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**EFFECT OF CAPITAL STRUCTURE ON THE VALUE OF AGRICULTURAL FIRMS LISTED
ON NAIROBI SECURITIES EXCHANGE**

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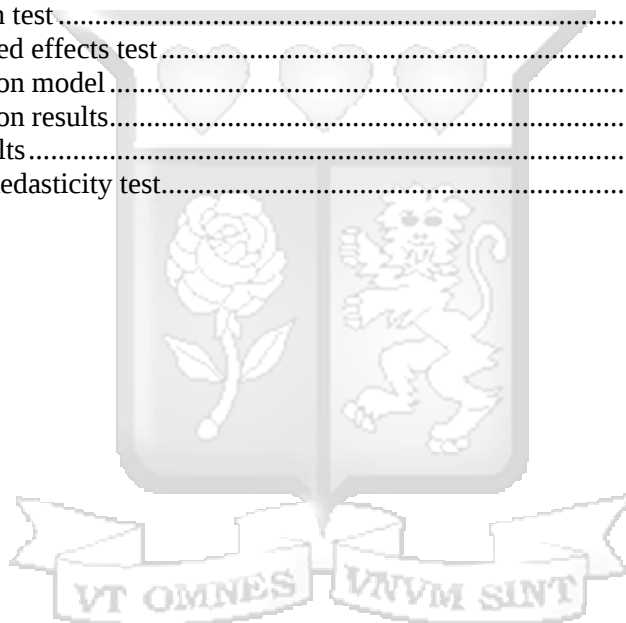
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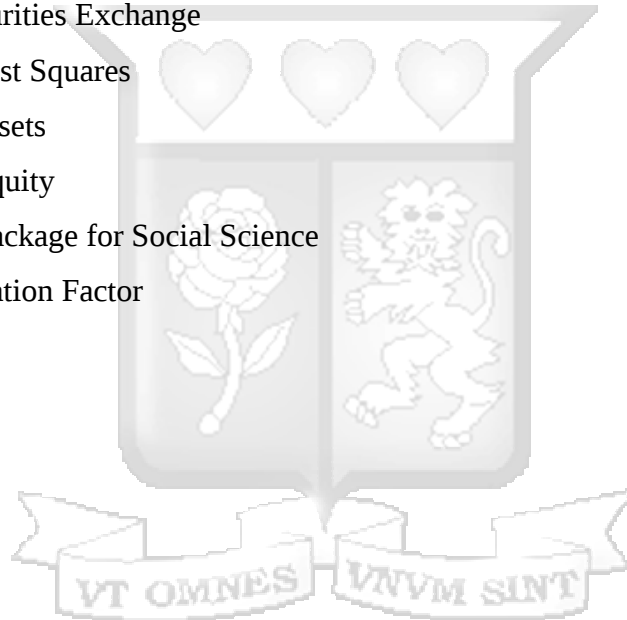
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LIST OF ABBREVIATIONS

ADF- Augmented Dickey Fuller
AIMS- Alternative Investment Market Segment
ANOVA- Analysis of Variance
EPS- Earnings Per Share
FIMS- Fixed Income Market Segments
IPS-Im, Pesaran and Shin
LLC- Levin Lin Chu
MIMS- Main Investments Market Segment
MSM- Muscat Securities Market
NSE - Nairobi Securities Exchange
OLS- Ordinary Least Squares
ROA-Return on Assets
ROE- Return on Equity
SPSS- Statistical Package for Social Science
VIF- Variance Inflation Factor



ABSTRACT

Firms continuously must finance their operations and growth. They raise capital either through internal financing, for example, retained earnings, or external financing such as bonds. When deciding on how to finance its operations, a firm must consider whether to use debt or equity. This is known as the capital structure decision. Capital structure is how a company finances its operations through debt and equity. Since the main goal of the firm is maximization of shareholder wealth, there have been several debates on whether there is relationship between capital structure and the value of a firm, that is, does the amount of debt or equity a firm uses to finance its activities affect its value, for example, its share price. In addition, there have been debates on whether an optimal capital structure exists. Moreover, do the factors that influence capital structure decisions, for example, asset tangibility have a relationship with the value of firms? The purpose of this study was to assess the influence of capital structure and the factors influencing capital structure decisions on the value of firms listed on the Nairobi Securities Exchange. This study was anchored on the following theories: Trade Off Theory, Agency Theory, Signalling Theory and Pecking Order Theory. Furthermore, the study analysed the results and conclusions from other empirical studies related to it. The study used a descriptive research design which involved analysis of existing data, survey of data and statistical analysis of the data that was collected. The target population of the study was the firms in the agricultural sector in the NSE. The data used was from their annual financial statements from 2014-2023. The study used panel data analysis whereby firm value measured by Tobin Q was the dependent variable. Moreover, capital structure, asset tangibility, firm size and profitability were the independent variables. The study also used various diagnostic tests to check for multicollinearity, correlation, stationarity and significance of the data. The results of the study showed that capital structure and its determinants have a negative relationship with firm value. This implies that the more the debt an agricultural firm uses in its capital structure the lower the firm value will be. However, the effect of capital structure and profitability on firm value were insignificant. Only asset tangibility and firm size were statistically significant. This implies that very large agricultural firms and those that have excess tangible assets that may be underutilised or underinvest in intangible assets tend to have low firm value. The study recommends further research in foreign stock exchanges and non-agricultural firms. Moreover, the study recommends that agricultural firms should focus on sustainable growth and should invest more in intangible assets like brand reputation.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Firms continuously must finance their operations and growth. There are two main ways in which a firm can raise capital to finance its activities: internal and external financing. Internal financing is the part of financial resources generated from operating and investing activities rather than attracting funds on the capital market (Bazilinska. O, 2008, Internal sources of business financing). Some sources of internal finance include retained earnings, owner's capital and the sale of unused or underutilised assets. External financing on the other hand is when a firm uses funds raised from outside the company, for example, loans and bonds, to finance its activities.

1.1.1 Capital Structure

When a company is deciding on how to finance its operations there is one major decision that it must take into consideration, whether to use debt or equity, that is, the capital structure decision. Capital structure is how a company finances its operations through a combination of debt and equity (Makanga, 2015). Debt includes various forms of borrowing, for example, loans, that a company has taken on and must repay over time. Equity includes the funds provided by a company's owners or shareholders and represents ownership in the company.

The cost of equity is usually higher than the cost of debt. This is because investors take on more risk when purchasing a company's stock than when purchasing a company's bond. Due to this, an equity investor will demand higher returns than a bond investor to compensate for the additional risk that he is taking on. However, taking on too much debt will cause the cost of debt to be higher than the cost of equity. This is because as a business takes on more debt, its probability of defaulting on its debt increases. More debt leads to higher interest payments. Debt investors will demand a higher return from companies with a lot of debt in order to compensate them for the additional risk they are taking on. A higher required return leads to a higher interest rate thus resulting in an increase in the cost of debt (Vipond, n.d.).

Debt financing has some advantages. Firstly, the ownership of the business stays completely in the hands of the corporate directors and shareholders. The lender neither gains any control over the business nor is he entitled to any of the company's profits. Furthermore, companies can deduct their interest payments as a business expense since these payments are tax deductible. This results in a decrease in the company's tax liability. Finally, the more a business borrows, the better its creditworthiness reputation will be. This will be beneficial when the business wants to borrow in the future (Cheong & Steve, n.d.)

However, debt financing also has several disadvantages. Firstly, it creates a financial burden that the company must record as a liability in its financial statements. The company may end up being forced to use cash that was needed for other business operations to repay its loans. Moreover, a firm may have to pledge some of its assets as collateral to acquire a loan. If the firm cannot repay its debt, the lender can take its assets and sell them to recover the money it lent. Furthermore, the high cost of repaying a loan can increase the firm's risk of bankruptcy and limit its growth (Cheong & Steve, n.d.).

