# A TEST OF RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND AGENCY COSTS: EVIDENCE FROM THE NAIROBI STOCK EXCHANGE

BY

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## DECLARATION

I, the undersigned, declare that this project is my original work and that it has not been presented in any other university or institution for academic credit.

Signed ..... Date 23/11/11

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**Supervisor**

This project has been submitted for examination with my approval as the university supervisor.

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**DEDICATION**

To

My dear husband

Abbu Kiptoo

And

My beloved daughter

Shamim Too

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## ABSTRACT

Financing decision is one of the most important roles played by a modern finance manager as it determines the value of a firm. Managers strive to maintain a capital structure that maximizes the shareholders wealth while minimizing financial and business risk of the firm. A traditional view on corporate finance assert that firms strive to maintain an optimal capital structure that balances the costs and value associated with varying degrees of financial leverage.

The study was an empirical study of the firms listed on Nairobi Stock Exchange (NSE). The population consisted of all the 54 companies quoted at the NSE for the years 2005 to 2009. The study sampled all companies listed at the Nairobi Stock Exchange, excluding financial sector firms (banks, insurance firms, unit trusts and other funds companies). This study was facilitated by the use of secondary data.

The study found out that half of the companies were unable to generate revenues that were commensurate with the total value of assets they had, it therefore, indicate that the management of most of the firms are inefficient in deployment of the firms' assets to generate revenue. This indicates that firms' assets could cover less than 18.6% of the firms debts for more than half the companies sampled. However, in the five regression analyses done size generally had a negative relationship with capital structure and agency cost which asserts the fact that as the size of a company increases, the agency cost would reduce.

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# INTRODUCTION

## 1.1 Background of the Study

The financing decision is one of the most important roles played by a modern finance manager as it determines the value of a firm. Managers strive to maintain a capital structure that maximizes the shareholders wealth while minimizing financial and business risk of the firm. A traditional view on corporate finance assert that firms strive to maintain an optimal capital structure that balances the costs and value associated with varying degrees of financial leverage, Leary & Roberts (2005). When firms are perturbed from this equilibrium, this view argues that companies respond by rebalancing their leverage back to the optimal level. However, recent empirical evidence has led researchers to question whether firms actually engage in such a dynamic rebalancing of their capital structures.

Financing decision can have significant influence over the future of any firm; such decisions are crucial and should therefore involve various pertinent considerations. Various studies, both local and foreign, have been done to ascertain the best possible combination that would maximize the value of the firm. A number of factors influence financing decisions of firms. Most of those decisions are industrial specific. Due to such a leeway in the choice of capital structure, it has become increasingly difficult to recommend a comprehensive and conventional capital structure policy that maximizes performance of such firms. Such contention surrounding capital structure has been termed by Myers (1984) as the "capital structure puzzle" which he believes is tougher than the "dividend puzzle". Academicians have come up with different perspectives to try and address various facets of capital structure but still, subsequent scholars have always documented limitations of earlier studies.

Fama & French (2002), among others, noted that firms' debt ratios adjust slowly toward their targets. That is, firms appear to take a long time to return their leverage to its long-run mean or, loosely speaking, optimal level. Moreover, Baker & Wurgler (2002) documented that historical efforts to time equity issuances with high market valuations have a persistent impact on corporate capital structures. This fact led them to conclude that capital structures are the cumulative outcome of historical market timing efforts, rather than the result of a dynamic optimizing strategy. Welch (2004) found that equity price shocks have a long-lasting effect on corporate capital structures as well. He concludes that stock returns are the primary determinant of capital structure changes and that corporate motives for net issuing activity are largely a mystery. These findings share the common theme that shocks to corporate capital structures have a persistent effect on leverage, which the last two studies interpret as evidence against firms rebalancing their capital structures toward an optimum.

Capital structure refers to the combination of debt and equity capital that a firm uses to finance its long term operations. The value of a firm depends upon its expected earnings stream and the rate used to discount this stream. The rate used to discount earnings stream is the firms required rate of return or the cost of capital. Capital structure decision can thus affect the value of the firm either by changing the expected earnings or the cost of capital or both. An optimal capital structure would be obtained at the combination of debt and equity that maximizes the total value of the firm (Value of share plus value of debt) or minimizes the weighted cost of capital.

Agency costs represent important problems in corporate governance in both financial and nonfinancial industries. The separation of ownership and control in a professionally managed firm may result in managers exerting insufficient work effort, indulging in perquisites, choosing inputs or outputs that suit their own preferences, or otherwise failing to maximize firm value. In effect, the agency costs of outside ownership equal the lost value from professional managers maximizing their own utility, rather than the value

of the firm. Theory suggests that the choice of capital structure may help mitigate these agency costs.

Under the agency costs hypothesis, high leverage or a low equity/asset ratio reduces the agency costs of outside equity and increases firm value by constraining or encouraging managers to act more in the interests of shareholders. Much empirical evidence collected by researchers, for example, Ang et al. (2001), and Fleming et al. (2005), shows that agency costs generated from the conflicts between outside equity holders and owner-manager could be reduced by increasing the owner-managers' proportion in equity, that is, agency costs vary inversely with the manager's ownership.

Since the seminal paper by Jensen & Meckling (1976), a vast literature on such agency-theoretic explanations of capital structure has developed (Harris & Raviv 1991 and Myers 2001). Greater financial leverage may affect managers and reduce agency costs through the threat of liquidation, which causes personal losses to managers of salaries, reputation, perquisites etc. ( Grossman & Hart, 1982) and through pressure to generate cash flow to pay interest expenses Jensen (1986). Higher leverage can mitigate conflicts between shareholders and managers concerning the choice of investment Myers (1977), the amount of risk to undertake Jensen & Meckling (1976), the conditions under which the firm is liquidated, Harris & Raviv (1990), and dividend policy, Stulz (1990).

As the proportion of debt in the capital structure increases beyond a certain point, the opposite effect of leverage on agency costs may occur, (Altman 1984 and Titman 1984). When leverage becomes relatively high, further increases may generate significant agency costs. Three reasons are identified in the literature which can cause this opposite effect: first reason is the increase of bankruptcy costs Titman (1984). Second reason is that managers may reduce their effort to control risk which result in higher expected costs of financial distress, bankruptcy, or liquidation (Berger & Bonaccorsi di Patti, 2005).

Finally, inefficient use of excessive cash used by managers for empire building would also increase agency costs, Jensen (1986).

The various capital structure theories address the theoretical relationship that exists between the value of the firm and the capital structure. The traditional view which refers to finance theorists before 1958. Kamere (1987), argue that the value of a firm can be maximized by minimizing the cost of capital through the careful use of debt. The basis of this argument is that at low levels of debt, increased leverage does not increase the cost of debt hence an incentive to borrow exists. This is the case until a certain level when the cost of debt begins to rise. Under these circumstances, the weighted average cost of capital curve is expected to decline to a minimal and then start rising implying that an optimal capital structure exists and it is at the point that the value of the firm is maximized Omondi (1996).

Regarding the cost of equity, traditional theorists argue that borrowing at first increases the expected return on equity at a slow rate which then shoots up with excessive borrowing Omondi (1996). The traditional theory has been complemented with encouraging more analysis in the contemporary ways of looking at capital structure for example signaling theory Ross (1977) and the Agency theory Jensen (1976).

Modigliani & Miller in 1958 developed a new financial theory in which they concluded that the capital structure of a firm is irrelevant to its value in a world without corporate taxes given the assumptions that there exists a homogenous risk class, homogenous expectations, capital markets, risk less, debt and zero growth. These findings were reaffirmed with the aid of the arbitrage process, which refers to the buying, and selling of identical assets at different prices. In the arbitrage process, if two companies differed only in the way they were financed and in their total market values, then investors would sell their stock of the overvalued firm and buy those of the undervalued firm.

This process would continue until the two firms' stock prices had the same market value Omondi (1996).

### 1.2 Statement of the Problem

In Kenya the majority of listed firms are owned by a few large owners who essentially own more than 25% of the issued share capital and the other remaining portion being dispersed to a wide range of minority investors whom the legal system tries to protect. Substantial research studies have been undertaken on capital structure, ranging from theories on capital structure, determinants of capital structure and the tests on the existence of an optimal capital structure (Myers 1977; Jensen & Meckling 1976; Baker & Wurgler 2002).

Hongxia and Liming (2002) examines the impact of capital structure on agency costs in non-financial Chinese listed firms. There were two main findings first, firms with high debt to asset ratio have high ratio of annual sales to total assets and high ratio of return-on-equity. If a firm has a high debt to asset ratio, creditors are much more concerned about the payment of interest and repayment of principal and will have incentives to monitor the firm. Thus, a capital structure with high debt decreases agency costs.
Secondly, positive and significant correlation is identified between ownership concentration and the return-on-equity ratio. This is because the largest shareholders have a strong interest in firm performance and therefore a high ability to reduce agency costs.

Zhang and Stephen (2008) provide empirical evidence on the agency costs hypothesis which suggests that increase of leverage may reduce agency costs. The multivariate tests revealed that general relationship between leverage and agency costs is significantly negative. The results suggest that the inverse relation is significant at 10% level. In addition, it was found that the firm size was negative related to agency costs with a significant level of 1% and firm performance was inversely related to agency costs but insignificantly.

A local study done by Odinga (2003) used local data available at the Nairobi Stock Exchange to investigate the variables that affect the capital structure decision. He concluded that profitability and non-debt tax shield are the most significant variables in determining leverage. Abai (2003) did a study to investigate the determinants of corporate debt maturity structure for companies quoted at the NSE, he identified effective income tax rate as one of the determinants. Musili (2005) carried out a study to determine the factors that motivate management of industrial firm's in choosing their capital structure; he concluded that industrial firms are more likely to follow a financing hierarchy than to maintain a target debt to equity ratio.

Omondi (1996) study on the capital structure in Kenya concluded that turnover, growth, asset structure and age are determinants of capital structure in Kenya. Many of these local studies examine the determinants of capital structure of firms, however limited work has been undertaken in establishing the relationship between capital structure and agency cost.

Most of the studies on capital structure and firm performance in addition to ignoring agency costs have been conducted in relation to firms operating in developed capital markets of American and European environment with only limited studies by Zhang and Stephen (2008) and Hongxia and Liming (2002) on the related studies on the relationship between capital structure and agency cost.

Research on how agency costs and capital structure moderate the relationship between ownership and firm performance in different institutional settings is limited (Ang and Cole 2000). One could imagine a simple causal structure such that agency costs directly influences capital structure which then influences firm value: more blockholder ownership could mean less power to minority investors and a tendency to retain earnings which can create private benefits for the controlling owners. However, more complicated

interaction effects are possible and perhaps more likely. It may be that the effects of agency costs depend on the level of blockholder ownership: the market may be adverse to low dividends if blockholder ownership and the perceived risk of expropriation by blockholders is high, but more positive, if the level of ownership concentration is low and the risk of expropriation is therefore perceived to be small.

The basis of this research project therefore will hinge on these apparent gaps, with a view to first understanding the effect agency costs have on the capital structure of firms. It investigates whether the fear of expropriation by minority investors leads to higher agency costs.

### 1.3 Objectives of the Study

The objective of the study is to determine the strength of relationship between capital structure and agency costs.

### 1.4 Importance of the Study

The study will be significant to investors at NSE especially retail investors due to the fact that the retail investors form the bulk of the investing public at NSE and they rely only on dividends and capital gains as a source of income. Investors are concerned about the agency costs as they affect the dividends they receive from their investments.

The study would be beneficial to financial managers as they will be more sensitive to the influence that the capital structure decisions they make may have on agency costs of quoted firms. They will be able to monitor the day to day operations of their company by taking precautions on choices that may result in financial distress.

The study will be of benefit to government policy makers in pursuit of policies that influence the corporate finance policy; in this regard the policies will be aimed at

eliminating bias against agency costs as this may be adopted as a protection against minority investors.

The study contributes to existing knowledge on the association between the capital structures and agency costs of quoted companies and further opens areas for further research for scholars.

# CHAPTER TWO
# LITERATURE REVIEW

## 2.1 Introduction

This section provides a review of the relevant theoretical and empirical literature. Theoretical arguments suggest that the debt-equity ratio is related to agency costs. A vast and rapidly growing literature deals with potential relations between this choice and agency problems. Three well-known predictions prevail. First, leverage aggravates agency conflicts between bondholders and shareholders. Frequently cited examples are the direct wealth transfer problem, the asset substitution problem and the underinvestment problem Smith & Warner (1979), Jensen & Meckling (1976), and Myers (1977). Second, leverage mitigates agency problems that arise from managerial behavior that conflicts with the interest of shareholders. A well-known example is the overinvestment problem, Jensen (1986). Finally, the relative amount of debt raises the costs of agency problems with stakeholders like customers and employees, Titman (1984). However, leverage is merely one potential factor in agency problems as the problems can be aggravated and mitigated by numerous factors. For example, the overinvestment problem is related to free cash flow, growth opportunities, leverage, and several corporate governance characteristics, such as bank relationships, threat of the market for corporate control, or managerial option plans.

## 2.2 Theoretical Literature Review

The theories of capital structure suggest that firms select their capital structure depending on attributes that determine the various costs and benefits associated with debt and equity financing. Explanations vary from the irrelevancy hypothesis (M&M 1958) to the optimal capital structure where the cost of capital is minimized and the value of the firm maximized. The greatest assumption that underlies each theory is that the decision maker has a need to minimize costs and maximize shareholders wealth.

