



**The impact of stock market development on the capital structure of listed  
firms in Kenya**

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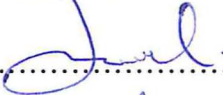
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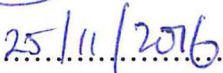
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## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the study**

The Nairobi Securities Exchange is considered one of the most developed stock markets in Sub-Saharan Africa. This development is attributed to the significant reforms that were made between the years of 1990 and 1999. The reforms include shifting from being self-regulated to having a regulatory body (Capital Markets Authority), elimination of “call-over” trading and “open-outcry” trading through introduction of a Central Depository and Settlement System, tax concessions, relaxation of exchange controls and reduction of listing costs.

The above reforms resulted in a development of the Nairobi Securities Exchange evidenced by the increase of the value of shares traded, market capitalization ratio and turnover ratio (Nyasha & Odhiambo, 2014).

Moreover, the reforms led to financial deepening. Ngugi, Amanja, & Maana (2009) show that there is a significant relationship between development of the stock market and financial depth. The development of the stock market implies that the market can facilitate information gathering more efficiently hence reducing the banking sector’s exposure to corporate governance issues. Conversely, the development of the banking sector contributes to that of the stock market implying the stock markets and banking sector are complementary. It is seen that the reforms made in the 1990s led to significant stock market development in Kenya which could have a significant effect on firms.

Demirgüç-Kunt & Makismovic (1996) brought to light some of the imperfections that could exist in the absence of a well-developed stock market and in doing so outlined three major roles of stock markets to firms.

In an under-developed stock market, investors have limited opportunity for diversification. Since an under-developed stock market is illiquid, investors will demand an illiquidity premium in order to purchase any firm’s shares that are traded in such a market. Firms would deem this as costly and opt not to obtain funds from the financial markets. In addition to this, it would lead the firms to vary their investment decisions and choose less capital-intensive technologies that are subject to lower levels of long-term risk.

Firms are unable to attain optimal capital structure. Firms with a high level of debt financing expose themselves to greater risk of bankruptcy. In order to prevent bankruptcy, such firms may take up excessively risky projects. If there existed a well-developed stock market, issuance of shares by the firm would alleviate the need for taking up excessive risk.

Well-developed stock markets play an informational role by availing information about firm's prospects to the investors.

The focus of this study will be on the second role. Firm managers' main objective is to maximize the value of the firm which is given by the present value of all its expected cash flows which are then discounted by a hurdle rate (Driver & Temple, 2010). An investment project will therefore increase the firm value if it earns a return that is greater than the hurdle rate which is a reflection of the mix of debt and equity used to finance the project, and the inherent risk. Based on this, an appropriate investment project can be taken up by the firm after proper appraisal by use of traditional techniques such as the payback period, discounted cash flow and Weighted Average Cost of Capital (WACC). Another aspect to be considered is the mix of debt and equity. This introduces capital structure which aims at attaining an optimal mix of debt and equity.

A firm has two main sources of funding at its disposal; internal funding and external funding. Internal funding involves the use of the firm's retained earnings, profits or tax savings as a result of depreciation of the firm's equipment to take up investment projects. This may be viewed as advantageous by some firms as it is less costly. However, use of internal funding can cause liquidity problems to a firm since it directs its extra fund to the investment project hence the firm could potentially find itself in a situation that it has no funds available.

If a firm has insufficient internal funds, it could consider external funding; equity or debt, which is of interest with regards to funding of investment projects as it influences the hurdle rate. Equity involves selling of the firm's shares which gives the shareholders a residual claim of the firm. On the other hand, debt refers to the firm borrowing. As stated above, the mix of equity and debt is of importance if managers want to meet their objective of maximizing the value of the firm since it influences the hurdle rate.

In order to arrive at the mix of debt and equity, the managers take into consideration the advantages and disadvantages associated with debt and equity financing. Debt financing has a tax benefit since interest payments on debt are tax deductible and it encourages the firm

managers to critically evaluate the investment projects. Despite this, debt financing leads to inflexibility since if the firm uses up its debt capacity its ability to take up debt in the future is limited.

Firms can obtain the external finance required through stock markets since the stock markets are a platform where firms that require financing can be linked to investors who can provide. Samuel (1996) states that stock markets play three major roles; Act as a source of finance, enhancement of corporate governance and providing information about investment decisions to managers. Aside from the stock markets, firms can also access the necessary funding from banks.

In view of the fact that firms can obtain external funding from the stock markets and banks, researchers and scholars have attempted to explain how the capital structure of firms changes with stock market development.

Demirgüç-Kunt & Makismovic (1996) is one of the most fundamental studies that have attempted to analyze this relationship. The study highlighted four possible effects of development of the stock market on the capital structure of firms. First, substitution of debt financing for equity financing through public offerings. By doing so, the stock market development decreases the leverage of firms. Second, development of the stock market offers an opportunity for diversification of risk which makes expansion of the firm more attractive. Firms could finance this expansion through use of equity or debt. Thus it is unclear whether the leverage will increase or decrease. Third, privately-owned firms may open themselves up to public ownership through the issuance of new shares in the stock market. As such, they substitute inside equity for outside equity which leaves the leverage constant. Fourth, given the informational role of stock markets, well developed markets lower the cost of raising capital by improving corporate governance of firms.

Demirgüç-Kunt & Makismovic (1996) concluded that the effect that stock market development will have on firms' capital structure depends on the initial level of development of the stock market. For an underdeveloped market, preliminary development will result in the increase of firms' leverage because aside from issuing new equity, they seek out more funds by borrowing. The creditors have more incentive to lend more as the stock market begins to develop because of the improvements in information quality and monitoring. As the stock market continues to develop, the firms begin to substitute equity for debt leading to a decline in leverage.

## **1.2 Problem Statement**

Demirgüç-Kunt & Makismovic (1996) gives some understanding of the relationship between stock market development and capital structure in developing countries but has some limitations. As part of the conclusions made, the study postulated that the impact depends on the initial level of the country's stock market development. However, in carrying out the study, the sample countries were placed into three groups based on a means removed average of the turnover ratios, market capitalization ratios and value of shares traded. As opposed to using a blanket approach as in Demirgüç-Kunt & Makismovic (1996) which ignores the different rates of stock market development for each country and aspects such as regime changes in the individual countries, this study focuses on one country (Kenya). By focusing on one country, this study hopes to provide a better understanding of the relationship between stock market development and capital structure of listed firms in Kenya over time.

## **1.3 Research objective**

1. To identify the relationship between the development of the Nairobi Securities Exchange and the capital structure of listed firms.

## **1.4 Research Questions**

1. How does the development of the Nairobi Securities Exchange relate to the capital structure of listed firms?
2. How do firm-specific variables impact the capital structure of firms listed in the Nairobi Securities Exchange?

