THE EFFECT OF FINANCIAL LEVERAGE ON PROFITABILTY AND RISK OF FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE.

BY

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DECLARATION

This management research project is my original work and to the best of my knowledge has not been presented for an award of a degree in any other University.

Signed:..... Date: 9.11.2012.....

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This management research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

I dedicate this project work to The Almighty God, my husband Moses Ng'iela, my daughters Effie Norah Akinyi, the late Voilla Ida Atieno and my son Joe Adar Kwach.

ABSTRACT

The objective of the study was to establish the effect of financial leverage on profitability and risk of firms listed at the Nairobi Securities Exchange (NSE) for the periods 1 January 2007 to 31 December 2011. A casual research design was adopted for the study. Population consisted of fifty eight companies out of which thirty companies were sampled. Sample exclude fifteen companies listed under banks and insurance because these companies are regulated and are to meet certain liquidity and / or leverage ratios. Six companies were suspended. Three companies were newly listed and therefore not continuously listed over the period of study. Four companies had information missing for some years required for the computation of the variables.

Secondary data was used and data collected from the thirty companies sampled. Source data included NSE database, Capital Markets Authority (CMA) and Annual Audited Financial Statements of sampled companies. Data was analyzed using Statistical Packages for Social Sciences (SPSS) version 17. Cross-sectional time series fixed model was used with the regression and correlation analysis to determine the nature and the strength of the relationship between the independent and dependent variables.

Based on the regression and correlation analysis, the findings of the first model indicated that 14.2% of variation in profitability was explained by financial leverage and there existed a negative relationship. This means that for every 1% change increase in financial leverage, there is a 14.2% decrease in profitability and vice versa. The second finding showed that 23.5 % variation in risk was explained by financial leverage and there existed a positive relationship. Meaning that as financial leverage increases by 1%, risk increases by 23.5%. The third finding indicated a 3% variation of returns adjusted by risk being explained by financial leverage and there existed a negative relationship. As financial risk increases by 1%, returns adjusted by risk decreases by 3% and vice versa. This indicates an insignificant relationship between returns adjusted by risk and financial leverage.

The findings of the study did not reveal what was expected. The expectation was that financial leverage has a strong positive effect on profitability and risk. The results however are not inclusive but they lay foundation for potential future research and useful recommendations for the policy direction. The study has also highlighted some of the limitations encountered.

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LIST OF ABBREVIATIONS

CAPM	Capital Asset Pricing Model
CMA	Capital Markets Authority
DER	Debt Equity Ratio
DPS	Dividend per Share
EAT	Earnings after Tax
EBIT	Earnings before Interest and Taxes
EBITDA	Earnings before Interest, Tax, Depreciation and Amortization
EBT	Earnings before Tax
EPS	Earnings per Share
GSE	Ghana Stock Exchange
MM	Modigliani and Miller
NSE	Nairobi Securities Exchange
NPV	Net Present Value
ROA	Return on Assets
ROI	Return on Investment
ROE	Return on Equity
WACC	Weighed Average Cost of Capital
SDEV	Standard deviation
SPSS	Statistical Packages for Social Sciences
USA	United States of America

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

A company can finance its investments by debt and or equity. A company may also use preference shares. The rate of interest is fixed irrespective of the company's rate of return on assets. The company has a legal binding to pay interest on debt. The rate of preference dividend is also fixed. The common shareholders are entitled to residual income, thus earning after interest, taxes and preference dividend. In business, leverage refers to the use of a relatively small investment or a small amount of debt to achieve greater profits. There are two types of leverage: operating and financial. Operating leverage refers to the use of fixed operating costs in the operation of a firm to magnify operating profits. Financial leverage results from the use of fixed-charges sources of funds, such as debt and preference capital in the capital structure. Financial leverage measures a firm's exposure to financial risk and results from the presence of fixed financial charges in the firm's income stream. These fixed charges do not vary with the firm's earnings before interest and taxes (EBIT) and they must be paid regardless of the amount of EBIT. Although both types of leverage involve a certain amount of risk, they can bring about significant benefits with little investment when successfully implemented (Pandey 2010). Leverage of a company is measured by leverage ratios, which indicate the mix of funds provided by owners and lenders. These ratios measure the long-term financial strength of a company. These ratios are total debt ratio, debt –equity ratio and times interest earned ratio. For the purpose of the study, the researcher used financial leverage as the parameter and Debt-equity ratio as a measure of financial leverage.

1.1.1 Risk

Almost any human endeavor carries some risk, but some are much more risky than others. There are several definitions of risk. Risk is defined as the potential that a chosen action or activity will lead to a loss. Risk can be seen as relating to the probability of uncertain future events. However, in finance, Farlex Financial Dictionary defines risk as the uncertainty associated with investment. That is, risk is the possibility that the actual return on an investment will be different from its expected return. A vitally important

concept in finance is the idea that an investment that carries a higher risk has the potential of a higher return. Some of the types of risks are-;

Default Risk is the uncertainty associated with the payment of financial obligations when they come due. Interest Rate Risk is the uncertainty associated with the effects of changes in market interest rates. Price Risk is the uncertainty associated with potential changes in the price of an asset caused by changes in interest rate levels and rates of return in the economy. Liquidity risk is the uncertainty associated with the ability to sell an asset on short notice without loss of value. A highly liquid asset can be sold for fair value on short notice. Financial risk is the uncertainty brought about by the choice of a firm's financing methods and is reflected in the variability of earnings before taxes. This risk is often discussed within the context of the Capital Structure. Market risk is defined within the context of the Capital Asset Pricing Model (CAPM), the economy wide uncertainty that all assets are exposed to and cannot be diversified away. Business risk is the uncertainty associated with a business firm's operating environment and reflected in the variability of EBIT. Risk as defined above is the variability in rates of return, which is the extent of the deviations or dispersion of individual rates of return from the average rate of return. There two measures of this dispersion; variance and standard deviation. Standard deviation is the square root of variance. For the purpose of the study, the researcher used financial risk as the parameter measured by the standard deviation (Anisha, 2010).

1.1.2 Profitability

In accounting, profit is defined as the difference between the purchase price and the costs of bringing to market whatever it is that is accounted as an enterprise (whether by harvest, extraction, manufacture, or purchase) in terms of the component costs of delivered goods and/or services and any operating or other expenses .In a business context, profitability is basically an index that measures the relationship between earnings or profits and the investment made to obtain such benefits. Obviously, the definition of profitability in this measure will indicate whether a particular item or product is

generating profits or losses, then help develop strategies to be implemented to exploit this valuable information (Viano, 2010).

Profit is the difference between revenue and expenses over a period of time. Profit is the ultimate output of a company and a firm has no future if it fails to make sufficient profit. Finance manager should therefore continuously evaluate the efficiency of the company in terms of profits, which is done by calculating profitability ratios. These ratios can be used to compare similar firms across the same industry and /or to compare industries or sectors in aggregation. There are many different ways to measure profitability of a firm, but all measures should be taken in aggregation. Line items such as revenue from operations, operating income and net income from operations can be used. Furthermore, the analyst or investor may wish to look deeper into financial statements and seek out margin growth rates or any declining debt (Pandey, 2010). The literature employs a number of different measures of firm's performance to test various hypotheses, which includes financial ratios from balance sheet and income statements (Demsetz and Lehn, 1985). Profitability ratios include gross profit margin, net profit margin, return on equity (ROE) and return on assets (ROA).

In this study ROE was used as measure of profitability. ROE measure the ability of a firm to generate income for its owners and is calculated as

$$ROE = \frac{\text{Earnings after taxes and preference dividend}}{\text{Shareholders' Equity}}$$

1.2 Statement of the problem

As companies' expand and as a result of increases operations accompanied costs, this calls for more funding. Financing a business through debt is considered cheaper than using equity because it is tax deductible (Pandey, 2010). Some reasons relating to this includes tax shield benefits associated with debt financing, information costs relating to debt financing are much lower than those of issuing new equity.

Myers and Mujluf (1984) indicated that equity financing becomes necessary when leverage is high enough to make debt expensive due to financial distress costs. Since managers' posse better information about their shares than outside investors, they will

only issue shares when they know that they are fairly priced and not when they are undervalued. As stated above, we will find firms using more debt than equity in their financing strategy. Theoretical relationship between capital structure (leverage) and profitability and that of risk of a firm is that of linear positive relationship in that firms with relatively high profits tend to be highly levered and a highly levered firm is considered to be risky.

Past studies have shown both the positive and negative effect of leverage on the firm profitability. Linking this issue with the Agency theory (Jensen, 1986), the conflict of interest between owners and managers results in significant agency cost and to resolve this problem owners can increase the level of debt and reduce the amount of free cash flows available to managers, hence reducing agency cost thus leverage exerts a positive impact on the firm profitability (Mork, 2007). In the absence of agency cost, debt also has an effect on the firm performance because lenders continuously monitor the firm performance to reduce their risk and there is a stress on the management to improve their performance to prevent liquidation, management becomes efficient and invests free cash in positive Net Present Value (NPV) projects (Grossman and Hart, 1982). Eriotis, Frangouli and Neokosmides (2002) found negative relationship between leverage and profitability. This negative relationship is due to the reason that highly leveraged firms bear high cost of borrowed capital than its returns and hence less profitable. (Samiloglu and Demirgunes, 2008) found leverage negatively affecting firm profitability reason being that highly leveraged firms have insufficient power to compete that leads to decrease in their profitability.