### 2.2.1 Traditional Theory of Capital Structure

This theory holds that there exists an optimal level of leverage. The implication is that minimizing the cost of capital when the optimal level of debt capital is employed maximizes the value of the firm Brealy & Myers (1998). It is based on the argument that at low levels of debt, increased leverage does not increase the cost of debt hence the replacement of an expensive source of capital (equity) with a cheaper source (debt) translates into increase in the value of the firm. It is this benefit that creates borrowing incentives to firms. However, borrowing will continue up to a certain level and beyond that level, let us call it the turning point; the cost of debt begins to rise. It is at the turning point that the firm's value is at maximum and is considered to be the optimal capital structure.

### 2.2.2 Modigilliani and Miller (1958) MM without Corporate Taxes

Modigliani and Miller challenged the traditional theory of capital structure by developing a new theory. They did their work with certain assumptions, which include; existence of homogenous risk class, homogenous expectations, efficient capital market, risk-less debt and zero growth. They concluded that the capital structure of a firm is irrelevant to its value in a world without corporate taxes. The market value of a firm is determined solely by the magnitude and risk of the cash flow generated by the capital assets. The debt equity ratio merely indicates how the stream of future cash flows will be divided among the debt holders and shareholders.

This argument was based on the arbitrage process, which refers to the buying and selling of identical assets at different prices when one is over valued Omondi, (1996). The demand will continue to rise for the under valued asset in order to sell to the over-valued firm. The law of demand and supply will set in to restore the prices at equilibrium.

### 2.2.3 MM with Corporate Taxes (1963)

This was an improvement of the MM's previous work. The assumption of zero tax rate was seen as a serious limiting factor, and hence the need to come up with a model that incorporate taxes. Modigiliani & Miller (1963) argued that the value of a firm will increase with leverage because interest in debt is tax-deductible expense, hence there exist an extra benefit to the levered firm.

### 2.2.4 The effects of Personal Taxes-Miller (1977)

Since Modigliani & Miller (1963) made oversight of the impact of personal taxes, Miller (1977) made significant contribution by correcting the (1963) contention replying on a number of assumptions. Miller (1977) introduced a model designed to show how leverage affects firm's value when both personal and corporate taxes are taken into consideration. Miller concluded that with both corporate and personal taxes capital structure decisions are irrelevant. Miller notes further that with introduction of personal taxes, the usable income available to investors reduces when dividends are paid, thus reducing the value of the unlevered firm.

Omondi (1996) highlights Taggart (1980) who extended Miller analysis to conditions of incomplete capital markets and special costs associated with corporate debts. He concluded that Miller findings could be upheld and all equity capital structures are seen as perfectly rational for at least some firms.

### 2.2.5 Signaling Theory and Capital Structure

Ross (1977) introduced signaling theory to finance in which he suggested that managers can use capital structure as well as dividends to give some signals about the firm's future prospects. More specifically, increasing the amount of debt in the firm's capital structure may be interpreted by outsiders as a sign of confidence in a firm's future.

Harris & Raviv (1990) contend that, managers do not always behave in the best interest of their investors. Debt according to them serves this purpose by offering creditors the option to force the firm into liquidation and it also generates information that can be used by investors to evaluate major operating decisions including liquidation.

Kamere (1987) notes that signaling is closely related to agency problem in that the use of a firm's capital structure to convey information to the market about a firms profitability is made possible by failure on the part of principals to control actions of management fully.

### 2.2.6 Trade off Theory of Capital Structure

Myers (1984) noted that the theories of capital structure don't seem to explain the actual financing behavior. He therefore ushered two ways of thinking which he identified as static trade off framework and pecking order framework. In the Trade off theory of capital structure, Myers (1984) draws extensively from the work related to MM papers in which the firms' tradeoff the benefits of debt financing (favorable corporate tax treatment) against higher interest rates and bankruptcy costs. "A firms' optimal debt ratio is determined by a trade off of the costs and benefits of borrowing, holding the firm's assets and investment plan constant". This implies that an optimal capital structures is a result of balancing the value of interest tax shields against various costs of bankruptcy or financial distress.

### 2.2.7 Pecking Order Theory of Capital Structure

The pecking order theory of capital structure is among the most influential theories of corporate leverage. The theory is from Myers (1984) and Myers & Majluf (1984). Myers noted that the pecking order hypothesis is "hardly new", He gave Donaldsons (1961) study of the financing practices of a sample of large corporations as an example, Donalson (1961) had observed that: managers preferred to fund investment initially from retained profits rather than use outside funds, if external finance was required, firms tended first to issue the safest security, debt, and only issued equity as a last resort.

The pecking order theory is explained by the information asymmetry between insiders (management) and outsiders (investors). This means that managers know more about their firms than outside investors. This is indicated by the fact that stock prices react to firm announcements of earnings, major capital expenditures, etc. The market simply learns from managers actions because the managers are believed to have better or earlier information, Myers (1984). Because managers know more about their firms, they are reluctant to issue stock when they believe their shares are undervalued and are therefore likely to issue when their shares are fairly priced. Investors on the other hand interpret the decision to issue stock as bad news and firms can only issue stock at a discount. This creates an adverse selection problem in which firms prefer internal to external finance and when outside funds are necessary, firms prefer debt to equity because of lower information costs associated with debt issues and therefore equity is rarely used. This is the established pecking order.

Majluf & Myers, (1984) notes that an equity issue becomes feasible in the pecking order only when leverage is already high enough to make additional debt materially expensive. The major strength of pecking order is the fact that it gives satisfactory explanations as to why profitable firms will borrow less as they can rely on internal funds. The preference for external equity implies that firms will use less debt than suggested by trade-off theory. Further, firms are more likely to create financial slack to finance future projects.

## 2.3 Recent Empirical Evidence in Light of Capital Structure

### 2.3.1 Market Timing

According to the market timing model, firm managers attempt to time the market by issuing equity when share prices are presumed to be high and issuing debt when the interest rates are presumed to be abnormally low. This means that the firm's capital

structure simply reflects the cumulative effects of its manager's attempt to issue equity opportunistically, Smart et al., (2007); Brigham & Ehrhardt, (2008).

Equity market timing has an important and lasting impact on corporate capital structure. Baker & Wurgler, (2002), they argue that firms fail to rebalance their leverage after issuing equity in an attempt to time the market. Consequently, capital structure is the cumulative result of attempts to time equity markets and firms are no more or less likely to adjust their leverage in response to these timed equity issuances.

### 2.3.2 Inertia

The inertia theory put forth by Welch (2004) argues that despite fairly active net issuing activity, firms fail to rebalance their capital structures in response to shocks to the market value of their equity, similar to the implication of market timing. Thus, Welch (2004) concludes that variation in equity prices is the primary determinant of capital structure and "corporate issuing motives themselves remain largely a mystery."

Leary & Roberts, (2005) study the response to equity shocks and two observations are worth noting. First, leverage noticeably decreases (increases) as a result of the positive (negative) equity shock, suggesting that firms do not respond immediately to the shock. Second, the response to equity shocks is gradual, in the sense that more and more firms respond over the subsequent five years. These results highlight the gradual response of leverage to equity shocks and the corresponding persistence of leverage, on which the inertia theory is predicated.

### 2.3.3 Credit Ratings and Capital Structure

Kisgen (2006), different credit rating levels are associated with discrete costs (benefits) to the firm. If the rating-dependent cost (benefit) is material, managers will balance that cost (benefit) against the traditional costs and benefits implied by the tradeoff theory. In

certain cases, the costs associated with a change in credit rating may then result in capital structure behavior that is different from that implied by traditional tradeoff theory factors. In other cases, the tradeoff theory factors may outweigh the credit rating considerations. Consider the change from investment-grade to speculative-grade rating status. If there is no discrete cost related to credit ratings, a value-maximizing manager will choose the leverage. A firm near a downgrade will be less likely to issue debt relative to equity to avoid a downgrade. Likewise, a firm near an upgrade to the higher rating will be more likely to issue equity relative to debt to obtain the upgrade.

Capital structure decisions are affected by the potential for both an upgrade as well as a downgrade. Ratings tests also indicate that firms are most concerned around ratings levels such that access to commercial paper is affected and bond liquidity issues are most severe. The effects of ratings on capital structure can be viewed as complementary to existing capital structure theories. Future capital structure research would benefit from including credit ratings as part of the capital structure framework, both to ensure correct inferences in capital structure empirical tests, and more generally, to obtain a more comprehensive depiction of capital structure behavior.(Kisgen, 2006)

### 2.3.4 Extent of Rebalancing Capital Structure

#### 2.3.4.1 Dynamic Models

Loof (2003) study builds on dynamic modeling approach following a minor but growing trend in the literature. Jalivand & Harris (1984) were among the first to recognize the importance of a dynamic approach in finance theory in their study of the capital structure of firms. They characterized a firm's financial behavior as a partial adjustment to long-run financial targets. Fischer, Heinkel & Zechner (1989) used adjustment dynamics when they studied the difference between the maximum and minimum debt ratios of firms over a sample period of more than eight years and tried to identify the factors that determined the range of capital structures. Rajbhandary (1997) estimated a dynamic adjustment model exploring Indian firm data.

Banerjee, Heshmati & Wihlborg (2000) represent one of the first attempts to apply a dynamic adjustment model and panel data methodology in capital structure analysis. The main finding is that firms typically have capital structures that are not at the target, and that they adjust very slowly towards the target. Their study highlights the issue of adjustment costs, which has been overlooked in previous literature. The Kumbhakar, Heshmati & Hjalmarsson (KHH) model used in Loof (2003) paper is an extension and development of the Benjare et al model. The principal idea in the model is that there is a tradeoff between the costs and the benefits of leverage, which implies an interior optimal debt level for a firm.

### 2.3.4.2 Optimal Leverage ratio

Assume that the optimal leverage ratio for a firm is a function of sets of variables as in the following equation:

$L^*_{it} = F(Y_{it}, X_i, X_t)$

Where $L^*_{it}$ is the optimal leverage ratio for firm $i$, at time $t$, $Yit$ is a vector of firm- and time-variant determinants of the optimal leverage, $X_i$ and $X_t$ are unobservable firm specific and time-specific effects represented by firm and time dummy variables. The distinguishing feature of the KHH model is that it allows the optimal leverage to vary across firms and over time. The dynamic of this model means that the optimal debt ratio may move over time for an individual firm Loof, (2003).

### 2.3.4.3 Adjustment Process towards Optimal Leverage

Under ideal conditions one would expect that the observed leverage of firm $i$ at time $t$ is equal to the optimal leverage, i.e. $L_{it} = L^*_{it}$ Loof, (2003). In the dynamic model this would imply that the change in actual leverage from the previous period to the current period is equal to the change required for the firm to attain optimal leverage at time $t$. If adjustments to the rate of change required for the firm to reach optimal leverage at time $t$

are costly, as reflected in $L\ it$, then firms may not find it optimal to adjust fully, but only partially. This is represented as

$L_{it} - L_{it-1} = \delta_{it} (L^*_{it} - L_{it-1})$

Which can be rewritten as;

$L_{it} = (1 - \delta_{it}) L_{it-1} + \delta_{it} L^*_{it} + e_{it}$

Where $\delta_{it}$ is the adjustment parameter representing the magnitude of desired adjustment between two subsequent periods, and $e_{it}$ is statistical noise assumed to have mean zero and constant variance.

If $\delta_{it} = 1$, the optimal adjustment is achieved within one period and the firm at time $t$ is at its target leverage. The effects of adjustment costs are represented by the restriction that $|\delta_{it}| < 1$, which is a condition that $L_{it} \rightarrow L^*_{it}$ as $t$ goes towards infinity. Finally, if $\delta_{it} > 1$, the firm over adjusts by making more adjustments than necessary. Over adjustment is a reflection of unanticipated changes in economic conditions.

#### 2.3.4.4 Speed of Adjustment

The speed of adjustment $\delta_{it}$ may itself be a function of some underlying variables affecting adjustment costs:

$$\delta_{it} = G(Z_{it}\ M_i\ M_t)$$

Where $Z_{it}$ is a vector of variables determining the speed of adjustment, and $M_i$ and $M_t$ are unobserved firm-specific and time-specific effects. As with the optimal leverage, which may shift from period to period, the speed of adjustment is also allowed to vary across firms and over time $t$. An important feature of the KHH adjustment model is that the current and past levels of optimal leverage contain information that can be used to predict the future behavior of leverage, and that it does not take into account the target leverage beyond time $t$.

### 2.3.5 Agency Costs and Capital Structure

Agency problems result when members of one group of stakeholders such as managers place their own interests before the interests of the group they represent such as the

stakeholders. How well the company controls the losses associated with the agency problems either through incentive plans, monitoring, or covenants can have a dramatic impact on its capital structure and value. As Mehran (1992) explains: "although the findings presented do not necessarily suggest that agency theory provides a complete explanation for corporate capital structure, they do indicate that any theory that ignores agency issues is seriously incomplete".

The bondholders are protected by some covenants against a possibility of management trying to take advantage of them. According to Jensen (1976) theses covenants hamper the corporations legitimate operations to some extent. He further puts that the costs of lost efficiency plus those incurred by monitoring the covenants are what is referred to agency costs. Agency costs increases the costs of debt and at the same time reduce the value of equity. The use of debt finance can reduce agency costs between managers and shareholders by increasing the managers' share of equity, Jensen & Meckling (1976) and by reducing the 'free' cash available for managers' personal benefits, Jensen (1986). It may also encourage managers to perform better in order to reduce the likelihood of bankruptcy, which is costly. Conflicts between debt-providers and shareholders arise because the debt contract gives shareholders an incentive to invest sub-optimally in very risky projects implying an agency cost of using debt finance. Jensen & Meckling (1976) also noted that with increasing costs associated with higher levels of debt and equity, an optimal combination of debt and equity might exist that minimizes total agency costs.