Equity financing also has a few advantages. Firstly, it helps companies to get investor networks and therefore enhance their credibility. Moreover, investors tend to have a long-term view and do not expect an immediate return on their investment. Due to this, the firm can keep more cash on hand to grow the business instead of having to pay back shareholders. Finally, investors may aid the business, for example, management expertise and access to additional sources of capital. They can be business advisors or part of the management. This is helpful especially to start-ups (Cheong & Steve, n.d.).

However, the main disadvantage of equity financing is that investors must be given some ownership of the business and a percentage of the profits. If the business is successful, it must share a portion of the profits with equity investors. The percentage of profits paid to shareholders may end up being more than the interest payments the firm would have been making for loans (Cheong & Steve, n.d.).

1.1.2 Firm Value

One of the main aspects that companies must take into consideration during any decision-making activity is the impact of the decision on firm value. Firm value is the theoretical takeover price that an investor would have to pay to acquire a certain firm. It is an important metric used by investors and analysts to assess the overall worth of a business and its success (Sujoko & Soebiantoro, 2007). Firms with strong values will be of interest to investors and build stakeholder confidence. More often than not, firm value is linked to share price. If investors perceive that a firm has high value and its probability of success in the future is high, the market value of the firm's shares will rise (Lonkani, 2018).

The central theme in capital structure literature is whether an optimal or a target capital structure exists. Optimal capital structure is the combination of debt and equity that minimizes cost of capital and maximizes the value of the firm. Target capital structure is the mix of debt and equity that a company is striving to obtain. The main question is whether an optimal capital structure exists (Baker & Martin, 2011).

1.1.3 Capital Structure and Firm Value

Some financial economists do not think that there is a relationship between capital structure and firm value. The first paper on the relationship between capital structure and firm value by Modigliani and Miller (1958) supports their school of thought. This paper formed the basis for modern thinking on capital structure. They showed that in

competitive, frictionless and complete capital markets, the choice between debt and equity does not have any material effects on the value of the firm (*THE THEORY OF CAPITAL STRUCTURE*, 2012). In addition, they showed that the only factor that determines the cost of capital is business risk.

However, in the real world, imperfections exist. By introducing imperfections, such as, taxes, bankruptcy costs and asymmetric information into their research models, some financial economists have been able to theoretically explain that there is a relationship between capital structure and the value of the firm.

Several studies have proved the existence of an optimal capital structure due to the relaxation of the restrictive assumptions underlying the theory of capital structure irrelevance. Baumol and Malkiel (1967) showed that the introduction of transaction costs produces a disequilibrium in which the shareholder seeks an optimal capital structure. Moreover, the introduction of corporate taxes and bankruptcy penalties into a state preference model of optimal financial structure, confirmed the existence of an optimal capital structure (Kraus & Litzenberger, 1973). In addition, the possibility of bankruptcy costs increases the uncertainty of future tax savings. This uncertainty is sufficient to induce an optimal capital structure (Brennan & Schwartz, 1978).

In summary, the literature on whether an optimal capital structure exists or not, has progressed from the irrelevance propositions of Modigliani and Miller (1958) to counter arguments based on more realistic assumptions. Financial economists have come up with various capital structure theories, for example, trade-off theory (Kraus & Litzenberger, 1973), pecking order theory (Myers, 1977; Myers and Majluf, 1984), signalling (Ross, 1977), and market timing theory (Baker and Wurgler, 2002) to explain the relevance of capital structure. Pandey (2004) states that the capital structure decision of a firm influences its shareholders return and risk and market value. Due to this, the firm's main objective should be the maximization of its value by examining its capital structure decision from the point of view of its impact on firm value (Antwi, 2012). Despite extensive research on this topic, determining the precise combination of debt and equity that maximizes the market value of the firm remains elusive (Baker & Martin, 2011).

1.1.4 Nairobi Securities Exchange

The NSE was formed in 1954 and is Kenya's securities exchange. It is used by investors in the country to trade securities thus boosting the market's liquidity. In addition, it is used to transfer resources from dormant sectors of the economy to more active sectors (Frederick, 2015). Moreover, the NSE facilitates the flow of capital from foreign countries and investors into the economy (Gakeri, 2012). It also facilitates locals being stakeholders in various listed companies.

The NSE consists of three market sections: Main Investments Market Segment (MIMS), Alternative Investment Market Segment (AIMS) and Fixed Income Market Segments (FIMS). MIMS is the main quotation market, AIMS provides alternative

methods to raising capital to firms that do not meet the requirements of MIMS and FIMS provides a market for fixed income securities (Ndung'u, 2019).

Publicly listed firms can use the NSE to raise capital through the issuing of shares or bonds. However, since the main goal of firms is maximization of shareholder wealth, firms listed on the NSE should choose to raise funds using a method that will maximize firm value. By investigating the relationship between capital structure and firm value, firms can determine their optimal capital structure and maximize shareholder value. Agricultural firms in Kenya have created several job opportunities in the country for many citizens. In addition, agriculture contributes around thirty three percent of Kenya's Gross Domestic Product and another 27 percent indirectly through linkages with other sectors. This has led to major economic development in Kenya (Kimencu, 2018). However, the performance of agricultural securities has been lagging at the NSE for the better part of the year (Standard, 2022). Several firms in the agricultural sector have also shut down due to losses, for example, Mumias Sugar. Firms in these sectors have either chosen to finance operations using debt or equity only or a combination of both, for example, in 2020 and 2021, Kakuzi Plc had zero long term debt (Obed, 2022). To understand how agricultural firms in Kenya can increase their value and maximize shareholder wealth, it is important to study if there is a relationship between capital structure and firm value

1.2 Problem Statement

Firm value is an investor's perception toward the firm's degree of success and is linked to the firm's share price. Shareholder wealth is dependent on the share price of the company. A high share price results in an increase in shareholder wealth. The main objective of a company is to maximize shareholder wealth. Since firm value is represented by the market price of a company's common stock (Horne,1998), a company will fulfil this objective by increasing the firm value.

There are several factors that determine firm value, for example, liquidity, growth and profitability. When making decisions on how to increase the value of their firm, the corporate directors must take these factors into consideration. However, the relationship between capital structure and firm value has been the subject of considerable debate. Does the amount of debt or equity that a company uses for financing affect its market value?

Modigliani and Miller (1958) showed that in competitive, frictionless and complete capital markets, the value of a firm is independent of its capital structure. However, other financial economists introduced capital market frictions such as taxes, bankruptcy and asymmetric information thus they came up with theories that explained the relevance of capital structure. Unfortunately, there has been little consensus among researchers on what the optimal capital structure is.

Chowdhury (2010) revealed that capital structure has a relationship with firm value. The firm value in this study was share price. The study revealed that an increase in debt financing led to a higher share price. Antwi (2012) revealed that both long term

debt and equity have a positive relationship on the market value of a firm. However, the study did not account for other factors that affect firm value in the regression model. On the other hand, Menon (2016) revealed an inverse relationship between the amount of debt and share prices while there was a positive relationship between the amount of equity and share prices. The study also did not account for other factors that affect the value of the firm. Cheng (2010) showed that debt financing can improve firm value in China. In addition, they showed that an increase in debt financing beyond the optimal amount deteriorates firm value. Buigut (2013) showed that an increase in debt results in an increase in share price while equity has a negative relation with share price. However, just as some of the other studies, the author did not account for other factors that affect firm value. Makanga (2010) revealed that debt financing does not significantly affect financial performance.