In Kenya, some studies have been done to establish the relationship between capital structure and financial performance of firms listed at the NSE. A study done by Nguni (2007) to investigate the relationship between gearing and profitability of firms listed at the NSE revealed an insignificant negative relation between gearing and profitability ratios. The study of Arimi (2010) on the relationship between capital structure and financial performance of firms listed under Industrial and Allied at the NSE showed a negative relationship between debt-equity ratio and ROE. Opanga (2011), in his study on

the relationship between capital structure and value of firms listed at the NSE fairly concluded a casual relationship between capital structure and value of the firm, as all factors that influences capital structure choice indicated varying relationships with the value of the firm.

Most studies, especially those done in Kenya have considered two variables; capital structure and profitability, capital structure and financial performance, capital structure and value of firms listed at the NSE. The studies have explored the relationships between capital structure and these variables in such a way that only two variables are considered at a time. This study has included a third variable, which is risk. Risk brings about the element of uncertainty in the returns. This study tested the relationship of financial leverage first to profitability and second to risk of firms listed at the NSE.

1.3 Objective of the study

The objective of this study was to establish the effect of financial leverage on risk and profitability of firms listed at the NSE for the periods 1 January 2007 to 31 December 2011.

1.4 Significance of the Study

This study will be of importance to the following groups;

The management of the firms listed at the NSE

The management of the firms listed at the NSE will benefit from the study in the sense that they will get a better understanding how financial leverage can affect the profitability and how much risk are involved in at any time debt instruments are used as source of financing.

Investors

Investors generally invest in shares of a company in anticipation of returns in the form of dividends. They claim the residual after the debt holders and preference stakeholders have been paid. In such a case the study will be of importance to them in that they will be

able to know whether their investments are safe at any time when debt is issued or when investments are threatened.

Future Researchers and Finance Practitioners

The study will make significant contribution to future researchers to advance or modify existing theories. The findings will provide a learning base for finance practitioners. The findings may also be used as a source of reference by other researchers. In addition, academic researchers may need to study findings to stimulate further research in this area.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section forms the second part of the study of literature review. It reviews theoretical and empirical literature of the study. First the chapter reviews theoretical foundation of capital structure, and then the relationship between capital structure and financial performance.

2.2 Theoretical review

2.2.1 The Irrelevance Theory of Capital Structure

In 1958, Modigliani and Miller wrote a seminal paper on the irrelevance of capital structure. This is Modigliani and Miller (MM) Theory 1958. Modigliani and Miller argue that in the absence of taxes and transaction costs, the choice of any capital structure is irrelevant to the market value of a firm, thus financial leverage does not affect the value of the firm. However the theory was based on the assumptions of perfect capital markets, homogenous expectations, no taxes and no transactions costs. This theory state that no capital structure mix is better than another and that the increased expected rate of return generated by debt financing is exactly offset by the risk incurred regardless of the financing mix chosen. However, the tax-free perfect market does not hold in the real world. Modigliani and Miller reviewed their earlier position by incorporating corporate taxes). Modigliani and Miller (1963) with taxes was an improvement of Modigliani and Miller (1958) previous work. The assumption of zero tax rate was seen as serous limiting factor and hence the need to come up with a model that incorporate taxes. Thus in this model, Modigliani and Miller urged that the value of the firm will increase with leverage because interest is a tax deductible expense, hence there exist an extra benefit to a levered firm.

In 1977 Miller made a significant contribution both personal and corporate taxes. The model suggests that in market equilibrium, corporation tax advantages are canceled out by the effects of personal taxes hence capital structure is irrelevance.

Miller noted further that with the introduction of personal taxes, the usable income available to investors reduces when dividend are paid, thus reducing the value of unlevered firm.

2.2.2 Trade-Off Theory

Trade-Off theory (DeAngelo and Masulis, 1980) depicts that companies obtain their debt level such that marginal tax advantage of additional borrowing are offset by the increase in the cost of financial distress. Interest payments are tax-deductible expense and thus raising more debt increase tax benefit. MM Theory of 1963, states that a firm that pays taxes receives a partially offsetting interest tax-shield in the form of lower taxes paid, therefore propose, that firms should use as much debt capital as possible in order to maximize their value. Titman 1984 also asserts that although debt financing gives the firm the tax shield advantage, there is a limit of which excess use of debt may lead to bankruptcy. According to this theory, a trade off of the costs and benefits of borrowing determines a firm's optimal debt ratio. This implies that an optimal capital structure is a result of balancing the value of interest tax shields against the various costs of bankruptcy and financial distress.

Trade-Off Theory suggests that larger firms are expected to have a higher debt capacity and therefore more highly geared. This is so because large companies are more stable or have less volatile cash flows that may be able to exploit the economies of scale in issuing securities (Gaud, Jani, Hoesli and Bender, 2005). The larger a firm is, the more information is expected to be available about it, which reduces the level of information asymmetries in the market, making it possible to obtain financial resources from lenders. Because of information asymmetries, smaller firms are also likely to face higher costs for obtaining external funds. However (Titman and Wessels, 1988) found a contrary negative relationship between debt ratios and firm size. They argued that small companies, due to their limited access to the equity capital market, tend to rely heavily on bank loans for their funding requirements.

The Trade-Off Theory also suggests a positive relationship between asset tangibility and capital structure. Firms with a relatively large portion of tangible assets also have higher liquidation value, which in turn reduce bankruptcy costs. Myers and Majluf (1984) suggest that managers may reduce the cost of debt by issuing secured debt, therefore they expect that firms with assets that can be collaterized to use more debt.

The Trade-Off Theory predicts that profitable companies will employ more debt since they are more likely to have a high tax burden and low bankruptcy risk.

2.2.3 Pecking Order Theory

The Pecking Order Theory (Myers, 1984) states that firms have a preference of using internal sources of financing first, then debt and finally external equity obtained by issuance of stocks. The preferences are attributed to the cost gap between internal and external funds due to asymmetric information and agency problems. The Pecking Order Theory suggests that there is no well-defined optimal capital structure; instead the debt ratio is as a result of the hierarchical financing overtime (Myers, 1984).

Pecking Order Theory by Myers (1984) predict a negative relationship between profitability and debt on the basis that successful companies do not need to depend so much on external funding. They can, instead, prefer to finance with internal funds accumulated from past profits. The results of Gaud *et al.* (2005) supported the Pecking Order Theory that high profitable firms use internal financing, while low profit firms use more debt because their internal funds are not adequate. In literature, various proxies such as ratios of operating income over sales, operating income over total assets, the return on assets, and the return on equity have been used as indicators to measure profitability.

A study by Munene (2006) in Kenya on the impact of profitability on capital structure of companies listed at the NSE for the periods 1999 to 2004. Forty-eight firms were studied and he found a weak positive relationship between capital structure and profitability.

Pecking Order Theory suggests that firms issuing debt send a positive signal about their future prospects. This shows that the company has more investment opportunities and growth prospects that it can handle with the internally generated funds. This aspect of signaling is consistent with shareholder wealth maximization. A study done by Frank and Goyal (2003) tested the Pecking Order Theory for the period 1971 to 1998. They found that, in contrast to pecking Order Theory, internal financing is not sufficient to cover investment spending on average, external financing is heavily used and debt financing does not dominate equity financing.

2.2.4 Portfolio Theory

Henry Markowitz developed Portfolio Theory in 1958. The theory provides normative approach to investors' decision to invest. It is a theory of finance which attempts to maximize portfolio expected return for a given amount of portfolio risk, or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets. A portfolio is a combination of individual assets or securities. The theory states that when securities are combined into portfolios, risk is reduced. This is the concept of risk diversification, which reduces risk when the returns of the securities in a portfolio do not vary in the same direction. Risk is divided into systematic risk and unsystematic risk. Unsystematic risk is that risk that is unique to that particular security and can be totally reduced through diversification. Systematic risk also known as market risk arises on account of the economy-wide uncertainties. Market risk cannot be reduced through diversification. Portfolio theory is based on the assumption that investors are risk averse implying that the required rate of return increases with an increase in risk. The other assumption is that the returns of the securities are normally distributed.

2.3 Financial leverage, Profitability and Risk

2.3.1 Financial Leverage

Leverage and capital structure are closely related concepts linked to cost of capital and therefore capital budgeting decisions. Operating leverage is concerned with the relationship between the firm's sales revenue and its EBIT. Operating leverage is defined as the ability to use fixed operating costs to magnify the effects of changes in sales on

EBIT. Financial leverage is concerned with the relationship between the firm's EBIT and the earnings available to for common stockholders. Total leverage is concerned with the relationship between the firm's sales revenue and the earnings available for common stockholders. This combined effect, or total leverage, can be defined as the firm's ability to use fixed costs, both operating and financial, to magnify the effect of changes in sales on the firm's earnings per share (EPS). In general, the greater the firm's operating leverage the higher its business risk. The firm's capital structure directly affects its financial risk is the risk resulting from the use of financial leverage.

Capital structure policy involves a strategic trade-off between risk and expected return; the target capital structure policy must seek a prudent and informed balance between risk and return (Melinda and Cristina, 2009).