### 2.3.6 Agency Costs and Debt

In the shareholder-bondholder conflicts shareholders make decisions transferring wealth from bondholders to shareholders. However, the bondholders are aware of the situations in which this wealth expropriation may occur. Therefore, they will demand a higher return on their bonds. Shareholders, foreseeing the bondholders' reaction, can mitigate the potential conflicts. Three potential conflicts can be distinguished: direct wealth transfer, asset substitution, and underinvestment. In the case of direct wealth transfer

conflicts, dividends are increased or debt with higher priority is issued Smith & Warner (1979). In the case of asset substitution, the firm substitutes current projects for projects which have higher risk Jensen & Meckling (1976). As the bondholders are compensated given the risk of the current projects, wealth is transferred from bondholders to shareholders.

In Myers' (1977) underinvestment problem, growth options will not be exercised because, due to the overhang of debt, the equity needed to finance these growth opportunities will not be provided by the shareholders. The shareholder-bondholder conflicts can be mitigated by adjusting the properties of the debt contract. This can take several forms. First, the contents of the debt contract can be adjusted by including covenants. For example, a covenant can contain restrictions on the payment of dividends or the disposition of assets. Second, debt can be secured by collateralization of tangible assets in the debt contract. Third, convertible debt or debt with warrants can be issued .Fourth, the maturity of debt can be shortened, Jensen & Meckling (1976).

The empirical studies related to the shareholder-bondholder conflicts mainly focus on the degree to which a firm can secure its debt and the firm's growth opportunities, both in relation to the relative amount of debt. In Titman & Wessels (1988) amount of fixed assets is used to approximate the relative amount of secured debt, which is a potential mitigating factor of wealth distribution and asset substitution. Titman and Wessels find no significant relationship, however, it remains unclear whether this result is caused by agency problems or by decreasing bankruptcy costs. In Smith and Watts (1992) variables are used to approximate growth opportunities, which are hypothesized to aggravate underinvestment. The results are mixed, which is probably caused by the difficulty to measure growth opportunities from publicly available data. Titman & Wessels (1988) do not find the expected negative influence of proxies for growth opportunities on leverage, whereas Smith & Watts (1992) find the predicted effect.

### 2.3.7 Agency Costs, Corporate Governance and Ownership Structure

Agency problems are increasingly inherent in the modern-day corporation, owing to the widening separation of ownership and control responsibilities, growing business diversification and segmentation across industry and business lines, and investor emphasis on near-term performance and return outcomes. Agency costs can manifest in various forms under these circumstances, including self-serving behavior on the part of managers focused on status or empire-building objectives, excessive perquisite consumption, non-optimal investment decision-making or acts of accounting mismanagement or corporate fraud. The adverse implications of these actions are then felt in the form of the destruction of shareholder wealth and wider impacts on other corporate stakeholders, such as debt providers, employees and society in general.

The realization of the consequences flowing from the incidence of agency problems have led to emphasis being placed on the importance of competitive markets for managerial labour and corporate control as monitoring mechanisms designed to limit the degree of agency divergence, the role of institutional shareholders as substitute agency devices and the development and enforcement of codes of corporate governance practice to enhance director and management oversight and create desirable incentive structures within firms.

A number of approaches have been employed within the literature to shed light on the existence of agency costs within corporations and the attributes that aid in mitigating such undesirable costs. Firstly, there is a stream of research evaluating the association between different agency-mitigating mechanisms and interpreting from this the agency cost consequences and the attributes that impact prominently on agency costs. Early studies in this regard include Jensen et al. (1992) which identified an interrelationship between levels of inside ownership, leverage and dividend payout, with inside ownership negatively impacting on debt and dividend levels. This suggests that inside ownership and financing policy (leverage and dividend payout) are substitute mechanisms in potentially reducing agency costs. Similar conclusions are drawn by Moh'd et al.(1995)

who find that inside ownership and leverage negatively impact on dividend payout ratios, and that higher institutional investment significantly increases payout ratios, suggesting that firm dividend policy is determined in a manner consistent with minimizing agency-related costs.

Agrawal & Knoeber (1996) provide some evidence of interrelationships between alternative agency mechanisms, including leverage use, insider ownership, institutional ownership, the existence of block holders and takeover market activity, and Crutchley et al. (1999) provide evidence of simultaneity between various agency-control mechanisms and support for institutional ownership substituting for other attributes mitigating agency costs.

The second approach taken in the empirical literature has been the evaluation of the association between agency control mechanisms and firm performance outcomes, with positive performance effects of agency attributes intimated through their contribution to lowering agency costs. Although this strain has spurned extensive research, substantial inconsistency is observed across studies evaluating the impact of individual agency-controlling mechanisms on firm performance. Potential governance related attributes that have been evaluated in this context include the size of the board of directors Jensen (1996) & Yermack (1996), the composition of the board of directors , Chief Executive Officer and board chairperson duality, board committee formation and independence, managerial remuneration and compensation structure, Shleifer & Vishny, (1997).

There has also been significant investigation into the role of shareholding influences on firm performance, with Morck et al. (1988), McConnell & Servaes (1990), providing evidence of a statistically significant non-linear relationship between managerial ownership and firm performance, and McConnell & Servaes (1990) identifying positive relationships between performance and levels of institutional and large external ownership respectively. Contrasting with these results, however, Demetz & Lelin (1985)

in relation to managerial ownership, and Morck et al. (1988) evaluating institutional ownership identified no statistically significant performance impacts.

Given the inconsistent findings based on the examination of individual attributes, increasing focus has been placed on considering the overall governance or agency structure of firms, using measures such as shareholder rights or takeover vulnerability indices. This approach relates to the expectation that firms offering lower protection for shareholder claims, those with poorer governance practices or firms that are increasingly immune to takeover threat are more likely to experience agency and managerial entrenchment problems leading to incurrence of agency costs and lower relative performance. The evidence in this regard is much more conclusive, with Shleifer & Vishny (1997), Gompers, Ishii & Metrick (2003), all finding a positive association between measures representative of superior corporate governance quality, stronger shareholder rights or increased takeover vulnerability and firm performance.

The final relevant subset of literature, and that which is most closely aligned to this study, involves those studies that have directly attempted to measure the level of agency costs inherent in firms, and then evaluated the factors that significantly impact on the variation in firm agency costs within cross-sectional or longitudinal sample constructs. Ang et al. (2001) applied this method to a sample of non-listed US small businesses based on measuring agency costs, using operating expense and asset turnover ratios, relative to a zero-agency cost base firm represented by a 100% owner-manager firm.

Agency costs were found to be negatively related to the manager's ownership interest and the extent of external bank monitoring and positively related to the number of shareholders and the existence of an outside (non owner) manager. Singh & Davidson III (2003) found that larger managerial ownership and smaller-sized boards both enhance asset utilization ratios for larger listed US companies. Doukas et al. (2005) examined agency cost determinants for listed US firms and concluded that greater analyst following

generally reduces agency costs, but its effect is more prominent for single-segment as opposed to diversified firms. They also provided evidence of non-linear relationships between inside ownership and leverage and the level of agency costs, whereas agency costs are found to be positively associated with the level of institutional ownership.

According to theory, agency costs should be inversely related to the ownership share of the primary owner. For a primary owner who is also the firm's manager, the incentive to consume perquisites declines as his ownership share rises, because his share of the firm's profits rises with ownership while his benefits from perquisite consumption are constant. For a primary owner who employs an outside manager, the gains from monitoring in the form of reduced agency costs increase with his ownership stake. Here, the primary owner fulfills the monitoring role that large blockholders perform at publicly traded corporations.

Agency costs should be lower at firms where a single family controls more than 50 percent of the firm's equity. At a small, closely held corporation where a single family controls the firm, the controlling family also fulfills the monitoring role that large blockholders perform at publicly traded corporations. Due to more diffused ownership among older businesses with larger families, however, monitoring by family members whose interests may not always be aligned should be less effective than monitoring by a sole owner. Agency costs should increase with the number of non-manager shareholders. As the number of shareholders increases, the free-rider problem reduces the incentives for limited-liability shareholders to monitor. With less monitoring, agency costs increase. Thus expense and asset-utilization ratios should be positively and negatively related to the natural logarithm of one plus the number of nonmanaging shareholders, respectively.

Finally, agency costs should be higher at firms managed by an outsider. This relationship follows directly from the agency theory of Jensen & Meckling (1976). As noted above,

this is the extreme case where the manager gains 100 percent of perquisite consumption, but little of the firm's profits.

### 2.3.8 Determinants to the Optimal Capital Structure

Thomson (2003) identifies several key features of firms that seem to be related to debt ratios across a wide range of environments and through time: size (+), earnings variability (+), asset tangibility (+), profitability (–), investment opportunity set (–) and industry. The negative sign implies a direct relationship while negative sign implies an inverse relationship with debt. The negative investment opportunity set observation supports trade-off theory but not pecking order theory.

Marsh (1982), who investigated security issues and found that companies are heavily influenced by market conditions and the past history of security prices in choosing between debt and equity. He also provided evidence that companies appear to make their choice of financing instruments as if they have target levels of debt in mind. These debt levels are themselves functions of company size, bankruptcy risk and asset composition. Chua & Mc Connel (1982) provide evidence suggesting that direct bankruptcy costs constitute a larger proportion of firms value .It is also the case that relatively large firms tend to be more diversified and less prone to bankruptcy. This indicates that large firms should be highly leveraged.

In Kenya, Kamere (1987) found out that long term debt and the value of total assets (size) are positively correlated, suggesting that the use of debt may be higher among large firms. Myers (1984) asserts that firms holding valuable intangible assets tend to borrow less than firms holding tangible assets. In Kenya, Kamere (1987) & Omondi (1996) found that firms with tangible assets borrow more.

Brigham & Gapenski (1990) observed that firms with very high return on investments use relatively little debt. The practical reason is that highly profitable firms do not need

much debt since their high rates of return enable them to do their financing with retained earnings. Contrary, Omondi (1996) found that Kenyan firms tend to borrow more when their profits are high, since the high profits serve as an incentive to the firm to invest more and this is what may warrant borrowing for expansion of business.

Lasfer (1999) found significant differences across company size; in particular, the relationship between debt and agency costs only applies to large companies whereas small company debt appears to be driven by profitability. Bevan & Danbolt (2002) found that debt determinants appear to vary significantly between short-term and long-term components of debt.

Bancel & Mittoo (2004) surveyed 87 managers from large listed firms across 16 European countries on the determinants of capital structure, financial flexibility was again found to be the primary concern when issuing debt, and earnings per share dilution when issuing equity. Managers value hedging considerations and use 'windows of opportunity' when raising capital. Companies' financing policies are influenced by both institutional environment and international operations. Overall, they conclude that companies determine capital structure by trading off costs and benefits of financing.

Titman (1984) argues that the more unique a firm's assets, the thinner the market for those assets and the lower the expected value recoverable by the lender in the event of bankruptcy. The idea is that a firm that develops and produces unique and specialized products also develops specialized or customized skills and competence capital that are not easily transferable. Consistent with this idea, Titman (1984) finds that firms in unique lines of business tend to be less leveraged.

Taxes are the main reason for capital structure optimization Loof, (2003). The advantage of corporate taxes in this respect is that interest payments are deductible as an expense. The consequence is that, ceteris paribus, the total income to both debt holders and

stockholders is larger for a leveraged firm. Total income increases by interest payment times the tax rate. The optimal strategy for the value-maximizing firm would therefore be to acquire a maximum of leverage. The greater the amount of debt is, the greater the tax shield and the greater the value of the firm Loof, (2003). But such a strategy is not consistent with empirical evidence. One main reason is related to the uncertainty of tax shields. The possibility of using tax shields effectively varies over the business cycle and among firms, depending on net income or profitability. Another reason for tax shelter redundancy identified by Van Horn (1992) is that firms use alternative ways other than interest on debt to shelter income, for example leasing, investment in intangible assets and the use of options and future contracts. Other non-debt factors that reduce the incentives to issue debt to take advantage of interest shields are depreciation and amortization.

Investigating four determinants of capital structure choice by analyzing the financial decisions of public firms in all G-7 countries (the U.S., Japan, Germany, France, Italy, the U.K., and Canada), Rajan & Zingales (1995) differentiate between leverage expressed in book value and in market value. They showed that both measures of leverage increase with tangibility (fixed assets divided by total assets) and sales, and decrease with profitability and (in conflict with Raviv and Harris) the market-to-book ratio as a proxy for growth opportunities. In a cross-sectional analysis of a sample of 176 large firms, Asgharian (1997) shows that growth, size, collateral value of the assets and managers' shareholding positively affect firm leverage while profitability affects leverage negatively.

## 2.4 Conclusion

Substantial research studies have been undertaken on capital structure, ranging from theories on capital structure, determinants of capital structure and the tests on the existence of an optimal capital structure (Myers 1977; Jensen & Meckling 1976; Baker & Wurgler 2002; Harris & Raviv 1991).

Zhang and Steven (2008) aims to provide empirical evidence on the agency costs hypothesis which suggests that increase of leverage may reduce agency costs. Both multivariate tests and univariate tests was employed in the study. The multivariate tests reveal that general relationship between leverage and agency costs is significantly negative. Univariate tests are further used to assess whether agency costs are significantly different when a firm has a relatively higher debt to asset ratio from when it is less leveraged. Similar supporting evidence is found for the agency costs hypothesis.

