

**EFFECT OF LEVERAGE ON STOCK RETURNS: EVIDENCE FROM NAIROBI
SECURITIES EXCHANGE**

BY

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DECLARATION

This research project is my original work and has not been presented for a degree in any university.

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ABBREVIATIONS

CMA	:	Capital Market Authority
DFL	:	Degree of Financial Leverage
DOL	:	Degree of Operating Leverage
DTL	:	Degree of Total Leverage
EPS	:	Earnings Per Share
ERC	:	Earnings Response Coefficient
IAS	:	International Accounting Standard
IPO	:	Initial public offer
MIMS	:	Main investment market segment
MM	:	Miller and Modigliani
NSE	:	Nairobi Securities exchange
ROA	:	Return on asset
ROE	:	Return on Equity

DEDICATION

I dedicate this work to my dear wife Ruth Nabangala for her love, support and encouragement

and

My beloved children Newton, Denzel and Baldwin for their constant joy and happiness.

To my Parents,

Syliverious and Rebecca, for their determination to educate me and their exemplary

Support and inspiration all through.

You are all special to me.

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ABSTRACT

The assets of a company can be financed either by increasing the owner claims or creditors claims. The owners claim is increased by raising funds through issuing ordinary shares or by retaining earnings. The creditors claims on the other hand increase through borrowing.

The financing or the Capital Structure of a Company influences the shareholders' return and also risk. Financial Leverage, that is, the use of fixed-charges sources of funds such as debt and preference shares, has particular implications on shareholders return.

The primary objective of a Company in using leverage is to magnify shareholders return under favourable economic conditions. This is based on the assumption that the borrowed funds can be obtained at a cost lower than ROI. Thus, when the favourable variance (surplus) is distributed to the shareholders, the EPS or ROE increases.

This paper therefore seeks to show the effect of Leverage on Stock Returns using companies listed on the Nairobi Securities Exchange.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

1.1.1 Leverage and Stock Returns

The assets of a company can be financed either by increasing the owner claims or the creditor claim (borrowing). The financing or capital structure decision is significant since it influences the shareholders' return and risk. Consequently, the market value of the share may be affected by the capital structure. The use of fixed - charges sources of funds such as debt and preference capital along with the owners' equity in the capital structure is called leverage. The leverage employed by a company is intended to earn more return on the fixed-charge funds than their costs. The surplus (or deficit) will increase (or decrease) the return on owners' equity.

1.1.2 Leverage and the Shareholders' Return

The primary objective of a company in using leverage is to magnify the shareholders' return under favourable economic conditions. The role of leverage in magnifying the return of the shareholders' is based on the assumptions that the fixed- charge sources of funds can be obtained at a cost lower than ROA or ROI. Thus, the variance between the earnings generated by the fixed-charge funds and costs of these funds is distributed to shareholders, the EPS or ROE increases or decreases depending on whether there is a surplus or deficit respectively. Therefore ROE,ROI and EPS are key indicators of the impact of financial leverage on stock returns.

Strategies differ from company to company but are always closely aligned to management's overall goals and objectives (Garrison et al., 2004). The marketing and research community has been measuring the wrong things (i.e., attitudes versus financial returns) and thinking about investments in the wrong context (communication

channels versus customers). Strategies and investments are not about attitude, goals and communication channels; they are about meeting customer needs better while improving ROI (Hayman et al., 1999).

Financial leverage results from the difference between the rate of return the company earns on investment in its own asset and the rate of return the company must pay its creditors (Garrison et al., 2004). Considerable effort has been expended to explain the relationship between a firm's real asset risk and the riskiness of its equity. Theoretical and empirical justification exists for relating stock risk to leverage. Percival (1974) explores the fixed-variable cost relationship and the theory related to Degree of operating leverage, suggesting weaknesses in this measure. This paper is criticized by Gahlon (1981), who shows that, in general, a firm's systematic risk should increase with increases in its Degree of operating leverage. Using Rubinstein's analytical model as a basis, Lev (1974) provides empirical evidence that operating leverage is positively associated with market risk. Hamada (1972) and Rubinstein (1973) demonstrate that a firm's beta should increase if the firm finances more heavily with debt.

These theories are extension of the pre-CAPM work of Modigliani and Miller (1969), who show that use of debt increases equity return variability. In his analysis of market risk, Hamada concludes that 21 percent to 24 percent of a firm's systematic risk could be explained by the nature of its financing. Later papers by Hill and Stone (1980) and Chance (1982) extend Hamada's risk decomposition approach. Gahlon and Gentry (1982) analyze the relationship between firm's real asset risk and their market risk. The coefficient of variation of profits, $CV ([P_i])$ is a function of a coefficient of variation of revenue as follows:

$$CV ([P_i]) = DOL * DFL * CV (REV)$$

Gahlon and Gentry also investigate the relationship between beta and leverage. Mandelker and Rhee's (1984) analytical model, however, better illustrates the DOL-DFL multiplicative relationship. The chance that the actual outcome from an investment will

differ from the expected outcomes is called risk. Most investors are concerned that the actual outcome will be less than the expected outcome. The broader the range of possible outcomes the greater will be the risk (Jones, 2003). Risk management effectiveness combines both the ability to exploit opportunities and avoid adverse economic impacts, and has a significant positive relationship to performance. This effect is moderated favorably by investment in innovation and lower financial leverage (Anderson, 2009).

