RELATIONSHIP BETWEEN AGENCY COST AND LEVERAGE FOR COMPANIES LISTED AT THE NAIROBI SECURITIES EXCHANGE

By

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DECLARATION

This research project report is my original work and has never been presented for an award of diploma or a degree in this or any other university.

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DEDICATION

This project is dedicated to my two sons Ian and Mark. Your presence in my life has been the source of my strength.

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LIST OF ABBREVIATIONS

AIMS	Alternative Investments Segment
CEO	Chief Executive Officer
FIMS	Fixed Income Securities Segment
FOMS	Futures and Options Market Segment
MIMS	Main Investment Segment
NSE	Nairobi Securities Exchange

ABSTRACT

This study was conducted with the aim of investigating the relationship between agency cost and leverage of firms listed at the Nairobi Securities Exchange. In the context of a market where a number of de-listings, receiverships and wind-ups have occurred on account of agency conflicts, it is was necessary to conduct this study. The study was causal in nature. The population of the study comprised of all the 60 listed firms at the NSE from January 2008 to December 2011. A sample of 34 companies was studied. The study used secondary data from published audited reports of accounts for the sample firms under study. These were obtained from Nairobi Securities Exchange and the Capital Markets Authority databases. Financial data from balance sheets, profit and loss accounts and cash flow statements were used to calculate and analyze agency costs, firm size, growth in sales and return on assets. The study used a regression model which analyzed the relationship between agency cost and leverage while controlling for firm size, growth in sales and return on assets. F test was used to determine the fitness of the regression model in analyzing the relationship. The coefficient of determination was used to explain how much of the variations in leverage were explained by the independent variables.

The study found the p-value of the F test to be less than alpha ($0 < .05$) hence concluded that there was a significant relationship between agency cost and leverage. On the basis of the findings, the study recommends that since agency costs and leverage are significantly related, leverage level variability decisions should take into account implications of costs of agency for listed firms. The results indicated that predictor variables only influenced 28.5 % of variations in leverage as indicated by the adjusted R square statistic 0.2846447.T test was also conducted at 5% level of significant. The asset utilization ratio was significant at 0.002178. Further investigation may be done to establish the effect of other agency cost surrogates.

CHAPTER ONE: INTRODUCTION

1.1 Background

Corporate managers are the agents of shareholders, a relationship fraught with conflicting interests (Jensen, 1986). Jensen and Meckling (1976) defined agency costs as the sum of the monitoring expenditures by the principal, the bonding expenditures by the agent and the residual loss. Agency costs manifest in various forms such as executive perks, drops in productivity, free cash flow inefficiencies, loss of firm value, among others. Free cash flow is cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital (Jensen, 1986). Conflicts of interest between shareholders and managers over payout policies are especially severe when the organization generates substantial free cash flow. The literature has indicated that leverage provides an effective mechanism to mitigate this agency cost (Lingling, 2004; Li and Cui, 2003; Zhang and Li, 2008; Zhang, 2009; McKnight, 2008). Ward and Price (2006) defined financial leverage as the proportion of capital which is financed by debt as opposed to equity. Therefore the higher the leverage, the higher the amount of debt in the capital structure of a firm.

Various theoretical frameworks have attempted to explain the relationship between agency costs and leverage in the literature. The social and private costs of an agent's action due to incomplete alignment of the agent's and owner's interests were brought to attention by the seminal contributions of Jensen and Meckling (1976) on agency costs. The agency theory recognizes that the separation of ownership and control in firms creates conflicts of interest between the firm's shareholders and managers (Jensen and

Meckling, 1976). Freeman (1984) is generally credited with introducing stakeholder theory in. Freeman argued that the firm exists primarily for the purpose of serving and coordinating stakeholder interests. Meanwhile, Modigliani and Miller (1963) in their trade off theory demonstrated that optimal leverage minimizes agency costs and maximizes firm value; among others.

Incorporated in 1954, the Nairobi Securities Exchange (NSE) is the leading securities exchange in East and Central Africa. The products traded at the NSE are shares (equity) and bonds (debt/leverage instruments) which are financial instruments that are jointly referred to as securities. NSE facilitates investments and savings by bringing together borrowers and lenders. Currently, a total of 60 firms categorized into 8 sectors are listed (NSE, 2013). The NSE plays an important role in economic development in Kenya, by providing a medium for the transfer of funds from surplus spending units to deficit spending units. Debt and other securities are raised from this market and are used to measure the leverage of a firm.

1.1.1 Agency Costs

Jensen and Meckling (1976) defined agency costs as the sum of the monitoring expenditures by the principal, the bonding expenditures by the agent and the residual loss. Monitoring costs are expenditures paid by the principal to measure, observe and control the agents' behavior. These costs may include: audits; writing executive compensation contracts and ultimately the cost of hiring and firing top managers. Bonding costs refers to the structures that management ultimately sets up to compel them to act in shareholders' best interests and includes compensating shareholders in the event

of failure to act as such. Residual loss refers to residual agency losses that arise from conflicts of interest after both monitoring and bonding measures have been effected (Baker and Anderson, 2010). According to Baker and Powell (2005) there are two types of agency costs, direct and indirect agency cost. Shareholder incur direct costs in order to reduce potential conflicts with managers (bonus, stock option plan, audit fees, managerial incentives and infrastructure) put in place to control the behavior of managers. Indirect agency cost is as a result of manager's failure to make profitable investment (free cash flow mismanagement, etc).

The significance of agency cost is that it helps mitigate the effects of the agency problem. Baker and Powell (2005) defined agency problem as referring to the difficulties faced by financiers in ensuring that their funds are not expropriated or wasted on unattractive projects. With this framework, shareholders are assumed to derive purely financial benefits from ownership of their equity investments (Baker and Anderson, 2010).

Several formulations have been used in the literature to compute free cash flows: Zhang (2009) formulated free cash flows as net profit minus changes in fixed assets minus changes in net working capital divided by total assets. Byrd (2010) formulated free cash flows as operating income before depreciation minus interest expense minus taxes minus preferred dividends divided by book value of assets. Chu (2010) calculated the free cash flows by subtracting total tax on income, gross interest expense and expense on investment activity from operating income before depreciation.

1.1.2 Leverage

Ward and Price (2006) defined financial leverage as the proportion of capital which was financed by debt as opposed to equity. Therefore the higher the leverage, the higher the amount of debt in the capital structure of a firm. Harris and Raviv (1991), adds that debt finance comes in different forms and has different maturity and priority structures. Whenever a firm borrows, it must decide not only on the amount but also on the type of debt finance, on the maturity and on the priority structures of the debt. In particular, companies have to decide on whether debt should be in the form of leases, convertible loans, loan capital, bank loans and overdraft, and notes and bills; should be short or long-term and whether debt should be secured, unsecured or subordinated. These debt characteristics are important dimensions of the capital.

The use of debt positively impacts on agency cost in several ways. First, the use of debt reduces the free cash flow available to managers (Jensen, 1986; Stulz, 1990), as promised interest payments to debt holders decrease free cash flow available for investment and perquisite consumption by managers. This decrease in free cash flow also helps in curtailing overinvestment problem (Harvey et al., 2004; D' Mello and Miranda, 2010). Secondly, use of debt can increase monitoring of managers by debt holders like bank, which put pressure on managers to run business profitable (Ang. et al., 2000). Thirdly, increasing the threat of bankruptcy forces managers to optimize decision making as they are confronted by the prospect of losing their benefits in the event the firm is liquidated (Grossman and Hart, 1958; Williams, 1987).

