THE RELATIONSHIP BETWEEN THE FIRM'S CAPITAL STRUCTURE AND THE SYSTEMATIC RISK OF COMMON STOCKS: AN EMPIRICAL STUDY OF COMPANIES QUOTED ON THE NAIROBI STOCK EXCHANGE

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DECLARATION

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

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DEDICATION

To my Father Reuben Lutomia and Mum Sarah Ondieri; the great teachers in my life.

To my Brothers Weremba, Aura, Anangwe, Kweyu, Lumbasi, Omumia and Sisters

Arochi, Machio, Mukhwana, Kombo; for blazing the trail.

To my future.

CONTENTS

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ABSTRACT

The issue of risk is of great importance to anyone interested in finance either as an investor or a finance manager. This is so because while the main objective of any investment is for its return, it has been established that this return is partly depended on the risk level associated with that investment. That is, the higher the risk the higher is the expected return, and vice versa. This being the case however, it has been established further that investors can diversify away part of this risk. The part of risk which they cannot diversify away is the systematic risk and this is what concerns them most. Among the factors thought to influence the risk of a security is the capital structure of the firm issuing the security.

This study then attempts to establish whether there is a relationship between the firm's capital structure and the systematic risk of its common stocks for companies quoted on the Nairobi Stock Exchange (NSE).

This study relies heavily on the theory of capital structure as espoused by Modigliani and Miller (MM theory 1958). It involves the computation of annual returns of the companies having debt and then annual returns of these same companies assuming that they do not have debt in their capital structure. These two sets of annual returns are then regressed against the observed market returns for the same period to determine the levered and un-levered estimates of systematic risk (beta).

The study concludes that there is no relationship between the firm's capital structure and the systematic risk of its common stocks. While there appears to be a difference between the means of the levered and un-levered estimates of beta, this difference is not statistically significant to lead to a conclusion to the contrary.

However, these conclusions are limited to the extent of the validity of the assumptions made in the study and the respective limitations that the study encountered.

CHAPTER ONE

1.0 INTRODUCTION.

1.10 BACKGROUND OF THE STUDY.

Firms finance their operations using different financial mixes. Determining the firm's financing mix or, equivalently, deciding how its income stream should be divided among stakeholders, constitutes the capital structure decision, (Archer, Choate and Racette, 1983). Thus the capital structure of a firm will include only long-term, interest bearing debt and common stock, excluding short-term liabilities.

Various theories in finance have been developed to try and explain how a firm should be financed if the value of the firm and the wealth of the shareholders is to be maximised. These include the Modigliani and Miller (M M) theory and the Traditional view of capital Structure, (Lumby, 1991).

In investment analysis, the risk-return relationship is of paramount importance in portfolio selection. This is so because while investors expect a particular return on their investment, there is always the likelihood that the realised return may be different from the expected return. This risk-return relationship is clearly demonstrated in the Capital Asset Pricing Model (CAPM) where the expected return is a function of the risk associated with the security, (Sharpe, 1964).

According to portfolio theory, (Markowitz, 1952 and 1995), in a situation where the risks and returns of various assets have been ascertained, it is expected that a rational investor will choose that combination of assets (portfolio) that will maximize his returns while minimizing risks to bear, (Reilly and Brown, 2000). In effect therefore, the investors and other market players will want to know or estimate the risk associated with the returns of a particular asset. In capturing this risk, knowledgeable market players who include analysts and investors will use a statistical measure called beta. This helps them isolate investment opportunities that have favourable risk-return characteristics and hence select stocks for inclusion in their portfolio.

Theoretical and empirical justifications for market beta as a measure of systematic risk are expounded in Markowitz (1995), Sharpe (1963) and Lintner (1965) in the CAPM context. Empirical evidence supports market beta as a significant explanatory variable of the ex-post returns for securities and portfolios (Black, Jensen and Scholes, 1972).

One major factor believed to influence the risk of a firm's common stock returns is its capital structure. Both in the CAPM and the MM theory, borrowing, from whatever source, while maintaining a fixed amount of equity, increases the financial risk and so the cost of equity rises, (Lumby, 1991). Therefore the covariance of the asset's rate of return with the market's portfolio rate of return (which measures the nondiversifiable or systematic risk of the asset) should be greater for the stock of firm with a higher debt-equity ratio than for the stock of another firm in the same risk class with a lower debt-equity ratio, (Hamada, 1972).

Glen and Pinto (1994) observe that the risk that debt imposes on a firm is recognised by creditors, shareholders and management. Creditors respond by adjusting the interest rates on firms as leverage increases, or by refusing to lend to firms that are too highly leveraged. In addition, creditors often impose restrictions on debtors that prevent them from issuing additional debt above some well-defined limit, from subordinating their credit to that of others, from making certain investment decisions and from paying dividends.