2.3.2 Profitability

Profitability is the return earned on the total assets of the company. Every firm aims to dig up maximum profits out of the invested capital pool. The success of the company usually depends on its returns earned. Profit is defined as the excess of the amount of sales and other income after deducted by all costs. Profit is the term used as the net income performed by the company. Profit can be classified into several categories such as: sales or revenues used to show the income gained before it is subtracted by costs; Earnings before interest, tax, depreciation, and amortization (EBITDA) that shows the operational income before it is deducted by other non-operational costs; EBIT, one of the commonly used to reflect the operational income instead of EBITDA. EBIT is usually used by most financial companies to measure the ability of a company to pay the liabilities; Earning before tax (EBT), that is usually used to compare with EBIT to measure the amount of interest cost contributed to the net income; Net income, that is the bottom line of income after it is deducted by all costs that enjoyed by the equity holders.

There are different ways of analyzing net income, and it depends on the ratios used. For example, in calculating the profitability ratio, net income is commonly used to measure the performance of the company in using its assets, equity, investment, and to compare with the sales that the company can achieve. One of the ways to measure the profit

enjoyed by shareholders is by using ROE ratio. The reason is that ROE ratio is comparable between one company to the other and can indicate the profitability of one industry with the other. Return on equity (ROE) ratio indicates the profitability of the company. ROE measures the rate of return on common stockholder's investment.
ROE =Net Income divide by *Common Equity.* (Singapurwoko and El-Wahid, 2011).

2.3.3 Risk

Risk refers to the possibility that the actual outcome of an investment will differ from its expected outcome. Risk consists of two components, systematic risks and unsystematic risks. The systematic risk is caused by the factors external to a particular company and uncontrollable by the company. The systematic risk affects the market as a whole. The economic conditions, political situations, sociological changes are some of the external factors that affect the market. This type of risk cannot be reduced through diversification. In the case of unsystematic risk the factors are specific, unique and relate to that particular industry or company of which the risk can be diversified.

Business risk involves a company's strategic decisions other than finance. Business risk measures the dangers of operational choices, such as responses to competition from other firms or entering into a new product line or business sector. Measures of internal efficiency, such as whether production is meeting desired quotas, is a key determinant of business risk. By contrast, financial risk examines how a company's finances are structured. Specifically, financial risk involves the use of corporate debt and stock issuance; financial risk is therefore risk that is shifted mostly to shareholders who buy a company's debt or stocks. Both business risk and financial risk have elements of leverage. Demand for a company's products may weaken, for example. To gain high levels of operating leverage, a company will want to work with fixed costs, or costs that are unlikely to fluctuate much. Business risks like falling demand can be mitigated somewhat by this ability to predict costs, especially in the long term. Financial leverage, by comparison, is measured by the firm's mix of debt, such as corporate bonds and stock. Companies that have a relatively high percentage of debt are referred to as being

financially highly leveraged. Other types or risk include default risk, interest rate risk liquidity risk (Anisha, 2010).

2.3.4 Expected theoretical relationship between Financial Leverage and profitability, and that of Risk

Firms' large interest payments level up the volatility of net cash flows to stockholders. A conventional hypothesis on financial leverage is that a higher leverage implies a higher stock risks and consequently a higher stock returns (Penman and Richardson, 2007). However empirical evidences are mixed. (Schewert, 1989) in his study found that at market level, the association between leverage and volatility of stock returns is weak. (Fama and French, 1992) found a positive association between leverage and stock returns at firm's level.

Alaghi (2011) concluded in his study that higher financial leverage increases the firm's risk profile. Thus higher financial leverage increases the beta of the equity of a firm, reason being higher leverage increases the variability of firms' income. However a study done by (Murphy, 1968) concluded that the proportion of leverage in a company capitalization proved to be generally unrelated to its relative return on common equity. Companies with no or little leverage did as well in these respects as firms with higher proportions of leverage.

2.4 Review of Empirical Studies on financial leverage, risk and profitability

Bhatti and Majeed (2010) examined the effect of leverage on stock returns and systematic risk in the corporate sector of Pakistan. This study determined the relation between leverage and systematic risk. The data was collected from eight industries that are cotton, engineering, chemicals, sugar & allied, cement Fuel Energy transport & Communications.

Both Primary and Secondary data were used for data collection. Primary data included face-to-face interviews with the high profile people of the selected industries in Pakistan. Secondary data was collected from Karachi stock exchange which were Annual reports,

Finance books, Daily trading documents, State Bank of general Index of Share prices, Articles from Pakistan Development Review, research articles from various journals via online. Data collected was quantified and used as on experimental bases. After data collection researchers analyzed data by using formulas of return, standard deviation, and leverage and applied all these formulas in Microsoft Excel.

The finding of the study was that high level of leverage creating a high level of systematic risk, leading to high volatility in the stock.

The results of a study done by Abu-Tapanjeh (2006) indicated a weak relationship existed between some of the independent variable and profitability except for debt ratio. The study was done in Jordan and the objective was to examine the relationship of firm structure and profitability, taking into consideration major characteristics such as firm size, firm age, debt ratio and ownership structure. Sample of the study was 48 Jordanian industrial companies for a period from 1995 to 2004, listed in Amman Stock Exchange. The study employed two model specifications in order to test the hypotheses, using the profitability measurement of Rate of ROE and Rate of Return on Investment (ROI). He found that firm structure emerged as an important factor affecting profitability.

Amjed (2007) investigated the relationship between capital structure and the financial performance of 100 textile firms of Pakistan listed on the Karachi Stock Exchange for the period 1999–2004. Linear regression model was used to analyze the data. He found that a significant positive relationship exists between the short-term debt and profitability and statistically significant negative relationship between long-term debt and profitability. The results are partially consistent with the previous studies as the negative relationship between long-term debt and the firm performance tends to sport the dominant Pecking Order Theory. The association of short-term debt and the financial performance in contrast attests the Static Trade-Off Theory. Total debt as a whole has no association with the firm's performance because of the inherited different characteristics of short-term debt and long-term debt.

Abor (2005), in his study on the effect of capital structure on profitability of 22 firms listed on the Ghana Stock Exchange (GSE).Regression analysis was used in the estimation of functions relating the ROE with measures of capital structure. The results reveal a significantly positive relation between the ratio of short-term debt to total assets and ROE. However, a negative relationship between the ratio of long-term debt to total assets and ROE was found. With regard to the relationship between total debt and return rates, the results show a significantly positive association between the ratio of total debt to total assets and return on equity.

Yoon and Jang (2005) did a study to investigate the effect of financial leverage on profitability and risk of restaurant firms in United States of America (USA) for the years1998 to 2003. Secondary date was collected from the mergent online database and yahoo Finance. The findings suggested that at least during the test period firm size had a more dominant effect on ROE of restaurant firms than debt use, larger firms earning significantly higher equity returns. Results also suggested that regardless of having lower financial leverage, smaller restaurant firms were significantly more risky than larger firms.

According to Munene (2006), there was a weak positive relationship between profitability of a firm and sources of financing and therefore more variables could contribute to the firms' structure and that profitability alone does not exclusively account for the variability in capital structure. He did this study on the on 48 companies listed on the NSE in Kenya for the periods 1999 to 2004.The objective was to ascertain whether there is a relationship between profitability of a firm and sources of financing. Quantitative secondary data was collected and regression analysis was used to analyze the data.

Nguni (2007), observed an insignificant negative relation between gearing and profitability ratios. The objective of the study was to investigate the relationship between gearing and profitability of firms listed at the NSE. The target population was all the 54 companies listed at the NSE. The sample of the study consisted of 36 companies, which

were consistently listed at the NSE over the six-year period of 2000 to 2006. Secondary data was collected from annual financial statements of the target firms. The information was obtained from NSE, Capital Markets Authority (CMA) and company registry. Simple regression was done at market level with the nature and strength of the relationship determined by correlation of coefficient and the coefficient of determinant. Kanyuru (2010) examined the relationship between capital structure and financial performance of 32 non-financial companies listed at the NSE for the period 2000 to 2009 based on the secondary data. First Pearson Product-Moment Correlation and regression analysis models were used for data analysis. He concluded that as the firms performance improve, the firm tent to reduce debt financing and switch to equity financing.

Arimi (2010), in his study to establish the relationship between capital structure and financial performance of firms listed under Industrial & Allied at the NSE. Sample included 15 companies that were continuously listed for 5 years between 2004 to 2008. Secondary date was applied and data relating to research questions were obtained from the audited financial statements of respective companies. Yearly debt/equity ratio and return on Equity was computed for companies under the study. Data was analyzed using Statistical Packages for Social Sciences (SPSS) version 17. The findings were based on the regression analysis revealing a negative relationship between debt/equity ratio and Return on equity and thus the conclusion of the study was that companies were not willing to source funds externally when the ROE was on the increase.

Opanga (2011), investigated on the relationship between capital structure and the value of the firms listed at the NSE for the period 2005 to 2010. The study used debt/equity ratio as proxy for capital structure and selected financial ratios to represent the attributes of firm's value in investigating the relationship. Attributes used were profit ratio, dividend payout ratio, assets & operating efficiency, growth rate, liquidity ration and business risk. The study employed secondary data, which were collected from published annual financial reports and authorized NSE data. Data analysis was done using cross-sectional regression and time series. Correlation analysis was used to describe the degree to which variables were related. One of the findings of the study was that the value of the firm is

highly positively correlated with Dividend per share (DPS). Another finding was that the value of the firm as measured by share price was inversely related to sales growth.