The main research gap that motivated my study was that some of the previous studies did not account for factors that influence capital structure decisions such as asset tangibility. Antwi (2012) investigated the effect of capital structure on firm value in Ghana, but the researcher only included long term debt and equity capital in the research model. Furthermore, Buigut et al (2013) studied the effect of capital structure on share price of listed Kenyan firms in the energy sector. However, the study only considered equity and debt in the study. The study did not take into consideration other factors that affect capital structure decisions. Moreover, several studies focused on the effect of capital structure on financial performance and profitability but not its effect on firm value. For example, Koech (2013) carried out a study investigating the effect of capital structure on the profitability of financial firms listed at the Nairobi Stock Exchange. Yegon et al (2014) also investigated the effect of capital structure on firms from the banking sector listed on the NSE but focused on its effect on profitability. Several other studies followed this same approach, that is, they focused on the effect of capital structure on financial performance or profitability. Due to this, studying the effect of capital structure on the value of firms listed on the NSE is of great importance. In addition, a number of studies used share price as the measure of firm value. Chowdhury (2010) investigated the effect of capital structure on the value of Bangladesh firms. The study used share price as the measure of firm value. Menon (2016) also used share price as the measure of firm value in a study investigating effect of capital structure on firm value in Oman. This study used Tobin Q as the measure of firm value. Ndung'u (2019) used Tobin Q as a measure of firm value, but the study was limited to six listed investment firms in the NSE. Finally, Huu (2021) also used Tobin Q as a measure of firm value, but the study only focused on listed chemical firms in the Vietnam stock market. In conclusion, to address these issues, this study used Tobin Q as a measure of firm value instead of share price. The study also included various firms listed on the NSE and was not limited to one specific sector. Finally, the study included both capital structure and the factors that influence capital structure decisions, for example, asset tangibility.

1.3 Research Hypotheses

- There is no significant relationship between capital structure and firm value among companies listed on the Nairobi Stock Exchange.
- There is no significant relationship between factors influencing capital structure decisions and value of firms listed on the Nairobi Stock Exchange.

1.4 Research Objectives

- To establish if there is a relationship between capital structure and the value of firms listed on the Nairobi Stock Exchange.
- To establish if there is a relationship between factors influencing capital structure decisions and the value of firms listed on the Nairobi Stock Exchange.

1.5 Research Questions

- Does capital structure influence the value of firms listed on the Nairobi Stock Exchange?
- Do factors influencing capital structure decisions influence value of firms listed on the Nairobi Stock Exchange?

1.6 Significance of the Research

The study aims to contribute to the existing body of knowledge on the topic of capital structure and firm value. The study aims to provide insights that will help companies operating in the Nairobi Stock Exchange to make capital structure decisions that will maximize the value of the firm thus maximizing shareholder wealth which is their main objective.

Moreover, the study will offer valuable information for investors and financial analysts interested in understanding the factors that affect firm value in the Nairobi Stock Exchange. This will lead to more informed investment decisions. Finally, the study can inform policymakers and regulators about the factors influencing capital structure decisions and their implications for the Kenyan economy. This may lead to the development of policies that promote the growth and stability of capital markets.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter outlines the theoretical framework and empirical studies that have been carried out on the relationship between capital structure and the value of the firm. Moreover, it highlights theories and empirical studies on the determinants of capital structure. The study explores the effect of capital structure on the value of firms listed on the Nairobi Securities Exchange.

2.2 Theoretical Framework

This outlines the theories that explain the relationship between capital structure and the value of the firm. The theories captured are, trade -off theory, agency theory, pecking order theory and signalling theory.

2.2.1 Trade Off Theory

Trade off theory argues that debt in a company's capital structure is beneficial to equity investors as long as they rewarded up to the point where the benefit of tax deductibility of interest is offset against potential bankruptcy costs (Baker & Martin, 2011). This theory was presented by Modigliani and Miller (1963). According to them, shareholders should benefit from debt in their capital structure due to the tax advantage of debt.

The trade-off theory is divided into two: static trade off theory and dynamic trade-off theory. The static trade off theory states that using debt instead of equity has both advantages and disadvantages. Due to this, firms should select an optimal capital structure that balances these at the margin (Scott, 1977). The traditional view of the theory is that tax advantages to debt exist, but they are offset with costs due to bankruptcy and financial distress. Moreover, the theory reveals that there is a positive relationship between tangibility of assets and leverage. This is because firms that cannot pay collateral are charged higher interest rates.

In addition, Myers (1977) did a study on the relationship between debt financing and firm value when interest is a tax-deductible expense. The study highlighted that the amount of debt issued by a firm is the amount that maximizes its value. The model in the study discounts the tax advantage of issuing debt since it is offset by personal taxes. However, Deangelo and Masulis (1980) showed that the presence of a corporate tax shield substituting for debt implies a market equilibrium in which each firm has a unique capital structure. Moreover, nondebt tax shields, for example, depreciation deduction, overturn the irrelevance of Miller.

Under dynamic trade-off theory, Fischer, Heinkel and Zechner (1989), revealed that in a trade-off setting with a fixed cost of issuing equity, firms may still not meet their

target capital structure. They only adjust their leverage when it exceeds certain bounds. This is because firms only make large readjustments to benefit from the tax benefits of leverage. Firms making profit use less leverage under this theory since they use their profits to repay debts thus leverage falls automatically. Moreover, Leland (1994) presented a dynamic trade off model in which firms do not adjust leverage toward the target capital structure as long as the adjustment costs exceed the value lost due to having a suboptimal capital structure.

Kraus and Litzenberger (1973) revealed that the taxation of corporate profits and the existence of bankruptcy policies are market imperfections that show there is an effect of leverage on the market value of a firm.

In conclusion, trade off theory assumes that firms target an optimal debt ratio by comparing the tax benefits of debt with the bankruptcy costs associated with it. However, the model has some weaknesses. It relies on simplistic assumptions, for example, perfect capital markets. Moreover, it does not take into consideration non-financial factors such as corporate governance which can influence financing decisions.

This theory is relevant in this study since it captures capital structure. Moreover, variables such as leverage, liquidity, asset tangibility and growth opportunities which are elements of capital structure are highlighted. This theory can be useful in understanding the effect of capital structure on the value of firms listed on the Nairobi Securities Exchange.

2.2.2 Agency Theory

This theory focuses on how capital structures can help contain agency costs by aligning the interests of shareholders, managers and lenders. Jensen and Meckling (1976) identified two types of conflicts. Firstly, we have conflict between managers and shareholders. It is caused by managers using the firm's profits for their own personal gain at the expense of shareholders. Jensen (1986) states that debt payments reduce the amount of free cash flow available to self-interested managers. Stultz (1990) revealed that debt payments reduce overinvestment since managers have to make interest payments. However, a lot of debt may lead to underinvestment due to high interest payments which make investment in profitable projects less likely. Deangelo and Deangelo (2006) revealed that firms can use low leverage, substantial equity payouts and substantial cash holdings to control agency costs and still maintain financial flexibility.

Secondly, we have conflict between shareholders and creditors. Debt provides shareholders with the incentive to invest sub optimally. Harris and Raviv (1991) argue that if an investment's returns are higher than the face value of debt, shareholders will enjoy the benefits. If the investment is not successful, shareholders enjoy limited liability by exercising the right to walk away. This results in the firm's market value being lower than the face value of the outstanding debt. This is a problem for creditors.

In addition, Myers (1977) showed that when firms are almost bankrupt there is no incentive for shareholders to invest more equity capital even if positive net present value projects are available. This is because creditors will enjoy most of the benefits or profits from the projects. This means that large amounts of debt may result in the rejection of profitable projects (*THE THEORY OF CAPITAL STRUCTURE*, 2012).

Agency theory is relevant to my study since it highlights how capital structure decisions influence managerial behaviour and firm value. In addition, the theory helps to identify the optimal capital structure that balances the benefits of debt with its costs.

2.2.3 Signalling Theory

This theory is caused by information asymmetry between firm management and shareholders. If the management believes that the firm is undervalued, they will issue debt first and equity last. If they believe it is overvalued, they will issue equity first and debt last. Ross (1977) came up with the theory and argued that if managers have insider information, their choice on capital structure will signal information to the market. An increase in debt financing will signal to the market that the firm's management is confident that they have enough resources to repay the debt. Moreover, it may signal that management is confident in their future earnings.

The implication of the theory is that corporate managers will attempt to time equity issues based on the market's assessment. The capital structure of the firm is a cumulative result of corporate managers past attempts to time the market.

2.2.4 Pecking Order Theory

The theory was developed by Myers and Majluf (1984). They showed that share issue is perceived negatively by investors. Since managers tend to issue shares when they are overpriced. To avoid the information effects of new shares issues, a firm is more likely to issue debt than equity. If firms are financing a project using equity, underpricing may result in new investors benefiting from more than the net present value of the project. This results in a net loss to existing shareholders. This may result in managers rejecting the project even if it is profitable.