Different metrics have been used in the literature to calculate the leverage level of a firm. Fatima (2010) used debt ratio to measure firm level of debt in her study on the interaction

between her debt policies and free cash flow. Jensen et al (1992) used debt to equity ratio to measure the debt policy. Byrd (2010) in his study to see the relationship between the debt and free cash flow took the value of each firms' long term obligations. Zhang (2009) in his study on the effect of debt in reducing the free cash flow formulated leverage as a firm's net debt issuance minus the net equity issuance.

1.1.3 Relationship Between Agency Cost and Leverage

Free cash flow represents the excess cash that a firm generates after laying out the money required to finance its asset base (Jensen 1986). High leverage reduces the amount of free cash flow available for use by managers and hence reduces agency costs between owner and managers. The use of debt impacts on agency cost in several ways: Use of debt reduces the free cash flow available to managers (Jensen, 1986, Stulz, 1990). Interest payments to debt holders also decrease free cash flow available for investments. The decrease in free cash flow also helps in curtailing the over-investment problem which results from managers channeling funds to negative NPV projects (Harvey et al., 2004; D'Mello and Miranda, 2010). Using debt enables institutions such as banks to monitor managers of firms so that they have to run profitable businesses in order to meet maturing obligations (Ang et al., 2000).

Another notable effect of leverage is the threat of bankruptcy. The threat of bankruptcy forces managers to run business in profitable manner. The creditors have legal right to take a firm to court if it fails to honor the claims of creditors. This creates threat for managers of losing their jobs in the event of liquidation of the firm. The threat of losing jobs put pressure on managers to run business profitably and stops them from exploiting

the resources of business (Jensen 1986). The use of debt limits the tendency of managers to use firm's resources inefficiently. In this way leverage helps in disciplining manager and forces them to purse business value maximizing goals. In addition managers would not want the firm to go bankrupt since they would lose out on final benefits (Grossman and Hart, 1958; Williams, 1987). Additionally, Ang et al. (2000) noted that lenders incur monitoring cost to safeguard their loans and makes firms operate more efficiently by better utilizing and moderating perquisites consumption so as to optimize performance that is normally keenly monitored by the financiers. In summary the use of debt helps in reducing agency cost in many ways and this reduction on agency cost leads to overall higher firm value (Grossman and Hart 1882; Ang et al., 2000).

1.1.4 Nairobi Securities Exchange

In Kenya, dealing in shares and stocks started in the 1920s when the country was still a British colony. However, the market was not formal as rules and regulations to govern stock broking activities were non-existent. Trading took place on a 'gentleman's agreement.' Standard commissions were charged with clients being obligated to honor their contractual commitments of making good delivery and settling relevant costs. At that time, stock broking was a sideline business conducted by accountants, auctioneers, estate agents and lawyers.

The Nairobi Securities Exchange (NSE) was approved as an overseas stock exchange in July 1953 by the London stock exchange. In 1954, it was registered under the Societies Act as voluntary of organization stock brokers. The NSE is currently made up of 22 stock broking firms. The NSE deals in both fixed income securities and the variable income

securities. It consists of both the primary and secondary market. It is currently divided into four segments; the Main Investments Segment (MIMS), the Alternative Investments segment (AIMS), the Fixed Income Securities Segment (FIMS) and later Futures and Options Market segment (FOMS). There are 60 listed companies as at 2013. It is also among the biggest and the most active stock exchange in Africa (NSE, 2013).

The NSE has both a primary and secondary market. It has acted as an important avenue through which the government has carried out the divestiture programme and for firms seeking additional capital. It deals with both the fixed income securities such as Treasury and corporate bonds, debenture stocks and preference shares and variable income securities such as ordinary share (NSE, 2013).

1.2 Research Problem

It is widely acknowledged that managerial interest is not aligned with shareholders interest (Jensen and Meckling, 1976). As a result, too much cash (free cash flows) can be a problem if monitoring is compromised and excess cash is not returned to shareholder (Jensen (1986). Managers once have satisfied all the obligations contracted by the company with funds generated by operations, can use the remaining flows from the treasury for their own benefit instead of the interest of shareholder. Shareholder value maximization demands that managers' invest cash in the projects that maximize their stock value; however, the managers' personal interests may overshadow shareholder value with free cash flows' in hand and therein arises the conflict (Meckling, 1976). As a remedy debt decreases the agency cost through the need to honor binding leverage commitments and the deterrents of financial distress and bankruptcy necessitates more

efficient use of available cash flows (Zhang and Li, 2008). Locally, there are several examples of NSE listed companies that have previously either been delisted; liquidated or placed under receivership on account of the agency problem mismanagement. Among them: Uchumi supermarket chain; Kenya Commercial Bank; National Bank, etc. (NSE, 2013).

Several studies have been conducted at world stage that focused on the relationship between the level of debt in the capital structure and agency cost of free cash flows: Lingling (2004) investigated the impact of ownership structure on the debt financing in the context of free cash flow problem and found that capital structure has a disciplinary role in reducing free cash flow problem.; Zhang (2009) investigated the role of capital structure and managerial incentive compensation in controlling the free cash flow agency problem and found that there was a negative relationship between the leverage and free cash flow; among others. This study, though, is not aware of any local study on how agency cost and leverage relate. The literature has argued that companies with substantial free cash flow always tend to face conflicts of interest between stockholders and (Easterbrook, 1984; Jensen, 1986). The literature has equally recommended that leverage presents an effective mechanism to mitigate this agency cost (Lingling, 2004; Li and Cui, 2003; Zhang and Li, 2008).

In the context of a market where a number of de-listings, receiverships and wind-ups have occurred on account of agency conflicts, it is worthy to investigate the relationship between leverage and agency cost. The study will also seek to answer the following question; what is the relationship between agency cost and debt levels?

1.3 Study Objective

The objective was to establish the relationship between agency cost and leverage of firms listed at the NSE.

1.4 Value of the Study

The study is crucial to investors and other stakeholders in a firm as it will lead to a better understanding of how the leverage influences management of agency costs in a firm; making them come up with policies or strategies that favor or safeguard their interests; It will provide investment bankers and stockbrokers with more refined analytical tools that will enable them to advise their clients better market information; it will help Kenyan companies to institute appropriate mechanisms to mitigate agency conflict.

The result will be resourceful in capital structure policy formulation of firms; it will provide the regulator with critical information that reduces unethical practices and information asymmetry in the market. It shall also provide policymakers with vital information that helps in formulation of leverage vis-à-vis agency costs' best practices.

It will contribute to the scant local literature on extent of leverage and its effect on free cash flow discipline. It will also confirm or dispute the theoretical predictions of the relationship between leverage and free cash flows discipline in the local context. It shall also provide clarity as to the extent and direction to which agency cost as well as other study variables influence leverage in the local context.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter focuses on a review literature of the relationship between agency cost and leverage. Theories that explain the relationship between agency cost and leverage are first discussed; Determinants of both agency cost and leverage, Measurement approach of agency cost and Empirical evidence of the relationship between agency cost and leverage is then given. Finally, a summary of the literature is then given.