2.5 Optimal Capital Structure

According to Solomon and Weston (1963), there exist an optimal capital structure, which is a combination of debt, and equity that maximizes the total value of the firm and minimizes the weighted average cost of capital (WACC). The WACC decreases only with a reasonable limit of leverage and after reaching a minimum level, it starts increasing with the level of leverage.

2.6 Conclusion

There is a lot of literature on capital structure, and that the capital structure remains elusive in prior studies due to a number of factors influencing capital decisions. In determining the method in which to raise capital, the firms need to consider the following; leverage, liquidity, profitability, dividends, market price, firm size, sales growth and variability.

Management of a company should set a target capital structure upon which subsequent financing decision should be made. Every time when funds have to be procured, the financial manger weighs the pros and cons of various sources of finance and selects the most advantages sources keeping in view the target capital structure, thus target capital structure should be used as guide towards an ideal capital structure that minimize the WACC and maximizes the value of the firm. It is evident that the theoretical reviews and empirical studies have yielded different results concerning the relationship between capital structure (Leverage) and financial performance and or profitability.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section outlines the general methodology used to conduct the study. It specifies the research design, target population, sample, data collection method and instruments, data analysis and interpretation.

3.2 Research design

Churchill (1996), defines research design as simply framework or plan for a study used as guide in collecting and analyzing data. It is a blueprint that follows in completing a study. The casual research design was adopted for this study. Casual research explores the effect of one variable of another. The independent variable is the presumed cause and the dependent variable is the potential effect. The key variables of the study are leverage, risk and profitability. In this case risks as proxy by standard deviation and profitability ratios are the dependent variables while capital structure/ leverage ratio as proxy by Debt-Equity ratio is the independent variable.

3.3 Population

The population of the study consisted of all the firms quoted at the NSE. At the time of the study, there were 58 companies quoted at the NSE. The study was conducted over five-year period covering years 1 January 2007 to 31 December 2011. This period was chosen because data was the most current and readily available from NSE records. However for the purposes of data analysis, the study included year 2006 as well. This was to enable the calculations of standard deviation for year 2007, which was a proxy of risk.

3.4 Sample

The sample size consisted of the companies that were continuously listed at the NSE for the period 1 January 2007 to 31 December 2011. Of the population fifteen companies listed under banks and insurance were excluded from the study because these companies are regulated and are to meet certain liquidity and /or leverage ratios, five companies are

suspended and three companies are not continuously listed, four companies did not have the full data that was required for the calculations of the variables of the study. Therefore thirty companies formed sample of the study.

3.5 Data collection methods

A secondary data collection method was used. Data was collected from annual audited financial reports and statements of respective companies sampled. Since all the quoted companies file their annual audited financial statements with NSE, the data was also obtained from NSE database, and a comparison of the two done to enhance reliability of the information. The financial reports for five years were analyzed for the purpose of meeting the research objective. Financial statistics collected from annual Financial Statements and Reports included total shareholders' equity, earnings after tax (EAT), long-term liabilities, and short-term liabilities. The secondary data collected was then used to compute Debt/Equity ratio (DER), ROE and then the standard deviation as proxy for risk, for the five years 2007 to 2011. In the study, book values were used for the computation of financial leverage, profitability and risk.

3.6 Data Analysis

Data analysis tools of SPSS version 17 was used to analyze the data. The study used cross-sectional time series fixed effect model to analyze the effect of financial leverage on profitability and risk of firms listed at the NSE. Cross-sectional time series of 30 and 5.Multiple regression analysis was used as well to determine the correlation between the variables. The nature and strength of the relationship was determined by the correlation of coefficient and the coefficient of determination. Three regression models were used separately: one tested the effect of financial leverage on profitability of firms. The second one tested the effect of financial leverage on risk of firms and the third tested the effect of financial leverage on returns adjusted by risk of firms.

Equation 1: $ROE_{i,t} = \beta 0 + \beta 1 DER_{it} + e_{it}$

Equation 2: $SDEV_{i,t} = \beta 2 + \beta 3 DER_{it} + e_{it}$

Equation 3: $\frac{ROE_{i,t}}{SDEV_{i,t}} = \beta 4 + \beta 5 DER_{it} + e_{it}$

Where $ROE_{i,t}$ is the Return on Equity of Company i at time *t*

$SDEV_{i,t}$ is the Standard Deviation on ROE of Company *i* at time *t*

$DER_{i,t}$ is the Debt-Equity Ratio of Company *i* at time *t*

$\beta 0$, $\beta 2$, $\beta 4$ are constants of the regression equation.

$\beta 1$, $\beta 3$, $\beta 5$ are coefficients of the independent variable DER.

e_{it} is the error term.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATIONS

4.1 Introduction

This section represents the data presentation, analysis and findings of the study. The chapter commences with descriptive statistics which gives the exploration of the variables used in the analysis. Descriptive statistics, correlation and regression analysis were used to assess the effect of, strength and nature of the relationship between the variables used in the study.

4.1.2 Variables used in the study and measurements

The variables used in the study were financial leverage, financial risk and profitability. Financial leverage was measured by DER, profitability measured by ROE; financial risk measured by SDEV of returns and returns adjusted by risk was measured by ROE divided by SDEV. To calculate DER, ROE, SDEV of returns (ROE) and returns adjusted by risk, the following financial statistics were used as presented in Table 4.1

Table 4.1 Variables and measurements

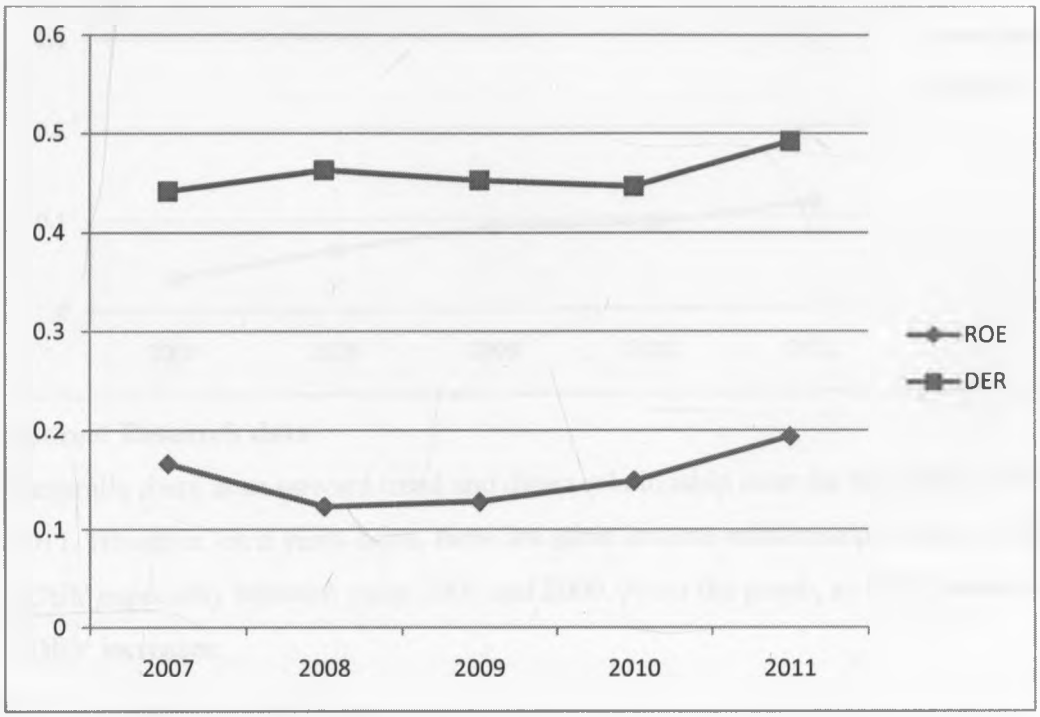
Variables	Explanation
Earnings After Tax (EAT)	This is the firms net earnings after taxation for the year
Short term loans	These are firms loans which fall due within one year
Long term loans	These are firms loans which fall due after one year period
Debt	This is the sum of long term and short term loans
Shareholders Equity/Funds	This includes share capital, capital reserves, revaluation reserves
ROE	This was calculated by dividing EAT by Shareholders Equity
DER	This was calculated as debt divide Shareholders Equity
SDEV	This was calculated as the square root of the sum of the deviations around the mean of ROE squared
ROE/SDEV	This was calculated as ROE divide by SDEV

4.2 Data presentations

4.2.1. ROE and DER

Figure 4.1 shows the graphical presentation of ROE and DER for the companies sampled for five years. Yearly averages of ROE and DER were computed and used.