To avoid this, managers follow a pecking order. Managers finance projects first with retained earnings since it has no asymmetric information, then low risk debt and finally risky debt. The firm issues equity as a last resort when financing a project with debt will result in excessive leverage that far exceeds the proceeds from the project (Baker & Martin, 2011).

The pecking order theory suggests that firms with few investment opportunities and high free cash flows will have low debt ratios. In addition, firms with high growth and low free cash flows will have high debt ratios. However, the theory has some limitations. It does not explain the influence of taxes, financial distress, security issuance costs, agency costs or the set of investment opportunities available to a firm on its capital structure. It ignores the problems that can arise when a firm's managers

accumulate so much financial slack that they become immune to market discipline (Koech,2013).

The pecking order theory is relevant to this study since it implies that the proportion of debt in a firm's capital structure should be more than the proportion of equity. This is because according to the theory managers prefer to finance activities with debt than equity.

2.3 Factors influencing capital structure decisions

This section outlines the various determinants of capital structure, or in other words, the factors affecting capital structure decisions.

2.3.1 Tangibility of Assets

This is a measure for the level of collateral that a firm can offer to its creditors. A high ratio of fixed to total assets provides a high level of security to creditors since they can liquidate assets in the case of bankruptcy. The opposite is true (Baker & Martin, 2011). Galai and Masulis (1976) and Jensen and Meckling (1976) argue that stockholders of levered firms are likely to overinvest which can lead to shareholder- bondholder conflict. In the trade-off theory, the lower expected costs of distress and fewer debt related agency problems predict a positive relationship between the proportion of tangible assets and leverage. However, Harris and Raviv (1991) state that monitoring costs are higher for firm with less collateralizable assets hence they might choose higher debt levels to limit consumption of prerequisites. This suggests a negative relationship between tangibility of assets and leverage.

2.3.2 Firm Size

Titman and Wessels (1988) argue that large firms tend to be more diversified and fail less often. Since bankruptcy costs consist of a fixed part and a variable part they tend to be higher for smaller firms (Warner, 1977; Ang, Chua and McConell,1982). The trade-off theory predicts an inverse relationship between size and probability of bankruptcy, and hence a positive relationship between size and leverage.

2.3.3 Profitability

In the agency models of Jensen and Meckling (1976) higher leverage helps to control agency problems by forcing managers to pay out more of the firm's cash. The model suggests a positive relationship between book leverage and profitability. However, the pecking order model predicts that higher earnings should result in less leverage. Debt grows when investment exceeds retained earnings and falls when investment is less than retained earnings. This suggests a negative relationship between leverage and profitability.

2.3.4 Growth Opportunities

According to Jensen and Meckling (1976) and Myers (1977), managers of levered firms have an incentive to engage in asset substitution and underinvestment. Agency costs related to debt are higher for companies with high growth opportunities. According to the trade-off theory, firms with more investment opportunities have less leverage due to stronger incentives to avoid underinvestment and asset substitution that may be caused by stockholder-bondholder agency conflicts.

The pecking order theory suggests that there is a positive relationship between leverage and growth opportunities. This is because debt increases when investment exceeds retained earnings and falls when investment is less than retained earnings. However, a more complex version of the pecking order theory suggests that since managers are concerned with both future and current financing costs, firms with large growth opportunities maintain low risk debt capacity to avoid financing future investments with new equity offerings (Baker & Martin, 2011).

2.3.5 Volatility

Firms with volatile cashflows have higher expected costs of financial distress and higher debt related agency costs. In addition, more volatile cashflows reduce the likelihood that the tax shield will be fully utilised. Due to this, the trade off theory suggests that there is a negative relationship between leverage and the volatility of cashflows (Baker & Martin, 2011).

Investors have little ability to accurately predict future earnings based on publicly available information for firms with high earnings volatility thus the market will demand a premium to provide debt to these firms (Angelo & Masulis, 1980). Furthermore, firms with highly volatile cash flows maintain low leverage to reduce the necessity of issuing new equity. Due to this, the pecking order theory also predicts a negative relationship between leverage and cash flow volatility.

2.3.6 Industry Classification

Industry effects are useful in capital structure decisions because managers use industry median leverage as a benchmark for their own firm's leverage. Moreover, industry effects reflect correlated but omitted factors. Furthermore, regulation impacts capital structure decisions. Regulated firms tend to have more stable cash flows and lower expected costs of financial distress thus resulting in higher leverage in regulated industries. However, according to Frank and Goyal (2009), in a pecking order world, industry classification should only impact capital structure decisions if it serves as a proxy for a firm's financing deficit. In addition, empirical studies usually exclude financial institutions from the sample because they are subject to specific rules and regulations. Due to this, exogenous factors unrelated to financing activities severely affect their leverage (Baker & Martin, 2011).

2.4 Empirical Review

Cheng, et al., (2002) examined the effect of capital structure on firm value. Moreover, the study investigated if there is an optimal leverage at which point a firm is able to maximize its value. The study used data from the Shenzhen and Shanghai stock exchanges from 2001 to 2006. The study had two categories of explanatory variables. One was the threshold variable (debt to asset ratio) which was used to assess the optimal capital structure of a firm and to capture the threshold effect of debt on firm value. The other was the control variable of which there were three. The first was firm size which was calculated as the natural log form of total assets. The second and third were the annual percent change in sales and assets respectively.

They were concerned with the firm's growth. The dependent variable was the firm value which was represented using return on equity (ROE). The author first carried out two panel-based unit root tests, the Levin Lin Chu (LLC) ADF and the IPS ADF, to determine if the variables in the model were stationary. The author then carried out panel threshold regression analysis. The empirical findings showed that debt is positively related to firm value when it had not reached the threshold value.

Increasing debt beyond its optimal value, that is, the threshold value determined in this study, would hurt the firm value. The findings were consistent with the trade-off theory.

Chowdhury (2010) examined the impact of capital structure on the value of firms listed on the Dhaka Stock Exchange and Chittagong Stock Exchange in Bangladesh. This study analysed 77 companies from four different dominant sectors of Bangladesh capital market, that is, pharmaceuticals and chemicals, fuel and power, food, and engineering industry. This study used only secondary data from the selected companies' balance sheets and income statements from January 1, 1994, to December 31, 2003. The model took the value of the firm (share price) as the dependent variable; firm size, profitability, public ownership in capital structure, dividend payout, asset and operating efficiency, growth rate, liquidity and business risk were taken as independent variables. All the variables used as independent variables were considered as proxy for the capital structure decision of respected firm. The study used a cross-sectional time series regression model to analyse available data to find out the impact of capital structure on the firm value. Through the analysis, it was seen that capital structure had an impact on the market value of a firm. Furthermore, it also observed that by changing its current ratio, operating leverage, EPS, dividend payout ratio or share capital, a firm may increase its value in the market.

Antwi (2012) carried out a study on the effect of capital structure on the value of firms in Ghana. The objective of this study was to find out whether the amount of equity and amount of debt used in a firm affects its market value. The study used data from the Ghana stock exchange of 34 companies as of 31st December 2010. In addition, data was also collected from the companies' financial statements. The Ordinary Least Square technique was adopted for the study. The model to be regressed in the study took firm value as the dependent variable while equity and

long-term debt were taken as the independent variables. From the regression results, long term debt was found to be the major determinant of a firm's value. According to the author, this is consistent with the pecking order theory, trade off theory and the traditionalist theory. In addition, the author concluded that in an emerging economy like Ghana, equity capital as a component of capital structure was relevant to the value of a firm. However, these results were inconsistent with the capital structure irrelevancy theory of Modigliani and Miller (1958). The author recommended that firms should compare the marginal benefit of long-term debt to its marginal costs before using it to finance its operations.

