

**THE SIZE, EARNINGS AND THE LEVERAGE OF AGRICULTURAL  
COMPANIES LISTED AT THE NAIROBI SECURITIES EXCHANGE**

**BY**

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the Award of Masters of Business Administration (MBA), School of Business,  
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## DECLARATION

This project proposal is my original work and has never been presented for any research project for the award of any degree in any university.

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[D61/61163/2013]

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

Signature..... Date.....

Dr. Wanjare

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## **DEDICATION**

This piece of work is a special dedication to my beloved wife Renyce C for her tireless sacrifices to ensure that I go through the program, my daughters Cindy T and Candy T for the joy and courage they gave me to go on and on. Always know that you are the best that this life could give me. God bless you.

## **ABSTRACT:**

Financing viable business project is an issue that each and every financial manager poses to think seriously about to enable them carry it out in a way that will enable the firm maximize its return. This has therefore made them to battle with the choice of whether to finance their project fully using debt financing, pure equity or a combination of both debt and equity, giving rise to the question on the value of capital structure to a firm, especially the value of using debt finance in the firm.

This paper therefore sought to find out the relationship between the earnings of the firm, the size and the level of financial leverage of agricultural firms listed at the Nairobi Security Exchange (NSE). The study focused on the agricultural firms listed at the Nairobi Security Exchange as a representation of the firms within the agricultural sector in Kenya due to their huge capital investment and their sizes. The study was based on secondary data which had been collected from the NSE for a period of five years (2008 - 2012).

In fulfilling the objective, the researcher employed correlation and regression analysis to determine the relationship between the size, earnings and the leverage of the agricultural firms which confirmed a positive relationship between the leverage of the firm and its size, and a negative relationship between the leverage level of these firms and their earnings. The findings of the study will help the managers in determining how best they should finance their projects if they want to achieve maximum profit.

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# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

The impact of financial leverage on a firm's investment decision is a central issue in corporate finance that each and every firm's manager needs to address since it has an impact on the firm's capital structure. According to Gleason, Mathur and Mathur (2000) the use of different levels of equity and debt by managers is one the strategy that can be used by firms to improve their financial performances and its competitiveness. The issue of how much debt or equity finance that firm should use to enable them maximizes their value in the market and maximizes their shareholders' wealth is critical for the firms' managers. The size of the firms will greatly determines the level and nature of its operations, while the earnings of the firm will determine the firm's ability to meet its financial obligations, which makes the two factors to be very important in making financial decision. Knowing the determinants of leverage that they can rely on while making the decision on how much debt to use in their capital structure will help them in improving their decision making techniques so long as they have understood the effect those determinants have on their leverage levels. Therefore do firms consider their sizes and earnings while going for debt financing?

According to pecking order theory by Myers and Majlu, (1984) the firms with adequate earnings will prefer the use of their internally generated finances to finance their viable projects, limiting the use of debt financing to finance their projects. However some firms despite their adequate earnings will still prefer the use of debt to finance their operations as away or reducing the free cash flows and minimizing the agency cost (Jensen and

Meckling's, 1976). Also looking at the net income theory by Brealey and Myers (1998) there exist an optimal level of leverage for firms that will enable them acquire capital at the minimum possible cost and enjoy the maximum possible returns. This emphasizes the need for the firm to obtain debt financing irrespective of their size and earnings to enable them attain this optimal level because failure to attain it may make it hard for the firms to maximize their returns. This emphasizes the value of including debt financing in the firm's capital structure. The question therefore is, "How much debt financing is enough in the firm's capital structure?"

The agricultural firms listed in the Nairobi Securities Exchange (NSE) requires a substantial amount of capital to finance their large operations which a times may not be easily afforded if they only rely on equity financing. Issueing of new equity to finance their project may subject them to the risk of diluting their market value, as some investors may view it as a sign of their firms being overvalued and start discounting and undervaluing the firm. Using of a lot of debt financing in their capital structure is also likely to increase their financial distress which may lead to bankruptcy if proper care is not taken, due to the unpredictable nature of the sector they operate in. Therefore does their sizes and earnings influence the amount of debt financing that the firms includes in their capital structure, or do they just go for debt financing without considering these determinants. That's what the study would like to find out.

Debt financing is a strategy that managers may use to improve their firms financial position (Gleason et al, 2000) whether in agricultural sector or any other sector. The firms' just needs to understand the determinant of their financial leverage, to enable the firm managers make the correct decision on the amount of debt financing to go for.

### **1.1.1 The Size and Earnings of the Firm**

The study looked at the size of the firm with respect to its total assets, and defines the size of the firm as natural logarithm of total assets of the firm (Frank and Goyal, 2009). Firms that had high value assets were considered as large firms as compared to the ones which had lower value asset. According to Titman and Wessels (1988) larger firms are not faced with greater challenges of direct bankruptcy cost due to their ability to diversify their operations and generate adequate finance to enable them offset the cost of debt. This makes bankruptcy cost not to be the key factors to be considered by them when including debt financing in their capital structure.

The earnings of the firm were considered in terms of the return on company's total assets or resources used. Firms with higher earnings were considered to be more profitable. According to the Trade-off theory, those more profitable firms are exposed to lower risks of bankruptcy and therefore have greater incentive to use debt financing to finance their projects. This also enables their shareholders also to benefit from the interest tax shields which increase their return and the value of their company. The theory suggests a positive relationship between profitability and leverage of the firm and strongly encourages the firms to include debt in their capital structure (Nadeem & Zongjun, 2011).

### **1.1.2 Financial Leverage of the Firm**

The inclusion of debt financing in the firm's capital structure will influence the governance structure of a firm as well as the ability of a firm to make the strategic choices (Jensen, 1986). According to Pandey (1984), a capital structure of the firm is defined by its leverage, which is the mix of debt and equity financing in the firm

according to the financial demands of the firm. The companies that possess high level of leverage in their capital structure are able to reduce their free cash flows, limiting their possibility of misappropriating funds and motivating them to increase their efficiency. This in turn will enable them to obtain a good return and avoid the bankruptcy cost. A good capital structure therefore should be able to allow the firms to meet its financial needs without incurring avoidable expenses and incurring the necessary cost at its minimum level possible.