2.2 Theoretical Review

Various theoretical frameworks have attempted to explain the relationship between agency costs and leverage in the literature. Six have stood out: Agency theory; stakeholders' theory; bondholders' theory; pecking order theory; free cash flow theory and trade-off theory (Jensen, 1986; Freeman, 1988; Donaldson and Preston, 1995; Modigliani and Miller, 1963).

2.2.1 Agency Theory

The social and private costs of an agent's action due to incomplete alignment of the agent's and owner's interests were brought to attention by the seminal contributions of Jensen and Meckling (1976) on agency costs. Agency theory has also brought the roles of managerial decision rights and various external and internal monitoring and bonding mechanisms to the forefront of theoretical discussions and empirical research (Ang et al, 2000).

Agency theory is concerned with agency relationships. Two parties have an agency relationship when they cooperate and engage in an association wherein one party (the

principal) delegates decisions and/or work to another (an agent) to act on its behalf (Eisenhardt, 1989; Rungtusanatham et al., 2007). The agency theory recognizes that the separation of ownership and control in firms creates conflicts of interest between the firm's shareholders and managers. The reason is that managers are often in the position to use the firm's resources to their advantage thus, negatively affecting shareholders' wealth maximization (Jensen, 1986).

The important assumptions underlying agency theory are that: potential goal conflicts exist between principals and agents; each party acts in its own self-interest; information asymmetry frequently exists between principals and agents; agents are more risk averse than the principal; and efficiency is the effectiveness criterion (Eisenhardt, 1989; Ekanayake, 2004; Rungtusanathamet al., 2007). Two potential problems stemming from these assumptions may arise in agency relationships: an agency problem and a risk-sharing problem. An agency problem appears when agents' goals differ from the principals' and it is difficult or expensive to verify whether agents have appropriately performed the delegated work (i.e. moral hazard). This problem also arises when it is difficult or expensive to verify that agents have the expertise to perform the delegated work (i.e. adverse selection) that they claim to have. A risk-sharing problem arises when principals and agents have different attitudes towards risk that cause disagreements about actions to be taken (Eisenhardt, 1989; Jensen and Meckling, 1976; Ross, 1973; Rungtusanathamet al., 2007).

In order to resolve agency and risk-sharing problems in principal-agent relationships, agency theory prescribes two formal (and ideal) types of management mechanisms to govern these relationships (Rungtusanatham et al., 2007). One is outcome-based

management mechanism. With this mechanism both principals and agents can observe outcomes, and the principals reward agents based on measured performance outcomes (Ekanayake, 2004). The outcome-based management mechanism emphasizes results regardless of how the agents achieve them (Choi and Liker, 1995). The other management mechanism is behavior-based. When this mechanism is taken, principals can use behavior controls to monitor agents' behaviors and efforts which otherwise are unknown to the principals. The behavior-based management mechanism emphasizes tasks and activities in agents' processes that lead to the outcomes of the agents (Eisenhardt, 1989; Ekanayake, 2004).

2.2.2 Stakeholders Theory

Stakeholder theory has been proposed as an integrative framework for the field of business and society, or more broadly, as a theory of the firm (Donaldson and Preston, 1995; Evan and Freeman, 1988; Freeman, 1984; Jones, 1995a). Freeman is generally credited with introducing stakeholder theory in 1984, with his book, "Strategic Management: A Stakeholder Approach". In that work, as well as later works, Freeman argued that the firm exists primarily for the purpose of serving and coordinating stakeholder interests (Schilling, 2000).

Stakeholders are variously defined: Stakeholders are those individuals or groups that have a stake in the firm (Caroll, 1993); any group or individual who can affect or is affected by the achievement of an organization's purpose'' (Freeman, 1984); those with a legitimate claim on the firm (Hill and Jones, 1992), and in a variety of other, similar ways. In general though, there is a consensus that stakeholders often include

customers, employees, management, stockholders, creditors, suppliers, community, and sometimes even competitors (Schilling, 2000).

Stakeholders may vary with respect to the degree of importance they place on their own stake, the degree of importance management places on their stake, and also with respect to the amount of power the stakeholder has with management (Hill and Jones, 1992). There is some disagreement in the field as to whether the variance in these factors also implies that different stakeholders should be treated with different levels of priority. Caroll (1993) implied that those stakeholders with more power and legitimacy require more attention. However, according to Donaldson and Preston (1995), most stakeholder analysts argue that all persons or groups with legitimate interests participating in a firm do so to obtain benefits and that there is no prima facie priority of one set of interests/ benefits over the other. Meanwhile, Freeman (1988) equally concurred that this theory does not give primacy to one stakeholder group over another though at times some groups may benefit at the expense of others. More generally though, stakeholder theory highlights the necessity to serve all the stakeholders regardless of the amount of their legal interests in an organization and deals with the relationships with the stakeholders both in terms of the process and the outcome (Gilbert and Rasche, 2008).

The theory suggests that the needs of shareholders cannot be met before the needs of stakeholders are met. Similarly, it claims that developing strategies by considering a broader stakeholder network and interaction will produce more successful results than focusing merely on direct profit maximization attempts (Jamali, 2008). Long-term sustainability of enterprises requires a management approach more sensitive towards the

interests and the benefits of all stakeholders (Sarikaya, 2009). Stakeholder theory also asserts that stakeholders do not have the incentives to become as well informed as investors in the company. Investors, as a group, are more sophisticated than other stakeholders and thus are more likely to monitor the firm's activities which may affect their financial interest. Non-investor stakeholders, being a more diversified collection of groups, are not as inclined to monitor the day-to-day activities of the firm (Steadman et al., 1996).

Donaldson and Preston (1995) suggested three different types of stakeholder theory that are related to each other and support each other although they seem quite different at first; namely descriptive, instrumental and normative. Descriptive approach to stakeholder theory explains the past, present and the future of relationships between enterprise and stakeholders. Instrumental approach suggests a relationship between stakeholder approach and desired outcomes such as profitability. On the other hand, normative approach presents moral and philosophical principles by analyzing the operations of enterprises in terms of morality (Donaldson and Preston, 1995).

2.2.3 Bondholders Theory

Free cash flow is the excess of cash that is required to fund all positive NPV projects (Jensen 1986). Managers have discretion to use free cash flow and this creates potential agency conflict. Managers can use free cash flow for enjoying perquisites or invest this free cash flow to increase resources under their control for perquisite consumption and overinvestment (Jensen, 1986; Stulz, 1990). This conflict created by free cash flow can be controlled by using debt in capital structure. By issuing debt, the managers of firm are obliged to make periodic payments of interests and principal. These periodic payments

reduce amount of free cash flow available for use by managers and hence reduces agency conflict between owner and managers. The use of debt also increases monitoring of managers' activities. As creditors have incentive to monitor to performance of the enterprise (Jensen and Meckling 1976) to ensure the payment of interest and principal. Banks, which are the major source of financing, play very important role in optimizing the monitoring of managers. Large debt holders also have contractual right to monitor activities of manager. This monitoring by creditors also helps owners in monitoring managers and reduces cost of monitoring managers by owners.