Leverage is commonly described as the use of borrowed money to make an investment and return on that investment. It is more risky for a company to have a high ratio of financial leverage. It has also been noticed that on the outcome of financial leverage, if the level or point of financial leverage is high, the more rise is anticipated profit on company's equity. Thus, financial leverage is used in various circumstances as a means of altering the cash flow and financial position of a company.

Corporate sectors around the world face a multitude of risks in their daily activities. Along with the direct business risks related to the very existence of the corporation, the risks can be associated with market events in foreign exchange, debt market or equity / commodity markets; credit events associated with the counter-parties of the corporation; operational issues in the internal processes employed by the corporation; societal events in politically unstable regions; mother nature showing its power in the form of disasters and catastrophes; to name but a few.

However, the base of any business is a healthy appetite for risk, since returns higher than the risk-free interest rate can only be achieved through risk taking. This is why one of the greatest and most important challenges for corporate executives is to define the optimal risk level for their businesses. Currently, corporations are reasonably aware of the risks related to their specific business areas. However, the measurement, consolidation and aggregation of the risk exposure are seldom carried out in any systematic manner. Typically, each business unit deals only with its own risks based on

a separate set of information; and retention varies quite a lot from one risk to another and one business to another. What is missing is a comprehensive understanding of how the various risks involved in separate business units affect the risk position at group level.

1.2 Statement of the Problem

Jain and Kini (1994) investigated the change in the performance of firms as they change the debt /equity ratio. They found out that firms exhibit a decline in operating performance as measured by the operating return on assets and operating cash flows deflated by assets as the debt/equity ratio increases with a caveat. These firms exhibit high growth in sales and capital expenditure relative to firms with low leverage.

Jacquillat et al (1978) reported positive aftermarket returns to low leverage in Finance during the period from 1966 to 1974. Kim and Ritter (1977) also reported that levered firms with similar characteristics neither over perform nor underperform when compared to seasoned firms. The most obvious risk of leverage is that it multiplies losses. A corporation that borrows too much money might face bankruptcy during a business downturn, while a less-levered corporation might survive. An investor who buys a stock on 50% margin will lose 40% of his money if the stock declines 20%. There is an important implicit assumption in that account, however, which is that the underlying levered asset is the same as the unlevered one. If a company borrows money to modernize, or add to its product line, or expand internationally, the additional diversification might more than offset the additional risk from leverage. Or if an investor uses a fraction of his or her portfolio to margin stock index futures and puts the rest in a money market fund, he or she might have the same volatility and expected return as an investor in an unlevered equity index fund, with a limited downside. So while adding leverage to a given asset always adds risk, it is not the case that a levered company or investment is always riskier than an unlevered one. In fact, many highly-levered hedge funds have less return volatility than unlevered bond funds, and public utilities with lots of debt are usually less risky stocks than unlevered technology companies.

This study aims to find out the effect of changes in leverage on share prices of listed firms.

It is apparent that most of the research studies in this area have been done in the developed markets with very little evidence for emerging markets particularly in Kenya. This paper therefore is the first step in trying to bridge the gap by investigating the effect of leverage on stock returns of companies listed at the Nairobi Securities Exchange.

1.3 Research Objective

To examine the effect of leverage on stock returns using companies listed on the Nairobi Securities exchange.

1.4 Significance of the Study

The corporate financing policies in Kenya are not very sound. Similarly institutional development is less competitive. All these factors have led to a highly levered stock market and hence provide the rationale for this study. The study will benefit the following groups

1. **Financial Policy Makers and the Government:** This research will bring to light the impact of leverage on performance; hence policy makers will know at what levels firms should maintain their leverage to avoid systemic risks and maintain the macro prudential health of the financial industry. While leverage allows a borrower to acquire assets and multiply gains in good times, it also leads to multiple losses in bad times. During a market downturn when the value of assets and income plummets, a highly leveraged borrower faces heavy losses due to their obligation to service the high level of debt. If the value of assets falls below the value of debt, the borrower then has a high risk of default. Deleveraging reduces the total amplification of market volatility on the borrower's balance sheet. It means giving up potential gains in good times, in exchange for lower risk of heavy loss and nasty default in bad times

2.Creditors: Creditors will benefit by getting to know the exact impact of increased leverage and the company's ability to repay. Leverage may involve a counterparty, either a creditor or a derivative counterparty. It doesn't always do that, for example a company leveraging by acquiring a fixed asset has no further reliance on counterparty. In the case of a creditor, most of the risk is usually on the creditor's side, but there can be risks to the borrower, such as demand repayment clauses or rights to seize collateral. If a derivative counterparty fails, unrealized gains on the contract may be jeopardized. These risks can be mitigated by negotiating terms, including mark-to-market collateral.