According to Kuang-Hua and Ching-Yu (2000), as much as the capital structure is considered as the way in which the firm finances their assets through the combination of debt and equity finances, the emphasis should be on the degree of those firms' leverage. A firm that uses more debt financing in its capital structure is considered to be highly levered and is therefore likely to benefit from the tax shield benefits than those that are not levered (Modigliani and Miller, 1963). This makes the differences between the value of a leveraged firm and that of an unleveraged firm to be the value of the interest tax shield that they enjoy.

This study therefore defined financial leverage of the firm as the ratio of debt financing to equity financing within the firm. That is the combination of debt financing and equity financing within the firm that will enable the firm to incur the minimum possible cost of raising capital but obtained the maximum possible return to its shareholders. The leverage of the firm should be that which enhances its value in the market and allows the firm to guard itself against the expensive bankruptcy cost. The study also defines free cash flow as the cash that a company is capable of generating after putting aside the cash required to preserve their assets

### **1.1.3 Size and Earning of the Firm on its Financial Leverage**

Large sized firms are capable of decreasing transaction costs of issuing long-term debt at a favorable low interest and raise funds from creditors with ease (Qureshi et al, 2012) as cited by Moses, Edna and Newton (2013) There exist a positive relationship between the firm size and leverage (Nadeem & Zongjun, 2011), implying that the larger the agricultural firm is the more levered it is likely to be as compared to the smaller firms. On the other hand, large firms also due to their high level of operations they are likely to enjoy higher earnings which according to the pecking order theory they may use to finance their operations instead of debt financing, negating the value of debt in the capital structure.

High earnings by the firm promote the use of debt and provide an incentive to firms to avail the benefit of tax shields on interest payments (Nadeem & Zongjun, 2011). The pecking order theory therefore ascertains that firms prefer to use internally generated funds when adequately available over debt financing. This therefore depicts a negative relationship between earnings and the leverage of the firm.

Jensen (1986) on the other hand predicted a positive relationship between the earnings of the firm and financial leverage as long as the market for corporate control is effective because debt reduces the free cash flow generated by profitability. Therefore more profitable agricultural firms will reduce the free cash flows in the firm reducing the possibility of the firm managers to mismanage their financial resources. The debt will also push the managers to make decisions that will ensure that their earnings are increased to enable them meet the cost of debt (Jensen, 1986).

### **1.1.4 The Agricultural Sector in Kenya**

Agriculture remains the backbone of the Kenyan economy. The sector is considered to be the most important sector in the economy, contributing approximately 25% of the GDP, and employing 75% of the national labour force (Republic of Kenya 2005) as cited by Patrick and Rosemary (2006). Over 80% of the Kenyan population live in the rural areas and derive their livelihoods, directly or indirectly from agriculture. As a result of all these, the performance of the sector is therefore reflected in the performance of the whole economy.

The Government of Kenya (GoK) (2010) found out the contribution of the agricultural sector to be 25 percent of the Gross Domestic Product (GDP) directly and another 25 percent indirectly. The United Nations Economic Commission for Africa (2013) upholds the sector as the main contributor to Kenyan exports accounting for about 65 per cent of Kenya's total exports and being a major foreign earner. This therefore makes the agricultural sector to be a sector worth being protected and invested in to enable the country continues enjoying the benefit that the sector has been providing. The sector therefore requires a good amount of finances to be invested to enable it continue supporting the economy.

The agricultural firms listed at the Nairobi security exchange have an avenue to raise their much needed capital through sales of their equity or debt. But, due to the volatility of the sector they operate in (United Nations Economic Commission for Africa, 2013), the equity finance may a times become very expensive, pushing them to the use of debt to finance their viable project. Again too much debt for them may also be very expensive to

them in the long run if care is not taken due to increase financial distress as a result of the firms in ability to meet the cost of debt. This makes difficult for the firms in this sector to finance their operations especially with respect to debt financing unless they understand the key issues that they need to consider when going for financial leverage, and their effect on the same.

If the manager decides to sell equity to raise their capital, then the outside investor may begin doubting the stability of the firm and ask why the managers may have decided to make that kind of move. They believe that managers will be willing to use equity to finance their project if they feel that their firm is overvalued and therefore may decide to rationally discount the firm's stock price reducing the value of the firm. To avoid this discounting the managers always prefer going for riskless debt to finance their new projects, which emphasizes on the value of having a levered firm. The study therefore will define agricultural firms as firms that directly depend on the agricultural produce to carry out their operations. They depend on the produce as either their main products being traded on or as their main raw materials.

## **1.2 Research Problem**

The size and earnings of the firm are very important in helping the firm managers determines the best mix between debt and equity financing that they should adopt to enable them have an optimal capital structure. As much as it is the financial managers' responsibility to determine the optimal mix of debt and equity that will ensure that their firms maximize their shareholders wealth (Maina & Ondongo, 2012), their decisions should be objective and based on factors that that will cushion them from running in to

financial bankruptcy. The big question that they need to address is the determination of how much debt they should include in their capital structure and how to attain this optimal level. According to Moses, Edna and Newton (2013) there exists a higher relationship between size and earnings of the firm with the firm's leverage especially for the firms in the financial institutions, making them to be key determinants of their financial leverage.

The agricultural companies listed in Nairobi Securities Exchange (NSE) their ability to determine the best mix between their debt and equity financing will ensure that they obtain their much needed capital at an affordable cost. Due to the fact that they operate in an unpredictable sector which is quite susceptible to climate change and climate variability (United Nations Economic Commission for Africa, 2013), many investors may be skeptical about this sector's capability to give back the much needed return on the high capital that they may require, which may make equity finance for them to be very expensive. This therefore pushes them to think of debt financing as the suitable alternative. However, since the farming activities directly depend on the existing climatic conditions, the variability is likely to make the agricultural firm's ability to meet the cost of debt be a problem especially if too much of it has been used. This makes the knowing determinants of financial leverage which directly affects them very important in making of their financial decision.