Figure 4.1: Graphical presentation of the relationship between ROE and DER



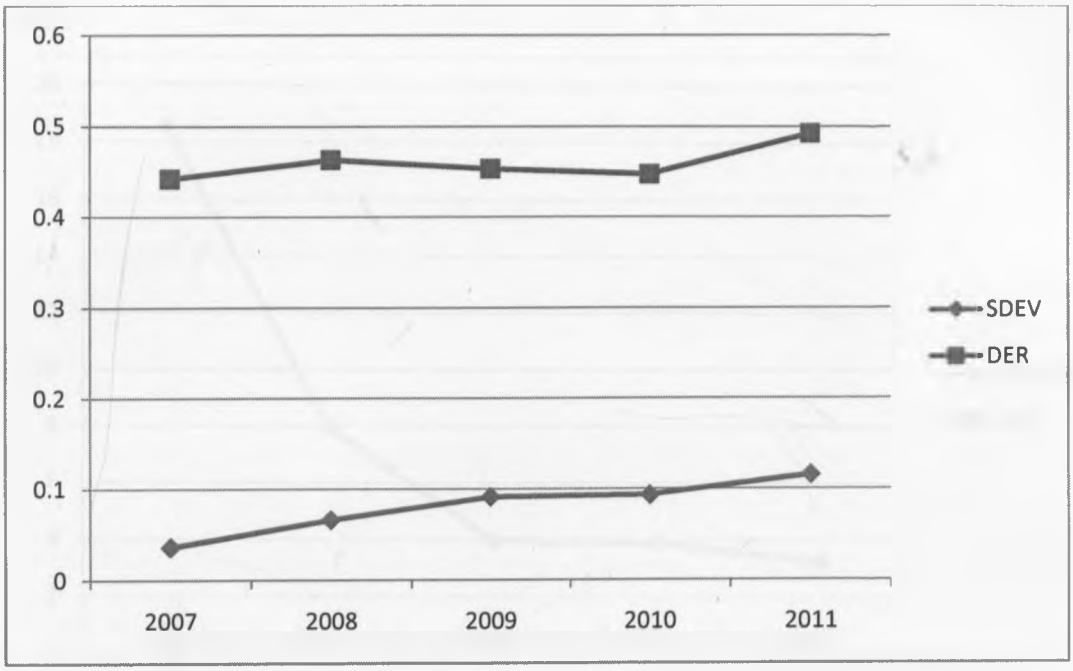
Source: Research data

From the graph, it clearly shows that between years 2007 and 2010, there is an inverse relationship between DER and ROE. This means that as DER increases, ROE decreases. In 2011, there is a direct relationship between DER and ROE meaning as DER increases, ROE increases as well.

4.2.2 SDEV and DER

Figure 4.2 shows the graphical presentation of SDEV and DER for the companies sampled for five years. Yearly averages of SDEV and DER were computed and used.

Figure 4.2: Graphical presentation of the relationship between SDEV and DER



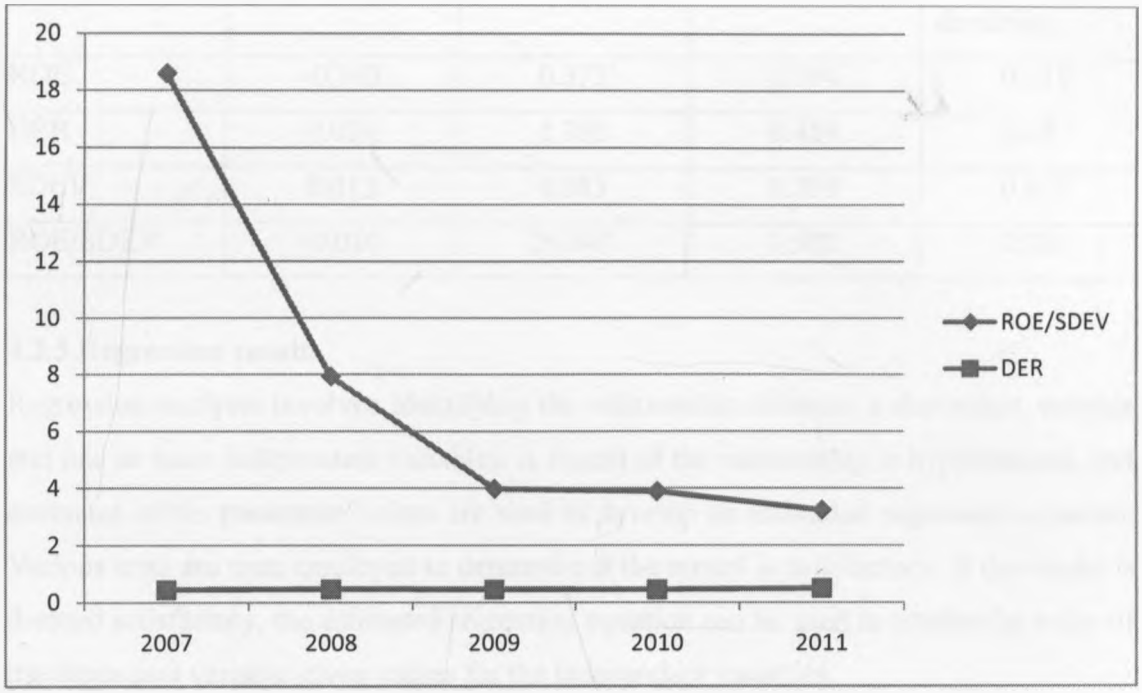
Source: Research data

Generally there is an upward trend and direct relationship over the five years 2007 to 2011. However, on a yealy basis, there are some inverse relationships between DER and SDEV especially between years 2008 and 2009. From the graph, as DER increases, SDEV increases.

4.2.3 Returns adjusted by risk and financial leverage

Figure 4.3 shows the graphical presentation of ROE/SDEV and DER for the companies sampled for five years. Yearly averages of ROE/SDEV and DER were computed and used.

Figure 4.3: Graphical presentation of the relationship between ROE/SDEV and DER



Source: Research data

Generally, there is no relationship between ROE/SDEV and DER. DER is somehow constant for the five year period while there is a rapid decrease in ROE/SDEV from years 2007 to 2009, henceforth on a gradual basis between the years 2009 and 2011.

4.2.4 Descriptive statistics of variables

Secondary data collection method was used for the study. Data collected were used to calculate the variables used in the analysis. Table 4.2 gives the summary of descriptive statistics of the dependent and independent variables of the sample. All variables used in the study were absolute figures.

Table 4.2 Descriptive statistics of variables

	Minimum	Maximum	Mean	Standard deviation
ROE	-0.163	0.372	0.194	0.119
DER	0.000	1.788	0.459	0.487
SDEV	0.015	0.383	0.799	0.079
ROE/SDEV	-0.010	26.640	7.522	7.204

4.2.5 Regression results

Regression analysis involves identifying the relationship between a dependent variable and one or more independent variables. A model of the relationship is hypothesized, and estimates of the parameter values are used to develop an estimated regression equation. Various tests are then employed to determine if the model is satisfactory. If the model is deemed satisfactory, the estimated regression equation can be used to predict the value of the dependent variable given values for the independent variables.

Table 4.3: Regression results of profitability and financial leverage

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.414[a]	.171	.142	.110168

a. Predictors: (Constant), Mean DER

Table 4.4: Regression results of co-efficient of profitability and financial leverage

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.198	.028		7.124	.000
	Mean DER	-.101	.042	-.414	-2.407	.023

a. Dependent Variable: Mean ROE

From the tables 4.3 and 4.4, DER explains 14.2% variations in ROE. 85.8% variation in ROE is explained the other factors other than DER. This means that there is a weak

relationship between ROE and DER. DER and ROE are inversely related thus as DER increases, ROE decreases and vice vasa.

Table 4.5: Regression results of risk and financial leverage

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.511[a]	.261	.235	.069077

a. Predictors: (Constant), Mean DER

Table 4.6: Regression results co-efficient of risk and financial leverage

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.042	.017		2.400	.023
	Mean DER	.083	.026	.511	3.146	.004

a. Dependent Variable: Mean SDEV

The tables 4.5 and 4.6 above show that 23.5% variations in SDEV is explained by DER, while other factors explain 74.5%. There is also a weak relationship between DER and SDEV. There is a positive relationship between DER and SDEV meaning that as DER increases SDEV increases as well.

Table 4.7: Regression results of returns adjusted by risk and financial leverage

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.074[a]	.006	-.030	7.310759

a. Predictors: (Constant), Mean DER

Table 4.8: Regression results of co-efficient of returns adjusted by risk and financial leverage

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.027	1.849		4.342	.000
	Mean DER	-1.099	2.785	-.074	-.394	.696

a. Dependent Variable: Mean ROE/SDEV

The tables 4.7 and 4.8 above show that DER explains only 3% of variations in ROE/SDEV. This is an insignificant relationship between DER and SDEV. Other factors explain 97% variations in ROE/SDEV. There is an inverse relationship between DER and ROE/SDEV.

4.2.6 Correlation analysis

Correlation analysis, likewise regression analysis deals with relationships among variables. The correlation coefficient is a measure of linear association between two variables. Values of the correlation coefficient are always between -1 and +1. The sign of the correlation coefficient (+, -) defines the direction of the relationship, either positive or negative. A positive correlation coefficient means that as the value of one variable increases, the value of the other variable increases; as one decreases the other decreases. A negative correlation coefficient indicates that as one variable increases, the other decreases, and vice-versa. A correlation coefficient of zero indicates that there is no linear relationship between the two variables; however the absolute value of the correlation coefficient measures the strength of the relationship.

Table 4.9 below represents the correlation matrix of the variables used. The variables used; ROE, DER, SDEV and ROE/SDEV. From the table, there is a negative a negative relationship between the following; DER and ROE, SDEV and ROE, ROE/SDEV and DER and lastly between ROE/SDEV and SDEV.