The main purpose of multivariate tests in Zhang and Stephen (2008) was to assess the general relation between agency costs and leverage, and whether this relation was statistically significant. For that purpose, agency costs (proxied by OETS that is operating expense to sales) as the dependent variable and the independent variables including: leverage (proxied by DTAR that is debt to asset ratio), and three control variables: firm size (proxied by LOSthat is level of sales), firm performance (proxied by ROA that is return on assets), and industry identification (set by 13 industry dummies, $IND_k=1$ for industry k, 0 otherwise, k=1, 2, ..13). the following regression was proposed for the purpose:

$$OETS = \alpha + \gamma_1 DTAR + \gamma_2 LOS + \gamma_3 ROA + \sum \beta_k IND + \varepsilon_i$$

where $\alpha$ is the intercept term, $\gamma_1,\gamma_2,\gamma_3,\beta_1,\beta_2...\beta_{13}$are coefficients, $\varepsilon_i$ is the error term.

As suggested by Harris and Raviv, (1990), test of the agency costs hypothesis typically are based on regressions of agency costs measures on the indicator of leverage plus some control

variables. However, they argue that regressions of agency costs on a measure of leverage may confound the effect of capital structure on agency costs with the effect of agency costs on capital structure. They conduct a two-equation structural model and estimate it using two-stage least squares (2SLS) because they argue that if agency costs affect the choice of capital structure, then failure to take this reverse causality into account may result in simultaneous-equation bias (Berger and Banaccorsi di Patti, 2006). Univariate tests are also widely used in tests of agency costs determinants. Ang et al. (2000) and Fleming et al. (2005) use the t-test methodology and the Mann-Whitney U-test methodology to test the significance of differences of agency costs between firms managed by owners and firms managed by outsiders.

A local study done by Odinga (2003) used local data available at the Nairobi Stock Exchange to investigate the variables that affect the capital structure decision. He concluded that profitability and non-debt tax shield are the most significant variables in determining leverage. Abai (2003) did a study to investigate the determinants of corporate debt maturity structure for companies quoted at the NSE, he identified effective income tax rate as one of the determinants.

Kiogora (2000) presented a summary of capital structures of companies quoted at the Nairobi Stock Exchange. In his findings, the level of average equity for all firms was 53.7% and with a standard deviation of 25.4. The Agricultural sector had the highest level of equity at 77% with a standard deviation of 11.42, followed by Insurance sector at 71% with standard deviation of 3.24, then Industrial sector at 58% with a standard deviation of 20.59. The Commercial sector had an equity level of 26% with a standard deviation of 29.19. He attributes the pattern of financing to the levels of business risk and easiness to obtain finances among sectors.

Musili (2005) sets out to determine the factors that motivate management of industrial firm's in choosing their capital structure; He concluded that industrial firms are more likely to follow a financing hierarchy than to maintain a target debt to equity ratio.

Onsomu (2003), set out to determine if there is a relationship between debt and the value of Kenyan firms quoted at the NSE she concluded that there was no significant relationship between debt and the value of the firm. Omondi (1996) study on the capital structure in Kenya concluded that turnover, growth, asset structure and age are determinants of capital structure in Kenya.
Munyui (2005) did a study on empirical testing of the pecking order theory among firms quoted on the NSE and concluded that firms do not follow the pecking order theory of capital structure in their financing choices.

Most of the studies on capital structure and firm performance in addition to ignoring agency costs have been conducted in relation to firms operating in developed capital markets of American and European environment with only limited studies by Zhang and Stephen (2008) and Hongxia and Liming (2002) on the related studies on the relationship between capital structure and agency cost.

Research on how agency costs and capital structure moderate the relationship between ownership and firm performance in different institutional settings is limited. One could imagine a simple causal structure such that agency costs directly influences capital structure which then influences firm value: more blockholder ownership could mean less power to minority investors and a tendency to retain earnings which can create private benefits for the controlling owners. However, more complicated interaction effects are possible and perhaps more likely. It may be that the effects of agency costs depend on the level of blockholder ownership: the market may be adverse to low dividends if blockholder ownership and the perceived risk of expropriation by blockholders is high, but more positive, if the level of ownership concentration is low and the risk of expropriation is therefore perceived to be small.

# CHAPTER THREE
# RESEARCH METHODOLOGY

## 3.1 Research Design

An empirical study of the firms listed on Nairobi Stock Exchange (NSE) was conducted. The aim of the study was to explore whether there exists a relationship between capital structure and agency costs.

## 3.2 Population

The population of this study consisted of all the 54 companies quoted at the NSE for the years 2005 to 2009; the list is attached in Appendix I. The use of the listed firms was due primarily to data availability and reliability because they are required by law to publish end of year financials. However firms that were not listed for the entire period under study were left out of the sample. The study used annual reports that were available at the Nairobi Stock Exchange.

## 3.3 Sample

The sample consisted of 28 listed companies that traded consistently for the five years under the research period excluding financial sector firms including banks, insurance firms, unit trusts and other funds companies, firms in financial industries have capital structure that are determined by the level of deposits and financial regulation. The firms in the sample were categorized across the various sectors which includes, Agricultural, Commercial and Services, Industrial and Allied and Alternative Investment Market Segment.

### 3.4 Data Collection

This study was facilitated by the use of secondary data. Capital structure and agency costs of the quoted firms for the years 2005 and 2006 were obtained from the Capital Market Authority (CMA) library database and data for the year 2007 to 2009 was obtained from the CMA website under annual reports for listed companies. The data obtained was in the form of annual financial statements and was stored in a flash disk.

### 3.5 Research Variables

#### 3.5.1 Agency Costs

Following Ang et al. (2001), the study focused on measuring the direct agency costs using the asset utilization ratio which is the ratio of sales to assets. This measures how effectively the firm management deploys its assets.

A firm whose sale to asset ratio is lower than the base case firm experiences positive agency cost. These costs arise because the manager in some or all of the following ways: makes poor investment decision exerts insufficient efforts resulting in lower revenues; consumes executive perquisites, so that the firm purchases unproductive assets, such as excessively fancy office space office furnishing, automobiles and resort properties.

The asset utilization ratio is not measured without error. Sources of measurement error include differences in the accounting methods chosen with respect to the recognition and timing of revenues and costs, poor record- keeping and the tendency of firm's shareholders to exercise flexibility with respect to certain cost items. For example, they may raise/lower expenses, including their own pay, when profits are high/low.

### 3.5.2 Capital Structure

Capital Structure was measured using debt-asset ratio which is total debts divided by total assets, this ratio measures leverage and can be seen as the best accounting based proxy for leverage, Rajan & Zingales (1995).

### 3.5.3 Control Variables

Following Ang et al. (2001), the study focused on using the following ccontrol variables firm performance measured by Return on Assets and Size of company was measured in terms of company's total asset base in shillings during the research period.

### 3.6 Data Analysis

Data was processed by descriptive statistics containing mean, standard deviation and inferential statistics containing Multivariate regression, Pearson correlation, Analysis Of Variance (ANOVA) test using Statistical Package for Social Sciences (SPSS).

Multivariate regression was used to explain the determinant of the proxy for agency costs that is the ratio of sales to assets. The proxy was regressed against the capital structure and control variables. Correlation analysis was used to establish the relationship between the regression variables. ANOVA was used to test for significant differences between the dependent and independent variables. The model used was similar to one used by Zhang and Stephen (2008) and is as follows;

$$\mathbf{Y = a + b_1X_1 + c_2I_1 + d_3I_2 + \varepsilon}$$

Where;

Y= Dependent variables which is asset utilization ratio.

$X_1$, $I_1$, $I_2$ = Independent variables which are debt- asset ratio and control variables that is return on assets and logarithm of total assets .

a, $b_1$, $c_2$, $d_3$ = Estimated coefficients of the regression model.

$\varepsilon$ = residual term that includes the net effect of other factors not in the model and measurement errors in the dependent and independent variables.

# CHAPTER FOUR

# DATA ANALYSIS AND INTERPRETATION

## 4.1 Introduction

This chapter presents findings and analysis on the relationship between capital structure and agency cost of the firms listed at the NSE between 2005 and 2009. This made a sample size of 28 companies that traded consistently within the period out of a maximum possible of 54 companies listed at the NSE. The data was collected from the companies annual reports filed with the NSE and those within the companies which consisted of the annual sales/turnover, total assets and liabilities, net profits and market capitalization values.

While capital structure was computed as the ratio of total debt to assets, agency cost was measured as the ratio of sales to assets. The study used regression model of the form:

$$Y = a + b_1X_1 + c_2I_1 + d_3I_2 + \varepsilon$$

Where Y is the agency cost (ratio of sales to assets), $X_1$ is the capital structure as measured by total debt to assets (leverage), $I_1$ and $I_2$ are the intervening variables; return on assets (ratio of net profit to total assets) and size of the company as quantified by the logarithm of total assets. $\varepsilon$ is the model significance.

## 4.2 Descriptive Statistics of Data

**Table 4.1: Descriptive Statistics**

| | Agency Cost | Leverage | Return on Assets | Size |
|---|---|---|---|---|
| Mean | 1.1563 | 0.1945 | 0.1262 | 9.5590 |
| STDEV | 0.8594 | 0.1230 | 0.0982 | 0.6791 |
| Minimum | 0.2870 | 0.0252 | (0.0190) | 7.7988 |
| Maximum | 4.0593 | 0.4655 | 0.4196 | 10.8849 |
| 1st Quartile | 0.6085 | 0.1059 | 0.0577 | 9.1316 |
| 2nd Quartile/Median | 0.9567 | 0.1859 | 0.0936 | 9.5314 |
| 3rd Quartile | 1.4258 | 0.2430 | 0.2129 | 9.9442 |
| No | 28 | 28 | 28 | 28 |

Table 4.1 shows the descriptive statics and the distribution of the data set on agency cost, leverage, return on assets, and size. Sales to asset ratio had a mean of 1.1563 meaning that on average sales covered the total value of assets. However, the minimum value was 0.2870 and maximum value of 4.0593 while the second quartile value (median) was 0.9567 meaning that half of the companies' sales to asset ratio ranged from 0.2870 to 0.9567 while the top half ranged from 0.9567 to 4.0593.

The mean of capital structure as measured by debt to asset ratio was 0.1945 signifying that on average, 19.45% of the debts/liabilities, of the companies listed at NSE that formed the sample, were covered by assets. Given a median value of 0.1859, it can be deduced that the total debt to asset ratio of half the companies had a distribution between 0.0252 (minimum value) and 0.1859 and the other half were distributed between 0.1859 and 0.4655 (maximum value). The study also established that the standard dispersion in the distribution of the leverage value was 0.1230 signifying a wide dispersion.

The study also established a mean value of return on assets at 0.1262 signifying that asset shilling in assets of the listed companies could on average generate a net profit of 0.1262 while more efficient companies could generate up to Ksh0.4196 from a shilling of assets. However, the least efficient companies could only generate a loss of Ksh0.0190 from every shilling of asset. The study also established that the average size of the companies as measured by log of total assets was 9.5590. The distribution of the size of the companies ranged from 7.7988 to 10.8849 within a median value of 9.5314. The third quartile value was 9.9442 indicating that most of the companies' sizes were distributed between the $1^{st}$ and the $3^{rd}$ quartile.

### 4.3 Regression Analysis and Interpretations

The regression model was guided by the formula: $\mathbf{Y = a + b_1X_1 + c_2I_1 + d_3I_2 + \varepsilon}$

Where Y is the dependent variable (agency cost), $X_1$ is the capital structure as measured by total debt to assets (leverage), $I_1$ and $I_2$ are the intervening variables; return on assets-ROA (ratio of net profit to total assets) and size of the company as quantified by the logarithm of total assets; $\varepsilon$ is the model significance.

R2 is called the coefficient of determination which normally is a square of R. R-Squared is a statistical term depicting how good one term is at predicting another. R2 shows the variability between dependent and independent variables- is often interpreted as the proportion of response variation "explained" by the regressors in the model.

Durbin–Watson on the other hand is a statistical analysis whose purpose is to detect whether there is an autocorrelation among the model residual. Values of the Durbin-Watson statistic always range between 0 and 4. A value of 2 means that there is no autocorrelation in the sample while values approaching 0 indicate positive autocorrelation and values toward 4 indicate negative autocorrelation.

#### 4.3.1 Year 2005 Statistics and Interpretations

**Table 4.2: Correlation and Analysis of Variance - 2005**

| | | | | | |
|---|---|---|---|---|---|
| R | 0.493 | | | | |
| R Square | 0.243 | | | | |
| Adjusted R Square | 0.149 | | | | |
| Std. Error of the Estimate | 1.1406 | | | | |
| Durbin-Watson | 2.132 | | | | |
| | Sum of Squares | df | Mean Square | F | Sig. |
| Regression | 10.045 | 3 | 3.348 | 2.574 | 0.078 |
| Residual | 31.221 | 24 | 1.301 | | |
| Total | 41.266 | 27 | | | |

Table 4.2 presents the Pearson's Moment Correlation Value for the 2005 statistics from which a correlation coefficient and coefficient of determination ($R^2$) value of 0.493 and 0.243 are given respectively. This shows a positive and weak relationship between the independent and dependent variables (0.493) as the former can explain or account for of 24.3% of the variations in the dependent variable (agency cost).

The Analysis of Variance (ANOVA) statistics of the 2005 data had an f-value of 2.574 and significance value of 0.078. This shows that the model can only be significant at 90% confidence interval with a likelihood of 7.8% in error.

**Table 4.3: Regression Statistics - 2005**

| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 1.517 | 3.076 | | 0.493 | 0.626 |
| C. Structure | -2.422 | 1.450 | -0.309 | -1.671 | 0.108 |
| ROA | 2.838 | 1.693 | 0.310 | 1.676 | 0.107 |
| Size | -0.007 | 0.324 | -0.004 | -0.023 | 0.982 |

From the finding of the study in the above table, the following regression equation was established by the study for the year 2005:

**AC = 1.517 - 2.422CS + 2.838ROA . 0.007Size**

Whereby AC represents agency cost, CS represents capital structure, ROA represents return on assets while Size represents size of the company.