The financial leverage level of the agricultural firms will determine their capital structure (Hadlock and James, 2002) which may be an optimal structure to them if care is taken or a very expensive one that may cause a lot of financial distress in the firm. According to Moses, Edna and Newton (2013) when determining the determinants of financial

leverage in the savings and credit co-operatives in Kenya found out that among the important factors that firms need to consider when going for leverage are the Firm size and the earnings of the firm among others. If this is true for the firms in other sectors, is it also true for the agricultural firms listed in the NSE? Despite these firms being listed in the NSE, they remain of different sizes and experiences different levels of earnings in the same economic environment. They also possess different capital structure with different levels of financial leverages. This makes one to kip on asking the question, “Does size and earnings of the firm have effect on the financial leverage of agricultural firms listed at the Nairobi Securities Exchange?”

### **1.3 Research Objectives:**

The study objective was;

To determine the effect of the size and the earnings on the financial leverage of the agricultural firms listed at the Nairobi Securities Exchange.

### **1.4 Value of the Study**

The study will help in strengthening the agency theory by Jensen and Meckling's (1976) that inclusion of debt financing in the capital structure will make the managers to make more structured and meaningful decisions on how to use the firms resources in an appropriate manner without putting their self-interest first. The debt will always remind the managers of the danger of making a decision use the capital in a non-beneficial manner to the firm.

The study will also help the chief financial officers for both listed and non-listed companies to evaluate their practices against the best practices of others in the environment which makes them succeed a head of them, especially with respect to Debt financing as part of their capital structure.

It will also help the policy makers in coming up with the suitable policies on the capital structure of the firm, especially with respect to debt financing. The policy will always ensure that firms are protected against the financial distress and the bankruptcy cost that may arise as a result of going for more debt beyond the required levels. This will also contribute to the building of a pool of knowledge that will be useful for the managers in making financial decision Kenyan business environment.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

The purpose of this chapter is to provide the readers with insight about the theory and scholarly work done in the same field of capital structure (Leverage of the Firm). This chapter contains a review of the theories of capital structure, the determinant of financial leverage of the firm and the empirical studies on capital structure.

### **2.2 Theoretical Review**

Some of the theories that were found to be relevant to the capital structure which the study discussed include; the Modigliani and Miller capital structure irrelevance theory, Net income theory, Pecking order theory and Trade off theory.

#### **2.2.1 Pecking Order Theory**

It is believed that the firm's managers have more information about the firm's future prospects than the outsiders (Stephan, 2010), therefore going for debt financing will be viewed as the extension of the managers confidence that the firm is in a stable position enough to meet the cost of debt, in terms of the earnings they receive. Myers and Majlu, (1984) argued that large firms with adequate earnings will prefer the use of their internally generated finances to finance their viable projects, though will prefer debt financing over equity when external finance is needed. This therefore implies that earnings have a negative relationship with the financial leverage level of the firm.

However on the other hand it observed that the inclusion of debt financing in the capital structure will reduce the free cash flows in the large profitable firms, minimizing the possibility of the firm managers to mismanage their financial resources (Jensen, 1986). The more earnings the agricultural firms receive the more debt they should go for, as the debt will push the managers to make decisions that will ensure that their earnings are increased to enable them meet the cost of debt. This brings a positive relationship between the earnings and the size of the firm with its leverage levels. The issue for this study is to determine the situation that exist in agricultural firms listed in the NSE

### **2.2.2 Net Income Theory**

This theory exerts that there exists an optimal level of leverage, a point where the cost of capital will be at the minimum value possible and allowing the firm to maximize its return. The implication of this is that minimizing the cost of capital when the optimal level of debt capital is employed maximizes the value of the firm (Brealey and Myers 1998). Their argument is that for firms with low debt ratio, increasing their financial leverage level will not increase the cost of debt and therefore can be used as a replacement of equity and preserves the firm's value. This therefore implies that whether the firm is large or small, with higher earnings or not there exist an optimal debt ratio that it must maintain for it to maximize its return. This negates the effect that firms earning may be having on its leverage.

According to Brealey and Myers (1998), financial leverage will make the managers be aware of the increased risk that they have to shoulder for the firm to continue growing in the industry. This therefore calls for going for debt sparingly just to obtain that amount

that the firm will be able to shoulder without suffering the financial distress and may going in to bankruptcy. This again showed that the size and earnings of the firm has a bearing on the financial leverage of the firm.

### **2.2.3 Modigliani and Miller Capital Structure Irrelevance Theory**

According to Modigliani and Miller (1963), the value of a firm is independent of its capital structure. However, they further emphasized on the value of including debt financing in the firm's capital structure, as the use of debt will offer the firm a tax shield to the firms earnings which will see a greater percentage of the firms earning goes to the shareholder instead of the tax authority. This contrary to the argument of Brealey and Myers (1998) that the form of financing does not change the net operating income of the firm and the risk attached to it, but simply shows the way in which the income is distributed between equity holders and debt holders. They emphasized on the value of including debt financing in their capital structure. Agricultural firm with higher earning will therefore be more profitable if they include more debt in their capital structure to enable them benefit from the tax shield.

They observed that the mix between the debt financing and equity financing should be in a way that it minimizes the cost of the capital and allows for the maximization of the return (Modigliani and Miller, 1963). This again proposes that irrespective of the earnings and the size of the firm, financial leverage of the firm is inevitable as it preserves the value of the firm and increases the performance of the firm. The amount of debt financing to be included in the capital structure should be devoid of the firms size

and earning, but should be that which will make them benefit maximally from the tax shield.