3.Risk Managers: The research will bring to light specifically the impact of high levels of leverage on risk and performance. Risk is a particularly important issue for organizations that combine their own funds with funds that are borrowed. The contractual payments for the borrowed funds must be met and consequently any variability of the return on loaned funds must be a source of concern to risk managers.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter describes a summary of the previous research done in this area and the results and models different researchers have come up with. It will act as the basis of the whole study.

2.1 Leverage and Stock Return Relationships

Theoretical finance has always regarded leverage as one of the basic sources of financial risk. In the real world of finance, capital structure decisions are critical as a shift in leverage could increase or decrease the financial strains on companies. Traditionalists such as Lintner (1956) and Gordon (1959) argue that there exists an optimal leverage ratio that equates the marginal benefits of debt such as tax shields to the marginal costs of debt such as increase in expected bankruptcy costs. Modigliani-Miller (1958; henceforth MM), on the other hand, argued rigorously that the value of a firm is independent of its capital structure. The immediate implication of this proposition was that the return on equity capital is an increasing function of leverage. This is because debt increases the riskiness of the stock and hence equity shareholders will demand a higher return on their stocks.

MM's Proposition II state that the rate of return on common stock of companies whose capital structure includes some debt is equal to the appropriate capitalization rate for a pure equity stream plus a premium related to financial risk. The theoretical impact of these propositions on corporate finance is immense but the original sample they used is very limited. Further empirical work uses much larger samples but results are mixed. Some authors (Hamada, 1972; Bhandari, 1988) show that returns increase in leverage; others show that they decrease in leverage (Kortweg, 2004, Dimitrov and Jain, 2005, Penman 2007).

MM define leverage as ratio of the market value of bonds and preferred debt to the market value of all securities; we measure leverage as the ratio of the book values of total debt to total capital, following Schwartz (1959). He argued that the narrow definition of financial structure-restricted to stocks and bonds- ignores the large measure of substitutability between the various forms of debt and thus a broader definition that encompasses the total of all liabilities and ownership claims must be used. Firms in various industries have different asset structures that are financed by cash flows generated from various forms of debt and equity. The use of book values of both variables ensures that we are measuring the capital structure via the cash flows generated at the time those assets were financed. Schwartz (1959) therefore proposes the ratio of total debt to net worth as the best single measure of gross risk.

The use of book values of debt and equity in defining the capital structure ensures that we measure capital structure at the time funds are raised to finance the assets. We account for the difference between the book value and market value of equity explicitly by using the book-to-market ratio as an additional risk factor. Additionally, following Bradley et al (1984) who suggest that industry classification is indeed a good proxy for business-risk across industries, we undertake cross-sectional analysis separately for each risk class.

Previous studies have used several definitions for returns and leverage. Arditti (1967) define returns as the geometric mean of returns. He finds a negative though insignificant relation between leverage and stock returns. Hall et al (1967) define returns as profits after tax and ratio of book value of equity to assets as an indicator for leverage. His results indicate that leverage has a negative relation with returns. Hamada (1972) calculates returns as profits after taxes and interest which is the earnings the equity and preferred shareholders receive on their investment for the period. He tests the relationship in the cross section of all firms.

He uses industry as a proxy for business risk since his sample lacks sufficient firms to yield statistically significant coefficients. Bhandari (1988) defines stock returns as inflation adjusted. He includes all firms including financial companies in his sample. He conducts his tests in the cross section of all firms without assuming different risk classes. Arditti (1967), who finds a negative though insignificant relation between leverage and stock returns, define leverage as the ratio of debt measured in book value to equity measured at market value. Baker (1973) measures leverage as the ratio of equity to total assets for the leading firms in an industry over a one year period. He finds that at the industry level, leverage raises industry profit rates, more leverage implies greater risks. In our study we use book values of debt and equity in defining the capital structure (Schwartz 1959).

2.2 Conceptual Framework

Studies that have measured the reaction of markets to declaration of earnings, includes Kormendi and Lipe (1987) that focused on the relationship of earnings and returns. Their results showed that the relationship between stock returns and earnings was probably dependent on persistence of the earnings process. The results gained based on the model they designed for persistence of the earnings process confirmed their forecast; thus one factor influencing the stock returns was recognized as persistence of the earning process. Collins and Kothari (1989) studied the relationship between systematic risk and stock returns. They observed that the only reducer of ERC was systematic risk (beta). They also found out that the rate of growth opportunities factor positively affected the stock returns.

Wikil (1990) studied the effect of auditor change on the quality of earnings and stock returns. He assumed that the stock returns of companies changing their auditors would face significant changes. Statistical results of his works showed no significant change and he failed to establish his theory in statistical terms. Collins and Salatka (1993) conducted an empirical study which has focused on the effects of changes in financial

reporting of multinational firms due to financial reporting based on international standards. They also studied the effects of money change due to change of standards used as basis for reporting on the stock returns. Results of the study showed that change of national to international standards and national currency had no significant effects on Stock returns.

Lev and Thiagrajan (1993) studied the relationship of quality of earnings and stock returns. They determined the 12 fundamental variables used by financial analysts in assessing quality of earnings, and measured the quality of earnings of each firm by giving 0 and 1 scores to every one of the 12 fundamental variables. Results of their works demonstrated that there was a significant statistical difference between stock returns in high-quality and low-quality groups; groups having higher earnings qualities have higher ERCs as well.