Table 4.9 Correlation matrix

	ROE	DER	SDEV	ROE/SDEV
ROE	1			
DER	-0.466	1		
SDEV	-0.414	0.511	1	
ROE/SDEV	0.511	-0.454	-0.074	1

4.3 Summary of interpretation and findings

The purpose of this study was on the effect of financial leverage on profitability and risks of firms listed at the NSE. Secondary data was collected from NSE database, CMA and Annual Audited financial statements for the companies that formed the sample. EAT, short term loans, long term loans and shareholders' funds are the financial statistics collected and then used to calculate the ROE, DER and SDEV for the five years under study. Data collected was keyed into SPSS and analysis made. Three regression models were used;

Equation 1: $ROE_{i,t} = \beta 0 + \beta 1 DER_{it} + e_{it}$

The first regression model was to measure the effect of financial leverage (measured by DER) on profitability (measured by ROE). The results of the regression reveal that the effect is 14.2% and in inversely related meaning that as financial leverage increases by 1%, profitability decreases by 14.2% and vice vasa. Financial leverage is just one of the factors affecting profitability among others, though weak effect. Profitability is defined as the return earned on the total assets of a company. Management of these companies need to consider the other factors that can increase profits both quantitative and qualitative in nature.

Equation 2: $SDEV_{i,t} = \beta 2 + \beta 3 DER_{it} + e_{it}$

The second regression model was to measure the effect of financial leverage (measured by DER) on risks (measured by SDEV). Regression analysis results reveal that the effect is 23.5% and positively related meaning that as financial leverage increases by 1%, risk increases by 23.5%. This is a weak relationship. The study concentered on the financial risk which basically examines how a company's finances are structured. A highly levered

firm constitutes a high risk profile. All companies sampled are listed at the NSE which is categorized as a developing security market. Due to this, they are exposed to a high degree of systematic risk which affects the market as a whole. Economic conditions, political situations, sociological changes are some of the factors that do affect the market as a whole. Systematic risk cannot be diversified.

Equation 3: $\frac{ROEi,t}{SDEVi,t} = \beta 4 + \beta 5 DERit + eit$

The third regression model was to measure the effect of financial leverage (measured by DER) on returns adjusted by risk (measured by ROE/SDEV). According to the results of the regression model, the effect is 3% and negatively related. The relationship is insignificant.

The analysis of the correlation matrix indicated that most of the observed relationships are weak. The table shows that there is a positive relationship between DER and SDEV, ROE and ROE/SDEV. The negative relationships are identified in the following variables; ROE and DER, ROE and SDEV, DER and ROE/SDEV, SDEV and ROE/SDEV.

In all cases, the effect of financial leverage on dependent variables is not 50 % and above thus leading to a conclusion that financial leverage has a weak effect on the profitability and risks of firms listed at the NSE and there are other factors explaining a much higher percentage in variations of the dependent variables.

This result concurs with studies of Nguni (2007) and Arimi (2010) where both concluded an insignificant negative relationship between DER and ROE. A study of Yoon and Jang (2005), to investigate the effect of financial leverage on profitability and risks of restaurant firms in USA concluded that a firm's size had a more dominant effect on ROE of restaurant firms than debt use.

There are some studies done in the past that reveal contrary findings to this study. Abor (2005) concluded in his study a significant positive relationship between DER and ROE. Munene (2006), in his study concluded a weak positive relationship between DER and ROE.A study of Bhatti and Majeed (2010) to investigate the effect of leverage on stock returns and systematic risk in the corporate sector of Pakistan, concluded that high level of leverage creating a high level of systematic risk, leading to high volatility in the stock.

CHAPTER FIVE

SUMMARY, CONCLUSSIONS AND RECOMMEDATIONS

5.1 Summary

This section of the study provides a summary of findings of the study, conclusion, suggestions, recommendations, limitations and suggestions for further research.

The main objective of the study was to establish the effect of financial leverage on profitability and risk of firms listed at the NSE for the periods 1 January 2007 to 31 December 2011.

The casual research design was adopted for the study, to explore the effect of independent variable to dependent variables. Financial leverage was taken as the independent variable measured by debt-equity ratio. Dependent variables were profitability measured by return on equity and risk measured by standard deviation. Risk was taken as the variability of returns on companies listed at the NSE for the period under study. Return adjusted by risk was also included as a dependent variable. This was calculated as return on equity divided by standard deviation.

Population comprised of fifty-eight companies quoted at the NSE over the period of study. Secondary data collection method was used and data collected of thirty companies sampled. Source of data included NSE database, (CMA) and Annual audited financial statements of sampled companies. Data collected were the financial statistics which enabled the calculations of the variables used. Data was analyzed using SPSS version 17. Cross-sectional time series fixed model was used with regression and correlation analysis to determine the nature and strength of the relationship between the independent and dependent variables.

The findings of this study were as follows; that financial leverage has 14.2% effect on profitability and positively related. 23.5% variation in risk was explained by financial leverage and there is a positive relationship and a 3% variation of returns adjusted by risk being explained by financial leverage and there is a negative relationship.

5.2 Conclusions

The study aimed to establish the effect of financial leverage on profitability and risk of firms listed at the NSE for the periods 1 January 2007 to 31 December 2011.

The casual research design was adopted for this study. Casual research explores the effect of one variable of another. The key variables of the study are leverage, risk and profitability. Financial leverage is the independent variable while risk and profitability are the dependent variables. Financial leverage is measured by DER, profitability by ROE and risk by standard deviation.

Three simple regression models were used, one determines the effect of financial leverage on profitability, and the other determines the effect of financial leverage on risk while the third determines the effect of financial leverage on returns adjusted by risk. Based on the regression and correlations analysis the first finding indicated that 14.2% of variation in profitability was explained by financial leverage and that there is a negative relationship between the two meaning that as financial leverage increases by 1%, profitability decreases by 14.2%. The second finding showed that 23.5% variation in risk was explained by financial leverage and there is a positive relationship meaning that as financial leverage incerses by 1%, risks increases by 23.5%. The third finding indicated a 3% variation of returns adjusted by risk being explained by financial leverage and there is a negative relationship. This portrayed an insignificant or no relationship between returns adjusted by risk and financial leverage.

The study expected a strong positive relationship between financial leverage and risk on one hand and to the other profitability. From the above, it is seen that in all the cases, the effect of financial leverage is weak, inversely and directly related to profitability and risk respectively. Because of the weak effect, the researcher concluded that there could be other factors that could have strong effect on these dependent variables which were not part of this study.

5.3 Policy recommendations

The firms financing strategy determines the capital structure of the firm. From the findings above, it is clear that as the firms' performance improves as measured by ROE, firms tend to reduce debt financing as measured by DER, however not on a strong basis. There is need for the management of these companies listed at the NSE to set optimal/target DER. The management of these companies should also identify factors that could have strong effect on company's performance and only concentrates on those that could lead to higher performance.

The objective of any firm is to maximize shareholders wealth. Shareholders wealth is maximized when the expected rate of return is higher than the cost of capital. From the findings of the study above, there is a direct relationship between financial leverage and risk. Excessive borrowing can lead to financial distress and bankruptcy; therefore it is recommended that there should be a tradeoff between advantages and disadvantages of using various sources of financing.

Investors generally invest in shares of a company in anticipation of returns. Investor decision to invest in a portfolio is to maximize portfolio expected return for a given amount of portfolio risk. It is recommended that investors be guided by the findings of this study to enable them chose their portfolio for investments purposes.

Since the actively trading firms in Kenya are exposed to a high degree of systematic risk, these calls for the attention of management of these companies to take into account the following factors; changes in debt financing have to take into account the implied effects on the firm's systematic risks. The increase or decrease in either short-term or long- term debt that lowers systematic risk is desirable.

5.4 Limitations of the study

The study only focused on companies which were continuously quoted at the NSE for the period of January 2007 and December 2011; which is relatively small compared to non-listed firms in the country and thus the findings can neither be generalized as true of all

companies in Kenya because no all the companies in the country wide were included nor a specific company.

The study relied on secondary data which were collected from Annual audited financial statements of the sampled companies, NSE database and CMA library. In as much as there are general guiding principles for the preparations and reporting of the financial statements which are Generally Accepted Accounting Principles and International Financial Reporting Standard, these companies being in various types of activities use different accounting policies and therefore reliability and quality of data was not 100%. There were four companies of which the researcher could not find all the information's for the period of the study. These were not included in the final sample of 30.

The study covered data for period 2007 to 2011. This means that only five observations were included in the analysis. A longer period of thirty or more observations would be more appropriate; however collection of such data was not possible.

The data collected for the study was based on book values rather than market values. Market values of could possibly have yielded different results

5.5 Suggestions for Further Studies

A similar study could be carried out over a longer period of time than a five year one and market values be used as opposed to book values as used in this study.

The researcher suggests that a similar study be carried out on companies identified with segments as categorized by NSE. Currently these segments are Agricultural, Commercial & Services, Telecom & Technology, Automobiles & Accessories, Banking, Insurance, Investments, Manufacturing & Allied, Construction & Allied and lastly Energy & Petroleum. The finding could have a basis for a general conclusion.

The study used DER as a measure of financial leverage, ROE as measure of profitability and Standard deviations as measure of risk. There are other measures which can be used

for these variables. The suggestion here is that other measures to be used other than those used in this research if such can yield different findings.