From the Table 4.3, taking all the factors constant, the agency cost as signified by sales to total asset ratio would be 1.517. Taking all other factors constant; a unit increase in capital structure would lead to a 2.422 decrease in agency cost. However, while ROA would intervene in the relationship by increasing the agency cost by 2.838 per unit increase, size of the company would have a negative effect on the relationship.

### 4.3.2 Year 2006 Statistics and Interpretation

**Table 4.4: Correlation and Analysis of Variance - 2006**

| | | | | | |
|---|---|---|---|---|---|
| R | 0.396 | | | | |
| R Square | 0.157 | | | | |
| Adjusted R Square | 0.051 | | | | |
| Std. Error of the Estimate | 0.6847 | | | | |
| Durbin-Watson | 2.119 | | | | |
| | Sum of Squares | df | Mean Square | F | Sig |
| Regression | 2.092 | 3 | 0.697 | 1.487 | 0.243 |
| Residual | 11.252 | 24 | 0.469 | | |
| Total | 13.344 | 27 | | | |

Table 4.4 presents the correlation and ANOVA statistics and establishes that the relationship between agency cost and capital structure is subject to correlation coefficient of 0.396 and $R^2$ value of 0.157. This depicts a positive but weak relationship between independent and dependent variables and the former accounts for or explains 15.7% of the total variations in the dependent variable. The ANOVA statistics shows an insignificant relationship between the two independent and dependent variables given a significance value of 0.243. This indicates that the regression model could be 24.3% in error.

**Table 4.5: Regression Statistics - 2006**

| | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | -0.128 | 1.884 | | -0.068 | 0.946 |
| C. Structure | -1.633 | 0.853 | -0.365 | -1.914 | 0.068 |
| ROA | -0.098 | 1.978 | -0.009 | -0.050 | 0.961 |
| Size | 0.152 | 0.195 | 0.146 | 0.779 | 0.444 |

From the finding of the study in the above table, the following regression equation was established by the study for the year 2006:

**AC = -0.128 - 1.633CS - 0.098ROA - 0.152Size**

From the regression results, when the independent and intervening variables values are null, the agency cost as quantified by sales to total assets ratio would be -0.128. The study also shows that taking other factors to be constant; a unit increase in capital structure (leverage) would lead to a 1.633 decrease in agency cost, while ROA and Size would intervene negatively in the relationship by 0.098 and 0.152 respectively.

### 4.3.3 Year 2007 Statistics and Interpretation

**Table 4.6: Correlation and Analysis of Variance - 2007**

| | | | | | |
|---|---|---|---|---|---|
| R | 0.475 | | | | |
| R Square | 0.226 | | | | |
| Adjusted R Square | 0.129 | | | | |
| Std. Error of the Estimate | 0.8598067 | | | | |
| Durbin-Watson | 2.429 | | | | |
| | Sum of Squares | df | Mean Square | F | Sig. |
| Regression | 5.181 | 3 | 1.727 | 2.336 | 0.099 |
| Residual | 17.742 | 24 | 0.739 | | |
| Total | 22.924 | 27 | | | |

Table 4.6 above presents correlation and ANOVA statistics and establishes that the relationship between agency cost and capital structure is subject to correlation coefficient of 0.475 and $R^2$ value of 0.226. This depicts a positive but weak relationship between independent and dependent variables and the former accounts for or explains 22.6% of the total variations in the dependent variable. The ANOVA statistics shows an insignificant relationship between the two independent and dependent variables at 95% confidence interval but significant at 90% given a significance value of 0.099. This indicates that the regression model could be 9.9% in error.

**Table 4.7: Regression Statistics - 2007**

| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 0.897 | 2.338 | | 0.384 | 0.704 |
| C. Structure | -2.931 | 1.319 | -0.410 | -2.223 | 0.036 |
| ROA 07 | 1.063 | 1.258 | 0.155 | 0.846 | 0.406 |
| Size 07 | 0.067 | 0.240 | 0.050 | 0.278 | 0.783 |

The established regression equation between agency cost and capital structure in the year 2007 is:

**AC = 0.897 - 2.931CS + 1.063ROA + 0.067Size**

From the findings, the agency cost would be 0.897 by default when other factors are null. The study also found that holding other factors constant, a factor increase in capital structure (leverage) lead to 2.931 decrease in agency cost, while a factor increase in ROA cause an increase in agency cost by 1.063 and 0.067 increase in the same by each unit increase in size of the company.

### 4.3.4 Year 2008 Statistics and Interpretation

**Table 4.8: Correlation and Analysis of Variance - 2008**

| | | | | | |
|---|---|---|---|---|---|
| R | 0.213 | | | | |
| R Square | 0.045 | | | | |
| Adjusted R Square | -0.074 | | | | |
| Std. Error of the Estimate | 1.0875 | | | | |
| Durbin-Watson | 2.133 | | | | |
| | Sum of Squares | df | Mean Square | F | Sig. |
| Regression | 1.347 | 3 | 0.449 | 0.380 | 0.768 |
| Residual | 28.382 | 24 | 1.183 | | |
| Total | 29.730 | 27 | | | |

The study also sought to establish the model fitness through table 4.8 above. From the table, the correlation between independent and dependent variable was 0.213 and coefficient of determination ($R^2$) of 0.045. This signifies a positive and weak or low association between the independent and dependent variables. Durbin Watson Test was also conducted to test for autocorrelation among the model residual and a value 2.133 was established. This indicates no autocorrelation among residuals given that the value is closer to the prescribed value of 2.0 hence the regression was not affected by autocorrelation.

Table 4.8 presents an F-value of 0.380 at significance value of 0.768 (p>0.10) was obtained. The ANOVA results depicts that the regression model can be 76.8% wrong in its prediction.

**Table 4.9: Regression Statistics - 2008**

| | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | -1.882 | 2.987 | | -0.630 | 0.535 |
| C. Structure 08 | -0.450 | 1.303 | -0.069 | -0.345 | 0.733 |
| ROA 08 | 0.013 | 1.802 | 0.001 | 0.007 | 0.994 |
| Size 08 | 0.306 | 0.306 | 0.200 | 1.002 | 0.326 |

From the table 4.8, the following regression analysis can be established:

**AC = -1.882 - 0.450CS + 0.013ROA + 0.306Size**

The regression model shows that when the independent variables are kept constant, the agency cost value would be -1.882. Holding other factors constant, a unit increase in leverage would lead to a 0.450 decrease in agency cost, a unit increase in ROA would lead to a 0.013 increase in agency cost and a unit increase in size of the firm would lead to a 0.306 increase in agency cost. However, the t-significance of the independent variables is indicative of lack of statistical significance as their value are above 0.1 (p>0.1).

### 4.3.5 Year 2009 Statistics and Interpretation

**Table 4.10: Correlation and Analysis of Variance - 2009**

| R | 0.425 | | | | |
|---|---|---|---|---|---|
| R Square | 0.180 | | | | |
| Adjusted R Square | 0.078 | | | | |
| Std. Error of the Estimate | 1.1864600 | | | | |
| Durbin-Watson | 1.336 | | | | |
| | Sum of Squares | df | Mean Square | F | Sig. |
| Regression | 7.439 | 3 | 2.480 | 1.762 | 0.181 |
| Residual | 33.784 | 24 | 1.408 | | |
| Total | 41.224 | 27 | | | |

Table 4.10 presents the correlation for the 2009 statistics from which a correlation coefficient and coefficient of determination ($R^2$) value of 0.425 and 0.180 are given

respectively. This shows a positive and weak relationship between the independent and dependent variables (0.425) as the former can explain or account for of 18% of the variations in the dependent variable (agency cost).

**Table 4.11: Regression Statistics - 2009**

| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 1.099 | 3.221 | | 0.341 | 0.736 |
| C. Structure | -1.055 | 2.137 | -0.103 | -0.494 | 0.626 |
| ROA | 3.096 | 1.763 | 0.368 | 1.757 | 0.092 |
| Size | -0.007 | 0.329 | -0.004 | -0.022 | 0.982 |

From the finding of the study in the above table the following regression equation was established by the study for the year 2009:

**AC = 1.099 - 1.055CS + 3.096ROA - 0.007Size**

From the finding in the above table the study found that holding capital structure, ROA and size constant agency cost will be 1.099. The study also found that a unit increase in capital structure will cause a 1.055 decrease in agency cost. Further it was established that a unit increase in ROA moderates the relationship between agency cost and capital structure positively by a magnitude of 3.096, while size of the company intervenes negatively by a magnitude of 0.007.

### 4.4. Regression Analysis and Interpretation Based on Sectors

The study used regression model of the form:

$$Y = a + b_1X_1 + c_2I_1 + d_3I_2 + \varepsilon$$

### 4.4.1 Statistics and Interpretation for the Agricultural Sector

**Table 4.12 Model Summary for Agricultural sector**

| | | | | | |
|---|---|---|---|---|---|
| R | 0.552 | | | | |
| R Square | 0.305 | | | | |
| Adjusted R Square | 0.248 | | | | |
| Std. Error of the Estimate | 1.1304 | | | | |
| Durbin-Watson | 1.982 | | | | |
| | Sum of Squares | Df | Mean Square | F | Sig. |
| Regression | 4.745 | 1 | 2.846 | 2.244 | 0.064 |
| Residual | 9.491 | 2 | 3.301 | | |
| Total | 14.236 | 3 | | | |

The table shows results of statistical analysis from which a coefficient of determination ($R^2$) value of 0.305 was established. This shows a positive and strong relationship between the agency costs and dependent variables (0.552) in the agricultural sector. The coefficient of determination explains or account for of 30.5% of the variations in the dependent variable (agency cost) in the agricultural sector. Moreover, the Analysis of Variance (ANOVA) statistics of the agricultural sector had an f-value of 2.244 and significance value of 0.064. This shows that the model can only be significant at 90% confidence interval with a likelihood of 6.4% in error.

**Table 4.13: Regression Statistics for Agricultural sector**

| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 1.624 | 3.886 | | 0.338 | 0.547 |
| C. Structure | -2.216 | 1.224 | -0.457 | -1.362 | 0.108 |
| ROA | 2.264 | 1.563 | 0.401 | 1.442 | 0.118 |
| Size | 0.028 | 0.244 | 0.003 | 0.034 | 0.886 |

From the finding of the study in the above table, the following regression equation was established by the study for the agricultural sector:

**AC = 1.624- 2.216CS + 2.264ROA + 0.028Size**

In our model, AC represents agency cost, CS represents capital structure, ROA represents return on assets while Size represents size of the company.

Taking all the factors constant, the agency cost would be 1.624. Taking all other factors constant; a unit increase in capital structure would lead to a 2.216 decrease in agency cost. ROA would intervene in the relationship by increasing the agency cost by 2.264 per unit increase while size of the company would also lead to a 0.028 increase in agency cost.

### 4.4.2 Statistics and Interpretation for Commercial and Services Sector

**Table 4.14: Model Summary for Commercial and Services Sector**

| | | | | | |
|---|---|---|---|---|---|
| R | 0.386 | | | | |
| R Square | 0.149 | | | | |
| Adjusted R Square | 0.126 | | | | |
| Std. Error of the Estimate | 1.0225 | | | | |
| Durbin-Watson | 2.108 | | | | |
| | Sum of Squares | df | Mean Square | F | Sig. |
| Regression | 1.146 | 3 | 0.372 | 0.322 | 0.672 |
| Residual | 8.924 | 4 | 2.231 | | |
| Total | 9.070 | 7 | | | |

From the table above, value of R (0.386) and coefficient of determination ($R^2$) of 0.149 were established. This signifies a positive and low association between the independent and dependent variables. Durbin Watson Test was also conducted to test for autocorrelation among the model residual and a value 2.108 was established. This indicates no autocorrelation among residuals given that the value is closer to the prescribed value of 2.0 hence the regression was not affected by autocorrelation. The table further shows ANOVA results whereby an F-value of 0.322 at significance value of 0.672 ($p>0.10$). This depicts that the regression model can be 67.2% wrong in its prediction.

**Table 4.15: Regression Statistics for Commercial and Services Sector**

| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | -1.782 | 2.664 | | -0.585 | 0.559 |
| C. Structure | -0.332 | 1.228 | -0.046 | -0.383 | 0.698 |
| ROA | 0.216 | 1.774 | 0.001 | 0.006 | 0.868 |
| Size | 0.282 | 0.289 | 0.198 | 1.001 | 0.314 |

From the table 4.15, the following regression analysis can be established:

**AC = -1.782 - 0.332CS + 0.216ROA + 0.282Size**

From the regression model, it was found out that when the independent variables are kept constant, the agency cost value in the commercial and services sector would be -1.782. Holding other factors constant, a unit increase in capital structure would lead to a 0.332 decrease in agency cost, a unit increase in ROA would lead to a 0.216 increase in agency cost and a unit increase in size of the firm would lead to a 0. 0.282 increase in agency cost. However, the t-significance of the independent variables shows that there is lack of statistical significance as their value are above 0.1 ($p>0.1$).

### 4.4.3 Statistics and Interpretation for Industrial and Allied Sector

**Table 4.16: Model Summary for Industrial and Allied Sector**

| R | 0.448 | | | | |
|---|---|---|---|---|---|
| R Square | 0.201 | | | | |
| Adjusted R Square | 0.158 | | | | |
| Std. Error of the Estimate | 0.9667 | | | | |
| Durbin-Watson | 2.387 | | | | |
| | Sum of Squares | Df | Mean Square | F | Sig. |
| Regression | 5.526 | 3 | 1.842 | 2.563 | 0.084 |
| Residual | 8.970 | 10 | 0.897 | | |
| Total | 14.496 | 13 | | | |

Table above establishes that the relationship between agency cost and capital structure in the industrial and allied sector is subject to a coefficient (R) of 0.448 and $R^2$ value of 0.201. This depicts a positive but weak relationship between independent and dependent

variables in the industrial and allied sector and explains 20.1% of the total variations in the dependent variable. In the ANOVA statistics there was established an insignificant relationship between the two independent and dependent variables and further indicates that the regression model could be 8.4% in error.