2.2.4 Trade-off Theory

According to the traditional (or static) trade-off theory (TOT), firms select optimal capital structure by comparing the tax benefits of the debt, the costs of bankruptcy and the costs of agency of debt and equity, that is to say the disciplinary role of debt and the fact that debt suffers less from informational costs than outside equity (Modigliani and Miller, 1963; Stiglitz, 1972; Jensen and Meckling, 1976; Myers, 1977; Titman, 1984). So optimal leverage minimizes cost of capital and maximizes firm value.

The trade-off models predict that firms will seek to maintain an optimal (target) capital structure by balancing the benefits and costs of debt. The benefits include the tax shield, the reduction of free-cash-flow problems and other potential conflicts between managers and shareholders, whereas the costs include expected financial distress, costs associated with underinvestment and asset substitution problems. The trade-off theory predicts that firms have optimal capital structure and they adjust their leverage toward the optimum over time (Cotei et al., 2011).

The theory asserts that firms set a target debt to value ratio and gradually move towards it. According to this theory, any increase in the level of debt causes an increase in bankruptcy, financial distress and agency costs, and hence decreases firm value. Thus, an optimal capital structure may be reached by establishing equilibrium between advantages (tax advantages) and disadvantages (financial distress and bankruptcy costs) of debt. In order to establish this equilibrium firms should seek debt levels at which the costs of possible financial distress offset the tax advantages of additional debt (Karadeniz et al, 2009).

2.2.5 The Pecking Order Theory

The pecking order theory is based on the idea of asymmetric information between managers and investors. It predicts that firms' financing deficit and information asymmetry are the main determinants of securities issuance and therefore, firms use external financing only if internal funds are not sufficient to finance the firms' growth opportunities and the information asymmetry cost is low (Shyam-Sunder and Myers, 1999). If external funds are needed, the pecking order theory predicts that firms will issue the safest security possible, given that the cost of financial distress is ignored (Cortei et al., 2011). A safe security is defined as one unaffected by the revelation of managers' inside information. This implies that firms will first issue debt and then equity.

2.2.6 Free Cash Flow Theory

Jensen (1986) argued that there is a difference in interests between managers and shareholders regarding excess cash flows. Managers would often want to retain the excess cash flow and invest it in value reducing projects, such as negative net present

value projects. Capital structure is one of the means of controlling managerial behavior. A major problem for shareholders is how to force managers to pay out cash flows rather than retain them. Using debt reduces cash flow available to managers for spending and forces them to pay out future cash flows. However, shareholders cannot force the payment of dividends and therefore the theory predicts that announcements of SEOs has a negative effect on stock returns and performance since it increases the free cash flow available for poor spending. An empirical prediction of the free cash flow theory is that the change in performance following the equity issue is negatively related to the existing free cash flow. The theory also predicts that as long as the number of positive-NPV opportunities is limited, these firms will experience a decline in operating performance subsequent to issuing equity (Jensen, 1986).

2.3 Determinants of Agency Cost

The following determinants are widely recognised to influence the degree of agency costs of a firm: ownership and control structure; bank monitoring ability; age of the firm; among others (Ang et al., 2000). Ownership and control structure is a key determinant. When management owns less than 100 percent of the firm's equity, shareholders incur agency costs resulting from management's shirking and perquisite consumption. Because of limitations imposed by personal wealth constraints, exchange regulations on the minimum numbers of shareholders, and other considerations, no publicly traded firm is entirely owned by management. Agency costs are indeed higher among firms that are not 100 percent owned by their managers, and these costs increase as the equity share of the owner-manager declines. Hence, agency costs increase with a reduction in managerial ownership, as predicted by Jensen and Meckling (1976).

Banks monitoring ability equally plays a critical discipline role. Banks play a pivotal role in small business financing because they are the major source of external funds for such firms. Cole et al (1996) reported that more than 60 percent of the dollar amount of small business credit outstanding takes the form of bank loans. Because banks generally require a firm's managers to report results honestly and to run the business efficiently with profit, bank monitoring complements shareholder monitoring of managers, indirectly reducing owner-manager agency costs. That is, by incurring monitoring costs to safeguard their loans, banks lead firms to operate more efficiently by better utilizing assets and moderating perquisite consumption in order to improve the firm's reported financial performance to the bank. Thus, lower priority claimants, such as outside shareholders, should realize a positive externality from bank monitoring, in the form of lower agency costs (Ang et al., 2000).

A Firm's age exerts a big influence on efficiency and begets learning curve advantages. It is widely acknowledged that the length of banking relationship may be correlated with firm age, which in turn could be related to a firm's efficiency. In addition, due to the effects of learning curve and survival bias, older firms are likely to be more efficient than younger ones and, especially, than start-up firms (Ang et al., 2000).

2.4 Determinants of Leverage

Classical leverage determinants include: size, asset structure, profitability, risk and growth (Viviani, 2008). Size affects firm leverage ratios and determines the degree to which a firm can be levered. There are several theoretical reasons why firm size is a determinant of leverage. Smaller firms may find it relatively more costly to resolve

informational asymmetries with lenders and financiers, which discourages the use of debt (Chung, 1993; Grinblatt and Titman, 1998) and should increase the preference of smaller firms for equity relative to debt (Rajan and Zingales, 1995). However, this problem may be mitigated with the use of short-term debt (Titman and Wessels, 1988). Relative bankruptcy costs and probability of bankruptcy (larger firms are more diversified and fail less often) are an inverse function of firm size (Warner, 1977; Ang et al., 1982). A further reason for smaller firms to have lower leverage ratios is that smaller firms are more likely to be liquidated when they are in financial distress (Ozkan, 1996).

Asset structure will determine to what extent a firm has leverage collateral. The degree to which firms' assets are tangible and generic should result in the firm having a greater liquidation value. By pledging the assets as collateral (Myers, 1977) or arranging so that a fixed charge is directly placed to particular tangible assets of the firm, also reduces adverse selection and moral hazard costs (Long and Malitz, 1992). Bank financing will depend upon whether the lending can be secured by tangible assets (Storey, 1994). Tangible assets could also have a negative impact on financial leverage by augmenting risk through the increase of operating leverage (Hutchinson and Hunter, 1995). Liquidity ratios may have a mixed impact on leverage decision. Companies with higher liquidity ratios might support a relatively higher debt ratio due to greater ability to meet short-term obligations. On the other hand, firms with greater liquidities may use them to finance their investments. Therefore, the companies' liquidities should exert a negative impact on its leverage ratio (Ozkan, 2001). Moreover, the liquid assets can be used to show to which extend these assets can be manipulated by shareholders at the expense of bondholders (Prowse, 1991).

Profitability of a firm will determine to what extent it requires leverage. There are conflicting theoretical predictions on the effects of profitability on leverage. Profitable firms, which have access to retained profits, can use these for firm financing rather than accessing outside sources. Jensen (1986) predicts a positive relationship between profitability and financial leverage if the market for corporate control is effective because debt reduces the free cash flow generated by profitability. More profitable firms are exposed to lower risks of bankruptcy and have greater incentive to employ debt to exploit interest tax shields (Viviani, 2008).