Dhaliwal, Lee and Fargher, (1991) conducted an empirical, study which focused on the relationship between unexpected earnings and abnormal return of stocks and the effect of financial leverage on it. They meant to collect more evidence about the factors influencing ERC and in particular to study the effect of capital structure on ERC. They assumed that financial leverage was effective on ERC, and based on that assumption they classified firms based on presence or absence of debts in their capital structures and their financial leverage level. Results of their works showed that ERC of firms lacking debts or having low financial leverage was larger than firms with high financial leverage.

Dhaliwal and Reynolds (1994) demonstrated that default risk may also negatively affect the ERC. They used a ranking of stocks and debt ratios to measure the bankruptcy risks. Billings (1999) conducted a research similar to that of Dhaliwal and Reynolds (1994), but added earnings growth rate, systematic risk and earning stability to his regression model. Results of his work showed that default risk had a relatively limited role in describing the ERC.

Bae and Sami (2005) conducted an empirical study which focused on the effect of potential environmental liabilities on ERC. Results of their regression model confirmed their hypothesis, establishing the point that firms having potential environmental liabilities have smaller ERC reactions in comparison to firms lacking such liabilities. Chevis and Sommers (2005) attempted to provide another method for interpretation of market through information transferred by earnings announcements and declarations. They related the ERC directly to the persistence of earnings process.

The difference of this study with other efforts in handling the effects of persistence of earnings process on ERC was in that they took persistence of unexpected earnings rather than just earnings as the factor influencing the ERC. Also, rather than interpreting the ERC instead of classifying it into transitory and permanent, they classified it into several new groups. Findings of their work confirmed the existence of a relationship among research variables.

Financial leverage results from the difference between the rate of return the company earn on investment in its own asset and the rate of return the company must pay its creditors (Garrison et al., 2004). Considerable effort has been expended to explain the relationship between a firm's real asset risk and the riskiness of its equity. Theoretical and empirical justification exists for relating stock risk to leverage. Percival (1974) explores the fixed-variable cost relationship and the theory related to Degree of operating leverage, suggesting weaknesses in this measure. This paper is criticized by Gahlon (1981), who shows that, in general, a firm's systematic risk should increase with increases in its Degree of operating leverage. Using Rubinstein's analytical model as a basis, Lev (1974) provides empirical evidence that operating leverage is positively associated with market risk.

Hamada (1972) and Rubinstein (1973) demonstrate that a firm's beta should increase if the firm finances more heavily with debt. These theories are extension of the pre-CAPM

work of Modigliani and Miller (1969), who show that use of debt increases equity return variability. In his analysis of market risk, Hamada concludes that 21 percent to 24 percent of a firm's systematic risk could be explained by the nature of its financing. Later papers by Hill and Stone (1980) and Chance (1982) extend Hamada's risk decomposition approach. Gahlon and Gentry (1982) analyze the relationship between firm's real asset risk and their market risk. The coefficient of variation of profits $CV ([Pi])$ is a function of a coefficient of variation of revenue as follows: $CV ([Pi]) = DOL * DFL * CV (REV)$

Gahlon and Gentry also investigate the relationship between beta and leverage. Mandelker and Rhee's (1984) analytical model, however, better illustrates the DOL-DFL multiplicative relationship. A major contribution of the Mandelker and Rhee (1984) model over Hamada and Rubinstein type models is that it utilizes leverage values based on accounting flow numbers (degree of operating and financial leverage) rather than market stock numbers (level of operating and financial leverage). In the Hamada model, for example, both the value of debt and equity are stock measures and, theoretically, should be market values. However, Bowman (1980) found that the market value of debt was not significant in assessing the effect of financial leverage on risk, but this may be attributable to the noise in his estimates of the market value of private debt (Ryan, 1997).

The difficulty in finding a market value of debt in many cases has led researchers (Chance, 1982) to use accounting book (stock) values of debt in leverage estimates. The use of book values is a major limitation on the subsequent leverage measures as it effectively constrains the leverage measure to be a static one which is unable to respond and reflect the changing relative costs of equity and debt. The use of flow equivalents avoids this problem even when using accounting data and ensures that the resultant leverage measures are dynamic and responsive to changes in the economic environment. Defining the degree of total leverage (DTL) as the percentage change in net income which results from a 1% change in sales, the degree of financial leverage

(DFL) as the percentage change in net income which results from a 1% change in earnings before interest and taxes, and the degree of operating leverage (DOL) as the percentage change in earnings before interest and taxes (operating income) which results from a 1% change in sales, we have, by definition, that $DTL = DFL * DOL$

Unfortunately, the Mandelker and Rhee model suffers from two problems as a rigorous, accounting based theoretical model of leverage. Firstly, the impact of utilizing accounting proxies for market measures of return are not explicitly recognized within the model and, secondly, their measure of the intrinsic business risk of the company incorporates both an accounting measure of profit and a market measure of value. The former is subject to accounting manipulation under different codes of generally accepted accounting principles (GAAP), whilst the latter is a non accounting measure of value.