The researcher used secondary data only. Findings of the study yielded contrary results than what the researcher expected. The findings of weak and or no relationship between independent and dependent variables in each cases, suggested that there are other factors that have strong effect on the dependent variables other than financial leverage. Due to this, the researcher proposes the use of primary data where management of the companies can be question on the position of other factors that can strongly explain the variation of the variables used.

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APPENDIX I

LISTED COMPANIES (Source: NSE)

AGRICULTURAL

1 Eaagads Ltd
2 Kapchorua Tea Co Ltd
3 Kakuzi
4 Limuru Tea Co Ltd
5 Rea Vipingo Plantations Ltd
6 Sasini Ltd
7 Williamson Tea

COMMERCIAL AND SERVICES

8 Express Ltd
9 Kenya Airways Ltd
10 Nation Media group
11 Standard Group Ltd
12 TPS East Africa (Serena) Ltd
13 Scangroup Ltd
14 Uchumi Supermarket Ltd
15 Hutchings Biemer Ltd

TELECOM AND TECHNOLOGY

16 Access Kenya Group Ltd
17 Safaricom Ltd

AUTOMOBILE AND ACCESSORIES

18 Car and General Ltd
19 CMC Holdings Ltd
20 Sameer Africa Ltd
21 Marshalls (EA) Ltd

BANKING

22 Barclays Bank Ltd
23 CFC Stanbic Holdings Ltd
24 Diamond Trust Bank Kenya Ltd
25 Housing Finance Co Ltd
26 Kenya Commercial Bank Ltd
27 National Bank of Kenya Ltd
28 NIC Bank Ltd
29 Standard Chartered Bank Ltd
30 Equity Bank Ltd
31 The Co-operative Bank of Kenya Ltd

INSURANCE

32 Jubilee Holding Ltd
33 Pan Africa Insurance Holdings
34 Kenya Re-Insurance Corporation Ltd
35 CFC Insurance Holdings
36 British -American Investment (K) Ltd

INVESTMENTS

37 City Trust Ltd
38 Olympia Capital Holdings Ltd
39 Centum Investment Co Ltd
40 Trans-Century Ltd

MANUFACTURING AND ALLIED

41 BOC Kenya Ltd
42 British America Tobacco
43 Carbacid Investments Ltd
44 East African Breweries
45 Mumias Sugar Co Ltd
46 Unga Group Ltd
47 Eveready East Africa Ltd
48 Kenya Orchards
49 A Buumann Co Ltd

CONSTRUCTION AND ALLIED

50 Athi River mining
51 Bamburi Cement Ltd
52 Crown Berger Ltd
53 EA Cables Ltd
54 EA Portland Cement Ltd

ENERGY AND PETROLEUM

55 KenolKobil Ltd
56 Total Kenya Ltd
57 KenGen Ltd
58 Kenya Power and Lighting Co Ltd

APPENDIX II

Debt-Equity Ratio (DER)

		2007	2008	2009	2010	2011
1	Kapchorua Tea	0.0117	0.0364	0.0584	0.0115	0.0086
2	Kakuzi	0.3124	0.1959	0.0000	0.0000	0.0000
3	Limuru Tea Co Ltd	0.0000	0.0000	0.0000	0.0000	0.0000
4	Rea Vipingo Plantations Ltd	0.2912	0.5128	0.1351	0.3002	0.1877
5	Sasini Ltd	0.0037	0.0017	0.1068	0.0827	0.2788
6	Williamson Tea	0.0061	0.0490	0.0793	0.0360	0.0194
7	Kenya Airways Ltd	1.6004	1.0672	1.8694	1.3478	1.0996
8	Nation Media group	0.0387	0.0319	0.0175	0.0039	0.0240
9	Standard Group Ltd	1.1185	0.8260	0.6620	0.3852	0.4884
10	TPS East Africa (Serena) Ltd	0.4005	0.3438	0.3773	0.2168	0.2642
11	Scangroup Ltd	0.0080	0.0027	0.0041	0.0522	0.0780
12	Car and General	0.4837	0.5424	0.7576	0.7414	0.9829
13	Sameer Africa	0.3685	0.2624	0.1626	0.1999	0.2018
14	Marshalls EA	1.6292	3.0723	1.5434	1.4553	1.2403
15	Olympia Capital Holdings	0.3334	0.2700	0.0950	0.1407	0.1222
16	Centum Investment	0.0000	0.0000	0.0269	0.0000	0.2080
17	British America Tobacco	0.1738	0.2533	0.4221	0.2975	0.1631
18	East African Breweries	0.0000	0.0000	0.0000	0.0000	0.1457
19	Mumias Sugar	0.0189	0.1137	0.3267	0.2300	0.2076
20	Unga Group	0.3886	0.2393	0.4112	0.2199	0.2209
21	Eveready EA	0.9298	0.5335	0.9190	1.0902	1.5583
22	Athi River mining	0.9823	1.2553	1.2625	1.7698	1.7413
23	Bamburi Cement	0.0000	0.2718	0.1705	0.1365	0.0575
24	Crown Berger	0.0445	0.1249	0.0509	0.0924	0.3275
25	EA Cables	1.1772	0.7633	0.6558	0.4965	0.5068
26	EA Portland Cement	0.6494	0.6697	0.5344	0.5967	0.5887
27	KenolKobil	1.1513	0.6043	0.3737	1.0840	1.6227
28	Total Kenya	0.5843	1.0047	1.5468	1.0308	1.6289
29	KenGen	0.2681	0.3070	0.4295	0.8721	0.1570
30	Kenya Power and Lighting	0.2896	0.5467	0.5789	0.5170	0.6170

APPENDIX III

Return on Equity (ROE)

		2007	2008	2009	2010	2011
1	Kapchorua Tea	-0.0013	-0.1123	0.1014	0.1701	0.1915
2	Kakuzi	0.1514	0.1805	0.2067	0.1743	0.2352
3	Limuru Tea Co Ltd	0.0374	0.2184	0.4618	0.6064	0.2631
4	Rea Vipingo Plantations Ltd	0.1626	0.1921	0.1151	0.0441	0.3593
5	Sasini Ltd	-0.0138	0.1877	0.1735	0.1566	0.6660
6	Williamson Tea	0.0535	-0.0386	0.0418	0.2524	0.2071
7	Kenya Airways Ltd	0.1894	0.1722	0.5006	0.1607	0.1569
8	Nation Media group	0.2881	0.3028	0.2375	0.2793	0.3197
9	Standard Group Ltd	0.3657	0.2868	0.2088	0.1822	0.0891
10	TPS East Africa (Serena) Ltd	0.1132	0.0282	0.1097	0.3039	0.0849
11	Scangroup Ltd	0.4049	0.1519	0.1819	0.1868	0.2104
12	Car and General	0.1972	0.1903	0.1514	0.1691	0.1937
13	Sameer Africa	0.0605	0.0813	0.0644	0.0114	0.0363
14	Marshalls EA	0.0836	-0.7045	-0.2462	-0.6204	0.6704
15	Olympia Capital Holdings	0.0629	0.0305	-0.1101	0.0329	0.0821
16	Centum Investment	0.1336	0.1075	-0.2398	0.1960	0.1782
17	British America Tobacco	0.2953	0.3475	0.3164	0.3455	0.4831
18	East African Breweries	0.3611	0.4153	0.3633	0.3773	0.3419
19	Mumias Sugar	0.1671	0.1343	0.1604	0.1429	0.2824
20	Unga Group	0.0576	0.1261	0.0589	0.0682	0.1171
21	Eveready EA	0.2853	0.0487	0.0716	0.0216	0.4438
22	Athi River mining	0.2431	0.2253	0.5147	0.2157	0.2010
23	Bamburi Cement	0.2527	0.1729	0.2817	0.2163	0.2405
24	Crown Berger	0.0918	0.0344	0.1031	0.1013	0.1708
25	EA Cables	0.3784	0.3457	0.3599	0.3057	0.1346
26	EA Portland Cement	0.2119	0.1333	-0.3399	0.0513	0.0896
27	KenolKobil	0.1191	0.1395	0.0953	0.1292	0.1506
28	Total Kenya	0.1103	0.1403	0.0538	0.0956	0.0078
29	KenGen	0.0384	0.0862	0.0307	0.0659	0.0208
30	Kenya Power and Lighting	0.0772	0.0739	0.1201	0.1293	0.1062

APPENDIX IV

Standard Deviation (SDEV)