Risk will determine to what extent financiers are willing to offer leverage. Since higher variability in earnings indicates that probability of bankruptcy increases, we can expect that firms with higher income variability have lower leverage (Bradley et al., 1984). Firms that have high operating risk can lower the volatility of the net profit by reducing the level of debt. A negative relation between operating risk and leverage is also expected: firms with high volatility of results try to accumulate cash during good years, to avoid under-investment issues in the future (Viviani, 2008).

The growth potential of a firm will determine the requirement for growth financing. For companies with growth opportunities, the use of debt is limited as in the case of bankruptcy, the value of growth opportunities will be close to zero, growth opportunities are particular case of intangible assets (Myers, 1984). Firms with less growth prospects should use debt because it has a disciplinary role (Jensen, 1986; Stulz, 1990). Firms with growth opportunities may invest sub-optimally, and therefore creditors will be more reluctant to lend for long horizons. This problem can be solved by short-term financing (Titman and Wessels, 1988) or by convertible bonds (Jensen and Meckling, 1976). Non-

debt tax shield like tax deduction for depreciation and investment tax credits are substitutes for the tax benefit of debt financing (De Angelo and Masulis, 1980). Therefore, the tax advantage of leverage decreases when other tax deduction increases.

The age of a firm implies that it has a credit history which facilitates the acquisition of leverage. The longer a company has been servicing its loan, the more likely the business is viable and its owner trustworthy. In consequence, the duration of the relation between a company and the banking system reduces information asymmetries between companies and banks. This reduction should facilitate the access to debt financing and have a positive effect on leverage ratio (Petersen and Rajan, 1994). On the other hand, young firms tend to be externally financed while older tend to accumulate retained earnings so age must be negatively related to leverage (Petersen and Rajan, 1994). So, theoretical effect of age on leverage is ambiguous.

The nature of industry will have an effect on willingness of financiers to provide leverage. Since asset risk, asset type, and requirement for external funds vary by industry we could expect average debt ratios to vary across industries (Myers, 1984; Harris and Raviv, 1991). The sector characteristics (degree of concentration, entry and exit barriers, technological changes) and dynamics (Miao, 2005) have an influence on the debt ratio (Viviani, 2008).

2.6 Measurement of Agency Cost

Great strides have been made in demonstrating empirically the role of agency costs in financial decisions, such as in explaining the choices of capital structure, maturity structure, dividend policy, and executive compensation. However, the actual measurement

of the principal variable of interest, agency costs, in both absolute and relative terms, has lagged behind (Ang et al., 2000).

The Jensen and Meckling's (1976) zero agency-cost firm model approach has continued to dominate empirical measurements of agency costs in the literature. To measure absolute agency costs, a zero agency-cost base case must be observed to serve as the reference point of comparison for all other cases of ownership and management structures. In the original Jensen and Meckling agency theory, the zero agency-cost base case is, by definition, the firm owned solely by a single owner-manager. When management owns less than 100 percent of the firm's equity, shareholders incur agency costs resulting from management's shirking and perquisite consumption.

Because of limitations imposed by personal wealth constraints, exchange regulations on the minimum numbers of shareholders, and other considerations, no publicly traded firm is entirely owned by management. Thus, Jensen and Meckling's zero agency cost base case cannot be found among the usual sample of publicly traded firms for which information is readily available. The absence of information about sole owner-manager firms explains why agency costs are often inferred but not directly measured in the empirical finance literature (Ang et al., 2000). No-agency-cost base case firms, however, can be found among non-publicly traded firms. These firms enable estimation of the expected expense for the no-outside-equity agency-cost base case.

Two alternative measures of agency costs are normally used. The first is direct agency costs, calculated as the difference in dollar expenses between a firm with a certain ownership and management structure and the no-agency-cost base case firm. This measure captures excessive expenses including perk consumption. To facilitate cross-

sectional comparisons, expenses are standardized by annual sales. The second measure of agency costs is a proxy for the loss in revenues attributable to inefficient asset utilization, which can result from poor investment decisions e.g., investing in negative net-present-value assets or from management's shirking e.g., exerting too little effort to help generate revenue. This second measure of agency costs is calculated as the ratio of annual sales to total assets, an efficiency ratio. Agency costs can then be measured as the difference in the efficiency ratio, or, equivalently, the dollar revenues lost, between a firm whose manager is the sole equity owner and a firm whose manager owns less than 100 percent of equity (Ang et al., 2000).

Agency costs attributable to the divergence of interests vary inversely with the manager's ownership stake. As the number of shareholders increases from one, the ownership of the owner manager falls to α, where $0 \leq \alpha \leq 1$. Because the manager gains 100 percent of each dollar spent on perks, but only α percent of each dollar in firm profit, the manager who owns less than 100 percent of the firm has the incentive to consume perks rather than to maximize the value of the firm to all shareholders. At the extreme is the manager with zero ownership($\alpha = 0$), who gains 100 percent of perquisite consumption, but zero percent of firm profits (Ang et al., 2000).

To measure agency costs of the firm, two alternative efficiency ratios that are frequently used appear in the accounting and financial economics literature: the expense ratio, which is operating expense scaled by annual sales, and the asset utilization ratio, which is annual sales divided by total assets. The first ratio is a measure of how effectively the firm's management controls operating costs, including excessive perquisite consumption, and other direct agency costs. More precisely, the difference in the ratios of a firm with a

certain ownership and management structure and the no-agency-cost base case firm, multiplied by the assets of the former, gives the excess agency cost related expense in dollars. The second ratio is a measure of how effectively the firm's management deploys its assets. In contrast to the expense ratio, agency costs are inversely related to the sales-to-asset ratio. A firm whose sales-to-asset ratio is lower than the base case firm experiences positive agency cost. These costs arise because the manager acts in some or all of the following ways: makes poor investment decisions, exerts insufficient effort, 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 (Ang et al., 2000).

2.7 Empirical Review

Leverage policy can be used as a mechanism of reducing free cash flow agency problem. A handful of international studies have been conducted on the relationship between the level of debt in the capital structure and agency cost of free cash flows (Lingling, 2004; Mc Night and Weir, 2009; Zhang and Li, 2008; Fatma, 2011; among others). There is, however, a dearth of local studies on the effect of leverage on agency costs.

Lingling (2004) sought to investigate the impact of ownership structure on the debt financing in the context of free cash flow problem on Japanese firms. In his study he investigated the implications of free cash flow theory in capital structure policy of listed Japanese firms. The study focused primarily on relations between leverage and free cash flow. The results of the study showed that there is a negative relationship between the free cash flow and debt and the results was more significant for low growth firms than the

higher growth firms. The results of the study showed that the capital structure has a disciplinary role in reducing free cash flow problem.

Zhang (2009) investigated the role of capital structure and managerial incentive compensation in controlling the free cash flow agency problem. The result of the study suggested that debt and executives can act as substitutes in reducing the free cash flow problem. He also pointed out that the free cash flow problem is more in the firms with low growth prospects and mature. The usage of debt was more beneficial as a monitoring device and there was a negative relationship between the leverage and free cash flow. The study also suggested that there was a more pronounced effect in firms that had more severe agency problem.