Buigut (2013) did a study on the effect of capital structure on the share price of energy listed firms in Kenya. The main objective of this paper was to determine the preferred sources of financing by Kenyan listed firms in the energy sector. The author chose to examine the energy sector due to the high demand for energy in the country which had resulted in these firms experiencing growth and huge capital investments. The data used was obtained from the NSE and the companies' financial statements. The study had three independent variables: equity, debt and gearing ratio. Equity was measured as a ratio of total equity to assets, debt was measured as debt divided by total assets while gearing ratio was measured as equity to debt ratio. The dependent variable was share price. All the variables were calculated from monthly data. Next, Pearson's coefficient of correlation was used to check the causal relationship between the variables. The author then conducted multiple regression analysis. Multicollinearity test using variance inflation factor (VIF) was also conducted. The results of the study showed that debt has a positive effect on share price, equity has a negative effect on share price and gearing ratio has a positive effect on share price.

Menon (2016) investigated the impact of capital structure on stock prices of 113 listed companies on the Muscat Securities Market (MSM) in Oman. The study's main objective was to examine the relationship between the amount of equity, amount of debt, debt equity ratio and share prices. The data used was from 2008 to 2015. The variables used for the study were: share price, amount of debt, amount of equity, debt-equity ratio. Firstly, the author examined the degree of correlation among the four variables using the bivariate Pearson correlation method. The author then used a multiple linear regression to analyse the relationship between share price and capital structure. Share price was taken as the dependent variable while the other three variables including log of debt and equity were taken as independent variables. In addition, the author used stepwise regression to check the robustness of the results for the full sample. The ANOVA tables were used to test the acceptability of the model from a statistical perspective. The results of the study showed an inverse relationship between the amount of debt and share prices. They also showed a positive relationship between the amount of equity and share prices.

Kubai (2016) conducted a study on the effect of capital structure on the financial performance of manufacturing firms in Kenya. The study used data from ten firms

listed on the NSE under the manufacturing sector. The research considered a seven-year period from 2009 to 2015. Analysis on the data was done using the Statistical Package for Social Science (SPSS version 22). The model used was a linear regression model with return on equity (ROE) as the dependent variable while capital structure, liquidity, size and growth of the firm were taken as the independent variables. The study concluded that increase in debt has a negative effect on performance of manufacturing firms listed at the NSE. The higher the total debt the less the return on equity. Firms should therefore fund investments from internal sources to enhance their financial performance. Finally, the author suggested that firms from other sectors should be included in future studies to increase the reliability of the results.

Ater, et al., (2020) carried out a study investigating the relationship between capital structure and the value of non-financial firms listed on the Nairobi Stock Exchange. The author used the OLS technique to analyse the relationship between capital structure and firm's value. The data used was from 2015 to 2019. The study took firm value measured by Tobin Q as the dependent variable. Short-term debt, long-term debt, retained earnings and capital structure measured by the debt-to-equity ratio were taken as the independent variables. The results of the study showed that long-term debt played the greatest role in the value of the firm. The study recommended that firms should adopt policies that tend towards use of debt instruments to maximize the value of the firm and shareholders wealth.

2.5 Summary of literature review

The literature review has detailed several theories that explain capital structure and its relation to the value of the firm. Moreover, it has outlined empirical studies on the determinants of firm value. Finally, the empirical literature section cites the relevant empirical studies done on the effect of capital structure, the outcomes of the studies and an explanation of the outcome.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology that will be used in the study to collect, analyse and present data in investigating the effect of capital structure and its determinants on the value of firms listed at the Nairobi Securities Exchange, (NSE). The chapter includes the research design, target population and methods of data collection. The chapter also presents how the validity and reliability of data will be ensured.

3.2 Research Design

Research design is referred to as a plan for the processes, implemented by a study for assessing the link amidst the response variable and predictor factors (Kothari, 2008). The study applied a quantitative research design because it involves the collection of data to answer questions concerning the current status of the subjects in the study.

According to (Creswell, 2003), quantitative research establishes statistically significant conclusions about a population by studying a representative sample of the population. The population consists of the entire group being studied. If chosen properly, the sample will be statistically identical to the population and conclusions for the sample can be inferred to the population (Campbell & Stanley, 1963)

The study used a descriptive research design. Descriptive research designs involve analysis of existing data, survey of data relating to experiences, tests to examine if the research area is operating as intended and finally statistical analysis of the data that will be collected (Sekaran & Bougie, 2010).

3.3 Target Population

Population is the entire group of constituents from which interpretations are construed and contains every probable element which is of importance in research (Kumar, 2005). The population of this study was firms listed at the Nairobi Securities Exchange (NSE) from 2014 to 2023. The target population was the NSE firms in the agricultural sector. The firms chosen for the study were: Eaagads Ltd, Kapchorua Tea, Kakuzi Plc, Williamson Tea, Limuru Tea and Sasini Plc.

3.4 Data Collection

The study used secondary data. The data included financial statements, that is, the balance sheets and the profit and loss accounts, for the NSE firms in the agricultural sector from 2014 to 2023. The financial statements used were the annual financial statements of the companies. Data was also obtained from the NSE handbooks for the period of reference. Other documents used to obtain data were statements of comprehensive income, financial position and notes to the accounts. A data collection sheet was utilized to collect the raw data.

3.5 Analytical Model

The study used panel data analysis to carry out the research. Panel data analysis was used since it allows for the observation of the behavior of entities such as companies across time. In addition, it provides accurate statistical estimates since it incorporates information from time and entities. This leads to better examination of the relationships between variables. Furthermore, it deals with omitted variable bias by controlling for variables that cannot be measured or observed but are correlated with the predictors.

The dependent variable in the study was firm value represented by Tobin's Q. Tobin's Q was measured using the following formula: market value/total assets.

The independent variables were measured as:

- a) Capital Structure = Total Debt/Total Equity
- b) Firm Size = Logarithm of assets
- c) Asset Tangibility = Fixed Assets/Total Assets
- d) Profitability = Return on Assets (Net Income/ Average Total

Assets)

The study uses the following equation:

$$\text{Firm value} = B_0 + B_1\text{Capital structure} + B_2\text{Firm size} + B_3\text{Asset tangibility} + B_4\text{Profitability} + e_t$$

For the study, the following research hypotheses were used:

H₀₁: Capital Structure has no significant effect on firm value

H₀₂: Asset Tangibility has no significant effect on firm value

H₀₃: Firm Size has no significant effect on firm value

H₀₄: Profitability has no significant effect on firm value

3.6 Diagnostic tests

In regression, multicollinearity denotes those determinant variables that have high correlation with other determinant variables (Cox, 2006). Multicollinearity causes standard errors to increase thus coefficients for certain predictor factors might not be significantly varying from zero. When multicollinearity does not arise, the coefficients could be significant (Tabachnick & Fidell, 2007). The study used Variance Inflation Factor (VIF) to check for multicollinearity. If VIF for any independent variable is equal to or more than 10, there is significant multicollinearity (Cox, 2006).

In addition, to choose between fixed effects and random effects model, the study used the Hausman test. Moreover, to determine if time fixed effects are necessary, the study will use a joint F-test

To test for heteroskedasticity, the study used the Breusch-Pagan/Cook-Weisberg test. If the null is rejected, there is heteroskedasticity. To deal with this, robust standard errors can be used.

To test for stationarity, the study used the Levin Lin Chu (LLC) unit root test. Furthermore, non-stationary variables were differenced to make them stationary. To carry out the significance tests, the F-test was utilized at 95% level of confidence. To test for serial correlation, the study used the Wooldridge test. Finally, the study was conducted using the Stata software.



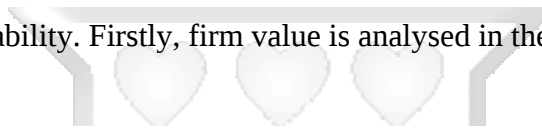
CHAPTER 4 RESULTS AND ANALYSIS

4.1 Introduction

This chapter presents the results of the analysed data and discusses the findings from the study. The analyses are based on secondary data from reports of the Nairobi Securities Exchange and the financial reports of the companies under review. In addition, the analyses are done using the Stata software.