Leverage and the accounting beta are directly related to the systematic risk (Bowman, 1989). High Levered and less highly levered firms show a stronger negative relation according to stock returns. There is an inverse relationship between period t firm stock returns and changes in firm stock return volatility from period t to 1+t. This inverse relation is stronger for firms with large debt/equity ratios (Cheung, 1979). The leverage is the most significant issue which establishes the firm's risk premium (Zimmer, 1990).

When bond and stock prices change the leverage of the firm, instability of the firm also changes. The variance of the assets returns is function of the variances of the stocks and bonds returns and the covariance of the returns. Firm with riskless debt and the variance of the assets of the standard deviation of the stock return is related to the standard deviation of the last year's leverage. This function shows the causes and change in the volatility of the stocks returns (Magchian, 1967). Power companies were used as a sample to find the positive relationship between the firm riskiness and leverage in different sectors like business terminology where high degree of operation leverage use shows that the change in sales results have a high effect on ROE (Brigham and Gapenski, 1991)

Financial distress has a series of financial events that reflect diverse phase of corporate adversity. These are decreases in cash flows from continuing operations, reduction of dividend payments, loan default and technical or troubled debt restructuring (TDR); these are considered as the financial distress. By using the accounting measurements and the distress stages, risk profiles of distressed firms can be developed (Henry, 1988).

Subsequent to a default, market risk, market size, firm's profitability and financial leverage are significantly associated with whether the distressed firm will stop working or survive. These findings implicitly confirm the usefulness of accounting measure and information for forecasting a distressed firm's potential development towards liquidation (Alexandre, 1998). Financial structure's, accounting measurements, Liquidity, performance, firm specific attributes and operating risk have been shown to capture risk components that potentially impact the durability of distressed firms (Flagg et al., 1991). Time varying stock volatility explanation is that leverage changes as the relative stocks and bonds prices changes; changes in the volatility of stock returns happened due to change in the leverage of firms (Fizlewcz & Sazqajkoski, 2002).

The concept of risk, defined as the variance of expected security returns, has been examined since the development of the CAPM by Sharpe (1964) and Mossin (1966). Total risk is partitioned into two components: systematic risk and unsystematic risk. The unsystematic risk component measures the risk of an individual firm's security that can be diversified away by portfolio management. The systematic risk component measures an individual security's risk contribution to a portfolio, which cannot be diversified away. In other words, systematic risk (as measured by its index, beta) is a single period measure of how a specific firm's stock return varies relative to the return for all securities in the market. A positive beta value exceeding one is associated with a stock exhibiting greater movement than that of the market itself, but in the same direction. Values between zero and one signal comparatively less movement. Negative betas are

similarly interpreted, but in the direction opposite to that of the market (Rachial, 1988). Strongly growing corporations represent economic development. The corporate leverage have negative relation to corporate growth, it also include the debt financing to be negatively correlated to the GDP development. Significant negative effect of economic growth depends on short term debt and total debt but it does not consider the long term debt (EmirgüçKunt and Maksimovic, 1996)

Corporation size is an important determinant of financial structure where the large firms rely on long term debt. This experimental result can be shown by the comparatively low bankruptcy costs of large firms, the fact that large firms can be able to raise additional capital for expansion. This proposes that small firms may be less levered than large firms and may favor to borrow through bank loans. Extremely levered companies are more probable to pass up profitable investment chances, strongly growing firms should use relatively more equity and less debt (Rajan and Zingales, 1995).

2.2.1. Local Studies

Numerous researches have done locally on this topic. The findings of a paper done by Olweny and Omondi(2011) on effect of macroeconomic variables on stock returns illustrated that there is evidence that Foreign exchange rate, Interest rate and Inflation rate affect stock return volatility. On foreign exchange rate, magnitude of volatility as measured is relatively low at 0.209138 and significant since the probability is almost zero. This implies that the impact of foreign exchange on stock returns is relatively low though significant. Volatility persistence as measured was found low at -0.251925 and significant. This implies the effect of shocks takes a short time to die out following a crisis irrespective of what happens to the market. There was evidence of leverage effect as measured by λ , 0.6720. This means that volatility rise more following a large price fall than following a price rise of the same magnitude.

A study done by Abdullah and Isaac (2005), which was to determine the degree of relationship between leverage and liquidity of a firm, did not accurately determine the

leverage level which accurately enhances the firms' liquidity. The results of this study differs sharply with the commonly held view that leverage increases the risk to common stock holders as a result of fixed interest charges that the firm will be committed to. This study holds that, while this theory holds true for developed markets, it may not hold for developing and emerging markets. It is apparent that existence of debt in capital structure does not lead to increase in the variability of returns to common stock holders for companies quoted on Nairobi Securities Exchange.

2.3 Conclusion

The empirical literature on the relation between leverage and stock returns is extensive, but inconclusive. A large number of studies try different definitions of expected returns to see if there is any empirical relation between leverage and equity risk. For example, Arditti (1967) finds a negative but statistically insignificant association between leverage and equity returns, which are taken as the geometric mean of returns. Hall et al (1967) uses another definition. Returns are taken to be profits after tax and the ratio of book value of equity to assets are used to measure leverage.