## **1.7 Justification of the study**

Kenya has experienced major financial development following the reforms made in the 1990s. This is evidenced by the development of both the Nairobi Securities Exchange and the banking sector. As a result of this development, firms have gotten access to a larger pool of funding. It is, however, not clear whether this development will be related to an increase in their levels of debt financing or equity financing. This study will be of importance to firm managers as it aims to shed some light on the link between development of the Nairobi Securities Exchange and capital structure of firms. It can also act as an avenue for more studies to be carried out on this relationship since the study does not include bond market development.

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## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Measures of stock market development

Rajan & Zingales (1998) examined the relationship between stock market development and economic growth by looking at the impact of stock market development on firms' financing decisions. The paper analyzed the extent to which stock market development reduced the costs of external financing to firms. Stock market development is seen to reduce the cost of external financing as it overcomes the effects of information asymmetry (moral hazard and adverse selection). It measures the ease of bringing borrowers and savers together and the level of confidence that they have in each other.

According to Rajan & Zingales (1998), there are two main measures of quantifying stock market development. The first is the capitalization ratio. This is the ratio between the sum of domestic credit and stock market capitalization to Gross Domestic Product (GDP).

$$\text{Capitalization ratio} = \frac{\text{Domestic credit} + \text{Stock Market capitalization}}{\text{Gross Domestic Product}}$$

However, due to uncertainty of market capitalization as an appropriate proxy, Rajan & Zingales (1998) opt to redefine the capitalization ratio as:

$$\frac{\text{Domestic credit}}{\text{Gross Domestic Product}}$$

The ratio is redefined because it does not reflect the level of funding that firms actually obtain. The stock market capitalization instead indicates the aggregate of actual equity issuances, retained earnings and investors' expectations of corporate sector growth. Despite this, Rajan & Zingales (1998) state that stock market capitalization should not be completely ignored as a measure of stock market development as doing so would underestimate the stock market's fundamental role of providing liquidity and information to investors.

The second measure of quantifying stock market development prescribed is the country's accounting standards. Accounting standards of a country indicate the ease in which firms can obtain funds from a wide variety of investors (Rajan & Zingales, 1998). An index was created by the Centre for International Financial Analysis and Research (CIFAR) that rates the annual reports of a minimum of three firms within the country on the basis of the omission or inclusion

of 90 items, hence a score is allocated to each country out of 90. This does not, however, give the amount of funding that firms can obtain.

Levine (2002) offered stock market development measures which Öztekin & Flannery (2012) adopted. The first measure was the size of the stock market and intermediaries which was gauged by the market capitalization ratio and private credit ratio. The second measure was efficiency which was indicated by the total value traded ratio multiplied by the banking system overhead costs. The third measure was the aggregate quality of the financial sector.

Agarwal & Mohtadi (2004) studied the relationship between stock market development and the financing choices of firms in 21 developing countries. The study used market capitalization ratio (value of listed shares divided by GDP), total value of shares traded ratio (value of shares traded divided by GDP) and turnover ratio (value of total shares traded divided by value of listed shares) to determine the level of stock market development. In addition to these variables, the study also considered the role capital inflows into the stock market by introducing Foreign Direct Investment as an additional variable.

Fan, Titman, & Twite (2010) studied the relationship between the institutional environment and the capital structure of firms. The paper used a sample of 39 firms in developed and developing countries to study this relationship. The institutional environment of the country where the firm operated was observed to be a key determinant of capital structure, seemingly more important than the firms' specific industry of operation. In the study, Fan, Titman, & Twite (2010) emphasized on institutional variables that reflected the enforcement of legal contracts, the tax treatment of debt and equity used by firms and the preference of the suppliers of capital.

Fan, Titman, & Twite (2010) stated that traditionally, the issue of capital structure was often approached from the point of view of the firms that require the capital, such as was case with the study by Demirgüç-Kunt & Makismovic (1996). These firms were assumed to operate under competition and complete financial markets which implied that debt and equity had an equal risk-adjusted rate. However, Fan, Titman, & Twite (2010) acknowledged that when that was not the case then capital structure will be strongly influenced by the preferences of the suppliers of capital.

Demirgüç-Kunt & Makismovic (1996) examined the capital structure problem by looking at the supply side in terms of the stock market development using variables such as market

capitalization. The use of these variables brought about endogeneity problems since the capital structure needs of firms had a bearing on these variables; the stock market was larger in countries with industries who required large amounts of external capital (Fan, Titman, & Twite, 2010).

Based on this dispute of the variables used by Demirgüç-Kunt & Maksimovic (1996), Fan, Titman, & Twite (2010) opted to use measures of the fund supply to intermediaries such as insurance companies, pension funds and banks.

## **2.2 Stock market development and capital structure**

As stated in the previous section, Rajan & Zingales (1998) examined the relationship between stock market development and economic growth by looking at the impact of stock market development on firms' financing decisions. As part of the conclusions, Rajan & Zingales (1998) find that the development of the stock market reduces the cost of external financing to firms but does not specify whether it increases or decreases the firms' leverage.

Booth, Aivazian, Demirguc-Kunt, & Maksimovic (2001) assessed the capital structure decisions of firms in developing countries. The study used firm-specific (size, tangibility and profitability), macroeconomic (GDP, tax and inflation rate) and stock market development variables (stock market capitalization ratio, turnover ratio and stock market value) for the years 1980 to 1991.

The findings of Booth, Aivazian, Demirguc-Kunt, & Maksimovic (2001) were that the variables used to determine the capital structure of firms in developed countries can be used to determine the capital structure of firms in developing countries despite the institutional differences. The paper highlighted, however, that in as much as the variables can be used across developed and developing countries, the specific country factors make the capital structure model more accurate. Such country-specific factors include the level of stock market development.

Gianetti (2003) postulated that stock market development gives firms cheaper access to external funding that they require which in turn could boost economic growth. The paper aimed at studying how stock market development, legal rules and various firm characteristics affect corporate financing decisions. In carrying out the study, data on unlisted firms in eight European countries was used. The study was carried out on unlisted firms because from previous studies it had been concluded that institutional differences were irrelevant. This is attributed to bias arising from using large listed companies to carry out the previous studies despite such companies contributing only a minor share of the GDP (Giannetti, 2003).

Gianetti (2003) criticized Demirguc-Kunt, & Maksimovic (1996) on the basis that the latter study focuses solely on the aggregate impact of laws and institutions on the capital structure whereas the former goes further and highlights the kind of firms that would be subject to institutional constraints. Gianetti (2003) concludes that proper creditor protection can be advantageous to firms. First, obtaining loans for investment in intangible assets becomes easier. Intangible assets cannot be put up as collateral for a loan but in the case where creditors are protected and assured of payment, they are more willing to give loans to firms. Second, firms that operate in sectors that give volatile returns can access long-term debt easily. Since creditors are protected and their payments are assured, they are more willing to offer longer-term debt as they are not worried of the risk that they may not be paid.