McKnight and Weir (2009) sought to examine the relationship between corporate governance, ownership structure and agency cost in UK publicly traded firms. They used three proxies to measure the agency cost which included; the ratio of sales to total assets, the free cash flow and the firm growth prospect. The analysis showed a significant negative relationship between the free cash flow and the debt. The result was consistent with the free cash flow theory given by Jensen in 1986. According to the results, the increase in debt reduced the free cash available to the firm and consequently reduced the agency cost.

Byrd (2010) sought to investigate the effect of financial policies of oil firms on the agency costs of free cash flows. He argued that there is a conflict between the interest of manger and shareholders about the spending of the free cash flow. The results of the study showed that there was an inverse relationship between leverage and agency cost. He reported that the free cash flow theory had stresses the importance of the firm capital structure and

dividend policies for controlling the free cash flow problem. The results indicated that unlevered firms with free cash flow bore higher agency costs than the levered firm.

Fatma and Chichti (2011) sought to investigate the impact of ownership structure and dividend policy in reducing the agency conflict between the shareholder and the manager in the restrictions of free cash flow problem. Her study observed that the debt policy was the principal mechanism of controlling the free cash flow problem of the firm. The study found that managerial ownership could be used to reduce the agency costs related to free cash flow.

2.8 Summary of the Literature Review

Various theoretical frameworks have attempted to explain the relationship between agency costs and leverage in the literature. Six theories have stood out: Agency theory; stakeholders' theory; bondholders' theory; free cash flow theory and trade-off theory. The following determinants are widely recognized to influence the degree of agency costs of a firm: ownership and control structure; bank monitoring ability; age of the firm; among others. Classical leverage determinants include: size, asset structure, profitability, risk and growth among others. Relatively fewer international studies have been conducted on the relationship between the level of debt in the capital structure and agency cost of free cash flows. Similarly, there is a dearth of local studies on the effect of leverage on agency cost. The Jensen and Meckling's (1976) zero agency-cost firm model approach has continued to dominate empirical measurements of agency cost in the literature

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design, population, data collection, data analysis and analytical model. It further shows the data collection methods to be used, techniques and instruments.

3.2 Research Design

Causal study was applied in the study. The design was appropriate because the study sought to establish the extent to which leverage contributes to agency costs (Mugenda, 2003). The study employed a cross sectional approach on data that spanned several time periods (2008-2011).

3.3 Population of the Study

The target population was all the 60 firms listed at the NSE for year 2008 to 2011 (list is attached in appendix 1). A study was carried out for the companies that used external finances and traded continuously within the period of study. A sample of 34 companies that met the criteria was used in the study.

3.4 Data Collection

The study was facilitated by use of secondary data from the NSE. Quoted companies are required by law to make public their financial reports. Thus, the secondary data was obtained for the period 2008-2011.

3.5 Data Analysis

Multiple regression analysis was used to determine relationship between agency cost and leverage at the NSE. Statistical Package for Social Sciences (SPSS) was used to aid in the data analysis.

3.5.1 Analytical Model

The study used a regression model to establish the relationship between the variables. The model used is similar to one used by Zhang and Stephen (2008). The model is as stated below;

$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \varepsilon_i$

Where,

Y_i = debt level for firm i.

X_{1i} = Asset utilization ratio (measure of agency cost) for firm i.

X_{2i} = size of firm i.

X_{3i} = growth in sales for firm i.

X_{4i} = return on assets for firm i.

ε_i = error term.

β_0 is a constant and $\beta_1, \beta_2, \beta_3,$ and β_4 are coefficients of regression equation.

3.5.2 Operationalization of Variables

Leverage (Y)

This was the dependent variable in the regression equation. It is the percentage of debt to total assets. The Leverage was calculated as follows;

$$Y = \sum_{i}^{n} \frac{D_i}{DE_i}$$

Where;

D_i = total debt for year i

DE_i = total debt plus equity for year i

Asset utilization ratio /Agency cost (X_1)

It was used to measure agency cost. It was derived by getting the ratio of sales to total assets. The variable was used to measure the manager's performance or capability in utilizing assets to maximize shareholders wealth. Agency cost was measured using the equation below

$$X_1 = \sum_{i}^{n} \frac{SALES_i}{TA_i}$$

Where;

$SALES_i$= sales for year i

TA_i = Total assets fot year i

n= number of years.

A firm whose sale to asset ratio is lower than the base case firm experience positive agency cost. These costs arise because the manager makes poor investment decisions exert insufficient efforts resulting in lower revenues. Consume executive perquisites so that firms purchase unproductive assets like fancy office space, furnisher, automobile and resort properties.

Size of the firm (X_2)

It was quantified by obtaining logarithm of total assets for each year. The size of the firm determines the leverage and agency costs. Size is determined by capital base that determines the power and amount to be borrowed. In addition, small firms are managed by the owners and family members unlike big firms where decision making is delegated to professional managers. The bigger the firm size the higher the agency cost and higher the leverage's. Measured by;

$X_2 = \text{In} [\sum_i^n \ TA_i \ ]$

Where;

TA_i = Total assets fot year i

n= number of years.

Growth in sales (X_3)

The annual growth rate was calculated by taking the ratio of change in sales in a year.

$X_3 = \sum_i^n \ \frac{\Delta SALES_i}{SALES_i}$

Where;

$\Delta SALES_i$= change in sales for year i

$SALES_i$= total sales for year i

Growth = Return on Assets (X_4)

It is the ratio of net profit to total asset.

$X_4 = \sum_i^n NI_i / TA_i$

Where;

NI_i = net profit for year i

TA_i = total assets for year i

n = number of years

3.6 Significance Testing

Descriptive statistics were used to describe the data while a t-test was conducted to test for significance at 5%.

H_0: There is no relationship between agency costs and leverage

H_1: There is a significant relationship between agency costs and leverage

Or

$$H_o = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$$

$$H_1 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$$

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS

4.1 Introduction

This chapter detailed the data analysis, findings and interpretations of the research study. Regression analysis; analysis results and findings are respectively discussed.

4.2 Nature and Strength of the Relationship

Table 4.1 Correlations

		leverage	size	Salesgrowth	ROA	Assetutilization
Pearson Correlation	Leverage	1.000	.231	-.051	-.407	-.237
	Size	.231	1.000	.107	.125	.057
	Salesgrowth	-.051	.107	1.000	.346	.137
	ROA	-.407	.125	.346	1.000	.068
	assetutilization	-.237	.057	.137	.068	1.000
p-value (1-tailed)	Leverage	.	.004	.282	.000	.003
	Size	.004	.	.115	.080	.261
	Salesgrowth	.282	.115	.	.000	.062
	ROA	.000	.080	.000	.	.224
	assetutilization	.003	.261	.062	.224	.
N	Leverage	128	128	128	128	128

	Size	128	128	128	128	128
	Salesgrowth	128	128	128	128	128
	ROA	128	128	128	128	128
	assetutilization	128	128	128	128	128

Source: Computation from raw data obtained from the NSE

From above table 4.1 there existed a negative relationship between leverage and agency cost (r = -0.237), a positive relationship between leverage and firm size (r = 0.231), a negative relationship between leverage and sales growth (-0.051) and finally a negative relationship between leverage and return on assets (r = -0.407). The correlation between leverage and agency cost was significant since its p-value of 0.003 was less than 0.05. Similarly the correlation between leverage and firm size as well as the correlation between leverage and ROA were significant since their p-values of 0.004 and 0.000 respectively were less than 0.05. However the correlation between leverage and sales growth was not significant since its p-value of 0.282 was greater than 0.05.