He finds that leverage has a negative relation with returns. Hamada (1972) defines returns as profits after taxes and interest which is the earnings the shareholders receive on their investments. He uses industry as a proxy for business risk. Bhandari (1988) gets inflation,adjusted stock returns for all firms including financials. He uses the cross section of all firms without assuming different risk classes. He shows returns increase with leverage.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the research methodology used by the researcher as the vehicle towards the attainment of the objective set out in chapter one. It specifically highlights the research methods that will be used in carrying out the study in order to answer the research questions. In addition, various methodological issues such as population, sampling technique, sampling frame and size, data collection and analysis methods that will be adopted in the conduct of the study will be discussed.

3.2 Research Design

A research design is a plan according to which one obtains research participants and collects information from them (Mugenda and Mugenda 2003). This research will adopt a descriptive research design. Descriptive research design describes data and characteristics about a population or phenomenon being studied (Cooper and Schindler. 2000). Descriptive research is analytic and it focuses on the particular variables. This approach assists in gathering data without manipulation of the research content. The research will also use the survey design. This is because the target population is small and also reduces the chances of bias. In addition, the survey design is flexible and will provide information more quickly and at a lower cost than observational or experimental research.

3.3 Target Population and Sampling

Population refers to an entire group of individuals, events or objects that have a common observable characteristic. Thus, a population is the entire group of interest that conforms to a given specification. A population is made up of elements, individuals or objects about which a researcher wishes to describe or draw conclusion (Cavusgil and

Byington, 1997). The population of the study will cover the 59 companies which are listed at the Nairobi Securities Exchange between 2002 and 2011. Stratified Sampling technique will be used to divide the companies into various strata depending on the industry in which the company falls. From each stratum, simple random sampling will be done to select the companies for the study. This method was selected because it is able to represent not only the overall population but also the key subgroups in the population and the method is free from bias. Again, the sectors at the securities exchange are divided into relatively homogeneous subgroups, thus favouring this method. Through this method also, the research will not only be able to represent the overall population, but also key sub-groups of the population.

3.4 Data Collection

This refers to the means by which measure and facts are obtained from selected elements in a study. In this study secondary data collection method is applied. This study makes use of secondary data which is obtainable from the NSE. The data used will be financial statements for the listed companies. These will include the Income statements and the Balance Sheets. The data will be used to compute the accounting ratios, which forms the basis of the study. The ratios the research will analyse include: Leverage and stock return ratios. Leverage ratio shows the proportionate contributions of owners and creditors. Debt ratio for a period of 10years ($\text{Total Liability/Total Assets}$) will be used.

3.5 Data Analysis and Presentation

The data will be analyzed using descriptive analysis, correlation analysis and regression analysis. The descriptive statistics will be the minimum, maximum, mean and standard deviation. Correlation analysis will be used to test for any serial correlation between the independent variables. Strength of the model will be tested using significance of F statistics at 5% level as well as using coefficient of determination. The analysis will be done using statistical package for social sciences version 20. The results will be presented in tables and graphs where necessary.

3.6 Analytical Model

To remain consistent with previous studies, measures pertaining to i) Debt Ratio, Debt Equity Ratio, Interest Coverage Ratio, and Tobin's Q were taken from Kyereboah-Coleman (2007) model.

Regression Equation:

$$Q = \beta_0 + \beta_1 DR_{it} + \beta_2 DE_{it} + \beta_3 IC_{it} + \mu_{it}$$

Where,

Q = Tobin's Q

DR_{it} = is Debt Ratio (Independent Variable); Debt/Total Capital.

DE_{i,t} = is Debt- Equity Ratio (Independent Variable) ;Debt/Equity

IC_{i,t} = is Interest Coverage (Independent Variable) Earnings before interest and tax/interest

μ_{i,t} = the error term

Q_{i,t} = Stock Returns i in time t

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents an analysis and interpretation of the data collected. The analysis involves the use of secondary data obtained from financial statements of the 59 companies listed on the Nairobi Securities Exchange. The analysis used the Microsoft (MS) Excel statistical packages.

4.2 Overall Performance

The table below shows the overall performance of fifty nine companies listed in Nairobi Securities Exchange.

Table 4.0 Overall Performance, (Q)

Years	Mean Debt Ratio	Mean Debt Equity	Mean Interest coverage	Mean Stock Returns	Overall Performance (Q)
1	0.262091311	0.929558	0.860668	1.497	0.887329328
2	0.291657754	0.903583	0.848678	1.76018	0.951025189
3	0.285891203	0.850274	0.838838	1.72735	0.925588801
4	0.280096918	0.799496	0.797586	1.79033	0.91687823
5	0.25415055	0.8407	0.815116	2.16564	1.018901388
6	0.205638924	0.841671	0.78935	1.90738	0.936010981
7	0.199521077	0.841005	0.767426	1.93974	0.936922019
8	0.221812684	0.834693	0.724576	2.05384	0.958731171
9	0.233317505	0.839784	0.79895	2.32331	1.048839376
10	0.258080634	0.886812	0.833268	2.19315	1.042827409

4.3 Tests of Significance.

Hypothesis testing on whether there is a significant relationship between the stock returns and leverage was done using MS Excel t test two sample means with unequal variances for each category and yielded the following results.

