \dots \dots (3)$$

Where, they omitted the current portion of long-term debt (R_{it}) variable which empirically according to them, had no significant effect on the overall results (Liu, 2013). This represents the disaggregated model.

3.2 Empirical Model

This study used the Shyam-Sunders and Myers (1999) aggregated model to test POT among firms in Kenya.

The simple POT regression model depicted in equation 4 below will be tested. The main aim will be to test if a change in internal financial deficits implies net debt issues.

$$\Delta D_{it} = \alpha + \beta_1 DEF_{it} + \varepsilon_{it} \dots \dots \dots (4)$$

First, the study defines what constitutes the internal financial deficit for NSE listed firms that qualify to be in the sample for the period 2011-2106 for each year. The above model is meant to explain the changes in both debt issues and internal financial deficits.

$$DEF_{it} = DIV_{it} + I_{it} + \Delta WC_{it} - CF_{it} = \Delta D_{it} + \Delta E_{it} \dots \dots \dots (5)$$

From the above equation, computing average internal deficit figures for each individual firms was possible using the below model where n is the number of years (Gachoki, 2005).

$$DEF_{it} = \frac{\sum_{i=1}^n DEF_{it}}{n} \dots \dots \dots (6)$$

Computing average net debt issues, we get:

$$\Delta D_{it} = \frac{\sum_{i=1}^n \Delta D_{it}}{n} \dots \dots \dots (7)$$

Similarly, we can get net equity issues as below:

$$\Delta E_{it} = \frac{\sum_{i=1}^n \Delta E_{it}}{n} \dots\dots\dots (8)$$

Hence, the POT regression model now looks like this:

$$\frac{\sum_{i=1}^n \Delta D_{it}}{n} = \alpha + \beta_1 \frac{\sum_{i=1}^n DEF_{it}}{n} + \varepsilon_{it} \dots\dots\dots (9)$$

The model in equation 9 was regressed and tested for significance. If POT holds, then $\alpha=0$ and $\beta_1=1$. Otherwise, POT will be in question in explaining capital structure of firms listed with NSE between 2011 and 2016.

Since DEF helps to define ΔD , then the following equation 10 is defined.

$$\Delta D_{it} = \alpha + b_1 DIV_{it} + b_2 I_{it} + b_3 \Delta W_{it} - b_4 \Delta C_{it} + \varepsilon_{it} \dots\dots\dots (10)$$

Under the POT, all other factors constant, and change in DEF means an exact change in ΔD .

Therefore, $b_1 = b_2 = b_3 = b_4 = 1$ in this study aimed at establishing if this will hold for Kenyan firms. See results presented in table 5 chapter 4.

3.3 Definition and Measurement of Variables

This study derived its data from annual reports, financial and cash flow statements of all firms that consistently traded with NSE for period 2011-2016. Then, the definitions were derived from corporate and financial investment field.

The dependent variables are ΔD_{it} and DEF_{it} which are defined in models 11 and 12 below.

$$\Delta D_{it} = \alpha + \beta_1 DEF_{it} + \varepsilon_{it} \dots\dots\dots (11)$$

$$DEF_{it} = DIV_{it} + I_{it} + \Delta WC_{it} - CF_{it} = \Delta D_{it} + \Delta E_{it} \dots\dots\dots (12)$$

The dependent variable (ΔD_{it}) represents the net debt issues by a firm. It is calculated by subtracting long-term debt reduction from long-term debt issuance. According to the POT, ΔD_{it} should change commensurately with changes in internal financial deficit (DEF_{it}) implying that $\alpha=0$ and $\beta_1=1$.

The independent variable (DEF_{it}) represents the internal financial deficit which was be derived from the financial accounting statement figures. It has various components as shown in equation 12 above.

DIV_{it} = Cash dividends paid by firm i in year t . This variable was be obtained directly from the financial statements.

I_{it} = This represents the net investments by firm i in year t . The net investments was be calculated as follows:

I_{it} = capital expenditures + increase in investments + acquisitions+ other use of funds – sale of PPE – sale of investments). This sometimes known us capital expenditure.

All the above parameters were be obtained from individual firm's cash flow statements.