**Table 4.17: Regression Statistics for Industrial and Allied Sector**

| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 0.982 | 1.998 | | 0.267 | 0.664 |
| C. Structure | -2.746 | 1.293 | 0.398 | 2.402 | 0.042 |
| ROA | 1.007 | 1.242 | 0.182 | 0.774 | 0.386 |
| Size | 0.056 | 0.286 | 0.048 | 0.241 | 0.698 |

The following regression equation was established between agency cost and capital structure in the industrial and allied sector:

**AC = 0.982- 2.746CS + 1.007ROA + 0.056Size**

Table 4.17 shows that, when the independent variables are kept constant, the agency cost value in the industrial and allied sector would be 0.982. Further, holding other factors constant, a factor increase in capital structure (leverage) would lead to a 2.746 decrease in agency cost, while a factor increase in ROA would lead to an increase in agency cost by 1.007 and a 0.056 increase in the same by each unit increase in size of the companies in the industrial and allied sector.

### 4.4.4 Statistics and Interpretation for Alternative Investment Market Sector

**Table 4.18: Model Summary for Alternative Investment Market Sector**

| | | | | | |
|---|---|---|---|---|---|
| R | 0.403 | | | | |
| R Square | 0.162 | | | | |
| Adjusted R Square | 0.101 | | | | |
| Std. Error of the Estimate | 0.7242 | | | | |
| Durbin-Watson | 2.088 | | | | |
| | Sum of Squares | df | Mean Square | F | Sig |
| Regression | 0.264 | 2 | 0.943 | 1.376 | 0.208 |
| Residual | 0.115 | 3 | 1.451 | | |
| Total | 0.379 | 5 | | | |

Table 4.18 shows an R coefficient of 0.403 and $R^2$ value of 0.162; this depicts a positive but weak relationship between independent and dependent variables in the alternative investment market sector. The coefficient of determination ($R^2$) accounts for or explains 16.2% of the total variations in the dependent variable. Further, the ANOVA statistics shows an insignificant relationship between the two independent and dependent variables given a significance value of 0.208. This indicates also that the regression model could be 20.8% in error.

**Table 4.19: Regression Statistics for Alternative Investment Market Sector**

| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 0.186 | 1.214 | | 0.084 | 0.821 |
| C. Structure | -1.528 | 0.742 | -0.402 | -1.762 | 0.056 |
| ROA | -0.072 | 1.884 | -0.076 | -0.050 | 0.887 |
| Size | 0.223 | 0.261 | 0.119 | 0.678 | 0.479 |

From the findings in the above table, the following regression equation was established for alternative investment market sector:

**AC = 0.186 - 1.528CS - 0.072ROA + 0.223Size**

The regression results in the table above shows that when the independent and intervening variables values are at constant, the agency cost in the alternative investment

market sector as quantified by sales to total assets ratio would be 0.186. Taking other factors to be constant; a unit increase in capital structure (leverage) would lead to a 1.528 decrease in agency cost, while a unit increase in ROA would intervene negatively in the relationship by 0.072. Lastly, a unit increase in Size would lead to a 0.223 increase in agency cost.

### 4.5 Conclusions

The study shows from the regression analysis for years 2005 and 2009 that there was a positive relation between independent and dependent variables; however the relation was weak as shown by the coefficient of determination ($R^2$). The variability between dependent and independent variables was found also to be low; for example in 2005, independent variables explained 24.3% of the variations in the dependent variable (agency cost); in 2006 the latter explained 24.3% of the variations; 15.7% in 2007 analysis; 22.6% in 2008 while in 2009, the independent variables accounted for of 18% of the variations in the dependent variable (agency cost). This means that other than capital structure, ROA, and size of firms; there are still other factors which explain agency cost and that were not considered in this study.

The variation between the independent variables and dependent (agency cost) was found to be high ($R^2$=30.5%) in the agricultural sector as compared to other sectors (commercial and services; alternative investment market; industrial and allied sectors) studied.

In the regression analysis for year 2005 to 2009, it was found that an increase in capital structure would lead decrease in agency cost while on the other hand, ROA was found to intervene in the relationship by increasing the agency. However, the relationship between size and agency cost varied. However, the t-significance of the independent variables is indicative of lack of statistical significance as their value are above 0.1 ($p>0.1$).

# CHAPTER FIVE

# SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

This chapter discusses the summary of the finding in chapter four. Conclusion and recommendations drawn from these findings are discussed in relation to the objectives of the study which was to determine the strength of the relationship between capital structure and agency costs.

## 5.2 Discussions

The study found that the mean value of the agency cost as measured by sales to total assets was 1.1563 with a minimum value of 0.2870 and a maximum value of 4.0593. The distribution of the companies' sales to asset ratio lied below the mean, given the median value of 0.9567 indicating the fact that majority of the firm's sales to asset ratio was below the mean value of 1.1563. This indicates that half of the companies were unable to generate revenues that were commensurate with the total value of assets they had. This is indicative of the management of most of the firms are inefficient in deployment of the firms' assets to generate revenue.

The study established the mean of capital structure at 0.1945 with minimum and maximum values of 0.0252 and 0.4655 respectively. The second quartile value (median) was below the mean at a value of 0.1859. This shows that the distribution of capital structure (leverage) was skewed to the left. Thus, majority of the firms' leverage values lied below the mean value. This indicates that firms' assets could cover less than 18.6% of the firms debts for more than half the companies sampled.

The study further regressed the independent and dependent variable variables and established the following relationship between agency cost and capital structure to be significant at 90% significance level:

**AC = 1.517 - 2.422CS + 2.838ROA - 0.007Size** **p = 0.078.....1**

**AC = 0.897 - 2.931CS + 1.063ROA + 0.067Size** **p = 0.099.....2**

The first and the second regression analysis signified that while the capital structure (leverage) could be negative, the sales to assets ratio would have a default value of 1.517 and 0.897 respectively. Both the first and second regression models show that capital structure has a negative relationship with the agency costs. The two model also establishes that return on assets moderates that relationship between capital structure and agency cost positively while company size intervened negatively in the first equation and positively in the second equation. However, in the five regression analyses done size generally had a negative relationship with capital structure and agency cost which asserts the fact that as the size of a company increases, the agency cost would reduce.

### 5.3 Conclusions

Based on the discussions above, the study concludes that capital structure has a negative relationship with the agency cost. This affirms to belief that managers do not always behave in the best interest of their investors. Creditors lend capital to the firm at rates that are based on the riskiness of the firm's existing assets. Debt finance reduces agency costs between managers and shareholders by increasing the managers' share of equity. Debt financing also encourage managers to perform better in order to reduce the likelihood of bankruptcy, which is costly.

### 5.4 Recommendations

In regard to the findings and basing on the aim of the study which was to determine the strength of the relationship between agency costs and capital structure, the study recommends that the amount of debt financing should be controlled carefully where an increase in it reduces the agency costs. It could also hamper financial performance with respect to the ability of assets to generate revenues. This could be explained by the fact

that some of the assets are tied as collaterals which limits their revenue generation deployment.

The study also recommends on the improvement of firm efficiency by reducing agency costs which may occur if the level of leverage is too high as managers may shift risk or reduce effort to control risk and some of the methods which may be used is controlling managers behaviors through salary adjustments and derivate substitution of executive compensation for instance by giving managers shares without rights to vote which could be beneficial in the optimal capital structure under which the value of firms could be maximized while agency costs minimized.

### 5.5 Limitation of the Study

Several limitations can be noted in this study:
The findings of this study are limited to companies that had traded consistently at the NSE for 5 year period that the study covered, that is, 2005 to 2009. These companies were 28. It thus, follows that the results of this study is not necessarily representative of the entire population of listed and non-listed companies.

Most of regression model used by this study had a low significance which exceeded the 0.1 threshold for 90% confidence level. Furthermore, the t-significance values were mostly below the threshold of 0.1. Thus the regression model can indicate existence of relationship between agency cost and capital structure where none exists. The study is also limited to the extent of accuracy of the data set used being that the study used secondary data sources which are at times prone to manipulations to suit specific needs. However, this is overcome by the fact that the financial reports meant for public consumption are accurate as they are audited reports.

The study also faced limitations owing to the differences in classifications of assets and liquidity among the financial and non-financial firms. This rendered financial market segment inappropriate sample for the study.

### 5.5 Areas for Further Studies

This research has focused mainly on quoted companies at the Nairobi Stock Exchange, other similar studies can also be done on private companies operating in the Kenyan economy so as to find out if the results could differ.

The study suggest that further study can be done on the determinants of capital structure of firms listed at the NSE as this would augment the findings of this study since it would connect the specific variables that determine agency cost.

Further study could also be done on the relationship between firms' profitability and agency cost. This would help determine how agency cost affect profitability and value of a firm.

Further study could also be done using longer research period so that the number of companies trading consistently could be higher than what the study had and find out if the results could be different.

Similar research study could be done by increasing the variables to be used in the regression model and use a different method to measure agency cost such as the expense ratio.

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## APPENDICES

### Appendix 1: List of Companies at the NSE

**Agricultural Sector**

1. Unilever Tea Kenya Ltd
2. Kakuzi
3. Rea Vipingo Plantations Ltd
4. Sasini Ltd

**Commercial and Services**

5. AccessKenya Group Ltd
6. Car & General (K) Ltd
7. CMC Holdings Ltd
8. Hutchings Biemer Ltd
9. Kenya Airways Ltd
10. Marshalls (E.A.) Ltd
11. Nation Media Group
12. Safaricom limited
13. Scangroup Ltd
14. Standard Group Ltd
15. TPS Eastern Africa (Serena) Ltd.

**Finance and Investment**

16. Barclays Bank Ltd
17. Centum Investment Company Ltd
18. CFC Stanbic Holdings Ltd
19. Diamond Trust Bank Kenya Ltd
20. Equity Bank Ltd
21. Housing Finance Co Ltd
22. Jubilee Holdings Ltd
23. Kenya Commercial Bank Ltd
24. Kenya Re-Insurance Corporation Ltd
25. National Bank of Kenya Ltd
26. NIC Bank Ltd

27. Pan Africa Insurance Holdings Ltd
28. Standard Chartered Bank Ltd

**Industrial and allied**

29. Athi River Mining
30. B.O.C Kenya Ltd
31. Bamburi Cement Ltd
32. British American Tobacco Kenya Ltd
33. Carbacid Investments Ltd
34. Crown Berger Ltd
35. E.A.Cables Ltd
36. E.A.Portland Cement Ltd
37. East African Breweries Ltd
38. Eveready East Africa Ltd
39. Kenya Oil Co Ltd
40. Kenya Power & Lighting Ltd
41. KenGen Ltd.
42. Mumias Sugar Co. Ltd
43. Olympia Capital Holdings ltd
44. Sameer Africa Ltd
45. Total Kenya Ltd
46. Unga Group Ltd

**Alternative Investment Market Segment**

47. A. Baumann & Co. Ltd
48. City Trust Ltd
49. Eaagads Ltd
50. Express Ltd
51. Williamson Tea Kenya Ltd
52. Kapchorua Tea Co. Ltd
53. Kenya Orchards Ltd
54. Limuru Tea Co. Ltd