Agarwal & Mohtadi (2004) also criticized Demirguc-Kunt, & Maksimovic (1996) and does so on the basis of three points. First, the study criticized the use of assets and liabilities as bank variables for the measure of a firm's leverage. Agarwal & Mohtadi (2004) view this as questionable because changes in the variables could be as a result of exogenous factors such as a change in a country's monetary policy. They deal with this problem by using a distinctive measure of leverage from International Finance Corporation. This helped in distinguishing the impact of stock market development versus that of banking sector development on the capital structure choices of firms.

Second, Demirguc-Kunt, & Maksimovic (1996) used data from 30 countries averaged over a long period of time (1980-1991). By averaging over a long period of time, Agarwal & Mohtadi (2004) acknowledge that this ignores changes such as regime change and business cycles in the countries, which are important.

Third, Demirgüç-Kunt & Makismovic (1996) did not take country-specific factors and effects related to the data into consideration when conducting their study. These include the conventional factors such as interest rates and inflation and the differences in definition and measurement of the various variables.

One of the findings Agarwal & Mohtadi (2004) made was that stock market development was positively related to firms' equity financing. As such, when the stock market develops, firms opt for equity as opposed to debt financing. The paper also found that stock market development has a more significant influence in the short-run financing decisions of firms than the long-run decisions. It however found that Foreign Direct Investment did not have a significant impact on

the financing decisions of the firms. Agarwal & Mohtadi (2004) also took into account the role of banking sector development and found that the banking variables were negatively related to firms' leverage.

Padachi & Seetanah (2007) studied the link between stock market development and financing choices of firms in Mauritius. The study was carried out on 38 firms listed in the Securities Exchange of Mauritius between 1994 and 2005 but distinguished between financial and non-financial firms in order to draw more comprehensive conclusions. It also distinguishes between stock market development and banking development.

The econometric model used by Padachi & Seetanah (2007) incorporated stock market development variables, banking development variables and firm-specific variables. The firm-specific variables coincided with those of previous studies and were profitability, size, tangibility, growth opportunities, business risk and tax shield effects. Banking development was measured by using the ratio of bank's liquid liabilities to GDP and the ratio of private credit to GDP. The measures of stock market development used in the study were market capitalization ratio, total value of shares traded ratio and turnover ratio which is consistent with Agarwal & Mohtadi (2004).

The study used Book Total Liabilities Ratio as the measure of leverage;

$$\frac{\textit{Total Liabilities}}{\textit{Total Liabilities + Book Value of Equity}}$$

Padachi & Seetanah (2007) deemed this as an appropriate measure of leverage for firms in Mauritius based on two major reasons. First, when firms seek out further debt, the potential creditors are not only interested in the firms' level of long term debt but also the firms' current level of debt and total liabilities. Second, a large number of firms in Mauritius finance their investment by using trade credit and as such it is necessary to include accounts payable when measuring firms' leverage.

The findings of Padachi & Seetanah (2007) were that with the development of Securities Exchange of Mauritius, non-financial firms opted for debt financing but financial firms substitute debt for equity financing. The study attributed this difference to the high risk associated with financial firms, hence the need for such firms to be well capitalized.

Bhabra, Liu, & Tirtiroglu (2008) studied the capital structure decisions of listed firms in China for the period 1992-2001. The Chinese market is still a nascent characterized by information asymmetry. The study considers the possible effects of firm characteristics, ownership structures and industry membership on the capital structure of the firms. One of the key objectives of the study was to establish whether the increasing stock market activity in China had an impact on the long-term debt of the listed firms. Bhabra, Liu, & Tirtiroglu (2008) conclude that tangibility and firm size are found to have a positive impact on the long-term debt while profitability and growth are negatively related to the long-term debt. The study also found that the long-term debt ratios of the firms remained almost constant during the sample period despite an increase in trading and stock market activity. Hence stock market development had no impact on the capital structure decisions of the listed firms in China for the sample period.

Chakraborty (2010) analyzed the determinants of capital structure of Indian firms listed in the Bombay Stock Exchange or the National Stock Exchange. The study used Fully Modified OLS (FMOLS) and Generalized Method of Moments (GMM) on a panel of 1169 listed non-financial firms for the period 1995-2008. The conclusion of the study was that profitability, size of the firm and uniqueness (measured by Research and Development) are negatively related to leverage while tangibility and non-debt tax shields are positively related to leverage. The findings are consistent for both FMOLS and GMM which implied that the findings were not sensitive to the estimation method used. Chakraborty (2010) also carried out panel cointegration tests which concluded that the leverage of Indian non-financial firms has a long-run equilibrium relationship with its determinants.

Chakraborty (2010) state that a big fraction of the largest companies in India are family businesses and that there are about 400 business groups in India which vary in size and diversification. Companies affiliated to such business groups are expected to have better access to capital markets (both internal and external) than what comparable non-group companies have (Schiantarelli & Sembenelli, 2000). These group members prefer debt financing to equity financing due to lower distress costs.

Despite the reforms in the Indian market, Chakraborty (2010) state that the most preferred source of financing is internal source, followed by debt financing then equity financing. The study attributes this to the increased cost of debt financing as a result of high interest rates that

accompanied the reforms and also to the large number of scams in the stock markets that have made equity financing less reliable.

Doku, Adjasi, & Sarpong-Kumankuma (2011) explored the impact of financial market development and capital structure of 21 firms listed on the Ghana Stock Exchange for the period 1995-2005 in a panel framework. The study also sought to determine whether debt and equity are complementary or substitute sources of financing for the firms.

Doku, Adjasi, & Sarpong-Kumankuma (2011) used a random effects model to carry out the panel analysis and use the measures of stock market development prescribed by Agarwal & Mohtadi (2004); market capitalisation ratio, value traded ratio and turnover ratio. For the banking sector development, the study used liquid liability ratio and domestic banks asset ratio. The study also controlled for the potential impact of firm-specific variables by including size of the firm, tangibility, growth and return on assets as explanatory variables in the regression.

In line with Demirgüç-Kunt & Maksimovic (1996), Doku, Adjasi, & Sarpong-Kumankuma (2011) found that banking sector development and stock market development are complementary to each other implying that debt and equity financing are complementary. The study concludes that as the financial market develops, firms in Ghana showed an increase in both debt and equity financing. However, as the financial market develops further, the firms opt for more equity financing.

DeAngelo & Roll (2011) studied the norm of stability of leverage over time. The paper posits that the leverage of firms is unstable through time and has periods of high and low leverage. Any leverage stability was seen to occur at low levels and only held temporarily. As such it is not possible to use the current leverage ratio to predict the leverage of the future as inferred by the stable-leverage proposition. In addition to this, the study finds that the industry leverage averages, which firms often use as capital structure target proxies, also varies with time.