4.3 Regression Analysis

A regression analysis was conducted on leverage against agency cost, which was proxied by asset utilization and the control variables: firm size, sales growth and ROA. The regression equation was as follows:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \varepsilon_i$$

Data for the above variables was generated for 34 companies listed in the NSE that spanned the years 2007 to 2011 (Refer appendix i). The data was subjected to regression analysis and the findings of which are discussed below:

Table 4.2: Coefficients of the model

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Tolerance*	*VIF*
Intercept	-0.1743744	0.113225897	-1.54006	0.126115		
Asset util	-0.0158897	0.005075339	-3.13077	0.002178	0.979	1.021
Size	0.02863567	0.007482227	3.827159	0.000205	0.978	1.022
sales gr.	0.06490238	0.047167178	1.376007	0.17132	0.864	1.158
ROA	-0.5098268	0.087988322	-5.79425	0.00000	0.872	1.147

Source: Computation from raw data obtained from the NSE

Table 4.2 depicts the numerical relationship between the independent variable and the predictor variables in the following resultant equation:

$$Leverage = -0.17437 - 0.01589X_{1i} + 0.028636X_{l2} + 0.064902X_{l3} - 0.50983X_{l4}$$

From the above equation it meant that when asset utilization increases by one unit, leverage decreases by 0.0159 units. When firm size increases by one unit, leverage increases by 0.0286 units. When sales growth increases by one unit, leverage increases by

0.0649 units. Finally when ROA increases by one unit, leverage decreases by 0.5098 units.

4.4 Test of Significance

Table 4.3: Model summary of agency cost on leverage

Regression Statistics	
Multiple R	0.55423423
R Square	0.30717558
Adjusted R Square	0.2846447
Standard Error	0.13653567
Durbin- Watson	1.314

Source: Computation from raw data obtained from the NSE

Table 4.3 indicates that predictor variables only influenced 28.5 % of variations in leverage as indicated by the adjusted R square statistic 0.2846447. This meant that the model less than convincingly suitable for (less than the requisite threshold of about 60%-100% for a good fit) explaining the firms' variability in leverage.

Autocorrelation was tested using Durbin-watson value. From table 4.3, the value of Durbin- Watson was 1.314 hence there was no existence of autocorrelation since the value was far below the threshold for autocorrelation of 7.

Table 4.4: ANOVA for agency cost on leverage

ANOVA					
	Df	*SS*	*MS*	*F*	*Significance F*
Regression	4	1.016625226	0.254156	13.63354	0.0000
Residual	123	2.292964797	0.018642		
Total	127	3.309590022			

Source: Computation from raw data obtained from the NSE

Significance F on table 4.4 demonstrates the usefulness of the overall regression model at a 5% level of significance. Since the p-value of the F test is less than alpha (0 < .05) it was concluded that there was a significant relationship between the dependent and independent variables used in the study. Table 4.4 also clearly indicates that the regression only accounted for a less than dominant number of variations in leverage; 1.016625226 (30.7 %) out of 3.309590022; the rest of the variations being accounted for by other factors external to the model (Residual) as indicated by the sum of the squares (SS). Residual (or error) represents unexplained (or residual) variation after fitting a regression model. It is the difference (or left over) between the observed value of the variable and the value suggested by the regression model.

Testing whether the coefficient of asset utilization is equal to zero at 5% level of significance yields a p-value of (0.002178 < 0.05), which was significant. Also firm size yielded a p-value of (0.000205 < 0.05), which was significant. Similar ROA yielded a p-

value of (0< 0.05) which was significant. On the contrary, sales growth yielded a p-value of (0.17132 > 0.05), which was not significant.

Multicollinearity of predictor variables was tested using variance inflation factors (VIFs). Multicollinearity is the undesirable situation where the correlations among the independent variables are strong. It Exists in the model if VIF ≥ 10. From table 4.2 the VIF for Asset utilization was 1.121, VIF for size of firm was 1.022, VIF for sales growth was 1.158 and VIF for ROA was 1.147. This meant that variance inflation factors for all predictor variables were less than 10 hence multicollinearity was not in existence.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarized the analysis in chapter four and underlined the key findings. It also drew conclusions and implications from the finding. Limitations of the study, recommendations and suggestions for further studies were outlined.

5.2 Summary of findings

This study was conducted with the aim of establishing the relationship between agency cost and leverage for companies listed in the Nairobi Securities Exchange. To achieve the above objective, a regression analysis was conducted whereby leverage was regressed against the predictor variables: asset utility, firm size, sales growth and ROA for a period spanning 2008-2011. Data for both the dependent and predictor variables were obtained from the NSE. The data was then subjected to a regression analysis.

The study found that in the model, agency cost (X_{1i}; $X_{2i;}$ $X_{3i;}$ X_{4i}) influenced a sizeable (but less than significant) 28.5 % of variations in firms' leverage variations as depicted by the adjusted R square statistic of 0.2846447 (refer to table 4.3). Table 4.4 further indicated that the regression model was also found to account for only 1.016625226 (30.7 %) out of 3.309590022 variations in leverage; with the bulk of the variation (in leverage) being accounted for by residuals/ other exogenous factors (69.3%). The study, however, found agency costs to be significantly related to leverage.

5.3 Conclusion

The results indicated that agency cost significantly influence leverage level variability of firms' listed in the NSE.

5.4 Limitations of the study

The study was unable to obtain data for all the 60 firms in the population, managing to obtain complete data from 34 firms. This was occasioned mainly by the fact that the business models of some key industries such as banking and insurance firm does not involve some of the study variables. This study also only used four proxies for agency cost whereas other possible agency cost surrogates that the study may not have factor in. Finally, this study is based on 2008-2011 leverage, asset utilization, firm size, sales growth and ROA data for the respective 34 firms and thus interpretations deviating from the findings of this research may occur if period is outside the study period or if regression variables are not study variables.

5.5 Recommendation

This study found that the causal relationship between agency cost and leverage was significant at the 5% level. On the basis of the findings, the study recommended that since agency costs and leverage are significantly related, leverage level variability decisions should take into account implications of cost of agency for listed firms.

5.6 Suggestions for further studies

Further investigation may be done to establish the effect of other agency cost surrogates. In addition, further inquiry may be done into why the agency surrogates exhibited the

specified relationships and coefficient magnitude against leverage. Finally, an investigation may be done to establish the key factors that constitute the residuals in this study.