**Appendix II: Agency Cost**

**Agency cost = Sales / Assets**

| Agriculture | 2009 | 2008 | 2007 | 2006 | 2005 | Average |
|---|---|---|---|---|---|---|
| Rea Vipingo Ltd. | 0.9695 | 0.8304 | 1.0568 | 1.1080 | 1.0554 | 1.0040 |
| Sasini Tea & Coffee Ltd. | 0.2728 | 0.2142 | 0.3464 | 0.3312 | 0.2707 | 0.2870 |
| Kakuzi Ltd. | 0.6992 | 0.6090 | 0.6376 | 0.6102 | 0.5373 | 0.6186 |
| **Commercial and Services** | | | | | | |
| Marshalls E.A. Ltd. | 0.5058 | 0.4907 | 0.7112 | 1.2025 | 1.2769 | 0.8374 |
| Car & General Ltd. | 3.3268 | 1.0920 | 1.8080 | 0.8694 | 1.4359 | 1.7064 |
| Kenya Airways Ltd. | 0.7980 | 0.7874 | 0.5153 | 0.7618 | 0.8504 | 0.7426 |
| CMC Holdings Ltd. | 5.3528 | 0.1102 | .4209 | 0.9415 | 3.0957 | 1.9842 |
| Nation Media Group Ltd. | 2.7327 | 1.2482 | 2.7502 | 1.1983 | 2.6314 | 2.1121 |
| TPS (Serena) Ltd. | 0.4816 | 0.4983 | 0.5060 | 0.5316 | 0.4730 | 0.4981 |
| Standard Group Ltd. | 0.9062 | 1.0479 | 1.1768 | 1.5227 | 3.8798 | 1.7067 |
| **Industrial and Allied** | | | | | | |
| Athi River Mining Ltd. | 0.0707 | 0.0941 | 0.8616 | 0.6119 | 0.0914 | 0.3459 |
| BOC Kenya Ltd. | 0.6433 | 0.6390 | 0.7863 | 0.6500 | 0.6121 | 0.6661 |
| British American Tobacco Kenya Ltd. | 0.1804 | 0.0017 | 1.6990 | 1.6318 | 1.7898 | 1.0605 |
| E.A. Cables Ltd. | 0.7943 | 1.2911 | 1.0798 | 1.0693 | 1.1050 | 1.0679 |
| E.A. Breweries Ltd. | 0.9598 | 0.9763 | 0.5155 | 0.3752 | 0.3844 | 0.6422 |
| Sameer Africa Ltd. | 3.5236 | 0.4804 | 0.6523 | 0.9576 | 1.0476 | 1.3323 |
| Kenya Oil Ltd. | 3.0992 | 4.8406 | 3.8822 | 3.4770 | 4.9974 | 4.0593 |
| Unga Group Ltd. | 2.0908 | 1.9851 | 2.0615 | 2.0352 | 1.9539 | 2.0253 |
| Bamburi Cement Ltd. | 0.9346 | 0.9742 | 1.0670 | 0.9028 | 0.9809 | 0.9719 |
| Crown berger (K) Ltd. | 1.3658 | 1.2239 | 1.3724 | 1.0998 | 1.1469 | 1.2418 |
| E.A Portland Cement Co. | 0.6721 | 0.7943 | 0.7162 | 0.6828 | 0.6947 | 0.7120 |
| Kenya Power & Lighting Ltd. | 0.5163 | 0.4000 | 0.5158 | 0.5817 | 0.6071 | 0.5242 |
| Total Kenya Ltd. | 1.3073 | 3.7657 | 3.5241 | 2.4815 | 3.7622 | 2.9682 |
| **Alternative Investment Market** | | | | | | |
| Eaagads Ltd | 0.4626 | 0.2576 | 0.2349 | 0.3014 | 0.3443 | 0.3202 |
| Express Ltd | 0.6838 | 0.6085 | 1.1050 | 0.9180 | 1.7110 | 1.0052 |
| Williamson Tea Kenya | 0.7296 | 0.3060 | 0.3853 | 0.2957 | 0.3702 | 0.4174 |
| Kapchorua Tea Co. Ltd | 0.6366 | 0.5857 | 0.6440 | 0.4474 | 0.5760 | 0.5780 |
| Limuru Tea | 1.0740 | 1.2036 | 0.9471 | 0.8340 | 0.6492 | 0.9416 |

**Appendix III: Capital Structure**

**Capital Structure = Total debt / Total asset**

| **Agriculture** | **2009** | **2008** | **2007** | **2006** | **2005** | **Mean** |
|---|---|---|---|---|---|---|
| Rea Vipingo Ltd. | 0.1515 | 0.1239 | 0.1372 | 0.1579 | 0.1749 | 0.1491 |
| Sasini Tea & Coffee Ltd. | 0.2411 | 0.2528 | 0.1595 | 0.1316 | 0.1235 | 0.1817 |
| Kakuzi Ltd. | 0.0000 | 0.2272 | 0.2858 | 0.2880 | 0.2613 | 0.2125 |
| **Commercial and Services** | | | | | | |
| Marshalls E.A. Ltd. | 0.2815 | 0.3724 | 0.4777 | 0.5608 | 0.5275 | 0.4440 |
| Car & General Ltd. | 0.1695 | 0.0758 | 0.1860 | 0.1121 | 0.1618 | 0.1410 |
| Kenya Airways Ltd. | 0.4119 | 0.4791 | 0.3601 | 0.5225 | 0.3804 | 0.4308 |
| CMC Holdings Ltd. | 0.1545 | 0.0200 | 0.1228 | 0.0524 | 0.1681 | 0.1036 |
| Nation Media Group Ltd. | 0.0298 | 0.0198 | 0.0956 | 0.0678 | 0.0174 | 0.0461 |
| TPS (Serena) Ltd. | 0.2296 | 0.2671 | 0.2449 | 0.3384 | 0.2937 | 0.2747 |
| Standard Group Ltd. | 0.2919 | 0.3134 | 0.3200 | 0.1348 | 0.1685 | 0.2457 |
| **Industrial and Allied** | | | | | | |
| Athi River Mining Ltd. | 0.3840 | 0.3753 | 0.3699 | 0.4223 | 0.4658 | 0.4034 |
| BOC Kenya Ltd. | 0.4466 | 0.6556 | 0.0336 | 0.0405 | 0.0356 | 0.2424 |
| British American Tobacco Kenya Ltd. | 0.1203 | 0.0984 | 0.1112 | 0.0980 | 0.1058 | 0.1067 |
| E.A. Cables Ltd. | 0.1795 | 0.1604 | 0.2096 | 0.1747 | 0.0424 | 0.1533 |
| E.A. Breweries Ltd. | 0.0766 | 0.0682 | 0.0387 | 0.0342 | 0.0339 | 0.0503 |
| Sameer Africa Ltd. | 0.1258 | 0.0204 | 0.0286 | 0.0609 | 0.0455 | 0.0563 |
| Kenya Oil Ltd. | 0.3845 | 0.4105 | 0.0439 | 0.0300 | 0.0325 | 0.1803 |
| Unga Group Ltd. | 0.0600 | 0.0545 | 0.0136 | 0.0248 | 0.0238 | 0.0353 |
| Bamburi Cement Ltd. | 0.1940 | 0.2188 | 0.1169 | 0.1252 | 0.1454 | 0.1601 |
| Crown berger (K) Ltd. | 0.0525 | 0.0492 | 0.0674 | 0.0758 | 0.0572 | 0.0604 |
| E.A Portland Cement Co. Ltd. | 0.3673 | 0.4267 | 0.4358 | 0.5057 | 0.5920 | 0.4655 |
| Kenya Power & Lighting Co. Ltd. | 0.2898 | 0.2912 | 0.1525 | 0.1563 | 0.1774 | 0.2134 |
| Total Kenya Ltd. | 0.1259 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0252 |
| **Alternative Investment Market** | | | | | | |
| Eaagads Ltd | 0.2282 | 0.2115 | 0.2038 | 0.2085 | 0.1957 | 0.2095 |
| Express Ltd | 0.2986 | 0.2872 | 0.1481 | 0.1492 | 0.0676 | 0.1901 |
| Williamson Tea Kenya | 0.1710 | 0.2180 | 0.2002 | 0.2059 | 0.2158 | 0.2021 |
| Kapchorua Tea Co. Ltd | 0.2330 | 0.2477 | 0.2526 | 0.2387 | 0.2522 | 0.2448 |
| Limuru Tea | 0.1378 | 0.1973 | 0.2513 | 0.2265 | 0.2731 | 0.2172 |

**Appendix IV: Return on Assets**

**Return on assets = Net profit / Total assets**

| Agriculture | 2009 | 2008 | 2007 | 2006 | 2005 | Average |
|---|---|---|---|---|---|---|
| Rea Vipingo Ltd. | 0.1514 | 0.1391 | 0.1438 | 0.1476 | 0.1769 | 0.1518 |
| Sasini Tea & Coffee Ltd. | 0.0950 | 0.1863 | -0.0185 | 0.0912 | -0.1525 | 0.0403 |
| Kakuzi Ltd. | 0.1946 | 0.1467 | 0.1140 | 0.0828 | -0.0542 | 0.0967 |
| **Commercial and Services** | | | | | | |
| Marshalls E.A. Ltd. | -0.1002 | -0.1405 | 0.0336 | 0.0493 | 0.0626 | -0.0190 |
| Car & General Ltd. | 0.2137 | 0.1172 | 0.2521 | 0.1235 | 0.3828 | 0.2178 |
| Kenya Airways Ltd. | -0.0629 | 0.0718 | 0.0524 | 0.1004 | 0.0957 | 0.0515 |
| CMC Holdings Ltd. | 0.3685 | 0.1102 | 0.4209 | 0.0715 | 0.2098 | 0.2362 |
| Nation Media Group Ltd. | 0.5397 | 0.2890 | 0.5731 | 0.2175 | 0.4788 | 0.4196 |
| TPS (Serena) Ltd. | 0.0614 | 0.0507 | 0.0852 | 0.0812 | 0.0217 | 0.0600 |
| Standard Group Ltd. | 0.1233 | 0.1594 | 0.1864 | 0.2360 | 0.2304 | 0.1871 |
| **Industrial and Allied Sector** | | | | | | |
| Athi River Mining Ltd. | 0.0782 | 0.1111 | 0.1378 | 0.0911 | 0.0914 | 0.1019 |
| BOC Kenya Ltd. | 0.2276 | 0.3209 | 0.2149 | 0.1955 | 0.1806 | 0.2279 |
| BritishAmerican Tobacco Kenya Ltd. | 0.2032 | 0.2345 | 0.2208 | 0.2249 | 0.3213 | 0.2410 |
| E.A. Cables Ltd. | 0.1487 | 0.2201 | 0.1863 | 0.2216 | 0.2796 | 0.2113 |
| E.A. Breweries Ltd. | 0.3436 | 0.3196 | 0.2006 | 0.1539 | 0.1723 | 0.2380 |
| Sameer Africa Ltd. | 0.2380 | 0.0263 | 0.0313 | -0.0045 | 0.0918 | 0.0766 |
| Kenya Oil Ltd. | 0.0620 | 0.0676 | 0.0659 | 0.0919 | 0.1645 | 0.0904 |
| Unga Group Ltd. | 0.0468 | 0.1185 | 0.0421 | 0.0397 | 0.0401 | 0.0574 |
| Bamburi Cement Ltd. | 0.2990 | 0.1734 | 0.2627 | 0.2072 | 0.2052 | 0.2295 |
| Crown berger (K) Ltd. | 0.0751 | 0.0398 | 0.0921 | 0.0523 | 0.0554 | 0.0630 |
| E.A Portland Cement Co. Ltd. | 0.1561 | 0.0789 | 0.1245 | 0.1021 | 0.1407 | 0.1205 |
| Kenya Power& Lighting Co. Ltd. | 0.0677 | 0.0458 | 0.0559 | 0.0646 | 0.0552 | 0.0579 |
| Total Kenya Ltd. | 0.0232 | 0.0709 | 0.0625 | 0.0442 | 0.0741 | 0.0550 |
| **Alternative Investment Market** | | | | | | |
| Eaagads Ltd | 0.0647 | 0.1553 | -0.0133 | 0.0403 | 0.0691 | 0.0632 |
| Express Ltd | 0.0198 | -0.0401 | 0.1346 | 0.1144 | 0.1241 | 0.0706 |
| Williamson Tea Kenya | 0.0712 | -0.0402 | -0.0277 | 0.0420 | 0.0383 | 0.0167 |
| Kapchorua Tea Co. Ltd | 0.0854 | -0.1050 | -0.0141 | 0.0360 | 0.0567 | 0.0118 |
| Limuru Tea | 0.4564 | 0.2637 | 0.0426 | 0.1137 | -0.0783 | 0.1596 |

**Appendix V: Size of the Company (Log of Total Assets)**

| Agriculture | 2009 | 2008 | 2007 | 2006 | 2005 | Average |
|---|---|---|---|---|---|---|
| Rea Vipingo Ltd. | 9.1505 | 9.2131 | 9.0670 | 9.0278 | 9.0197 | 9.0956 |
| Sasini Tea & Coffee Ltd. | 9.9031 | 9.8323 | 9.5828 | 9.5834 | 9.5368 | 9.6877 |
| Kakuzi Ltd. | 9.4582 | 9.4250 | 9.3751 | 9.3604 | 9.3152 | 9.3868 |
| **Commercial and Services** | | | | | | |
| Marshalls E.A. Ltd. | 9.0690 | 9.0821 | 9.0996 | 9.0355 | 8.9948 | 9.0562 |
| Car & General Ltd. | 9.1164 | 9.4385 | 9.0092 | 9.1558 | 8.8689 | 9.1177 |
| Kenya Airways Ltd. | 10.954 | 10.885 | 11.057 | 10.840 | 10.686 | 10.8849 |
| CMC Holdings Ltd. | 9.3406 | 10.081 | 9.3200 | 9.8932 | 9.3424 | 9.5955 |
| Nation Media Group Ltd. | 9.4767 | 9.8203 | 9.4463 | 9.7235 | 9.3278 | 9.5589 |
| TPS (Serena) Ltd. | 9.9277 | 9.8135 | 9.8602 | 9.7882 | 9.8108 | 9.8401 |
| Standard Group Ltd. | 9.4849 | 9.4298 | 9.3456 | 9.1107 | 8.7095 | 9.2161 |
| **Industrial and Allied** | | | | | | |
| Athi River Mining Ltd. | 10.083 | 9.8026 | 9.6537 | 9.6292 | 9.5103 | 9.7359 |
| BOC Kenya Ltd. | 9.0077 | 8.9638 | 9.2696 | 9.2323 | 9.2075 | 9.1362 |
| BAT Kenya Ltd. | 10.016 | 10.013 | 9.9676 | 9.8901 | 9.7961 | 9.9366 |
| E.A. Cables Ltd. | 9.5490 | 9.4834 | 9.5060 | 9.2806 | 9.0219 | 9.3682 |
| E.A. Breweries Ltd. | 10.554 | 10.522 | 10.724 | 10.746 | 10.698 | 10.6490 |
| Sameer Africa Ltd. | 8.9686 | 9.7994 | 9.7258 | 9.5200 | 9.5060 | 9.5040 |
| Kenya Oil Ltd. | 10.494 | 10.443 | 10.123 | 10.125 | 9.9219 | 10.2218 |
| Unga Group Ltd. | 9.7458 | 9.6777 | 9.5709 | 9.5551 | 9.5875 | 9.6274 |
| Bamburi Cement Ltd. | 10.506 | 10.450 | 10.316 | 10.267 | 10.185 | 10.3453 |
| Crown berger (K) Ltd. | 9.2701 | 9.2906 | 9.1827 | 9.1865 | 9.0996 | 9.2059 |
| E.A Portland Co. Ltd. | 10.081 | 9.9576 | 9.9513 | 9.9567 | 9.8876 | 9.9669 |
| Kenya Power & Lighting Co. Ltd. | 10.848 | 10.776 | 10.675 | 10.587 | 10.554 | 10.6886 |
| Total Kenya Ltd. | 10.499 | 10.163 | 10.097 | 10.185 | 10.032 | 10.1957 |
| **Alternative Investment Market** | | | | | | |
| Eaagads Ltd | 8.4151 | 8.4420 | 8.3370 | 8.3539 | 8.2701 | 8.3636 |
| Express Ltd | 9.1159 | 9.1205 | 8.9215 | 8.9523 | 8.7902 | 8.9801 |
| Williamson Tea Kenya | 9.3101 | 9.5538 | 9.4957 | 9.5226 | 9.5103 | 9.4785 |
| Kapchorua Tea Co. Ltd | 9.0671 | 8.9920 | 8.9767 | 9.0146 | 8.9968 | 9.0095 |
| Limuru Tea | 7.9287 | 7.7617 | 7.7589 | 7.7867 | 7.7582 | 7.7988 |