Given this variation in the leverage, DeAngelo & Roll (2011) stated that firm, industry and market-wide variables that vary over time are important determinants in explaining this instability. In spite of this, the study concluded that much is still unknown about the variables that cause the instability of the leverage.

Öztekin & Flannery (2012) opposed Demirgüç-Kunt & Maksimovic (1996) and Booth, Aivazian, Demircuc-Kunt, & Maksimovic (2001) on the grounds that the latter studies were

based on the underlying assumption that all the firms in their studies operated at equilibrium hence did not incur any costs in adjusting their capital structure. Öztekin & Flannery (2012) coincided with the trade-off theory of capital structure (Kraus & Litzenberger, September 1973) which pointed out that the institutional environment has an effect on the target capital structure and on the speed at which firms attain the target capital structure.

Öztekin & Flannery (2012) stated that the institutional environment influences the costs and benefits of adjusting the capital structure towards the target which in turn influences the adjustment speed. The adjustment costs were grouped into three major categories; costs of accessing debt/equity markets, information asymmetry and financial constraints.

The costs of accessing the markets depend highly on the enforcement of regulations that protect investors. Countries which effectively enforced investor-protection regulations had firms with faster capital structure adjustment speeds because external financing is made less costly.

Information asymmetries create a disparity between the internal and external financing costs. Less information asymmetry, which could be achieved by taking up better accounting standards, lowered the costs associated with adverse selection which lowered financing costs and increased the adjustment speed.

Financial constraints such as minimum dividend payouts and reserve requirements reduce the adjustment speed.

Öztekin & Flannery (2012) outlined two major adjustment benefits that would influence the capital structure adjustment speeds. The first benefit is the tax shield value that firms may be entitled to upon adjustment of the capital structure. As such, countries with higher corporate tax rates had firms with faster capital structure adjustment speeds. The second benefit is distress costs. Countries which implement the bankruptcy codes in a timely, efficient and cost-saving manner were found to have firms with faster adjustment speeds.

Öztekin & Flannery (2012) thus posited that stock market development would reduce the market inefficiencies which increase the capital structure adjustment costs. Öztekin & Flannery (2012) demonstrate that it is an important factor to be considered in capital structure studies.

Didier & Schmukler (2013) studied the use of capital markets for financing by firms in China and India and the extent to which they grow. The study noted that capital markets in both countries had developed rapidly following a series of financial reforms and liberalization in the

1990s which were intended to encourage financing through the capital markets and promote domestic and foreign investment in the capital markets. The financial systems had become deeper as evidenced by an increased Market Capitalization Ratio and had moved away from being mainly bank-based to a state where the capital markets played a major role.

With this development, Didier & Schmukler (2013) sought to explain the extent to which it promoted equity and debt financing by firms in the two countries. The study found that with the development of the financial system the firms in China and India opted for more debt financing.

Didier & Schmukler (2013) noted that development of the financial systems affected only a few firms in terms of financing since firm characteristics were seen to influence the use of capital markets. These characteristics were size, profitability, growth and the level of retained earnings as proposed by studies like Frank & Goyal (2009). This demonstrated that the development of capital markets will not have a widespread effect on financing as expected, it will mainly influence larger firms.

Graham, Leary, & Roberts (2014) highlighted the importance of stock market development in explaining changes in firms' leverage. The paper studied the increase in firm leverage and aimed to identify whether increase in leverage could be attributed to firm-specific characteristics. To carry out the study, the authors used data on firms listed on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ and distinguished between regulated and unregulated firms. The study focused on unregulated firms because as opposed to regulated firms whose debt-to-capital ratios were stable, those of unregulated firms increased dramatically over the 20<sup>th</sup> century.

Regressions carried out by Graham, Leary, & Roberts (2014) proved that firm-specific characteristics such as firm size, profitability, asset tangibility and earnings volatility proposed by studies such as Frank & Goyal (2009) did not play a significant role in explaining the increase in leverage. Graham, Leary, & Roberts (2014) stated that the changes in these variables were not enough to support the major increase in leverage. The implication of this was that there could be significant firm-specific variables that have been omitted. An alternative implication, which the study pursued, was that macroeconomic effects that reflect changing economic environment could be present. These effects were tax, government borrowing, managerial incentives, economic uncertainty and stock market development.

Graham, Leary, & Roberts (2014) measured leverage in book value terms because of unavailability of some data. Three approaches were taken to calculate the leverage of the firms. First, was the ratio of total debt to total capital. Second, the ratio of the sum of total debt and preferred equity (which were considered as debt in this case) to total capital. Third, the ratio of net debt (total debt less the firm's cash holdings) to total assets.

The findings of Graham, Leary, & Roberts (2014) in relation to stock market development was that there was a significant relationship between leverage and the financial sector output from equity issuance and business credit. This relationship implied that the increased capacity of the stock market to gather information played a fundamental role in increasing the leverage of firms i.e. stock market development led to more debt financing. However, the study states that the mechanisms through which this happens are quite unclear and require further research.

## **2.2 Development of the Nairobi Securities Exchange**

Ngugi (2003) gives a detailed description of the development of the Nairobi Securities Exchange. The Kenyan government realized that for the economy to shift to reliance on domestic financial resources for investment, it would be necessary to make reforms to the stock market. Despite evidence of the Nairobi Securities Exchange's underperformance in the 1970s, the reforms were not made until the 1990s. This was as a result of the recommendations made from a joint study carried out in 1984 by the Central Bank of Kenya and International Finance Corporation.

These recommendations were to establish a regulatory body that would govern the Nairobi Securities Exchange, elimination of tax disparities between equity and debt finance and introduction of a wider variety of money market instruments. These reforms would improve efficiency of price discovery, increase the level of liquidity in the Nairobi Securities Exchange, reduce the transaction costs and facilitate competition within the market.

The Capital Markets Authority was then established and was to enhance the development of Nairobi Securities Exchange through several ways. First, protection of investors' rights through the setting up of a fund that cushions investors against credit risk i.e. Stockbrokers and dealers defaulting on their financial obligations to the investors. Providing the investors with protection encourages investment. Second, enhancing disclosure of relevant information. The CMA expects the firms listed in the Nairobi Securities Exchange to publish regular reports. Third, maintenance of liquidity within the Nairobi Securities Exchange by ensuring that there are adequate levels of

supply and demand of securities. Fourth, promoting the diversity of available financial assets by encouraging issuance of a variety of financial instruments in the Nairobi Securities Exchange.

Following the reforms, Nyasha & Odhiambo (2014) show that the Nairobi Securities Exchange developed significantly as evidenced by the increasing market capitalization ratio, turnover ratio and the value of shares traded. However, the paper points out that despite its significant development, the Nairobi Securities Exchange faces a number of challenges that inhibit its development. These are lack of awareness among investors about the role, functions and operations of the market, low investor confidence in the performance of the market and in the standard of corporate governance, low level of capital market liquidity and susceptibility of the stock market to market shocks.