#### **2.2.4 Trade Off Theory**

According to Myers (2001) debt financing offers the firm a tax shield, and that firms that pursue higher levels of debt gain the maximum tax benefit and ultimately enhance profitability, though higher levels of debt financing in the firm may also increase the possibility and adverse effects of bankruptcy. The trade-off theory of capital structure emphasizes on the fact that a firm will choose a financial leverage level by balancing the costs and benefits of both the debt and equity financing. That is as the firm increases their debt, the marginal benefit of the debt begins to decline as the marginal cost increases. Therefore the managers needs to establish an optimal mix that will ensure that the marginal cost remain minimum as the marginal benefit move to maximum (Kuang-Hua & Ching-Yu, 2000).

The Static Trade-off Theory argued that although the benefit of tax shields may encourage the firms to employ more debt than other external sources available to them, this mode of finance is not free from costs. Myers (1977) observed that as much as levered firms enjoy tax deductibility as a benefit of their leverage, care needs to be taken such that the cost of financial distress associated with the inclusion of debt financing in the capital structure. He observed that the firm's capital structure is at optimal at the point where the cost of using debt and equity is at minimum as compared to the benefit that accrues as a result of using the mix, to allow the firms to trade them off. The firms

therefore should seek to establish this optimal point in their capital structure irrespective of their size and earnings.

Dynamic Trade off Theory on the other hand argues that the firm's capital structures may not always be as per their target leverage ratios, but firms may allow the ratio to vary considering the costs and the benefits of the use of debt and equity and also the financing margin that the firm anticipates in the next period. Fischer, Heinkel & Zechner (1989) argued that a dynamic optimal capital structure is an appropriate choice in a case where the firm requires recapitalization. Unlike the static trade off theory where the emphasis is on the targeted leverage ratio that the firm will not be willing to deviate from, the dynamic trade off theory emphasizes on the firm having an optimal leverage range within which they let their leverage ratios vary. The firm only adjusts their capital structure when leverage reaches either of the two boundaries defining the range. The levels of the boundaries vary cross-sectional with firm characteristics such as the volatility of cash flows, size, earnings of the firm, interest rates and bankruptcy costs (Kuang-Hua & Ching-Yu 2000). This therefore indicates that the firms' size and earnings have effect on the firms' financial leverage.

### **2.3 Determinant of financial Leverage of a Firm**

the study will consider the leverage of the firm as the ratio between the total debts of the firms to the total assets of the firm (the debt ratio) Some of the factors that the study considered as those that are likely to affect the capital structure decision included: the earnings of the firm and the size of the firm among others.

### **2.3.1 The Size of the Firm**

According to Titman and Wessels (1988) larger firms are not faced with greater challenges of direct bankruptcy cost due to their ability to diversify their operations and generate adequate finance to enable them offset the cost of debt. They argued that big firms are better off using debt financing to finance their projects, as there exist a positive relationship between the size and the leverage of the firm. According to agency theory (Jensen and Meckling's, 1976) large firms go for debt financing as a way of trying to solve their agency cost. Therefore the more the firm expands in size, the more debt financing it should go for.

Rajan and Zingales (1995) on the other hand found out that large firms do not suffer so much the problem of information symmetry, which therefore reduces the chances of their new equity being undervalued in the market. This implied that large firm can comfortably use equity financing and still maintain their value, depicting a negative relationship between the size of the firm and its leverage. Again this presents a contradiction on whether the financial leverage of the firm depends on its size and earnings.

### **2.3.2 The Earnings of the Firm**

According to the trade-off theory those more profitable firms are exposed to lower risks of bankruptcy, which gives them a greater incentive to use debt financing and benefit from the interest tax shields which increases the value of their return. The theory suggests a positive relationship between earnings of the firm and its financial leverage of the firm and strongly encourages the firms to include debt in their capital structure (Nadeem &

Zongjun, 2011). Jensen (1986) also confirmed the existence of a positive relationship between profitability and financial leverage so long as the market for corporate control is effective.

On the other hand the pecking order theory argues that firms prefer to use internally generated funds when available and only chooses debt over equity when external financing is required. This negates the value of including debts in the firm's capital structure. According to the pecking order theory, there exist a negative relationship between profitability and leverage of the firm. This therefore raises the question on whether the earnings of the firm or its profitability affect its financial leverage levels.

## **2.4 Empirical Studies Done on Capital Structure**

Nadeem & Zongjun (2011) conducted a study on the determinants of capital structure in the manufacturing firms in Pakistan where they found out that profitability, liquidity, earnings volatility, and tangibility (asset structure) are related negatively to the debt ratio, whereas firm size is positively linked to the debt ratio. Their study confirms that the size of the firm, the liquidity and the earnings of that particular firm have an effect on the financial leverage of the manufacturing firms.

Saeedi and Mahmoodi (2011) examined the relationship between capital structure and performance of listed firms in the Tehran Stock Exchange (TSE). According to the study market measures of performance are positively related to capital structure and whereas Return on Asset (ROA) is positively related to capital structure. The findings by Saeedi and Mahmoodi (2011) indicate that earnings of the firms have positive relationship with their financial leverage. Especially for the firms listed in the TSE as at that time.

Similarly Javed and Akhtar (2012) also found a positive relationship between financial leverage, financial performance and growth and size of the companies. The study, which focused on the Karachi Stock Exchange in Pakistan, used correlation and regression tests on financial data. The study applied regression analysis and found a negative relationship between debt equity ratio and ROE. Their study confirms that the size of the firm has an influence on the financial leverage of the firms. It also confirms that the measure of ROE does not have much influence on the financial leverage of the firm. This is why the study intends to adopt the ROA as a measure of the firms earning.

Moses, Edna and Newton (2013) looked at the Determinants of Leverage of Savings and Credit Co-Operatives in Kenya, where they found out that the firm size has significant relationship with leverage at 99% confidence level, whereas liquidity and tangibility have significant relationship with leverage at 95% confidence level. The study used regression analysis to explain the relationship. This further confirms that both the size and liquidity of the firm has an effect on the financial leverage of the firm. The above studies though most of them focused mainly on industrial and allied sector and paying little attention to the agricultural firms indicates that the size and earnings of the firm has a bearing on its financial leverage. If this is confirmed in these other sector then does it also hold for the agricultural firms listed in the Nairobi Security Exchange (NSE) which also faces the financial challenges just like the firms in the other sectors? Does size and earnings of the firms have an effect on the financial leverage of the Agricultural listed at the Nairobi Security Exchange?