The tests were done at a 95% level of significance using the two tail test.

H_0 : There is no significant difference between the rate of stock returns and leverage.

H_A : There is a significant difference between the rate of stock returns and leverage.

4.3.1 Stock Returns Test Statistic

t-Test: Two-Sample Assuming Unequal Variances

	Year 1-5	Year 5-10
Mean	0.274777547	0.223674165
Variance	0.000255791	0.000547226
Observations	5	5
Hypothesized	Mean	
Difference	0	
Degree of freedom	7	
t Statistic	4.032479368	
P(T<=t) one-tail	0.002490057	
t Critical one-tail	1.894578604	
P(T<=t) two-tail	0.004980114	
t Critical two-tail	2.364624251	

The Stock returns test statistic computed was 4.0325 and fell in the critical region, implying that we reject the null hypothesis that there is no significant difference in stock returns and leverage level and accept the alternative hypothesis that there is a significant difference in stock returns with changes in leverage.

4.3.2 Debt Ratio Test Statistic

t-Test: Two-Sample Assuming Unequal Variances

	Year 1-5	Year 5-10
Mean	0.8647222	0.848793
Variance	0.002688529	0.000459198
Observations	5	5
Hypothesized Mean Difference	0	
Degree of freedom	5	
t Statistic	0.634863596	
P(T<=t) one-tail	0.2767141	
t Critical one-tail	2.015048372	
P(T<=t) two-tail	0.5534282	
t Critical two-tail	2.570581835	

The computed Debt test statistic was 0.6349 and fell in the acceptance region defined by -2.5706 and 2.5706. Thus accept the null hypothesis that there is no significant difference in stock returns with changes in debt level.

4.3.3 Debt Equity Test Statistic

t-Test: Two-Sample Assuming Unequal Variances

	Year 1-5	Year 5-10
Mean	0.832177	0.782714
Variance	0.000654	0.001619275
Observations	5	5
Hypothesized Mean Difference	0	
Degree of freedom	7	

t Stat	2.31975
P(T<=t) one-tail	0.026707
t Critical one-tail	1.894579
P(T<=t) two-tail	0.053414
t Critical two-tail	2.364624

The computed Leverage test statistic was 2.3198 and fell in the acceptance region defined by $- 2.3646$ and 2.3646 . Thus accept the null hypothesis that there is no significant difference in leverage and stock returns.

4.3.4 Interest coverage Test Statistic

t-Test: Two-Sample Assuming Unequal Variances

	Year 1-5	Year 5-10
Mean	1.788101	2.0834836
Variance	0.057937	0.030523573
Observations	5	5
Hypothesized	Mean	
Difference	0	
Degree of freedom	7	
t Statistic	-2.22072	
P(T<=t) one-tail	0.030906	
t Critical one-tail	1.894579	
P(T<=t) two-tail	0.061812	
t Critical two-tail	2.364624	

The interest coverage test statistic computed was $- 2.2207$ and fell in the acceptance region defined by $- 2.3646$ and 2.3646 . Thus accept the null hypothesis that there is no significant difference in interest coverage and stock returns.

4.3.5 Overall Performance Test Statistic (Q)

t-Test: Two-Sample Assuming Unequal Variances

	Year 1-5	Year 5-10
Mean	0.939944587	0.984666191
Variance	0.002465867	0.003205096
Observations	5	5
Hypothesized Mean Difference	0	
Degree of freedom	8	
t Statistic	1.327926278	
P(T<=t) one-tail	0.110419532	
t Critical one-tail	1.859548033	
P(T<=t) two-tail	0.220839064	
t Critical two-tail	2.306004133	

The overall performance test statistic of -1.3279 lies in the acceptance region defined by -2.306 and 2.306. Thus accept the null hypothesis that there is no significant difference in the overall performance and stock returns.

Overall, a negative relationship between DR and Q was found (see Table 4); that is, larger Debt Ratio negatively affects the Stock Returns of Listed Companies. Positive relationships for:

- i) DE and Q, and
- ii) IC and Q, were found; that is, Debt /Equity and Interest Coverage positively affect the Level of Stock returns.

CHAPTER FIVE.

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction.

From the data collected and analyzed, the following discussions, conclusions and recommendations were made.

5.2 Findings

This study is aimed at determining the effect of leverage on stock returns. The basic objective is to identify whether the capital structure of a firm affects the returns of its stock being traded on the securities market. The approach used to conduct the study is based on Fama and French (1993) three-factor model. The study was basically conducted on 59 firms listed on Nairobi Securities Exchange. Time horizon that this study covered ranges from January 2003 till December 2011.

The results of this study show that leverage has a negative and significant effect in explaining the stock returns of a company. Thus, the capital structure of firm proves to be of value in determining stock returns. In addition to that it also reveals that for the said time period there is no size effect as well as value effect present in NSE market. This study provides important implications for investors who are willing to invest in NSE because it provides an insight to investors regarding capital structure and stock return relation.