### **2.3 Research Gap**

A majority of the studies that have been carried out on the relationship between stock market development and capital structure have been carried out in developed countries such the United States of America. Limited research has been carried out on this relationship in the context of emerging markets. The current study hopes to fill this gap by contributing to this limited pool of literature by studying the relationship between stock market development and capital structure in Kenya, which is an emerging market.

## CHAPTER THREE: METHODOLOGY

### **3.1 Research Design**

The research design used in this paper is correlational. A correlational research design aims at determining whether there is a relationship/covariation between the variables in question. The key objective of this study is to determine the relationship between stock market development and capital structure decisions of listed firms and as such this study follow a correlational research design.

### **3.2 Population and Sampling**

#### **3.2.1 Population**

The variables required for this study are measures of stock market development for the Nairobi Securities Exchange (market capitalization ratio, turnover ratio and volume of shares traded) and banking sector credit to the private sector that is complementary to stock market development and the leverage ratios of listed firms. The population for this study will be the 65 firms listed in the Nairobi Securities Exchange.

#### **3.2.2 Sampling design and Sample size**

Based on convenience sampling, a sample of firms is selected depending on availability of comprehensive financial statements between the years of 2004 and 2013. Therefore, Atlas Development and Support Services, Eaagads Ltd, Flame Tree Group Holdings Ltd, Hutchings Biemer Ltd, Home Afrika Ltd, Kurwitu Ventures, Liberty Kenya Holdings Ltd, Longhorn Kenya Ltd and Umeme Ltd are excluded from the sample due to lack of comprehensive financial statements.

Banking and insurance companies are also excluded from this study. This is because they are subject to a number of stringent regulations as pertains to their capital structure which may result in misleading findings.

### **3.3 Data collection and procedures**

The market capitalization ratio, turnover ratio and the volume of shares traded are acquired from secondary sources; Nairobi Securities Exchange website and the World Bank Data Bank. The leverage ratio for each firm is obtained from the respective firm's financial statements and the Capital Markets Authority of Kenya library. The ratio of private sector credit to GDP will also be acquired from a secondary source; the World Bank Data Bank.

### 3.4 Research Procedure

Wooldridge (2010) proposed the use of fixed-effects or random-effects models to account for time-invariant heterogeneity that arises in firms as a result of their characteristics. In order to choose between the two, a Breusch Pagan test and Hausman test will be used to test for the presence of significant random effects and differentiate between the two models. These two tests will be instrumental in selecting the most appropriate model.

The measures of stock market development used are in line with those used by Agarwal & Mohtadi (2004) as well as the ratio of private credit to GDP as adopted by Padachi & Seetanah (2007).

#### 3.4.1 The model set-up

This study follows the assumption of previous studies such as Agarwal & Mohtadi (2004) and Demirgüç-Kunt & Makismovic (1996) that firms' leverage ratio,  $L$ , is a function of a vector of independent variables,  $X$ , that measure stock market development. This model can be formalized as follows;

$$L = \alpha + \beta_{i,t}X_{i,t}$$

$L$ ; Leverage Ratio

$\alpha$ ; Constant

$\beta_{i,t}$ ; Measure of how strongly  $X_{i,t}$  influences  $L$

$X_{i,t}$ ; Stock market development indicators

Firm-specific variables are included in the model in order to account for the effect that they have on capital structure decisions of different firms. Previous studies have shown that firm-specific variables play an important role in determine capital structure decisions. The model then becomes;

$$L = \alpha + \beta_{i,t}X_{i,t} + \gamma_{i,t}F_{i,t}$$

$\gamma_{i,t}$ ; Measure of how strongly  $F_{i,t}$  influences  $L$

$F_{i,t}$ ; Firm – specific variables

### 3.4.2 Fixed-effects model

This model can be estimated using the Least Squares Dummy Variables approach;

$$L = \beta_{i,t}Z_{i,t} + \mu_1D_{1,i} + \mu_2D_{2,i} + \dots + \mu_ND_{N,i} + v_{i,t}$$

$Z_{i,t}$ ; Firm – specific variables and stock market indicators

$D_{1,i}$  is a dummy variable that takes the value 1 for observations relating to the first firm in the sample but 0 otherwise.  $D_{2,i}$  will take the value 1 for observations relating to the second firm in the sample but 0 otherwise. This proceeds until the last firm in the sample. In order to avoid the dummy variable trap, the model excludes the intercept term,  $\alpha$ .

### 3.4.3 Breusch-Pagan Lagrange Multiplier test for random effects

This test examines whether the variance components are equal to zero i.e.  $H_0: \sigma_v^2 = 0$ . It examines the presence of random effects in the panel data and if it is concluded that random effects are present, random effects model should be used.

$$LM_v = \frac{nT}{2(T-1)} \left[ \frac{\sum(\sum e_{i,t})^2}{\sum \sum e_{i,t}^2} - 1 \right] \sim \chi^2(1)$$

The statistic above follows a Chi-Squared distribution with one degree of freedom.

### 3.4.4 Random effects model

Under this model, the intercept for each cross-sectional unit is assumed to arise from a common intercept  $\alpha$  that is constant across each cross-section and time, and a random variable  $\varepsilon_i$  which varies for each cross-section but is constant over time. It therefore treats any heterogeneity present as a random component.

$$L = \alpha + \beta_{i,t}Z_{i,t} + \omega_{i,t}$$

$$\omega_{i,t} = \varepsilon_i + v_{i,t}$$

The underlying assumptions of the term  $\varepsilon_i$  that captures the variations across cross-sections are that it has a mean of zero, constant variance, is independent of  $v_{i,t}$  and also independent of the explanatory variables  $Z_{i,t}$ . A major drawback of the random effects model as compared to the fixed effects model is that the error term  $\omega_{i,t}$  should be independent of the explanatory variables which implies that both  $\varepsilon_i$  and  $v_{i,t}$  should be independent of the explanatory variables in random

effects models. The Hausman test is used to check whether this assumption holds, hence whether or not the random effects model can be used.

### 3.4.5 Hausman test

The Hausman test is used to compare the fixed and random effects models with a null hypothesis that the individual errors are uncorrelated with the regressors. If this does not hold, any parameter estimates based on the random effects model will be biased and inconsistent because the assumption of individual errors being uncorrelated with the regressors is violated.

$$LM = (b_{fixed} - b_{random})\widehat{W}^{-1}(b_{fixed} - b_{random}) \sim \chi^2(k)$$

$$\widehat{W} = var(b_{fixed} - b_{random})$$

$$= var(b_{fixed}) - var(b_{random})$$

## 3.5 Data Analysis

To carry out the study, panel data is used and this offers benefits as outlined by Hsiao (1986). First, panel data allows and controls for variations in the cross-section unit. As such using panel data or this study will take into account any heterogeneity inherent across the firms, reducing potential bias to the estimates. Second, with the large data set characteristic of panel data, there is less collinearity among the explanatory variables and the estimates are more reliable.