4.2 Descriptive Statistics

This section analyses the study's data set in terms of measures of central tendency and measures of variability. Firstly, firm value is analysed in the figure 4.1 below:



FIRM VALUE					
	Percentiles	Smallest			
1%	.2106062	.2106062			
5%	.2591515	.2494979			
10%	.2750102	.256429	Obs		60
25%	.3763056	.2618741	Sum of wgt.		60
50%	.6393558		Mean		1.318003
		Largest	Std. dev.		1.603654
75%	1.108154	4.579995			
90%	4.489726	4.582679	Variance		2.571707
95%	4.581337	6.014549	Skewness		1.878822
99%	6.754035	6.754035	Kurtosis		5.325342

Figure 4. 1 Firm value descriptive statistics

From the figure above, firm value is seen to have positive skewness, long right tail, and is leptokurtic due to its kurtosis, 5.33, being greater than 3.

CAPITAL STRUCTURE				
	Percentiles	Smallest		
1%	.0572476	.0572476		
5%	.0721431	.0687907		
10%	.0831336	.0718165	Obs	60
25%	.1158572	.0724697	Sum of wgt.	60
50%	.2628091		Mean	.243932
		Largest	Std. dev.	.1174225
75%	.3359409	.4006322		
90%	.3922238	.4163028	Variance	.0137881
95%	.4084675	.4343385	Skewness	-.0412542
99%	.4890014	.4890014	Kurtosis	1.803733

Figure 4. 2 Capital structure descriptive statistics

From figure 4.2 above, capital structure is seen to have negative skewness, long left tail. In addition, it is platykurtic due to its kurtosis 1.80 being less than 3.

FIRM SIZE				
	Percentiles	Smallest		
1%	12.22029	12.22029		
5%	12.33784	12.31805		
10%	12.48791	12.33117	Obs	60
25%	13.74564	12.34451	Sum of wgt.	60
50%	14.88746		Mean	14.59263
		Largest	Std. dev.	1.224316
75%	15.64004	16.03795		
90%	15.92172	16.05915	Variance	1.49895
95%	16.04855	16.06011	Skewness	-.6364363
99%	16.09604	16.09604	Kurtosis	2.146171

Figure 4. 3 Firm size descriptive statistics

From figure 4.3 above, firm size is seen to have negative skewness, long left tail. In addition, it is platykurtic due to its kurtosis 2.15 being less than 3.

ASSET TANGIBILITY				
	Percentiles	Smallest		
1%	.4053382	.4053382		
5%	.4122399	.4075826		
10%	.4706543	.4083484	Obs	60
25%	.5709215	.4161313	Sum of wgt.	60
50%	.6109186		Mean	.6679088
		Largest	Std. dev.	.1537479
75%	.8293853	.8904061		
90%	.8844136	.8906674	Variance	.0236384
95%	.8905367	.8986129	Skewness	.0983653
99%	.9119318	.9119318	Kurtosis	1.826549

Figure 4. 4 Asset tangibility descriptive statistics

From the figure 4.4 above, it is seen that asset tangibility mirrors normal skewness and is platykurtic due to its kurtosis, 1.83 being less than 3.

PROFITABILITY				
	Percentiles	Smallest		
1%	-.084478	-.084478		
5%	-.0714068	-.076191		
10%	-.0545757	-.0737913	Obs	60
25%	.001097	-.0690224	Sum of wgt.	60
50%	.0257164		Mean	.0280589
		Largest	Std. dev.	.0548392
75%	.0626142	.1109614		
90%	.1029535	.1129888	Variance	.0030073
95%	.1119751	.1270548	Skewness	-.0175897
99%	.1605072	.1605072	Kurtosis	2.685228

Figure 4. 5 Profitability descriptive statistics

From figure 4.5 above, it is seen that profitability has negative skewness, long left tail. Moreover, it is platykurtic due to its kurtosis, 2.69, being less than 3

4.3 Diagnostic tests

This section presents analysis of the variables in the regression model to determine whether or not they are stationary. The study used the Levin Lin Chu (LLC) unit root test to determine if the variables are stationary. In addition, the section presents the regression model run using the fixed effects, random effects and pooled OLS models. Furthermore, the results of various tests are used to determine the most appropriate model to use.

4.3.1 Firm value

Figure 4.6 LLC test for firm value

Levin-Lin-Chu unit-root test for **firmvalue**

H0: Panels contain unit roots	Number of panels =	6
Ha: Panels are stationary	Number of periods =	10
AR parameter: Common	Asymptotics: N/T -> 0	
Panel means: Included		
Time trend: Not included		

ADF regressions: 1 lag
LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-8.0432	
Adjusted t*	-6.5870	0.0000

Figure 4. 6 Firm value LLC test

Figure 4.6 shows that the firm value variable is stationary. This is due to its p-value, 0.0000 being less than 0.05.

4.3.2 Capital structure

Levin-Lin-Chu unit-root test for **capitalstructure**

H0: Panels contain unit roots	Number of panels =	6
Ha: Panels are stationary	Number of periods =	10
AR parameter: Common	Asymptotics: N/T -> 0	
Panel means: Included		
Time trend: Not included		

ADF regressions: 1 lag
LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-3.9232	
Adjusted t*	-0.2046	0.4189

Figure 4. 7 Capital structure LLC test

Figure 4.7 above shows that the capital structure variable is not stationary since its p-value, 0.4189 is not less than 0.05. Due to this, the study used differencing to make the variable stationary. The variable was differenced twice and became stationary as shown in figure 4.8 below.

Levin-Lin-Chu unit-root test for **d2_capitalstructure**

H0: Panels contain unit roots Number of panels = **6**
 Ha: Panels are stationary Number of periods = **8**

AR parameter: **Common** Asymptotics: **N/T -> 0**
 Panel means: **Included**
 Time trend: **Not included**

ADF regressions: **1 lag**
 LR variance: **Bartlett** kernel, **6.00** lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-7.6563	
Adjusted t*	-3.1787	0.0007

Figure 4. 8 Differenced capital structure LLC test

4.3.3 Firm size

Levin-Lin-Chu unit-root test for **firmsize**

H0: Panels contain unit roots Number of panels = **6**
 Ha: Panels are stationary Number of periods = **10**

AR parameter: **Common** Asymptotics: **N/T -> 0**
 Panel means: **Included**
 Time trend: **Not included**

ADF regressions: **1 lag**
 LR variance: **Bartlett** kernel, **6.00** lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-4.4858	
Adjusted t*	-3.3500	0.0004

Figure 4. 9 Firm size LLC test

Figure 4.9 above shows that firm size is a stationary variable

4.3.4 Asset tangibility

Levin-Lin-Chu unit-root test for **assettangibility**

H0: Panels contain unit roots Number of panels = **6**
 Ha: Panels are stationary Number of periods = **10**

AR parameter: **Common** Asymptotics: **N/T -> 0**
 Panel means: **Included**
 Time trend: **Not included**

ADF regressions: **1 lag**
 LR variance: **Bartlett** kernel, **6.00** lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-6.0922	
Adjusted t*	-4.2853	0.0000

Figure 4. 10 Asset tangibility LLC test

Figure 4.10 above shows that asset tangibility is a stationary variable.

4.3.5 Profitability

Levin-Lin-Chu unit-root test for profitability

H0: Panels contain unit roots Number of panels = **6**
 Ha: Panels are stationary Number of periods = **10**

AR parameter: **Common** Asymptotics: **N/T -> 0**
 Panel means: **Included**
 Time trend: **Not included**

ADF regressions: **1 lag**
 LR variance: **Bartlett** kernel, **6.00** lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-4.8803	
Adjusted t*	1.4144	0.9214

Figure 4. 11 Profitability LLC test

The figure 4.11 above shows that profitability is not stationary. Due to this, the variable was differenced once to make it stationary as shown in figure 4.12 below.