ΔWC_{it} = This represents changes in working capital for firm i in year t and calculated as follows:

ΔWC_{it} = change in operation working capital + change in cash and cash equivalentents + change in current debt).

The figures was be obtained from the balance sheets of each firm.

CF_{it} = This represents the net cash flows after interests and taxes for firm i in year t and are obtained as follows:

CF_{it} = income before extra-ordinary items + depreciation and amortization + extraordinary items and discontinued operations + deferred taxes + equity in net loss – earnings + other funds from operations + gain (loss) from sales of PPE and other investments).

The above are obtained from the cash flow statements of firms in the sample.

ΔE_{it} = This represents the net equity issues for firm i in year t and are obtained as follows:

ΔE_{it} = common stock sales - stock repurchases. The parameter figures extracted from the financial statements.

3.4 Econometric Approach

The study employed a panel regression model. This is because panel data has the power to incorporate both the cross-sectional and time series data especially because data may have variations across the periods (Kinyua and Muriu, 2017). With this model ensures reduced biases through controlling for omission of variables.

In the estimation, the study intended to estimate the models using pooled ordinary least squares (OLS), fixed effect and random effect models. Pooled OLS was based on the notion that there are no correlations among firms in the sample. The fixed effect model allows variations of the intercepts of each firms while at the same time maintaining constant slopes. The random effect model assumes no correlation between firm specific traits with explanatory variables (Akinlo, 2011).

Data was analyzed using STATA 14 software. Presence of heteroscedasticity was tested using Breusch–Pagan test and the Eicker-Huber-White standard errors were used to ensure estimates are free of heteroscedasticity (Abor, 2005). Other tests to ensure absence of autocorrelation, serial correlation, were carried out on the data.

3.5 Sources of data

The study mainly used secondary data. These included annual financial statements, annual financial and cash flow reports for all firms listed and trading with NSE for the period

between 2011 and 2016. The data was available at both the NSE and CMA. The data was consolidated and based on the key variables, be cleaned using Stata 14 ready for analysis.

For firms to qualify to be in the sample:

- i. They must have traded with the NSE for the period 2011-2016
- ii. They must have all financial and annual reports deemed necessary for this study
- iii. They must not be highly regulated. Hence all banks were excluded

Any of the firm that did not meet any of the above criteria, did not enter the final sample of 37 firms considered in this study.

CHAPTER FOUR

EMPIRICAL FINDINGS

4.1 Introduction

This chapter presents the empirical findings. The study used panel data for the period 2011-2016 which consisted of 37 firms across 8 sectors. Pre-estimation tests including summary statistics, correlation statistics and Hausman test results are presented first. These are then followed by regression results and post estimation tests results.

4.2 Descriptive Statistics

This study used data across 8 sectors with a total of 37 firms that were listed with NSE for period of 2011-2016. This resulted to a total of 222 observations. The firms that managed to get to the final sample must have consistently traded for the sample period and had majority of the data points that were required to empirically test POT among listed Kenyan firms. Kenyan banks were excluded from the sample on grounds of too much regulation as compared to any other financial institution. Table 1 presents the summary statistics of the variables.

Table 1: Summary Statistics (KES '000,000)

Variable	Mean	N	SD	Min	Max	P50	Skewness	Kurtosis
DIV	0.00103	222	3320	0	30400	59.2	6	47
I	5.935822	222	18	-0.22707	174	0.600407	6	50
ΔWC	-1.175745	222	14.6	-206	27.6	0.03971	-13	176
CF	1.401251	222	6.747949	-60.1	38.1	0.442224	-3	41
ΔD	2.229184	222	24	-66.4	248	-746	7	65
ΔE	0.545297	222	10.9	-137	47.7	220177	-9	118
DEF	2.774481	222	29.4	-142	296	226004	6	58

Source: Own Computation from the panel data

In the computation, the models of this study required use of log of values of the variables rather than ratios and this helped track changes in values over the sample period. This accounts for the large figures seen in the table above. It is equally evident that key statistics like mean and standard deviations have large values. This can be explained by the different sizes of the firms and sectors, which they belong. Safaricom and Kakuzi are two examples which can be compared. While Safaricom gives huge dividends to a huge pool of shareholders, Kakuzi gives smaller dividends to its small number of shareholders. In addition,

while some firms borrow heavily, other firms in the sample borrowed little and hence had a smaller portion of financial deficit. Overall, the data did not have major skewness and especially considering that it considered the variables across 8 sectors of firms listed at NSE.