The study highlights the impact of firm specific factors like market capitalization, Book Value-to-Market value ratio (BV/MV) and Debt to Equity ratio (D/E) on stock returns apart from the impact of market specific factors like return of market portfolio. The results indicate that returns decrease in leverage. The findings are robust to other risk factors and are consistent with Penman et al (2007) who argue that leverage component of Book to Price ratio is negatively associated with future returns. Clearly the risk factors included in these models have additional explanatory power on stock returns. The negative relation of leverage with abnormal returns remains unaffected

when other factors such as effective tax rates and industry concentration are included in the regression equation. The magnitude of the impact of leverage on abnormal returns diminishes as these variables are taken into consideration. However the relation between leverage and abnormal returns remains significant and negative.

Overall findings show that larger level of leverage negatively affects the rate of Stock Returns while Interest Coverage Levels and Debt Equity levels positively affect the rate of Stock Returns.

5.3 Recommendations

This study recommends further study on policy issues raised; first, determining the proper balance (mix) between the benefits that leverage confers to markets and the potential systemic risk posed by high levels of leverage. If it is found that, existing market mechanisms do not adequately guide on the use of leverage, resulting in unacceptably high levels of systemic risk, then the question becomes one of how best to address this concern. Leverage allows an investor to take on higher risks, including those risks that are shed by others. Thus, the leveraged exposure of investors with higher risk appetites can be a vehicle that allows a larger number of risk-averse investors to reduce their risks. While the leverage that supports the reallocation of risk provides benefits, it can be fragile. In a volatile market, high levels of leverage increase the likelihood that a leveraged entity will fail, in part because the size of potential losses can seriously deplete and even wipe out the entity's net worth.

When leveraged investors are overwhelmed by market or liquidity shocks, the risks they have assumed will be discharged back into the market. Thus, highly leveraged investors have the potential to exacerbate instability in the market as a whole. The outcome may be direct losses inflicted on creditors and trading counterparties, as well as an indirect impact on other market participants through price changes resulting from the disappearance of investors willing to bear higher risks. The indirect impact is potentially the more serious effect. Volatility and sharp declines in asset prices can heighten

uncertainty about credit risk and disrupt the intermediation of credit. These secondary effects, if not contained, could cause a contraction of credit and liquidity, and ultimately, heighten the risk of a contraction in real economic activity.

5.4 Limitations and areas of further studies

This study focused only on the 59 companies listed on the NSE. Non-listed companies were not considered. Similarly, the main focus was on the overall performance of the listed companies without much detail of the specific sectors within which the companies fall into. More research needs to be done on whether the industry that a company belongs to be it finance and Investment, commercial and services, industrial and allied and agriculture affects the stock returns level and leverage. This will be able to show if there are major performance differences in stock returns between different sectors of the economy.

The research also dealt with the Kenyan perspective. The NSE is might not be a representative of the global financial sector. The Kenyan financial sector may not be as developed as other markets more so in developed world where credit regimes can be more apt when looking at fundamentals of credit vis a vis the Kenyan example. More wide research should be done to a more broad explanation of the relationship between leverage and stock returns.

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APPENDICES

Appendix A: Listed Companies in the Nairobi Securities Exchange

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 Kenya Ltd

COMMERCIAL AND SERVICES

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

TELECOMMUNICATIONS AND TECHNOLOGY

17. AccessKenya Group Ltd
18. Safaricom Ltd

AUTOMOBILES AND ACCESSORIES

19. Car and General (K) Ltd
20. CMC Holdings Ltd
21. Sameer Africa Ltd
22. Marshalls (E.A) Ltd

BANKING

23. Barclays Bank Ltd
24. CFC Stanbic Holdings Ltd
25. Diamond Trust Bank Kenya Ltd
26. Housing Finance Co Ltd
27. Kenya Commercial 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

33. Jubilee Holdings Ltd
34. Pan Africa Insurance Holdings Ltd
35. Kenya Re-Insurance Corporations Ltd
36. CFC Insurance Holdings
37. British-American Investment Company (Kenya) Ltd

INVESTMENT

38. City Trust Ltd
39. Olympia Capital Holdings Ltd
40. Centum Investments Co Ltd
41. Trans-Century Ltd

MANUFACTURING AND ALLIED

42. B.O.C Kenya Ltd
43. British American Tobacco Kenya Ltd
44. Carbacid Investments Ltd
45. East African Breweries Ltd
46. Mumias Sugar Co
47. Unga Group Ltd

48. Eveready East Africa Ltd

49. Kenya Orchards Ltd

50. A. Baumann Co Ltd

CONSTRUCTION AND ALLIED

51. Arthi River Mining

52. Bamburi Cement

53. Crown Berger

54. E A Cables Ltd

55. E A Portland Cement Ltd

56. Kenol Kobil Ltd

ENERGY AND PETROLEUM

57. Total Kenya Ltd

58. Kengen Ltd

59. Kenya Power & Lighting Co Ltd