		2007	2008	2009	2010	2011
1	Kapchorua Tea	0.0097	0.0785	0.1069	0.1233	0.1266
2	Kakuzi	0.0168	0.0206	0.0277	0.0228	0.0322
3	Limuru Tea Co Ltd	0.0547	0.1280	0.2130	0.2529	0.2211
4	Rea Vipingo Plantations Ltd	0.0071	0.0209	0.0389	0.0646	0.1174
5	Sasini	0.0674	0.1424	0.1124	0.0940	0.2549
6	Williamson Tea	0.0556	0.0652	0.0502	0.1237	0.1219
7	Kenya Airways Ltd	0.0640	0.0121	0.3935	0.3375	0.3001
8	Nation Media group	0.0526	0.0104	0.0343	0.0280	0.0309
9	Standard Group Ltd	0.0030	0.0558	0.0784	0.0828	0.1051
10	TPS East Africa (Serena) Ltd	0.0110	0.0601	0.0481	0.1169	0.1040
11	Scangroup Ltd	0.0073	0.1789	0.1383	0.1167	0.1015
12	Car and General	0.0066	0.0048	0.0247	0.0208	0.0195
13	Sameer Africa	0.0513	0.0147	0.0111	0.0300	0.0273
14	Marshalls EA	0.0358	0.5573	0.3958	0.3632	0.5623
15	Olympia Capital Holdings	0.0358	0.0229	0.0919	0.0775	0.0756
16	Centum Investment	0.0251	0.0184	0.2084	0.1963	0.1795
17	British America Tobacco	0.0062	0.0369	0.0263	0.0250	0.0735
18	East African Breweries	0.0114	0.0383	0.0307	0.0251	0.0274
19	Mumias Sugar	0.0218	0.0233	0.0174	0.0152	0.0601
20	Unga Group	0.0199	0.0484	0.0392	0.0326	0.0333
21	Eveready EA	0.2753	0.1673	0.1305	0.1207	0.2675
22	Athi River mining	0.0358	0.0125	0.1622	0.1438	0.1321
23	Bamburi Cement	0.0346	0.0565	0.0564	0.0471	0.0410
24	Crown Berger	0.0010	0.0406	0.0368	0.0325	0.0484
25	EA Cables	0.0175	0.0231	0.0164	0.0309	0.0989
26	EA Portland Cement	0.0552	0.0556	0.1043	0.1637	0.1451
27	KenolKobil	0.0434	0.0145	0.0221	0.0189	0.0211
28	Total Kenya	0.0043	0.0212	0.0439	0.0359	0.0574
29	KenGen	0.0458	0.0338	0.0301	0.0255	0.0270
30	Kenya Power and Lighting	0.0019	0.0024	0.0258	0.0287	0.0250

APPENDIX V

Return on Equity/Standard Deviation (ROE/SDEV)

		2007	2008	2009	2010	2011
1	Kapchorua Tea	-0.1353	-1.4309	0.9488	1.3796	1.5130
2	Kakuzi	8.9867	8.7635	7.4663	7.6631	7.3015
3	Limuru Tea Co Ltd	0.6838	1.7063	2.1684	2.3980	1.1897
4	Rea Vipingo Plantations Ltd	23.0494	9.1954	2.9621	0.6834	3.0606
5	Sasini	-0.2045	1.3174	1.5428	1.6653	2.6131
6	Williamson Tea	0.9624	-0.5927	0.8328	2.0400	1.6990
7	Kenya Airways Ltd	2.9607	14.2019	-1.2722	0.4761	0.5230
8	Nation Media group	5.4745	29.0839	6.9354	9.9722	10.3518
9	Standard Group Ltd	122.3583	5.1382	2.6619	2.2007	0.8478
10	TPS East Africa (Serena) Ltd	10.3336	0.4696	2.2810	2.6001	0.8161
11	Scangroup Ltd	55.6828	0.8487	1.3154	1.6005	2.0730
12	Car and General	29.9360	39.3181	6.1329	8.1139	9.9181
13	Sameer Africa	1.1793	5.5146	5.8137	0.3798	1.3316
14	Marshalls EA	2.3375	-1.2642	-0.6220	-1.7083	1.1923
15	Olympia Capital Holdings	1.7584	1.3296	-1.1973	0.4247	1.0848
16	Centum Investment	5.3138	5.8293	-1.1504	0.9987	0.9926
17	British America Tobacco	47.3188	9.4107	12.0491	13.8046	6.5770
18	East African Breweries	31.5392	10.8389	11.8485	15.0519	12.4861
19	Mumias Sugar	7.6542	5.7718	9.2332	9.4008	4.6952
20	Unga Group	2.8888	2.6046	1.5028	2.0908	3.5179
21	Eveready EA	1.0364	0.2910	0.5489	0.1787	1.6589
22	Athi River mining	6.7952	17.9597	3.1733	1.4998	1.5214
23	Bamburi Cement	7.2995	3.0611	4.9971	4.5972	5.8704
24	Crown Berger	87.7669	0.8482	2.7995	3.1131	3.5252
25	EA Cables	21.5620	14.9624	21.9623	9.9100	1.3608
26	EA Portland Cement	3.8402	2.3986	-3.2590	0.3133	0.6178
27	KenolKobil	2.7452	9.6464	4.3013	6.8221	7.1236
28	Total Kenya	25.4780	6.6237	1.2270	2.6604	-0.1354
29	KenGen	0.8383	2.5517	1.0211	2.5806	0.7728
30	Kenya Power and Lighting	39.9560	31.3170	4.6599	4.5128	4.2536

APPENDIX VI

REGRESSION RESULTS: ROE vs DER

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Mean DER[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Mean ROE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.414[a]	.171	.142	.110168

a. Predictors: (Constant), Mean DER

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.070	1	.070	5.794	.023[a]
	Residual	.340	28	.012		
	Total	.410	29			

a. Predictors: (Constant), Mean DER

b. Dependent Variable: Mean ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.198	.028		7.124	.000
	Mean DER	-.101	.042	-.414	-2.407	.023

a. Dependent Variable: Mean ROE

APPENDIX VII

REGRESSION RESULTS: SDEV vs DER

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Mean DER[a]		Enter

a. All requested variables entered.

b. Dependent Variable: Mean SDEV

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.511[a]	.261	.235	.069077

a. Predictors: (Constant), Mean DER

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.047	1	.047	9.899	.004[a]
	Residual	.134	28	.005		
	Total	.181	29			

a. Predictors: (Constant), Mean DER

b. Dependent Variable: Mean SDEV

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.042	.017		2.400	.023
	Mean DER	.083	.026	.511	3.146	.004

a. Dependent Variable: Mean SDEV

APPENDIX VIII

REGRESSION RESULTS: ROE/SDEV vs DER

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Mean DER[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Mean ROE/SDEV

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.074[a]	.006	-.030	7.310759

a. Predictors: (Constant), Mean DER

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.318	1	8.318	.156	.696[a]
	Residual	1496.522	28	53.447		
	Total	1504.839	29			

a. Predictors: (Constant), Mean DER

b. Dependent Variable: Mean ROE/SDEV

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.027	1.849		4.342	.000
	Mean DER	-1.099	2.785	-.074	-.394	.696

a. Dependent Variable: Mean ROE/SDEV

APPENDIX IX

CORRELATION OF VARIABLES

Correlations

		Mean ROE	Mean SDEV	Mean DER	Mean ROE/SDEV
Mean ROE	Pearson Correlation	1	-.466**	-.414*	.511**
	Sig. (2-tailed)	.	.010	.023	.004
	N	30	30	30	30
Mean SDEV	Pearson Correlation	-.466**	1	.511**	-.454*
	Sig. (2-tailed)	.010	.	.004	.012
	N	30	30	30	30
Mean DER	Pearson Correlation	-.414*	.511**	1	-.074
	Sig. (2-tailed)	.023	.004	.	.696
	N	30	30	30	30
Mean ROE/SDEV	Pearson Correlation	.511**	-.454*	-.074	1
	Sig. (2-tailed)	.004	.012	.696	.
	N	30	30	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX X

DESCRIPTIVE STATISTICS

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std.	Variance
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Company Name	30	1	30	15.50	1.61	8.803	77.500
ROE 2007	30	-.014	.405	.16594	.02176	.119183	.014
ROE 2008	30	-.705	.415	.12327	.03540	.193908	.038
ROE 2009	30	-.501	.515	.12757	.03821	.209260	.044
ROE 2010	30	-.620	.606	.14897	.03560	.194997	.038
ROE 2011	30	-.444	.670	.19436	.03691	.202158	.041
Mean ROE	30	-.163	.372	.15207	.02171	.118927	.014
SDEV 2007	30	.001	.275	.03593	.00909	.049794	.002
SDEV 2008	30	.002	.557	.06551	.01900	.104052	.011
SDEV 2009	30	.011	.396	.09052	.01819	.099612	.010
SDEV 2010	30	.015	.363	.09322	.01681	.092074	.008
SDEV 2011	30	.020	.562	.11459	.02101	.115055	.013
Mean SDEV	30	.015	.383	.07995	.01442	.078967	.006
DER 2007	30	.000	1.629	.44213	.09015	.493787	.244
DER 2008	30	.000	3.072	.46340	.11018	.603477	.364
DER 2009	30	.000	1.869	.45258	.09380	.513739	.264
DER 2010	30	.000	1.770	.44690	.09132	.500155	.250
DER2011	30	.000	1.741	.49156	.10170	.557017	.310
Mean DER	30	.000	1.788	.45930	.08900	.487495	.238
ROE/SDEV 2007	30	-.205	122.358	18.57987	5.16920	28.312867	801.618
ROE/SDEV 2008	30	-1.431	39.318	7.92382	1.82765	10.010440	100.209
ROE/SDEV 2009	30	-1.272	21.962	3.98009	.88943	4.871595	23.732
ROE/SDEV 2010	30	-1.708	15.052	3.89324	.77675	4.254412	18.100
ROE/SDEV 2011	30	-1.659	12.486	3.23452	.62173	3.405370	11.597
Mean ROE/SDEV	30	-.010	26.640	7.52233	1.31518	7.203542	51.891
Valid N (listwise)	30						