## **2.5 Summary of Literature Review**

Debt financing provides an affordable alternative source of finance for the firms who would like to preserve their value in the market and explore new ventures in the environment. With the previous studies reviewed above approving that the inclusion of debt financing in the firm's capital structure not only preserves the value of the firm, but also motivates the managers to improve their efficiency and effectiveness in carrying out their operations within the firm. However just going for debt financing without putting some considerations in place may be dangerous for the firm. It may subject the firm to financial distress which may lead to bankruptcy.

For the agricultural firms listed in the NSE, care needs to be taken when going for debt financing. As much as they may need much capital to invest which may be readily available through debt financing, their sector at times becomes very unpredictable which may hinder their ability to generate the required return to meet the cost of debt. It therefore calls for them to determine the level of debt finance which they should include to minimize the bankruptcy cost and still preserve value.

Every agricultural firm strives to increase their size and earnings to enable them overcome the competition that exist in the industry and control the market, especially the ones listed at the Nairobi Securities Exchange. These firms have proved to be among the best in the industry and therefore their best practices with respect to debt financing will be vital in assisting other firms in the sector especially those which are not listed to improve on their approaches to debt financing and curb the danger of bankruptcy.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter systematically provides an explanation of the research design that was adopted by this research, the target population, the data sample, data collection method and techniques that will be used to analyze data.

### **3.2 Research Design**

In this study, a longitudinal research design was used, whereby the leverage of each and every firm will be observed for the five years and the relationship between the debt ratio and the determinants will be determined. This design will allow for the data to be collected for five years, where the debt ratio at each and every determinant level was analyzed to clearly bring out the relationship that exist between them and the leverage level of the firm. This helped in determining the relationship between the size and earnings of the firm and its financial leverage level.

The design was used by Robert (2013) when he was determining effect of capital structure on financial performance of firms listed at the Nairobi securities exchange and was found suitable it enables them to observe the firms performances for a period of time with respect to their capital structure to enable them draw their conclusion..

The study also employed a descriptive research design to describe the effect of the mentioned determinants on the financial leverage levels of the firm, just as was used by Mwangi, Anyango and Amenya (2012) to describe the Capital Structure Adjustment,

Speed of Adjustment and Optimal Target Leverage among Firms Quoted on the Nairobi Stock Exchange and was also found to be suitable.

### **3.3 The Population of the Study**

The population of interest of this study was composed of all the 11 agricultural firms listed at the Nairobi Securities Exchange as at December 2013, which included: Eaagads Limited; Kakuzi Limited; Kapchorua Tea Company Limited; Limuru Tea Company Limited; Rea Vipingo Plantations Limited; Sasini Tea And Coffee Limited; Williamson Tea Kenya Limited; British American Tobacco Kenya Limited; East African Breweries Limited; Mumias Sugar Company Limited and Unga Group Limited (NSE, 2013).. These are firms which either deal in agricultural produce or depend on the agricultural produce as their main raw materials.

The fact that these firms are listed at the NSE implies that they have high level of capital investment which raising may be a challenge. They also have an opportunity to raise more of their required capital through sales of equity in the securities market or through debt financing, implying that they have a choice to make. Therefore should the managers go for debt financing they do it out of their own free will unlike unlisted firms which may be making choices of debt financing just because they are unable to access equity financing easily.

### **3.4 Data Collection**

The study relied on secondary data collected from the Nairobi Security Exchange for a 5 year period that is from 2008 to 2012. The annual financial report for the firms was used

as the main sources data as they reflected the financial position of the firm as at end of their trading periods and clearly outlined their capital structure. The report helped in obtaining the following information; the Total Assets of the firm; the Profit before Taxes; the Current assets and the Current liabilities of the firm.

### **3.5 Data Analysis**

Data obtained was analyzed using correlation and regression analysis techniques, to help in determining the relationship between the firm's debt ratio and the identified determinant. This technique was also employed by Moses, Edna and Newton (2013) when they were looking at Determinants of Leverage of Savings and Credit Co-Operatives, Nadeem & Zongjun (2011) when they were finding out the determinants of capital structure in the manufacturing firms in Pakistan and it worked for them.

#### **3.5.1 The Analytical Model**

The relationship was determined by expressing the debt ratio as a function of the size and earnings of the firm, a model that was also Nadeem & Zongjun (2011) when they were looking at the determinant of capital structure, an empirical study of firms in manufacturing industry of Pakistan. The model was expressed as:

$$DR_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \epsilon_{it}$$

Where:

$DR_{it}$  = The Debt Ratio of the  $i^{\text{th}}$  firm at time  $t$

$E_{it}$  = The Earnings of the  $i^{\text{th}}$  firm at time  $t$

$S_{it}$  = The Size of the  $i^{\text{th}}$  firm at time  $t$

$\beta_1 - \beta_2$  = Coefficient of concerned independent variable in the study

$\beta_0$  = y-Intercept for the model

$\epsilon_{it}$  = The Stochastic error of the  $i^{\text{th}}$  firm at time t

The study defined its variable as follows: Debt ratio ( $DR_{it}$ ) as the Ratio of total debt of the firm to its total assets (the financial leverage); Earnings of the firm ( $E_{it}$ ) as the Ratio of profit before taxes to the total assets of the firm and Firm Size ( $S_{it}$ ) Natural logarithm of total assets of the firm, just as they were defined by Nadeem & Zongjun (2011). A factor is considered to have an effect if its beta coefficient in the model is a value other than zero. The determinants with zero beta coefficients are considered not to have any effect on the leverage levels of the firm. Those beta coefficients with positive values are considered to have a direct relationship with the leverage level of the firm, such that their increase will lead to increase in the firms leverage levels, while those with negative beta coefficient will be considered to have inverse relationship with the leverage level of the firm, such that the increase in the presence of that determinant will lead to decrease in the leverage levels of the firm. The greater the positive value of the beta coefficient, the more effect the determinant have on the leverage levels of the firm, while the little the value of the negative beta coefficient, the more the determinant have inverse effect on the leverage of the firm.

## CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION.

### 4.1 Introduction

This chapter will provide the analysis of the collected data from the 11 agricultural firms listed at the Nairobi Securities Exchange, the result from the analysis and the discussion on the findings of the analysis to bring out their relevance.

### 4.2 The Size, Earnings and the Leverage of the Firms

The average size, earnings and the leverage of the agricultural firms listed at the NSE between the years 2008 to 2012 were found to be as follows:

S/NO	FIRM	SIZE	EARNINGS	DEBT RATIO
1	EAAGADS LTD	12.77573636	0.139624280	0.197513255
2	KAKUZI LTD	14.87610816	0.199726159	0.222711472
3	KAPCHORUA TEA Co. LTD	13.94883880	0.101023695	0.257966174
4	LIMURU TEA Co. LTD	11.92836995	0.481521329	0.203521482
5	REA VIPINGO PLANT. LTD	14.22357242	0.236629266	0.197989335
6	SASINI TEA & COFFEE LTD	15.88951019	0.109027129	0.244447522
7	WILLIAMSON TEA K. LTD	15.25626010	0.174334873	0.208065673
8	B.A.T KENYA LTD	15.80817721	3.219639579	0.231363151
9	E.A.B. LTD	17.15726008	0.452116791	0.269339046
10	MUMIAS SUGAR Co. LTD	16.59986465	0.115790178	0.261501630
11	UNGA GROUP LTD	15.52064567	0.057587308	0.374449236
	AVERAGES	14.90770000	0.480600000	0.242600000
	STANDARD DEVIATION	1.58133000	0.919010000	0.050950000

Table 4.1: Table of average Size, Earnings and the Debt ratio of the Agricultural Firms (Researchers Data, 2014)

From table 4.1, the average size of the agricultural firms for the five year period ranges between 11.92836995 and 17.15726008 for the smallest and the largest firms respectively, with the average size of all the agricultural firms listed at the NSE being 14.9077 and the standard deviation being 1.58133 indicating that the firms are almost at the same size with each other. That is the difference between the smallest firm listed and the largest firm is not all that big. This implies that the firms are able to make similar decisions when it comes to debt financing, if the size is the main factor that determines the leverage of the firm.

The average earnings of the firms (Table 4.1) for the five years period range between 0.101023695 and 0.481521329 with only the BAT Kenya Ltd having 3.219639579 which is far much larger than all the other 10 firms, which may be attributed to other factors in the industry. The average earnings of the firms is 0.480600000 with the standard deviation being 0.919010000 which clearly indicates a great variation in earnings between the firms listed which may be attributed to the mode of their operations. But even despite all these variations in earnings, the average debt ratio between these firms for the past five years is at 0.242600000 which is not far away from the firm with minimum debt ratio of 0.197513255 and the maximum of 0.374449236. Their standard deviation is 0.050950000 which also confirms that despite the firms different earnings they leverage levels is almost the same which almost negates the effect of the firms earnings on the leverage of the firm.

### 4.3 The Relationship between size, earnings and the leverage of the firm

#### 4.3.1 The Pearson Correlation Analysis

The study used Pearson correlation to determine the relationship between the size, earnings and the debt ratio of the firms and obtained the following outcome:

#### Correlations

		SIZE	EARNINGS	LEVERAGE
SIZE	Pearson Correlation	1	.160	.474
	Sig. (2-tailed)	.	.639	.141
EARNINGS	Pearson Correlation	.160	1	-.125
	Sig. (2-tailed)	.639	.	.715
LEVERAGE	Pearson Correlation	.474	-.125	1
	Sig. (2-tailed)	.141	.715	.

a. List wise N=11

Table 4.2 Table showing the relationship between the size, earnings and the debt ratio of the firm (Researcher's Data, 2014)

From table 4.2 the size of the firm has a positive relationship with the leverage of the agricultural firms listed in the NSE which is at 0.474 or approximately 50%. This implies that it is a factor that firms should look into while going for debt financing. The earnings of the firm on the other hand has a negative relationship of -0.125 or approximately 13% which also implies that it is a factor that these firms must look in to seriously before going for debt financing. The negative relationship of the earnings suggests that as the earnings of the firm increases its leverage level is likely to go down, which tends to support the line of arguments taken by the pecking order theory by Myers and Majlu, (1984). That is the firms with adequate earnings tend to prefer financing their projects using internally generated funds and only prefer debt over equity when the internally generated funds are exhausted. From the analysis in the table 4.2 it is clear that both the

size and earnings of the firm has an influence on the leverage levels of the agricultural firms listed in the NSE and has a bearing on how much debt financing to be included in the capital structure.

### 4.3.2 Regression analysis

The regression analysis of the size, earnings and the leverage of these firms helped in understanding of the leverage is defined by the size and the earnings of the firm to help in knowing the magnitude of the role they play in coming up with the capital structure.

#### Variables Entered

Model	Variables Entered	Variables Removed	Method
1	EARNINGS, SIZE	.	Enter

- a. All requested variables entered.
- b. Dependent Variable: Leverage

Table 4.3: Table of variables used in the analysis

The table 4.3 confirms that all the study variables were considered with the firms Leverage being considered as the dependent variable with size and earnings being the defining or independent variable. The further analysis revealed the following:

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.515	.265	.082	.04882

a. Predictors: (Constant), Earnings, Size

### ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.007	2	.003	1.445	.291
	Residual	.019	8	.002		
	Total	.026	10			

a. Predictors: (Constant), Earnings, Size

b. Dependent Variable: Leverage

Table 4.4: Tables of model summary and variance analysis

From the model summary, the two variables combined define 27% of the firm's financial leverage. As much as the remaining percentage may have been accounted for by other factors, the two factors account for almost one third of the most important factors to be considered when going for debt financing. The analysis of the variance the F value is of 1.45 is significant since the corresponding value of 0.291 is below 0.5. The individual variables relates with the debt ratio in this manner:

### COEFFICIENTS

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.005	.147		.033	.974
	SIZE	.016	.010	.506	1.650	.138
	EARNINGS	-.011	.017	-.205	-.669	.522

a. Dependent Variable: Leverage

Table 4.5: Table of beta coefficients of size and earnings;

From table 4.5 the beta standard coefficient of the size of the firms is 0.506 which is greater than zero. This implies that size of the firm has a great direct influence on the leverage of the agricultural firms listed in the NSE, implying that as the firm increases in size by 51% there is high possibility that it will increase the amount of debt in its asset structure by 51%. The findings are in line with the finding of a similar study that was conducted by Moses, Edna and Newton (2013) who looked at the Determinants of Leverage of Savings and Credit Co-Operatives in Kenya, where they found out that the firm size to have significant relationship with leverage. Though unlike their study, the study had 86% level of confidence.

The graphical representation of the leverage and the size revealed the following relationship as a confirmation that size has an influence on the firms leverage level:

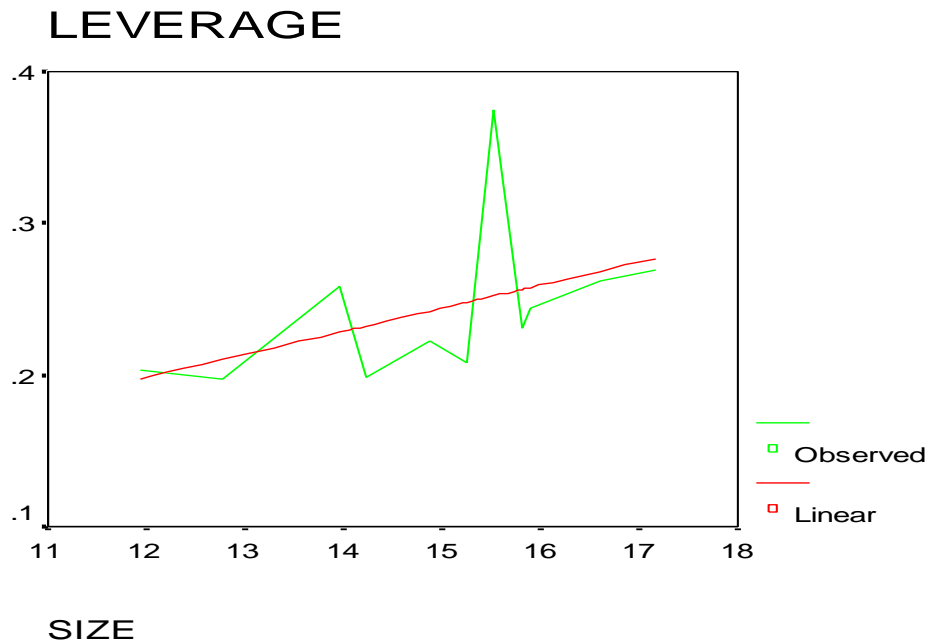


Fig. 4.1: Graph of Size against the Leverage of the firms

From the Fig. 4.1 though the line of best fit does not cover most of the points for the leverage, it covers more than half of the points. This confirms that the size of the firm has greater influence on the leverage of the firm.

The beta coefficient of the earnings of the firm from the table 4.5 is -0.205 which is a value not equal to zero. This implies that the earnings of the firm also have an influence on the leverage of the firm. The negative influence implies that as the earnings of the firm increases by 21%, the firm is likely to reduce the amount of debt in their capital structure by 21%. This further implies that the agricultural firms with high earnings are likely to use their internally generated finances to finance their project and will only go for debt when their earnings are reduced. The findings of the study is also in line with the findings of Nadeem & Zongjun (2011) when they conducted a study on the determinants of capital structure in the manufacturing firms in Pakistan where they found out that earnings of the firms have negative relationship with debt ratio.

The graphical representation between the leverage and the earnings of the firm also showed the following the following relationship between the firms leverage and their earnings;

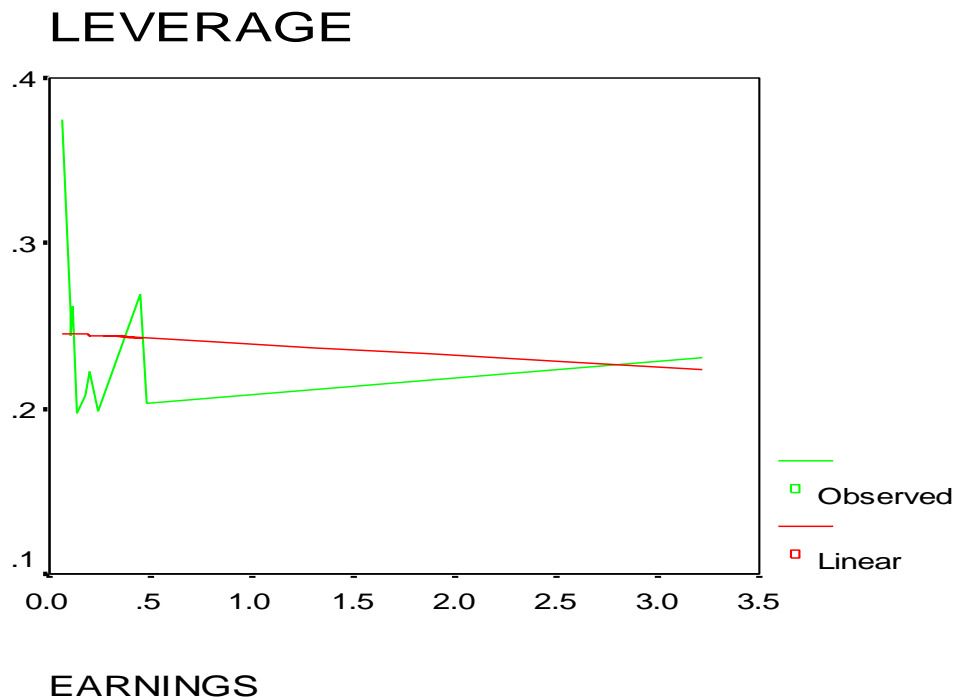


Fig 4.2; the graph of Earnings against the Leverage of the firm

The Fig 4.2 confirms that much of the debt is used when the earnings are low and less is used when the earnings are high.