Levin-Lin-Chu unit-root test for d_profitability

H0: Panels contain unit roots Number of panels = **6**
 Ha: Panels are stationary Number of periods = **9**

AR parameter: **Common** Asymptotics: **N/T -> 0**
 Panel means: **Included**
 Time trend: **Not included**

ADF regressions: **1 lag**
 LR variance: **Bartlett** kernel, **6.00** lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-8.4652	
Adjusted t*	-2.3326	0.0098

Figure 4. 12 Differenced profitability LLC test

4.3.6 Fixed effects model

firmvalue	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
d2_capitalstructure	-.4961706	.4404721	-1.13	0.267	-1.38786	.3955185
firmsize	-.3806791	.2314912	-1.64	0.108	-.8493085	.0879504
assettangibility	-.3138137	.8476336	-0.37	0.713	-2.029758	1.402131
d_profitability	.0697934	.5301231	0.13	0.896	-1.003385	1.142972
_cons	7.003653	3.474542	2.02	0.051	-.0301887	14.03749

Figure 4. 13 Fixed effects model

The figure 4.13 above shows the regression model run using the fixed effects model. In this model, none of the independent variables are statistically significant in affecting firm value. This is due to their p-values not being less than 0.05.

4.3.7 Random effects model

firmvalue	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
d2_capitalstructure	-.4690089	.4966201	-0.94	0.345	-1.442366	.5043486
firmsize	-.6440898	.1604986	-4.01	0.000	-.9586613	-.3295182
assettangibility	-1.285918	.8266746	-1.56	0.120	-2.90617	.3343345
d_profitability	.0173816	.5927995	0.03	0.977	-1.144484	1.179247
_cons	11.49755	2.346368	4.90	0.000	6.898754	16.09635

Figure 4. 14 Random effects model

The figure 4.14 above shows the regression model run using the random effects model. Under the random effects model, firm size is the only independent variable that is statistically significant due to its p-value, 0.0000 being less than 0.05. The other independent variables are not key predictors of firm value. Their p-values are greater than 0.05

4.3.8 Pooled OLS model

firmvalue	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
d2_capitalstructure	-.5043913	1.754144	-0.29	0.775	-4.04196	3.033177
firmsize	-.6567025	.1038101	-6.33	0.000	-.8660555	-.4473495
assettangibility	-3.623844	.8168743	-4.44	0.000	-5.271228	-1.97646
d_profitability	-1.724744	2.026907	-0.85	0.400	-5.812393	2.362904
_cons	13.23442	1.378098	9.60	0.000	10.45522	16.01361

Figure 4. 15 Pooled OLS model

The figure 4.15 above shows the regression model run using the pooled OLS model. Under pooled OLS, both firm size and asset tangibility are statistically significant. This is because their p-values are less than 0.05. However, profitability and capital structure are not statistically significant hence they are not key predictors of firm value.

4.3.9 Fixed effects vs random effects model

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe_model	(B) re_model		
d2_capital~e	-.4961706	-.4690089	-.0271617	.0208117
firmsize	-.3806791	-.6440898	.2634107	.2061087
assettang~y	-.3138137	-1.285918	.9721042	.4811904
d_profitab~y	.0697934	.0173816	.0524118	.0803771

b = Consistent under H0 and Ha; obtained from xtreg.
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

$\chi^2(4) = (b-B)'[(V_b-V_B)^{-1}](b-B)$
= 12.37
Prob > χ^2 = 0.0148

Figure 4. 16 Hausman test

The study uses the Hausman test as shown in figure 4.16 above to decide on whether the fixed or random effect is the best fit for the regression model. The null hypothesis of the test is that the individual effects are uncorrelated with any regressor in the model, that is, the preferred model is random effects. From the figure above, the Prob > chi2 is less than 0.05 hence we reject the null. This means that the fixed effects model is preferred.

4.3.10 Time fixed effects

To see if time fixed effects are necessary, we use a joint F- test. The null hypothesis is that the coefficients for all years jointly equal zero hence time fixed effects need to be considered.

```
( 1) 2017.year = 0
( 2) 2018.year = 0
( 3) 2019.year = 0
( 4) 2020.year = 0
( 5) 2021.year = 0
( 6) 2022.year = 0
( 7) 2023.year = 0
      Constraint 2 dropped
      Constraint 6 dropped

      F( 5,      5) =    9.91
      Prob > F =    0.0125
```

Figure 4. 17 Time fixed effects test

From the figure 4.17 above, since the Prob > F is less than 0.05 we reject the null hence time fixed effects are needed. Due to this, the study uses the pooled OLS model with time fixed effects for the regression. This is because the fixed effects model cannot be used to investigate the time invariant causes of the dependent variables. In addition, the pooled OLS model has a higher R-squared ,0.7081, than the fixed effects model, 0.6186. This means that the pooled OLS model fits the data better since it explains more of the outcome's variance. Moreover, it implies that the model has stronger predictive power in capturing the relationship between the predictors and the outcome. Furthermore, the pooled OLS model has more significant results than the fixed effects model. However, the pooled OLS model with time fixed effects assumes homogeneity across entities, that is, there are no entity fixed effects. However, due to its robustness, the pooled OLS model with time fixed effects has more precise estimates than the fixed effects model.

4.4 Regression Results and Discussion of Findings

firmvalue	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
d2_capitalstructure	-.4446575	2.240171	-0.20	0.844	-4.987936	4.098621
firmsize	-.6565114	.1126205	-5.83	0.000	-.8849164	-.4281063
assettangibility	-3.657144	.8921959	-4.10	0.000	-5.466601	-1.847687
d_profitability	-2.420892	2.580125	-0.94	0.354	-7.653628	2.811845

Figure 4. 18 Regression model

From the figure 4.18 above, under the pooled OLS model with time fixed effects, an increase in capital structure by one unit leads to a decrease in firm value by 0.4446575 units. A one unit increase in firm size leads to a decrease in firm value by 0.6565114 units. A one unit increase in asset tangibility leads to a decrease in firm value by 3.657144 units. Finally, a one unit increase in profitability leads to a decrease in firm value by 2.420892 units. However, the only variables that are statistically significant are firm size and asset tangibility due to their p-values, both 0.000, being less than 0.05. This means that capital structure and profitability are not key predictors of the value of agricultural firms listed on the Nairobi Securities Exchange.

firmvalue	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
d2_capitalstructure	-.4446575	2.240171	-0.20	0.844	-4.987936	4.098621
firmsize	-.6565114	.1126205	-5.83	0.000	-.8849164	-.4281063
assettangibility	-3.657144	.8921959	-4.10	0.000	-5.466601	-1.847687
d_profitability	-2.420892	2.580125	-0.94	0.354	-7.653628	2.811845
year						
2017	-.1124544	.5140062	-0.22	0.828	-1.154907	.9299984
2018	-.0907049	.5081824	-0.18	0.859	-1.121347	.9399368
2019	-.2369022	.5432754	-0.44	0.665	-1.338716	.8649114
2020	-.2500155	.50339	-0.50	0.622	-1.270938	.7709068
2021	-.1146998	.5023985	-0.23	0.821	-1.133611	.9042116
2022	.0922425	.5290331	0.17	0.863	-.9806864	1.165171
2023	-.098108	.5074163	-0.19	0.848	-1.127196	.9309799
_cons	13.35645	1.526505	8.75	0.000	10.26056	16.45235

Figure 4. 19 Regression results

From the figure 4.19 above, the regression equation can be written as follows:

$$\text{Firm value} = 13.35645 - 0.6565114 \text{ Firm size} - 3.657144 \text{ Asset tangibility} + e_t$$

The regression results highlighted in the equation above show that there is a significant negative relationship between firm size and value of listed agricultural firms on NSE. This is in line with the results of a study by Huu (2021) which showed that firm size has a negative effect on the firm value of chemical companies listed on the Vietnam

stock market (Huu, 2021). However, this is not in line with Titman and Wessels (1988) who argue that large firms tend to be more diversified and fail less often. In addition, there is a significant negative relationship between firm value of agricultural firms listed on NSE and asset tangibility. These results differ from those of (Nyamasege et al., 2014) whose study outcomes showed that asset tangibility has a significant positive influence on firm value for firms listed on NSE.