4.3 Correlation Matrix Results

Correlation analysis helps one understand the relation between and among variables of the model(s) used in the study (Wooldridge, 2013). Correlation ranges between -1 and 1 indicating strong negative and positive correlations respectively. Correlation values may vary across variables indicating strong or weak correlation between variables. The results are shown in Table 2 below.

Table 2: Correlation Matrix Results

	DIV	I	ΔWC	CF	ΔD	ΔE	DEF
DIV	1.000						
I	0.0588	1.000					
ΔWC	-0.01	-0.4678	1.000				
CF	0.6393	0.1886	-0.0669	1.000			
ΔD	0.0138	0.4333	0.0396	-0.0107	1.000		
ΔE	0.1117	-0.1844	0.8378	0.0385	0.3187	1.000	
DEF	0.0528	0.2856	0.3437	0.0056	0.9359	0.6322	1.000

Source: Own Computation from the panel data of firms listed at NSE 2011-2016

According to Shyam-Sunder and Myers (1999), there exists a positive and direct correlation between changes in debt and financial deficit from the table results, 0.9359 shows that there exists a strong correlation between changes in net debt and financial deficit. This is consistent with the pecking order theory that the size of financial deficit a firm has, determines how much of debt a firm incurs to meet its financial obligations. Hence, the more financial deficit a firm has the more it borrows. It is also worth noting that there existed a weak correlation, 0.3187, between changes in debt and equity. This confirms the pecking order model which advocates for use of equity as the last option of finance. This is consistent with the pecking order position that debt financing does not dominate the size of equity financing adopted by a firm (Frank & Vidham, 2003). On the other hand, there were weak correlations between deficit and factors determining it. For example, there exists a weak and negative correlation between financial cash flows (CF) and changes in debt (Δ D). This is consistent with the POT (Matemilola., Bany-Ariffin, & Carl, 2012), which posits that firms with higher cash flows

employ less debt in their capital structure (Ahmad, Kareem, Mautin, & Sakiru, 2015) and this will be explained further in section 4.5 when we look at the predictive power of DIV, I, ΔWC and CF in determining DEF.

4.4 Hausman Specification Test

The test is performed on panel data regression models to be able to know if either random or fixed effect models are appropriate to run the study models. To do this, both the random and fixed effects models are run first and the Hausman test conducted finally. If the p-value is less than critical value, then a fixed effect model is appropriate model, otherwise run a random effect model.

From Table 3 below, the p-value obtained for the POT model was 0.0013 which was less than 0.05 and hence significant meaning that the POT model was analysed using the fixed effect model. On the other hand, as per table 4, p-value for debt model was greater than 0.05 and hence the model was estimated using the random effect model.

Table 3: Hausman tests for the POT Model

$$\Delta D_{it} = \alpha + \beta_1 DEF_{it} + \varepsilon_{it}$$

Coefficients				
	(b) Fixed	(B) Random	(b-B) Difference	sqrt(diag(V_bV_B)) S.E
DEF	0.749583	0.765046	-0.0154628	0.0047998

Source: Own Computation from the panel data of firms listed at NSE 2011-2016

Test: Ho: difference in coefficients not systematic

Chi2 (1) = (b-B)'[(V_b-V_B)^(-1)](b-B)=10.38

Prob>chi2 =0.0013.