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APPENDICES

APPENDIX I: FIRMS LISTED AT THE NSE AS AT 2012

	AGRICULTURAL
1	*Eaagads Ltd*
2	*Kapchorua tea Co. Ltd*
3	*kakuzi Ltd.*
4	*Limuru tea Co. Ltd.*
5	*Rea Vipingo plantations Ltd.*
6	*Sasisni Ltd.*
7	*Williamson tea Kenya Ltd.*
	COMMERCIAL AND SERVICES
8	*Express Ltd.*
9	*Kenya Airways Ltd.*
10	*Nation Media Group*
11	*TPS Eastern Africa (Serena) Ltd.*
12	*Scangroup Ltd.*
13	*Hutchings Biemer Ltd.*
14	*Uchumi supermarket Ltd.*

15	*Longhorn Kenya Ltd.*
16	*Standard Group Ltd.*
	TELECOMMUNICATIONS & TECHNOLOGY
17	*AccessKenya Group Ltd.*
18	*Safaricom Ltd.*
	AUTOMOBILES & ACCESSORIES
19	*Car and General (K) Ltd.*
20	*CMC Holdings Ltd.*
21	*Sameer Africa Ltd.*
22	*Marshalls (EA) Ltd.*
	BANKING
23	*Barclays Bank Ltd.*
24	*CFC Stanbic Holdings Ltd.*
25	*Housing Finance Co. Ltd.*
26	*I & M Holdings Ltd*
27	*Kenya Comercial Bank Ltd.*
28	*National Bank of Kenya Ltd.*
29	*NIC Bank Ltd.*

30	*Standard Chartered Bank Ltd.*
31	*Equity Bank Ltd.*
32	*The Cooperative Bank of Kenya Ltd.*
	INSURANCE
34	*Jubilee Holdings Ltd.*
35	*Pan African Insurance Holdings Lotd.*
36	*Kenya Re-Insurance Corporation Ltd.*
37	*CFC Insurance Holdings*
38	*British-American Investments Company (Kenya) Ltd.*
39	*CIC Insurance Group*
	INVESTMENTS
39	*City Trust Ltd.*
40	*Olympia Capital Holdings Ltd.*
41	*Centum Investment Co. Ltd.*
42	*Trans-Century Ltd.*
	MANUFUCTURING & ALLIED
43	*BOC Kenya Ltd.*

44	*British American Tobacco Kenya Ltd.*
45	*Carbacid Investments Ltd.*
46	*East African Breweries Ltd.*
47	*Mumias Sugar Co. Ltd.*
48	*Unga Group Ltd.*
49	*Eveready East Africa Ltd.*
50	*Kenya Orchards Ltd.*
51	*A. Baumann CO Ltd.*
	CONTRUCTION & ALLIED
52	*Athi River Mining*
53	*Bamburi Cement Ltd.*
54	*Crown Berger Ltd.*
55	*E.A. Cables Ltd.*
56	*E. A. Portland Cement Ltd.*
	ENERGY & PETROLEUM
57	*KenolKobil*
58	*Total Kenya Ltd.*
59	*Kenya Power & Lighting Co. Ltd.*

60	*Kengen Ltd.*

APPENDIX III: RESIDUAL OUTPUTS

RESIDUAL OUTPUT		
Observation	***Predicted Leverage***	***Residuals***
1	0.158343058	0.003778522
2	0.172398922	0.001707399
3	0.15299128	0.020896411
4	0.173416323	0.031437029
5	0.113884546	0.004543093
6	0.186197062	-0.061790285
7	0.144765518	-0.045823288
8	0.129723278	-0.026092901
9	0.262099254	0.737900746
10	0.222341516	-0.075454287
11	0.260526147	-0.103484295
12	0.206635913	-0.039857783
13	0.19112998	0.040546753
14	0.20693275	0.015049218
15	0.192216133	0.018750548

16	0.130334568	-0.112442722
17	0.161653017	-0.023977905
18	0.136660224	-0.049035313
19	0.142393738	-0.057057361
20	0.136919565	-0.049082678
21	0.207400248	-0.169965237
22	-0.008698599	0.109209528
23	0.152850788	-0.128546847
24	0.292155755	0.127831937
25	0.292735903	0.158466477
26	0.363198101	0.155903715
27	0.294724674	0.120838913
28	0.504685181	0.110208402
29	0.24460387	0.012302577
30	0.286577415	0.196107803
31	0.168154471	-0.01653363
32	0.18288706	-0.11001761
33	0.141208597	-0.136135982

34	0.168674949	-0.163259
35	0.157331992	-0.138455198
36	0.106405915	-0.100665024
37	0.119794755	-0.103233032
38	0.090316069	-0.076855078
39	0.2510361	-0.170513663
40	0.224612636	-0.166199501
41	0.228772083	-0.185214261
42	0.192555799	0.052340516
43	0.167213805	0.135351678
44	0.15920894	0.218799253
45	0.13998424	0.289980644
46	0.26812083	-0.084904915
47	0.261176608	-0.098928862
48	0.242784302	-0.04980727
49	0.231439208	-0.043278182
50	0.104013632	-0.065342253
51	0.039636047	0.067811823

52	-0.089237354	0.19351005
53	-0.065127833	0.159716852
54	0.034067749	0.102230124
55	0.18108552	-0.049315642
56	0.213490232	-0.110110295
57	0.258658735	-0.10916921
58	0.145894021	-0.005206665
59	0.163854385	-0.023846213
60	0.185428087	-0.020648743
61	0.243669531	-0.08000813
62	0.438738317	-0.129862625
63	0.212342758	0.128442067
64	0.194216411	0.126747452
65	0.217043753	0.087799992
66	0.096825425	0.025293794
67	0.177124986	-0.044727692
68	0.135324488	-0.003499906
69	0.163565083	0.071977612

70	0.1765984	0.059336659
71	0.188895097	0.043695306
72	0.161267066	0.062404365
73	0.232966276	-0.206748506
74	0.210297795	-0.1827982
75	0.196006751	-0.171008983
76	0.179943175	-0.150730009
77	0.174755618	-0.033674209
78	0.196464132	-0.034426748
79	0.203615121	-0.02199104
80	0.035024817	-0.035024817
81	0.371358763	-0.004869265
82	0.340830312	0.000396542
83	0.347317671	-0.109900875
84	0.303766922	-0.118691659
85	0.338644647	0.331140809
86	0.302154666	0.092261322
87	0.316121522	-0.040207211

88	0.295386875	-0.028227544
89	0.162053425	-0.151087001
90	0.186480625	-0.153344584
91	0.174139708	-0.146535245
92	0.171134953	0.000628493
93	-0.064478486	0.126082585
94	0.068851479	-0.056328831
95	0.04563171	-0.029412827
96	0.091922621	-0.069927838
97	0.294981498	-0.171015774
98	0.144777524	-0.011938607
99	0.108102887	-0.021548047
100	0.099555152	0.006305526
101	0.176156446	0.056295139
102	0.13099851	-0.006402158
103	0.131631954	-0.008746862
104	0.069989592	0.029308064
105	0.175411987	-0.077109602

106	0.187722862	0.393422487
107	0.219673622	0.393240413
108	0.134071419	0.07874868
109	0.085800988	0.14943635
110	0.067719323	-0.026306136
111	0.134525274	-0.109139403
112	0.132936358	-0.077702707
113	0.168470448	-0.113293904
114	0.135048433	-0.063275196
115	0.123607343	-0.068174423
116	0.141931064	-0.084517823
117	0.212829687	-0.145995057
118	0.077645032	0.057144557
119	0.093086111	0.063609538
120	0.098992088	0.018835576
121	0.205963475	-0.079518488
122	0.188124394	-0.064730128
123	0.172926681	-0.008542239

124	0.227844862	-0.037712114
125	0.273873411	0.183127647
126	0.256258194	0.203372326
127	0.243333691	0.117327937
128	0.20154299	0.157352295