**Appendix VI: SPSS Statistical printouts**

**2009 Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .425[a] | .180 | .078 | 1.1864331 | 1.336 |

a. Predictors: (Constant), Size 2009, Capital Structure 2009, ROA 2009

b. Dependent Variable: Agency Cost 2009

**ANOVA[b]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 7.441 | 3 | 2.480 | 1.762 | .181[a] |
| | Residual | 33.783 | 24 | 1.408 | | |
| | Total | 41.224 | 27 | | | |

a. Predictors: (Constant), Size 2009, Capital Structure 2009, ROA 2009

b. Dependent Variable: Agency Cost 2009

**Coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.098 | 3.221 | | .341 | .736 |
| | Capital Structure 2009 | -1.055 | 2.137 | -.103 | -.494 | .626 |
| | ROA 2009 | 3.097 | 1.763 | .368 | 1.757 | .092 |
| | Size 2009 | -.007 | .329 | -.004 | -.022 | .982 |

a. Dependent Variable: Agency Cost 2009

**Residuals Statistics[a]**

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | .388856 | 2.668893 | 1.278221 | .5249530 | 28 |
| Residual | -1.3470058 | 3.3446367 | .0000000 | 1.1185799 | 28 |
| Std. Predicted Value | -1.694 | 2.649 | .000 | 1.000 | 28 |
| Std. Residual | -1.135 | 2.819 | .000 | .943 | 28 |

a. Dependent Variable: Agency Cost 2009

**2008 Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .213[a] | .045 | -.074 | 1.0874948 | 2.133 |

a. Predictors: (Constant), Size 2008, ROA 2008, Capital Structure 2008

b. Dependent Variable: Agency Cost 2008

**ANOVA[b]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1.346 | 3 | .449 | .379 | .769[a] |
| | Residual | 28.383 | 24 | 1.183 | | |
| | Total | 29.730 | 27 | | | |

a. Predictors: (Constant), Size 2008, ROA 2008, Capital Structure 2008

b. Dependent Variable: Agency Cost 2008

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | -1.881 | 2.988 | | -.630 | .535 |
| | Capital Structure 2008 | -.450 | 1.303 | -.069 | -.345 | .733 |
| | ROA 2008 | .013 | 1.802 | .001 | .007 | .994 |
| | Size 2008 | .306 | .306 | .200 | 1.002 | .326 |

a. Dependent Variable: Agency Cost 2008

**Residuals Statistics[a]**

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | .410216 | 1.314287 | .977004 | .2232833 | 28 |
| Residual | -1.1420532 | 3.7076817 | .0000000 | 1.0253000 | 28 |
| Std. Predicted Value | -2.538 | 1.511 | .000 | 1.000 | 28 |
| Std. Residual | -1.050 | 3.409 | .000 | .943 | 28 |

a. Dependent Variable: Agency Cost 2008

**2007 Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .475[a] | .226 | .129 | .8597850 | 2.429 |

a. Predictors: (Constant), Size 2007, ROA 2007, Capital Structure 2007

b.Dependent Variable: Agency Cost 2007

**ANOVA[b]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.182 | 3 | 1.727 | 2.337 | .099[a] |
| | Residual | 17.742 | 24 | .739 | | |
| | Total | 22.924 | 27 | | | |

a. Predictors: (Constant), Size 2007, ROA 2007, Capital Structure 2007

b. Dependent Variable: Agency Cost 2007

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .899 | 2.338 | | .384 | .704 |
| | Capital Structure 2007 | -2.932 | 1.319 | -.410 | -2.224 | .036 |
| | ROA 2007 | 1.064 | 1.258 | .155 | .846 | .406 |
| | Size 2007 | .066 | .240 | .050 | .277 | .784 |

a. Dependent Variable: Agency Cost 2007

**Residuals Statistics[a]**

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | .138829 | 1.855902 | 1.142114 | .4380979 | 28 |
| Residual | -1.1959727 | 2.3691905 | .0000000 | .8106130 | 28 |
| Std. Predicted Value | -2.290 | 1.629 | .000 | 1.000 | 28 |
| Std. Residual | -1.391 | 2.756 | .000 | .943 | 28 |

a. Dependent Variable: Agency Cost 2007

**Model Summary**[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .396[a] | .157 | .051 | .6847344 | 2.118 |

a. Predictors: (Constant), Size 2006, Capital Structure 2006, ROA 2006

b. Dependent Variable: Agency Cost 2006

**ANOVA**[b]

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 2.092 | 3 | .697 | 1.487 | .243[a] |
| | Residual | 11.253 | 24 | .469 | | |
| | Total | 13.344 | 27 | | | |

a. Predictors: (Constant), Size 2006, Capital Structure 2006, ROA 2006

b. Dependent Variable: Agency Cost 2006

**Coefficients**[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | T | Sig. |
| 1 | (Constant) | -.128 | 1.884 | | -.068 | .947 |
| | Capital Structure 2006 | -1.633 | .853 | -.364 | -1.914 | .068 |
| | ROA 2006 | -.098 | 1.979 | -.009 | -.050 | .961 |
| | Size 2006 | .152 | .196 | .146 | .779 | .444 |

a. Dependent Variable: Agency Cost 2006

**Residuals Statistics[a]**

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | .327564 | 1.437595 | 1.015368 | .2783407 | 28 |
| Residual | -1.0623952 | 2.1210172 | .0000000 | .6455738 | 28 |
| Std. Predicted Value | -2.471 | 1.517 | .000 | 1.000 | 28 |
| Std. Residual | -1.552 | 3.098 | .000 | .943 | 28 |

a. Dependent Variable: Agency Cost 2006

**2005 Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .493[a] | .243 | .149 | 1.1405732 | 2.132 |

a. Predictors: (Constant), Size 2005, Capital Structure 2005, ROA 2005

b. Dependent Variable: Agency Cost 2005

**ANOVA[b]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 10.045 | 3 | 3.348 | 2.574 | .078[a] |
| | Residual | 31.222 | 24 | 1.301 | | |
| | Total | 41.266 | 27 | | | |

a. Predictors: (Constant), Size 2005, Capital Structure 2005, ROA 2005

b. Dependent Variable: Agency Cost 2005

**Coefficients**[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 1.517 | 3.077 | | .493 | .626 |
| | Capital Structure 2005 | -2.422 | 1.450 | -.309 | -1.671 | .108 |
| | ROA 2005 | 2.838 | 1.694 | .310 | 1.676 | .107 |
| | Size 2005 | -.008 | .324 | -.004 | -.023 | .982 |

a. Dependent Variable: Agency Cost 2005

**Residuals Statistics**[a]

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | .350030 | 2.764033 | 1.368950 | .6099382 | 28 |
| Residual | -1.4594833 | 3.1664374 | .0000000 | 1.0753427 | 28 |
| Std. Predicted Value | -1.671 | 2.287 | .000 | 1.000 | 28 |
| Std. Residual | -1.280 | 2.776 | .000 | .943 | 28 |

a. Dependent Variable: Agency Cost 2005

**Model Summary**[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .467[a] | .218 | .120 | .8060155 | 2.024 |

a. Predictors: (Constant), Average Size, Average Capital Structure, ROA Average

b. Dependent Variable: Agency Cost Average

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4.348 | 3 | 1.449 | 2.231 | .111[a] |
| | Residual | 15.592 | 24 | .650 | | |
| | Total | 19.940 | 27 | | | |

a. Predictors: (Constant), Average Size, Average Capital Structure, ROA Average

b. Dependent Variable: Agency Cost Average

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -.229 | 2.214 | | -.103 | .919 |
| | Average Capital Structure | -2.923 | 1.355 | -.418 | -2.158 | .041 |
| | ROA Average | .455 | 1.698 | .052 | .268 | .791 |
| | Average Size | .198 | .229 | .157 | .868 | .394 |

a. Dependent Variable: Agency Cost Average

**Residuals Statistics[a]**

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | .261143 | 1.844843 | 1.156325 | .4013060 | 28 |
| Residual | -1.2026434 | 2.7463396 | .0000000 | .7599187 | 28 |
| Std. Predicted Value | -2.231 | 1.716 | .000 | 1.000 | 28 |
| Std. Residual | -1.492 | 3.407 | .000 | .943 | 28 |

a. Dependent Variable: Agency Cost Average

**Agricultural Sector Model Summary(b)**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .552(a) | .305 | .248 | 1.1304 |

a Predictors: (constant) Average Size, Average Capital Structure...

b Sector = Agriculture

**ANOVA(b,c)**

| Model | | Sum of Squares | Df | Mean Square | F | Significance |
|---|---|---|---|---|---|---|
| 1 | Regression | 4.745 | 1 | 2.846 | 2.244 | 0.064(a) |
| | Residual | 9.491 | 2 | 3.301 | | |
| | Total | 14.236 | 3 | | | |

a Predictors: (constant) Average Size, Average Capital Structure...

b Dependent Variable: Agency Cost Average

c Sector = Agriculture

**Coefficients(a,b)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Signifi cance |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.624 | 3.886 | | 0.338 | 0.547 |
| | Average Capital Structure | -2.216 | 1.224 | -0.457 | -1.362 | 0.108 |
| | ROA | 2.264 | 1.563 | 0.401 | 1.442 | 0.118 |
| | Average Size | 0.028 | 0.244 | 0.003 | 0.034 | 0.886 |

a Dependent Variable: Agency Cost Average

b Sector = Agriculture

**Commercial & Services Sector Model Summary(b)**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.386(a) | .149 | .126 | 1.0225 |

a Predictors: (constant) Average Size, ROA Average, Average Capital Structure...

b Sector = Commercial

**ANOVA(b,c)**

| Model | | Sum of Squares | Df | Mean Square | F | Significance |
|---|---|---|---|---|---|---|
| 1 | Regression | 1.146 | 3 | .372 | .322 | .672(a) |
| | Residual | 8.924 | 4 | 2.231 | | |
| | Total | 9.070 | 7 | | | |

a Predictors: (constant) Average Size, ROA Average, Average Capital Structure...

b Dependent Variable: Agency Cost Average

c Sector = Commercial

**Coefficients(a,b)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Significance |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -1.782 | 2.664 | | -.585 | .559 |
| | Average Capital Structure | -0.332 | 1.228 | -.046 | -.383 | .698 |
| | ROA Average | 0.216 | 1.774 | .001 | .006 | .868 |
| | Average Size | 0.282 | .289 | .198 | 1.001 | .314 |

a Dependent Variable: Agency Cost Average

b Sector = Commercial

**Industrial and Allied Sector Model Summary(b)**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .448(a) | .201 | .158 | .9667 |

a Predictors: (constant) Average Size, Average Capital Structure, ROA Average...

b Sector = Industry and Allied

**ANOVA(b,c)**

| Model | | Sum of Squares | df | Mean Square | F | Significance |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.526 | 3 | 1.842 | 2.563 | .084(a) |
| | Residual | 8.97 | 10 | .897 | | |
| | Total | 14.496 | 13 | | | |

a Predictors: (constant) Average Size, Average Capital Structure, ROA Average...

b Dependent Variable: Agency Cost Average

c Sector = Industry and Allied

**Coefficients(a,b)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Significance |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .982 | 1.998 | | .267 | .664 |
| | Average Capital Structure | -2.784 | 1.293 | .398 | 2.402 | .042 |
| | ROA Average | 1.007 | 1.242 | .182 | .774 | .386 |
| | Average Size | .056 | .286 | .048 | .241 | .698 |

a Dependent Variable: Agency Cost Average

b Sector = Industry and Allied

**Alternative Investment Market Sector Model Summary(b)**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .403(a) | .162 | .101 | .7242 |

a Predictors: (constant) Average Size, Average Capital Structure, ROA Average...

b Sector = Alternative

**ANOVA(b,c)**

| Model | | Sum of Squares | Df | Mean Square | F | Significance |
|---|---|---|---|---|---|---|
| 1 | Regression | .264 | 2 | .943 | 1.376 | .208(a) |
| | Residual | .115 | 3 | 1.451 | | |
| | Total | .379 | 5 | | | |

a Predictors: (constant) Average Size, Average Capital Structure, ROA Average...

b Dependent Variable: Agency Cost Average

c Sector = Alternative

**Coefficients(a,b)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Significance |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .186 | 1.214 | | .084 | .821 |
| | Average Capital Structure | -1.528 | .742 | -.402 | -1.762 | .056 |
| | ROA Average | -.072 | 1.884 | -.076 | -.050 | .887 |
| | Average Size | .223 | .261 | .119 | .678 | .479 |

a Dependent Variable: Agency Cost Average

b Sector = Alternative