Table 4: Hausman tests for Debt Model

$$\Delta D_{it} = \alpha + b_1 DIV_{it} + b_2 I_{it} + b_3 \Delta W_{it} - b_4 \Delta C_{it} + \varepsilon_{it}$$

Coefficients				
	(b) Fixed	(B) Random	(b-B) Difference	sqrt(diag(V_bV_B)) S.E
DIV	0.000438	0.000584	-0.0001465	0.0009883
I	0.890237	0.805408	0.0848297	0.1111168
ΔWC	0.509854	0.515396	-0.0055415	0.0534564
CF	-0.54837	-0.55296	0.0045916	0.2164244

Source: Own Computation from the panel data of firms listed at NSE 2011-2016

Test: Ho: difference in coefficients not systematic

chi2 (4) = (b-B)'[(V_b-V_B)^(-1)](b-B)=0.65

Prob>chi2 = 0.9571

4.5 Estimation Results

The study estimated two main models as indicated in equations 4 and 10 in chapter 3 above. Equation 4 represents the pecking order model while equation 10 represents the debt model. The POT model was estimated through the fixed effect model while the debt model through the random and the results reported in Table 5.

Table 5: Estimates of the Pecking Order Theory of Capital Structure among Kenyan Firms Listed at NSE

	Random Effects Model		Fixed Effects Model	
	ΔD_{it} POT Model	ΔD_{it} Debt Model	ΔD_{it} POT Model	ΔD_{it} Debt Model
DEF_it	0.7650*** (39.4)	-	0.7496*** (37.48)	-
DIV_it	-	0.0006 (1.07)	-	0.000438 (0.39)
I_it	-	0.8054*** (9.08)	-	0.8902*** (6.26)
ΔWC_{it}	-	0.5154*** (4.78)	-	0.5099*** (4.24)
CF_it	-	-0.5530** (-2.03)	-	-0.5484 (-1.57)
Constant	106579.2 (0.19)	-1771604 (-1.17)	149480.5 (0.26)	-2137401 (-1.07)
R^2	-	0.2769	0.884	0.203
Adjusted R^2	-	-	0.861	0.027
AIC	-	-	7672.1	8160.4
BIC	-	-	7678.9	8177.4
Observations	222	222	222	222

Source: Own Computation from the panel data of firms listed at NSE 2011-2016

*T-statistics in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

Notes: Where DEF_it is Financial Deficit, DIV_it is Cash dividends for firm i in year t, I_it is Net investment for firm i in year t, ΔWC_{it} is Change in working capital for firm i in year t, CF_it is Cash flow after interest and taxes for firm i in year t.

For POT to hold, β_1 in equation 4 must be equal to one implying a dollar-to-dollar relationship between changes in debt and financial deficit. Hence, according to the POT model, Kenyan firms do indeed have a strong case in following the POT in their financing evidenced by an almost unit POT coefficient, β_1 .

It is worth noting that firms have to make difficult financial capital structure decisions (Muriu, 2016) and Kenyan firms are no exception. This can be explained by the fact that retained earnings have no financial obligations as compared to debt and equity, which are highly prone information asymmetry.

From equation 10, investments (I) and change in working capital (WC) were found to be statistically significant in determining the changes in net debt(D) employed by firms in Kenya. This implies that the more a firm invested, the more it was likely to employ debts in its capital structure. This indeed confirms the POT, which asserts that if a firm is able to control for its internal flow of funds, investing in fixed assets and working capital should commensurately be matched by one to one increase in the amount of debt issued (Frank & Vidham, 2003).

From the model, it is clear that dividends play a minor role in determining borrowing by firms in Kenya. This is indeed a confirmation that dividends are sticky and hence when a firm cuts on dividends, such cuts are not used to finance capital expenditure (Myers, 1984). The positive relationship between the debt and dividends is perhaps because, high dividend-paying firms are likely to have less retained earnings and hence may opt to borrow to bridge the gap. The negative relationship between debt and cash flows suggests that if a firm has lots of internal cash flows, then it applies less and less of debt.

CHAPTER FIVE

CONCLUSION

5.1 Introduction

The general objective of this study was to investigate the extent to which the POT of capital structure provides a satisfactory account of the financing behaviour of publicly traded firms in Kenya for the period 2011-2016. Specifically, the study sought to provide evidence about the broad patterns of financing activity in Kenya, establish whether the POT receives greater support among firms that face particularly severe adverse selection problems and finally examine a number of implications of the pecking order in the context of Kenyan listed firms.

Study adopted a panel regression model in analysis. The main empirical model analysed was the POT model. The dependent variable was changes in net debt and the independent variable being the financial deficit.