In addition, since capital structure and profitability are statistically insignificant in predicting firm value, this implies that they are not key determinants of value of firms listed in the agricultural sector of the NSE. Moreover, these results challenge both the trade-off theory (Modigliani & Miller, 1963) and pecking order theory (Myers & Maljuf, 1984) which often predict positive relationships between these factors and firm value. Capital structure being insignificant in influencing firm value differs from the results of (Tzeng & Cheng, 2012) whose research results showed that capital structure has a significant positive influence on firm value of firms listed on the Taiwan Securities Exchange. Profitability being insignificant in influencing firm value is in line with the results of the study by Huu (2021) which showed that profitability does not influence the firm value of chemical companies listed on the Vietnam stock market. In addition, the results are in line with the outcome of a study by Mita, Moeldaji and Indrawati (2017) investigating the effect of leverage, profitability, information asymmetry and firm size on value of manufacturing firms listed at the Indonesian Stock Exchange. The study showed that leverage has a negative effect on firm value which is in line with this study's results. However, the study demonstrated that profitability has a positive effect on firm value which is different from this study's results (Mita et al., 2017).

4.4.1 Testing for multicollinearity

To test if there is multicollinearity in the model, the study uses the variance inflation factor (VIF). The test was a postestimation test.

Variable	VIF	1/VIF
d2_capital~e	1.41	0.709751
firmsize	1.23	0.810762
assettangiy	1.28	0.778620
d_profitab~y	1.40	0.713565
year		
2017	1.86	0.536493
2018	1.82	0.548860
2019	2.08	0.480243
2020	1.79	0.559360
2021	1.78	0.561570
2022	1.97	0.506448
2023	1.82	0.550519
Mean VIF	1.68	

Figure 4. 20 VIF results

From the figure 4.20, above, the mean variance inflation factor is 1.68. Since the mean VIF is less than 10, we conclude that there is no significant multicollinearity in the model.

4.4.2 Testing for heteroskedasticity

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Breusch-Pagan/Cook-Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of firmvalue

H0: Constant variance

      chi2(1) =    0.94
Prob > chi2 = 0.3319

```

Figure 4. 21 Heteroskedasticity test

The study uses the Breusch – Pagan / Cook – Weisberg test to determine if there is heteroskedasticity in the model. This was also a postestimation test. From the figure 4.21 above, the study concludes that there is no heteroskedasticity. This is because the Prob > chi2 is greater than 0.05 hence we accept the null that there is homoskedasticity.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the summary of the findings of the study. In addition, conclusions from the study's findings are discussed in relation to the study's objectives. Moreover, recommendations drawn from the findings are discussed in this chapter.

5.2 Summary of Findings

The objective of the study was to examine the effect of capital structure and its determinants on the value of agricultural firms listed on the Nairobi Securities Exchange. The firms chosen for the study were: Eaagads Ltd, Kapchorua Tea, Kakuzi Plc, Williamson Tea, Limuru Tea and Sasini Plc. The time period chosen for the study was ten years, from 2014 to 2023. The study was conducted using secondary data.

The study shows that there is a negative relationship between capital structure and firm value of agricultural firms listed on the NSE. This means that having more debt leads to a decrease in firm value. This is against the pecking order theory (Myers & Majluf, 1984) which implies that the proportion of debt in a firm's capital structure should be more than the proportion of equity since managers prefer to finance activities with debt than with equity. However, the study's findings show that capital structure is statistically insignificant in predicting firm value due to its p-value being higher than the 0.05 threshold.

Furthermore, the study shows that there is a negative relationship between firm size and firm value of agricultural firms listed on the NSE. The findings also show that firm size is statistically significant in predicting firm value due to its p-value being less than the 0.05 threshold. In addition, the study shows that there is a negative relationship between asset tangibility and firm value of agricultural firms listed on the NSE. The findings also show that asset tangibility is statistically significant in predicting firm value due to its p-value being less than the 0.05 threshold.

Finally, the findings show that there is a negative relationship between profitability and firm value of agricultural firms listed on the NSE. However, the study's findings show that profitability is statistically insignificant in predicting firm value due to its p-value being higher than the 0.05 threshold.

5.3 Conclusion

The study's findings show that there is a significant negative relationship between firm size and value of listed agricultural firms on NSE. This is not in line with Titman and Wessels (1988) who argue that large firms tend to be more diversified and fail less often (Titman & Wessels, 1988). In addition, there is a significant negative relationship between firm value of agricultural firms listed on NSE and asset tangibility. This implies that larger firm sizes and higher asset tangibility lead to a decrease in firm value. This may be due to inefficiencies in managing larger firms and underutilization of tangible assets hence resulting in decline in firm value.

In addition, since capital structure and profitability are statistically insignificant in predicting firm value, this implies that they are not key determinants of value of firms listed in the agricultural sector of the NSE. Moreover, these results challenge both the trade off and pecking order theories which often predict positive relationships between these factors and firm value. This shows the unique characteristics and challenges faced by agricultural firms in the Kenyan market.

5.4 Limitations of the study

The study focuses solely on agricultural firms listed on the Nairobi Securities Exchange. Due to this, the findings may not be applicable to non-agricultural firms listed on the Nairobi Securities Exchange. In addition, the study only focused on the Kenyan market thus the results may not be applicable to firms in other countries

The study was conducted during the 2014-2023 time period. This time period was affected by significant external shocks, majorly the Covid 19 pandemic. This may have influenced firm performance and capital structure decisions, hence distorting underlying long-term relationships.

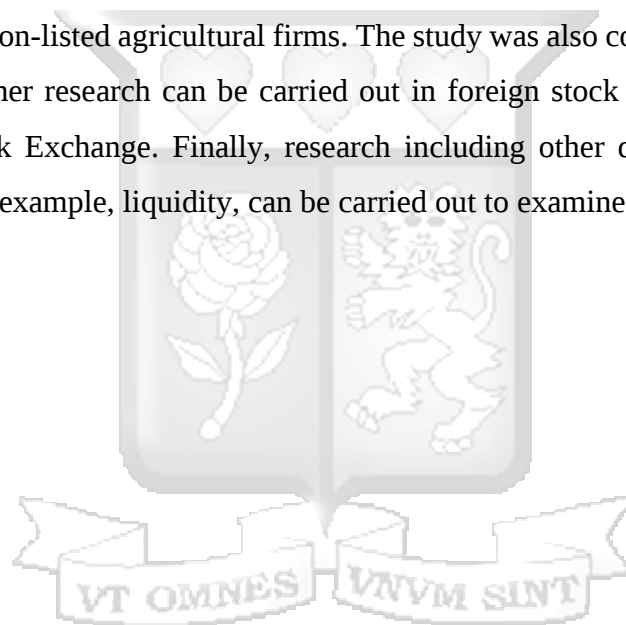
5.5 Recommendations

The findings from the study show that there is a negative relationship between firm size and the value of firms in the agricultural sector. This may be due to operational inefficiencies or mismanagement as firms grow. To deal with this, agricultural firms can streamline processes to improve efficiency, for example, increased use of automation in firm processes to lower operational costs. Moreover, agricultural firms can focus on strategic growth by avoiding overexpansion, for example, acquiring unrelated business, since this may cause inefficiencies. Instead, they should adopt strategic growth policies. Furthermore, large agricultural firms should adopt decentralized management strategies to improve operational efficiency.

The findings also show that there is a negative relationship between asset tangibility and value of listed agricultural firms. This may be due to overinvestment in non-productive or underutilized assets. Agricultural firms can deal with this by conducting asset audits to identify underperforming or underutilized tangible assets. Furthermore, agricultural firms should invest in more intangible assets for example, improving brand reputation. This will help them build sustainable long-term value.

5.6 Suggestions for Further Study

This study is not exhaustive in nature. The study only focused on the agricultural sector of the Nairobi Securities Exchange. Further research can be carried out to examine the effect of capital structure on the value of non-agricultural firms listed on the NSE. Moreover, further research can be carried to examine the impact of capital structure on the value of non-listed agricultural firms. The study was also conducted in the Kenyan context. Further research can be carried out in foreign stock exchanges such as the London Stock Exchange. Finally, research including other determinants of capital structure, for example, liquidity, can be carried out to examine their influence on firm value.



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