The Fisher-type unit root test is used to investigate stationarity and the Breusch-Pagan test (which is used to decide between the fixed-effects and random-effects model) is used to test for heteroscedasticity. These tests have been briefly described below to give a basic overview of them but will be carried out using Stata software.

### 3.5.1 Fisher-type unit root test

To test for stationarity across the variables, the Fisher-type unit root test based on the Augmented Dickey Fuller is used. Maddala & Wu (1999) and Choi (2001) proposed this Fisher-type test;

$$P = -2 \sum_{i=1}^n \ln p_i \sim \chi^2(2n)$$

*p<sub>i</sub>; p – values from unit root tests for each stock market variable*

Unit root tests for each variable are conducted individually and the p-values obtained. The null hypothesis is that all the variables are non-stationary. This test is chosen as opposed to the Levin-Lin-Chu test and Im-Pesaran-Shin test because it has a higher power.

### 3.5.2 Panel Cointegration

A panel cointegration test is conducted to determine whether or not a long-run equilibrium relationship exists between the explanatory variables and leverage. Most panel cointegration tests rely on the generalizations of Engle-Granger following the work of Pedroni (1999, 2004).

$$y_{it} = \alpha_i + \beta_1 X_{1,t} + \beta_2 X_{2,t} + \dots + \beta_m X_{m,t} + u_{i,t}$$

The residuals from this regression,  $\hat{u}_{i,t}$  are then subjected to separate Dickey Fuller or Augmented Dickey Fuller regressions to determine whether they are I(1). The null hypothesis is that the residuals from all of the test regressions are unit root processes, therefore there is no cointegration. The alternative hypothesis is that cointegration is present.

Kao (1999) develops a more restricted version where the slope parameters in the equation are assumed to be fixed but intercepts still vary. The Dickey Fuller or Augmented Dickey Fuller test regression is then run on a pooled sample. This approach is used as it allows for simplification of the testing approach (Brooks, 2014).

## 3.6 Variable specification

### Leverage

Leverage refers to the amount of debt that a firm uses to finance its assets. For this study, two measures of leverage are used.

$$\text{Total debt ratio} = \frac{\text{Total liabilities}}{\text{Total assets}}$$

$$\text{Debt-Equity ratio} = \frac{\text{Total liabilities}}{\text{Total equity}}$$

### Market Capitalization Ratio

This is the total market value of all the outstanding shares of publicly traded companies. It is used to measure the size of the stock market.

$$\text{MC} = \frac{\text{stock price} \times \text{total number of outstanding shares}}{\text{GDP}}$$

### **Turnover Ratio**

The turnover ratio is used as a measure of liquidity of the stock market.

$$\text{Turnover ratio} = \frac{\text{Total value of shares traded}}{\text{Value of listed shares}}$$

### **Volume of shares traded**

This refers to the total number of shares transacted between a buyer and seller within the stock market for a given period. It indicates how actively shares are traded within the market.

### **Ratio of domestic credit to private sector to GDP**

This refers to the ratio of financial resources offered by domestic banks to companies through loans, purchase of securities, etc. to Gross Domestic Product.

Based on convenience sampling, listed firms will be selected and their leverage used to carry out this study. In addition to this, firm-specific effects (size, sales growth and asset tangibility) across the firms will also be obtained and included as part of the explanatory variables in order to account for some of the variation in the capital structure decisions. The key explanatory variables needed are market capitalization, turnover ratio, the volume of shares traded in the Nairobi Securities Exchange and ratio of private credit to GDP from 2004 to 2013. Either the fixed-effects model or random-effects model will be used based on the aforementioned tests.

## CHAPTER FOUR: DATA ANALYSIS AND FINDINGS

### 4.1 Introduction

The chapter presents findings from data collected and carrying out the methodology outlined in the previous chapter. The data analysis is carried out using Stata software where a 5% level of significance is used as the basis for rejecting or failing to reject the null hypotheses for all test results. The same is also used to determine the significance of the regressors.

### 4.2 Test for stationarity

The Fisher type unit root test based on Augmented Dickey Fuller is carried out on each of the panels. The null hypothesis of the test is that the panels contain a unit root (the data is non-stationary) versus the alternative hypothesis that the panels do not contain a unit root (data is stationary). The results are shown in the table below.

*Table 1: Variable stationarity results*

<u>VARIABLE</u>			<u>STATISTIC</u>	<u>P-VALUE</u>
<b>Market Capitalization</b>	Inverse chi-squared(76)	P	112.6379	0.0041
	Inverse normal	Z	-1.542	0.0615
	Inverse logit t(194)	L*	-2.0185	0.0225
	Modified inv. chi-squared	Pm	2.9717	0.0015
<b>Turnover</b>	Inverse chi-squared(76)	P	83.6751	0.2558
	Inverse normal	Z	-2.6686	0.0038
	Inverse logit t(194)	L*	-2.374	0.0093
	Modified inv. chi-squared	Pm	0.6225	0.2668
<b>Volume traded</b>	Inverse chi-squared(76)	P	33.802	1.000
	Inverse normal	Z	2.2258	0.987
	Inverse logit t(194)	L*	1.975	0.9752
	Modified inv. chi-squared	Pm	-3.4227	0.9997
<b>Credit</b>	Inverse chi-squared(76)	P	6.57	1.000
	Inverse normal	Z	8.5462	1.000
	Inverse logit t(194)	L*	8.1939	1.000
	Modified inv. chi-squared	Pm	-5.6315	1.000
<b>Total Debt</b>	Inverse chi-squared(76)	P	103.1627	0.0208
	Inverse normal	Z	-1.32	0.0934
	Inverse logit t(194)	L*	-1.4468	0.0748
	Modified inv. chi-squared	Pm	2.2032	0.0138
<b>Debt-Equity ratio</b>	Inverse chi-squared(76)	P	146.7507	0.000
	Inverse normal	Z	-2.8966	0.0019
	Inverse logit t(194)	L*	-3.5786	0.0002
	Modified inv. chi-squared	Pm	5.7386	0.000

<b>Tangibility</b>	Inverse chi-squared(76)	P	122.9123	0.0005
	Inverse normal	Z	-1.8882	0.0295
	Inverse logit t(194)	L*	-2.5567	0.0057
	Modified inv. chi-squared	Pm	3.8051	0.0001
<b>Size</b>	Inverse chi-squared(76)	P	96.0384	0.0601
	Inverse normal	Z	4.153	1.000
	Inverse logit t(194)	L*	3.21	0.9992
	Modified inv. chi-squared	Pm	1.6253	0.052
<b>Sales Growth</b>	Inverse chi-squared(76)	P	327.5902	0.000
	Inverse normal	Z	-12.0322	0.000
	Inverse logit t(194)	L*	-14.3263	0.000
	Modified inv. chi-squared	Pm	20.4067	0.000

The hypotheses are tested based on the Inverse Normal p-values as recommended by Choi J. J. (2001) as it offers the best tradeoff between size and power. Based on the 5% level of significance, market capitalization, volume of shares traded, credit, total debt and size are found to be non-stationary. This is because their corresponding p-values are greater than 0.05 hence the null hypothesis is accepted. Turnover, sales growth, debt-equity ratio and tangibility are found to be the only stationary variables. In order to remedy the non-stationarity, first differences of the non-stationary variables can be taken.