5.2 Summary of the Key Findings

The study used a sample of 37 firms across 8 sectors. The sectors included agriculture, automobiles, commercial and services, construction and allied, energy and petroleum, insurance, investment, manufacturing and allied, and telecommunication. These firms had been selected on the basis that they had consistently traded at NSE and thus had data. The period 2011-2016 was selected because the study sought to test POT in the current and not historical financial environment.

According to the POT, the amount of financial deficit reflects the amount of external financing a firm needs. In this model, the external financing was found by summing up changes in equity and debt for all the 37 firms. The results showed a strong support for the POT order theory because the pecking order coefficient was 0.7496, close to unity as depicted by the pecking order theory.

In addition, factors determining financial deficit as per the POT included dividends (DIV), investments (I), working capital (WC), and cash flows (CF). A random effect panel regression model of debt against these independent variables showed that investments, working capital and cash flows statistically significant in explaining the amount of debt firms in Kenya employ in their capital structure. The more Kenyan firms invest the more they are

likely to borrow and the more cash flows the firms have, the less likely they are to use debt in the financing models.

5.3 Conclusions

From the above findings, it can be concluded that listed at NSE for the sample period 2011-2016 do follow the pecking order theory in their capital structure decisions. This means that firms are aware of the costs of information associated with debt and equity. To cut on such costs, they opt for retained earnings first, followed by debt and finally equity as the last resort source. In addition, firms in Kenya that invest heavily are equally likely to be using a lot debts. Also, firms with lot of cash flows have been found to use less and less of debt. All the above confirms that POT does have a say in financing options applied by firms in the capital structure decisions.

5.4 Policy Implications

From the study findings, it was evident that these firms decision top opt for external financing was a result of internal financial deficit. This implies that Kenyan firms have been borrowing a lot first from the banks and financial market to bridge the deficits before they can opt for equity issuance. This was highlighted, further by a strong correlation between changes in debt and financial deficits. This implies that Kenyan firms are aware of the costs of borrowing and information asymmetry problems that come with application of debts and equity respectively.

However, the existence of a significant positive relationship between debt and investment maybe a critical point especially to investors. It shows that firms in Kenya that have huge investments have equally borrowed more. This brings in the uncertainty of whether such borrowings may have adverse future ramifications of such firms. Therefore, using much debt may equally be interpreted as a source of financial discipline by the investors and this may send out a good signal (Ross, 1977).

This study presents a crucial decision point for managers and investors in making their financial capital decisions. It clearly shows that firms in listed in Kenya have a great preference in using debts first before resorting to equity. This may be because they are aware of higher premiums that any investor would ask of their investment. Hence, this study will act as great guide to any manager, investor and scholar intending to study how firms listed in the Kenyan NSE behave when they are looking at consolidating a strong financial capital structure.

5.5 Study Limitations

The study initially set out to empirically test, POT using all firms listed at NSE for the period 2002-2016 with a condition of excluding banks on the premise of too much regulation. However, the study period had to narrow down to 2011-2016 on grounds that many firms had no data had not traded consistently. Moreover, the study sought to use 2011-2016 as the period was current and would give a good ground in understanding the Kenyan financial situation in testing the POT.

Therefore, the study started with all 68 firms listed at NSE but only ended up with 37 firms that had data on all the variables and these had traded continuously for the sample period. It would have been great to have all the firms well represented, as this would have given a good ground for inferences and generalizations of findings.

In addition, among the firms that made it to the final sample, they differed greatly across sectors, in sizes and assets structure and these brought about huge variances as depicted in the summary statistics. Hence, future studies should focus more on testing POT theory on specific sectors, industries or firms and this may reduce such variations.

5.6 Areas for Further Research

Capital structure remains a field that always present conflicting empirical findings of theories both in developing and developed countries. Kenya is no exception. For this reason, empirical testing POT has not been widely carried out in Kenya and even in the region. For this, there is need to test this theory using firms listed and those not listed in the security markets and have comparison. This way, concrete statistical inferences and generalizations maybe more significant and hence laying a strong foundation for financial capital structure decisions by all stakeholders.

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