Leverage also increases the risk of equity. As a consequence, shareholders adjust the return that they require from a firm to reflect not only the operating risk of the firm, but also the risk implied by the firm's leverage as well. Hence a higher cost of equity for the firms. While it is possible to diversify away the unsystematic risk, this is not possible for the systematic risk. It therefore becomes important to know the effect of leverage on the systematic risk.

Most studies on the capital structure focused on the relevance or irrelevance of leverage in the maximisation of the value of the firm. The study by Hamada (1972) marked the first direct attempt to investigate the leverage-systematic risk relationship.

1.2 CONCEPTS AND TERMS.

1.2.1 Capital structure.

The term capital structure is used to represent the proportionate relationship between debt and equity. Equity includes paid-up share capital, share premium and reserves and surplus (retained earnings). The capital structure decision is a significant managerial decision as it influences the shareholder's return and risk, (Pandey, 2000).
The company will have to plan its capital structure initially at the time of its promotion. Subsequently, whenever funds have to be raised to finance investment, a capital structure decision is involved.

According to Copeland and Weston (1988), capital structure or capitalisation of the firm is the permanent financing represented by long-term debt, preferred stock and shareholder's equity. It is further contrasted from financial structure, which includes short-term debt in addition to the components of capital structure.

1.2.2 Concept of risk.

The definition of investment risk has led to the observation that not everyone agrees on how to define risk, let alone measure it. Nevertheless, there are some attributes of risk that are well accepted.

If an investor invests in treasury bonds, he faces no uncertainty about monetary outcome. The value of the investment at maturity will be identical with the predicted value. In this case the investor bears no monetary risk. However if he invested in common stocks, it will be impossible to exactly predict the value of the investment as of any future date.

The best he can do is make a best guess or most-likely estimate qualified by statements about the range and likelihood of other values. In this case the investor does bear risk. Hence risk has been simply defined as the likelihood of the realised returns on an investment being different from the expected, (Modigliani and Pogue, 1974).

The risk of an individual security can be divided into two components, the systematic risk and the unsystematic risk components. The unsystematic risk component can be eliminated by mixing the security with other securities in a diversified portfolio, while systematic risk component cannot be eliminated through diversification. The systematic risk results from the fact that the return on nearly every security depends to some degree on the overall performance of the market.
It is this systematic risk portion which gives rise to the risk premium that is attached to a security. The unsystematic risk requires no such premium since it can be eliminated through diversification.

This study focuses on the systematic risk of common stock and not the total risk because it is the systematic risk which is rewarded.

1.2.3 Concept of beta.

Beta is a measure of systematic risk of a security. The return on a security will depend on the return of the market as a whole. There are factors which affect the market which include, inflation rate in the economy, the interest rates, legal/political factors and others. These factors existing in the market may have a more profound effect on the return on a security much more than the market as a whole. Thus commonly associated with measuring volatility of individual stocks, beta measures the variation in the returns of a portfolio to the variation in returns of the entire market.

Investors would like to maximise the market value of their existing stocks of equity. A direct implication of this assumption is that the firm should choose its investment programme and financing policy so as to maximise the price value of its common stocks.

This in turn requires some sort of model of the forces which influence and determine stock prices.

Sharpe (1964) and Lintner (1965) developed the capital asset pricing model (CAPM) which relates the return from a portfolio with systematic risk which that return is associated with. The CAPM is expressed as follows:

$$E(R_i) = R_f + [E(R_m) - R_f]\beta_i$$

Where,

$E(R_i)$ = the expected return on a security,

R_f = the risk-free rate of return,

β_i = beta coefficient which measures the security's systematic risk,

$E(R_m)$ = the expected return on the market portfolio.

The higher a security's beta, the higher is its systematic risk and therefore the higher is the expected return on this security.

1.3 STATEMENT OF THE PROBLEM.

Both theoretical and empirical studies have been carried out in the field of finance relating the issues associated with corporation finance to those associated with investment and portfolio analyses. Those studies focused on the leverage-risk relationship have shown that some of the changes observed in the systematic risk of common stocks can be explained by the added financial risk taken on by the underlying firm with its use of debt and preferred stock, (Hamada, 1972).

Most of these studies have been carried out in developed markets and their applicability in developing markets like Kenya is not known. While some of these studies found a strong and significant relationship between systematic risk and leverage (Beaver, Kettler and Scholes 1970), results from other studies indicate that the coefficients of the systematic risk-leverage relationship were not significantly different from zero. That is, the sign, magnitude and statistical significance of the leverage variables were most unstable (Breen and Lerner 1973). The authors viewed these results as a reflection of the leverage-risk theoretical controversy.