From the above observations therefore, it reveals that for a firm to be able to enjoy maximally the benefit of debt financing and avoid the expensive cost associated with bankruptcy, the firm has to consider seriously its size and earnings so that they don't overindulge in debt financing which may lead to a lot of financial distress in the firm.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents the summary and conclusion from the research findings as per the objective of the study. Based on the findings of the study, the following recommendations have been given.

### **5.2 Summary of Findings and Conclusion**

The main purpose of the study was to determine the effect of the size and earnings on the financial leverage of the agricultural firms listed at the Nairobi Securities Exchange. In finding this, the study had to determine the sizes and earnings of the agricultural firms listed at the NSE and the link that exist between them and their leverage levels. The study found out that firms for the five year period the sizes of the firms averagely ranged from 11.92836995 to 17.15726008 for the smallest and the largest firms respectively, with the average size of all the agricultural firms listed at the NSE being 14.9077 and the standard deviation being 1.58133 indicating that the firms are almost at the same size with each other. It also found the average earnings for the same period to range between 0.101023695 and 0.481521329 with only the BAT Kenya Ltd having 3.219639579 which is far much larger than all the other 10 firms, which may be attributed to other factors in the industry. The average earnings of the firms are 0.480600000 with the standard deviation being 0.919010000 which clearly indicates a great variation in earnings between the firms listed.

The study found out the beta coefficients to not to be equal to zero for both the size and earnings of the firm. This revealed a great relationship between the size earnings of the firms and their leverage level, which implies that for agricultural firms to be safe from the financial distress brought about by debt financing they should always consider seriously their size and earnings among others. The study found the size to have a positive influence on the firms leverage, depicting that the firms leverage is likely to increase as the size of the firm increases, while for the earnings which the study found to have negative relationship is likely to reduce the level of leverage with its increase. This therefore confirms that just like the findings of other studies (Moses, Edna and Newton, 2013 and Nadeem & Zongjun, 2011) in other sectors which confirms that the firm size and earnings have an effect on the leverage of the firm. The negative relationship between the earnings and the leverage add more weight to the pecking order theory that even the agricultural firms will prefer the use of their internally generated funds to finance their project before going for debts.

### 5.3 Recommendations

Since there exist greater relationship between the size and earnings of the agricultural firms, the firms irrespective of their sizes in the sector should always take caution not to go for debt without considering their sizes and earnings, and where possible they should use their internally generated funds to finance their projects and only go for debt financing when they have fully exhausted their internal funds.

The study therefore proposes a model of determining the maximum debt ratio that the agricultural firms may adopt to be:

$$DR_{it} = 0.515 + 0.265E_{it} - 0.082S_{it} + 0.04882$$

(Table 4.4 Model Summary)

Any firm operating within the maximum debt ratio will be safe from the expensive financial distress that may drag them to bankruptcy.

#### **5.4 Limitations of the Study**

The items discussed as limitations hindered the scope of my study in one way or another. The first challenge faced was how to get the data. Data was not available freely but one had to purchase the data from the NSE which the cost was pegged to the number of years. The higher the number of years the higher the cost hence the study could not capture longer term due limited availability of funds.

The second limitation is time frame for the research. The five years considered may have been characterized by factors that may have made the operations of the not to be under a conducive environment that may allow them to generate maximum revenue, being that they were after the country had just gone through a rough ordeal with the 2007/2008 post-election violence. Therefore if more time would have been available for the study to explore what happened in the past years then perhaps a more conclusive outcome would have been obtained.

## **5.5 Suggestions for Further Research**

The study has evidently revealed that despite the fact that the size and earnings of the firm has an effect on the leverage of the firm, they are not the only key factors that determine the leverage, since they only explained approximately 30% of the leverage. This leaves almost 70% of the factors affecting the leverage of the firm unaccounted for which if another study can be conducted to determine what these factors are and how they affect the financial leverage of these firms will be of great importance to these firms.

The other area that the study recommends is the determination of whether there exist a relationship between the leverage of these firms and their performance. Since the study has clearly revealed a negative relationship between their earnings and their leverage, then does it mean that the unlevered firms perform in the industry better than the levered ones? This will help in knowing whether there is need to go for debt-financing even if the internally generated funds are adequate as well as further understanding why some firms are more levered than others as well as the value of leverage on the performance of these firms.

Finally a similar study can be carried out using different analytical tools and covering a longer period of time to enable it find out whether the findings of this study will still hold or shed more light for the firms on the relationship that exist between their size, earnings and financial leverage. This because it became clear from the study that most of the firms in this sector are levered and any study that may help them know how to manage their debt financing will be worth going for.

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**APPENDIX I**

**SECONDARY DATA CAPTION FORM**

**FIRM..... YEAR.....**

<b>YEAR</b>	<b>Total Debt of the Firm</b>	<b>Total Assets of the firm</b>	<b>Profit before Depreciation, Interest and Taxes</b>
<b>2008</b>			
<b>2009</b>			
<b>2010</b>			
<b>2011</b>			
<b>2012</b>			

## APPENDIX II

### LIST OF THE AGRICULTURAL FIRMS AS AT DECEMBER 2013

S/N	NAME
001	Eaagads Limited
002	Kakuzi Limited
003	Kapchorua Tea Company Limited
004	Limuru Tea Company Limited
005	Rea Vipingo Plantations Limited
006	Sasini Tea And Coffee Limited
007	Williamson Tea Kenya Limited
008	British American Tobacco Kenya Limited
009	East African Breweries Limited
010	Mumias Sugar Company Limited
011	Unga Group Limited

*(NSE Hand Book, 2013)*