### 4.3 Panel Cointegration

Panel cointegration tests are used to determine whether the variables have a long-run relationship. The study uses the Kao and Engel-Granger approach to cointegration testing. The null hypothesis for the test is that there is no cointegration among the variables while the alternative hypothesis is that the variables are cointegrated. The null hypothesis is rejected if the p-value is less than the 5% significance level.

The results of the test are tabulated below and based on the p-value of 0.0000, the null hypothesis is rejected. This implies that the leverage of the listed companies is not linked to the explanatory variables by a long-run equilibrium relationship.

**Table 2: Panel cointegration test results**

Kao Residual Cointegration Test  
 Series: VOLUME TURNOVER TOTAL\_DEBT TANGIBILITY SIZE  
 SALES\_GROWTH MKT\_CAP DEBT\_EQUITY CREDIT  
 Date: 10/31/16 Time: 19:57  
 Sample: 2004 2013  
 Included observations: 380  
 Null Hypothesis: No cointegration  
 Trend assumption: No deterministic trend  
 Automatic lag length selection based on SIC with a max lag of 1  
 Newey-West automatic bandwidth selection and Bartlett kernel

	t-Statistic	Prob.
ADF	-7.093074	0.0000
Residual variance	1451313.	
HAC variance	1553776.	

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(RESID)  
 Method: Least Squares  
 Date: 10/31/16 Time: 19:57  
 Sample (adjusted): 2005 2013  
 Included observations: 292 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID(-1)	-0.594990	0.053953	-11.02786	0.0000
R-squared	0.294727	Mean dependent var		-5.796099
Adjusted R-squared	0.294727	S.D. dependent var		1345.085
S.E. of regression	1129.610	Akaike info criterion		16.90055
Sum squared resid	3.71E+08	Schwarz criterion		16.91314
Log likelihood	-2466.480	Hannan-Quinn criter.		16.90559
Durbin-Watson stat	2.127341			

#### 4.4 Test for heteroscedasticity

The Breusch Pagan test is used to detect heteroscedasticity. The null hypothesis of the test is that the variance across all the entities is zero. The test is also helpful in deciding whether to use a fixed effects model or a random effects model.

Given that the p-value is less than 0.05, the null hypothesis is rejected (Heteroscedasticity is present). In line with this, the random effects model is preferred over the fixed effects model.

**Table 3: Breusch Pagan test**

Breusch and Pagan Lagrangian multiplier test for random effects

$$DEBT\text{EQUITYRATIO}[companynum, t] = Xb + u[companynum] + e[companynum, t]$$

Estimated results:

	Var	sd = sqrt(Var)
DEBT\text{EQU}\text{~}\text{O}	.0479571	.218991
e	.0157289	.1254148
u	.0316538	.1779153

Test: Var(u) = 0

chibar2(01) = 576.47  
 Prob > chibar2 = 0.0000

### 4.5 Hausman test

As described in the previous chapter, the Hausman test is used to determine whether or not to use a random effects model. The test is based on the assumption that individual errors must be uncorrelated with the regressors in the case of random effects models. The null hypothesis is that the preferred model to be used is the random effects model while the alternative hypothesis is that the preferred model is the fixed effects model. The corresponding p-values are greater than 0.05 which means that we fail to reject the null hypothesis and that the preferred model to be used is the random effects model.

**Table 4: Hausman test – Total debt ratio**

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
MKTCAP	2.23e-08	2.36e-08	-1.29e-09	6.90e-09
TURNOVER	-5.01e-08	-1.73e-08	-3.28e-08	6.19e-08
VOLUME	5.84e-06	5.32e-06	5.16e-07	1.40e-06
CREDIT	-.0028937	-.0026011	-.0002927	.0009567
TANGIBILITY	.0792236	.0156048	.0636189	.0661422
SIZE	.0874883	.0791311	.0083572	.0126032
SALESGROWTH	-.0045261	-.0058055	.0012793	.007209

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)' [(V\_b-V\_B)^(-1)] (b-B)  
 = 1.23  
 Prob>chi2 = 0.8729

**Table 5: Hausman test – Debt-equity ratio**

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
MKTCAP	-4.10e-08	-4.26e-08	1.59e-09	1.63e-09
TURNOVER	2.08e-07	1.83e-07	2.51e-08	2.54e-08
VOLUME	-9.23e-06	-8.89e-06	-3.41e-07	5.45e-07
CREDIT	.0062567	.0059586	.0002981	.0003823
TANGIBILITY	.0465161	.0939111	-.047395	.0480853
SIZE	.0073929	.0098641	-.0024712	.0037463
SALESGROWTH	-.0295586	-.02482	-.0047386	.0023705

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)' [(V\_b-V\_B)<sup>-1</sup>] (b-B)  
 = 4.58  
 Prob>chi2 = 0.3336

#### 4.6 Regression results

The first analysis is carried out by regressing the total debt ratio against the stock market development variables (market capitalization, turnover, volume of shares traded and domestic bank credit to private sector which complements the first three variables) and the selected firm-specific variables (tangibility, size and sales growth). The second analysis uses the same explanatory variables but the dependent variable used is debt-equity ratio. Based on the Hausman test, the random effects model is used for these regressions.

In order to gauge which variables are significant, the p-values relating to each of the variables is compared to the level of significance of 5%. Those whose p-values are greater than 0.05 are found to be insignificant.

#### 4.6.1 Effect of stock market development on the total debt ratio of listed firms

From the table below, size is the only significant variable. This is because its corresponding p-value is below the 5% significance level. The corresponding coefficient of 0.0791311 implies that the larger the firm, the higher the total debt ratio as the firm takes up more debt financing.

The stock market development measures are insignificant in determining the total debt ratio since all the corresponding p-values of the measures are greater than 0.05.