This study therefore seeks to establish the effect of a firm's capital structure on the systematic risk of common stocks in an effort to analyse the systematic risk-leverage characteristics of companies quoted on the Nairobi Stock Exchange.

1.4 OBJECTIVE OF THE STUDY.

Specifically, this study aims to:

- Determine whether there is a relationship between t a firm's leverage and the systematic risk of its common stock.

In order to achieve this objective, this study will test the following hypothesis:

$H_0 : \hat{\beta}_l = \hat{\beta}_u$ There is no relationship between leverage and the systematic risk of common stocks.

$H_1 : \hat{\beta}_l \neq \hat{\beta}_u$ There is a relationship between leverage and the systematic risk of the common stocks.

1.5 NEED FOR THE STUDY.

There has never been an investigation linking the firm's capital structure with the systematic risk of its common stocks on the Nairobi Stock Exchange (NSE). This study will therefore go a long way in providing empirical evidence on this relationship.

1.6 IMPORTANCE OF THE STUDY.

This study is considered to be important because of the following purposes:

a) Investment practitioners

This study should be of use to security analysts, stockbrokers, investors and other parties whose knowledge of the relationship between leverage and systematic risk is an important input in to investment analysis.

b) Academicians and researchers.

This study is meant to act as a base for further studies and also as a point of reference for both academics and researchers for it will provide further insight into the characteristics of the NSE.

c) Finance officers.

This study will help the finance officers know the impact that their choice of capital is likely to have on the systematic risk of their common stock and hence plan accordingly.

CHAPTER TWO.

2.0 LITERATURE REVIEW.

2.1 THE THEORY OF CAPITAL STRUCTURE.

2.1.1 THE TRADITIONAL VIEW.

The term "traditional view" is today used to refer to the views of finance theorists before 1958, when Modigliani and Miller challenged these views. This view is based on the belief that an optimal capital structure exists and that the value of the firm can be maximised and cost of capital minimised through careful use of debt. It assumes that firms substitute cheaper debt for equity. As long as assets financed by this cheaper debt provide higher returns than the cost of debt, the value of the firm will rise. There is no agreement among the traditionalists, however, as to the actual behaviour of cost of equity. Although there is a general agreement that the share prices increase because the increase in earnings exceeds the added risk of debt financing, whether the cost of capital remains constant or rises is an unresolved issue, (Allen 1983). One would, however, expect a market for equity characterised by rational wealth maximising investors to demand a higher premium due to increased risk of debt financing.

Another issue has to do with the shape of the cost of capital curve. Some see it as V-shaped which is suggestive of a unique optimal capital structure whereas others view it as U-shaped and therefore suggestive of a range of optimum debt levels. Whatever the shape the increase in firm value ceases when the shareholders perceive the greater net income resulting from the use of debt funds as just enough to compensate for the greater financial risk. Increasing the debt beyond this point increases the cost of capital and lowers firm value, (Solomon 1963).

For all its simplicity, the traditional view should be credited with prompting the kind of rigorous analysis that MM subjected the capital structure question to. It is noteworthy that modern views have not discarded the traditional view wholesale. Instead these notions have been subjected to more abstract reasoning and analysis and some contemporary ways of looking at capital structure such as the signalling framework and agency theory attach some importance to a firm's capital structure.

2.1.2 THE MODIGLIANI-MILLER VIEW.

Modigliani and Miller (1958) challenged the traditional view and proved that given certain conditions, there does not exist an optimal capital structure and that the cost of capital is independent of a firm's mode of financing. In their view, a firm's capital structure has no effect on the firm's value. They demonstrated that identical income streams could not sell at different prices under the assumptions of perfect capital markets, absence of transaction costs, existence of equivalent risk classes and the absence of taxes. Arbitrage, they argued, would ensure that an individual's exposure to risk would not change because home-made leverage was as good as corporate leverage.

One of the earliest reactions of MM's irrelevance theorem came from Durand who though not denying the validity of their proposition, questioned the practical practicability of arbitrage operations, the assumption of a riskless world and equivalent return classes, (Durand 1959). What Durand apparently lost sight of is the fact that empirical and theoretical analysis cannot be successfully done without making certain assumptions. Indeed the onus was on Durand to provide support for the traditional position and MM regretted the lack of evidence in support of the traditional U-shaped cost of capital curve in their reply to Durand's comment, (Modigliani and Miller 1959).