**Table 6: Effect on total debt ratio**

Random-effects GLS regression	Number of obs	=	337
Group variable: companynum	Number of groups	=	38
R-sq: within = 0.0402	Obs per group: min	=	7
between = 0.0485	avg	=	8.9
overall = 0.0401	max	=	9
	Wald chi2(7)	=	13.73
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0562

TOTALDEBT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
MKTCAP	2.36e-08	1.83e-08	1.29	0.198	-1.23e-08 5.95e-08
TURNOVER	-1.73e-08	2.08e-07	-0.08	0.934	-4.26e-07 3.91e-07
VOLUME	5.32e-06	4.52e-06	1.18	0.239	-3.54e-06 .0000142
CREDIT	-.0026011	.0031352	-0.83	0.407	-.008746 .0035439
TANGIBILITY	.0156048	.0230516	0.68	0.498	-.0295755 .060785
SIZE	.0791311	.0275882	2.87	0.004	.0250591 .1332031
SALESGROWTH	-.0058055	.016396	-0.35	0.723	-.0379411 .0263302
_cons	-.0237969	.0150109	-1.59	0.113	-.0532177 .0056239
sigma_u	0				
sigma_e	.09889644				
rho	0	(fraction of variance due to u_i)			

#### 4.6.2 Effect of stock market development on the debt-equity ratio of listed firms

From the table below, size is the only significant variable in determining the debt-equity ratio of the listed firms. This is because the corresponding p-value (0.001) is less than the 5% significance level. The positive coefficient of 0.1163751 implies that the larger a firm becomes, the higher the debt-equity ratio hence the company takes on more debt financing.

The p-values of the other variables are greater than the 5% significance level, hence are insignificant in determining the debt-equity ratios of the listed firms.

**Table 7: Effect on debt-equity ratio**

Random-effects GLS regression	Number of obs	=	337
Group variable: companynum	Number of groups	=	38
R-sq: within = 0.0384	Obs per group: min	=	7
between = 0.1724	avg	=	8.9
overall = 0.0460	max	=	9
	Wald chi2(7)	=	15.88
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0263

DEBTEQUITY~O	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
MKTCAP	-2.57e-09	2.28e-08	-0.11	0.910	-4.72e-08	4.20e-08
TURNOVER	2.24e-07	2.59e-07	0.86	0.388	-2.84e-07	7.31e-07
VOLUME	-7.39e-06	5.62e-06	-1.32	0.188	-.0000184	3.62e-06
CREDIT	.0015715	.0038961	0.40	0.687	-.0060647	.0092077
TANGIBILITY	.0328968	.0286455	1.15	0.251	-.0232474	.0890409
SIZE	.1163751	.034283	3.39	0.001	.0491816	.1835686
SALESGROWTH	-.0040309	.0203748	-0.20	0.843	-.0439648	.0359031
_cons	-.0276242	.0186536	-1.48	0.139	-.0641846	.0089361
sigma_u	0					
sigma_e	.12353018					
rho	0	(fraction of variance due to u_i)				

## CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS & RECOMMENDATIONS

### 5.1 Discussion

From the findings in the previous chapter, it is indicated that the development of the stock market as measured by market capitalization, turnover, volume of shares traded and the domestic bank credit to the private sector does not have a significant effect on the capital structure of listed firms in Kenya. This is consistent with the findings of Bhabra, Liu, & Tirtiroglu (2008) that stock market development did not have an impact on the capital structure of Chinese firms and those of Didier & Schmukler (2013) that demonstrated that the development of capital markets will not have a widespread effect on financing as expected.

These findings differ from those of Agarwal & Mohtadi (2004) who carried out a study on the impact of stock market development on the financing decisions of firms in 21 emerging countries for the period 1980 – 1997. Agarwal & Mohtadi (2004) found that stock market development as measured by the market capitalization, has a negative relationship with debt levels of firms.

The findings also contradict those of Padachi & Seetanah (2007) that demonstrated that the development of the stock market has a significant impact on capital structure decisions. The findings of the study were that with the development of Securities Exchange of Mauritius, non-financial firms opted for debt financing but financial firms substitute debt for equity financing. Padachi & Seetanah (2007) attributed this difference to the high risk associated with financial firms, hence the need for such firms to be well capitalized.

The findings also differ from those of Graham, Leary, & Roberts (2014) who found that development of NYSE, AMEX and NASDAQ led to an increase in debt financing for the listed firms.

The study also finds that only one of the chosen firm-specific variables has a significant impact on the capital structure decisions of the listed firms in Kenya. Size of the company is seen to be the only significant variable in determining the capital structure decisions of the listed firms. Size of the company is found to have a positive relationship with the leverage of a firm. Bas, Muradoglu, & Phylaktis (2009) offers an explanation for this. The study states that as firms become larger their diversification increases while their risk of failure decreases which allows

them to take up more leverage. However, these findings contradict those of Chakraborty (2010) who found that size of the firm is negatively related to the leverage of Indian non-financial firms.

Based on the Panel cointegration test, it is found that the explanatory variables do not have a long-run equilibrium relationship with the leverage ratios of the listed firms. As such, the leverage of listed firms in Kenya is not bound and changes independently of the explanatory variables.

## **5.2 Conclusions**

This paper has attempted to explore the impact of the development of the stock market on the capital structure of listed firms by using panel data on 38 firms listed in the Nairobi Securities Exchange for the period 1994-2013 and stock market development variables for the same period. From the findings presented, it is seen that the development of the Nairobi Securities Exchange as quantified by market capitalization ratio, turnover ratio, volume of shares traded and ratio of private credit to GDP (a complementary measure) does not have a significant effect on the capital structure of listed firms and that these variables do not have a long-run equilibrium relationship with the capital structure of the listed firms.

Asset tangibility and sales growth are also found to have an insignificant impact on the capital structure decisions of the 38 listed firms. Size of the company is found to be the only firm-specific variable that has an impact on the capital structure of the firms. Size has a positive relationship with the leverage of listed firms and this can be attributed to increased diversification and decreased risk of failure as firms increase in size.

Based on the results of the panel cointegration test, the leverage of listed firms in Kenya is found not to have a long-run equilibrium relationship with its determinants.

However, firm managers should not ignore the potential impact that stock market development could have on capital structure decisions. As the Nairobi Securities Exchange continues to develop and become more efficient, this development may begin to have a significant influence on listed firms' capital structure.

### **5.3 Recommendations**

Time-varying models could be used to account for different economic situations and regimes within the country. Accounting for these differences could help give a clearer conclusion of the relationship between the development of the stock market and the capital structure decisions of the listed firms. Further studies could also look into the impact that development of the bond market in Kenya has on capital structure of the listed firms. Other areas of financial development such as this could be explored and their impact on capital structure decisions of firms studied.

A major limitation faced when conducting this study was in collecting of data. The Nairobi Securities Exchange should ensure that all the listed firms regularly publish their financial statements and that they are readily available to the members of the public. In addition to this, the firms should ensure that their past financial statements are also readily available on their website or other accessible platforms. This would make collection of data for future studies less cumbersome.

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