In a correction to their original propositions, MM had recognised that the value of the firm was dependent on the after tax net cash flows. Therefore where taxes discriminate between returns on debt and equity in favour of debt an optimal capital structure exists and a firm should use close to 100% debt (Modigliani and Miller 1963). This correction by appreciating the tax advantages of debt reduced the difference in the perceived effects of leverage between the traditional view and MM'S original propositions.

However, MM were quick to point warn against a temptation to maximise debt in the capital structure. Other sources of finance like retained earnings may be cheaper when personal income taxes are considered. Increasing costs of debt financing as well as limitations imposed by lenders may check the amount of debt that a firm can carry. From this argument, the choice between debt and equity is clearly of some importance.

The series of comments and replies between 1958 and 1969 when MM wrote in reply to Heins and Sprenkle (1969) offered them the opportunity to refine and clarify their assumptions but did not change the basic form of their argument. In a word, MM propositions have not been conclusively challenged.

The theory of capital structure as we know it today owes a lot to MM because the amount of theoretical and empirical work that have been done has been as a result of questions arising out of their path finding article in 1958.

2.1.3 SUBSEQUENT DEVELOPMENTS.

Stiglitz (1969) gave fresh flavour to the capital structure controversy by delineating what he felt to be the major limitations of MM theory. These were the assumptions of the MM theory, the possibility of bankruptcy and the constraint of partial rather than general equilibrium analysis. It should be noted however that MM's assumptions are standard assumptions in most economic discourse. Also the possibility of bankruptcy does not necessarily negate MM.

Subsequent contributions to the capital structure debate have centred more or less on the issues raised by Stiglitz. Attempts have been made to understand the magnitude and implications of market imperfections for optimal capital structure in the real world. Kraus and Litzenberger (1977) observe that bankruptcy and taxes are market imperfections that are central to a positive theory of the effects of leverage on a firm's market value.

It is also noted that a firm's future investment strategy may be substantially changed by the substitution of debt for equity in a firm's capital structure. A highly levered firm which is unable to secure additional funding (because it is considered to be more risky) may be forced to bypass profitable investment opportunities which an unlevered firm may be able to undertake. When this happens and a firm fails to take up positive net present value (NPV) investments, it foregoes an increase in value equivalent to the NPV of the investment, (Robichek and Myers 1965).

2.1.4 Studies on Capital Asset Pricing Model (CAPM) and beta.

Blume and Friend (1973) tested CAPM using monthly portfolio returns during the 1955-68 periods. Their tests involved fitting the coefficients of equation for three sequential periods. They also tested for linearity of the risk-return relationship by adding a factor to the regression equation.

Their results were that a linear model is a tenable approximation of the empirical relationship between return and risk for NYSE stocks over the three periods covered.

Fama and French (1992) examined the relationship between betas and returns between 1963 and 1990. They concluded that there was no relationship between the two. They also noted that the two other variables, size and book value/market value, explain the difference in returns across the firms much better than beta. These results have however been challenged.

Amihud, and Mendelson (1992) used the same data as Fama and French, preformed different statistical tests and showed that betas do in fact explain returns during the time period.

Ross (1976) dissatisfied with CAPM led to the development of alternative theory to explain asset pricing; the Arbitrage Pricing Theory (APT). Instead of using the all embracing beta as a measure of shares market risk, the APT breaks down risk in to a number of common components or factors to which a company's share price might be sensitive. For example, interest rates, crude oil prices, exchange rate movements and inflation can be measured and diversified portfolios can be constructed to give desired sensitivities to particular factors. The expected return (ER) on a portfolio is then determined by its sensitivities to the factors considered.

Levy (1971) examined weekly rates of return for the 500 NYSE stocks. He concluded that the risk measure was not stable for individual stocks over fairly short periods (52 weeks). His tests also showed the beta coefficient to be very predictable for large portfolios and progressively less predictable for smaller portfolios and individual securities.

According to Scholes and Williams (1977), the use of annual instead of monthly returns to estimate betas, though possibly reducing precision, helps avoid other measurement problems caused by trading frictions (such as transaction costs and taxes), non-synchronous trading and seasonal patterns in returns. Each of these factors can create biases in estimating beta. For example, the betas of small-cap stocks that trade in thin markets are systematically understated by "monthly" betas. Over a period as long as a year, however, measured returns should be close to the market's assessment of changes in value, yielding less biased beta estimates.

Kothari and Shanken (1998) carried out a study on the relationship between beta and return. They concluded that contrary to the popular interpretation of the Fama and French results as implying no compensation of beta risk, it is observed that their evidence is equally consistent with a value-weighted market risk premium of 6% per year. In addition, when betas are estimated using annual rather than monthly data, the results are highly statistically significant. Thus, while the CAPM may not provide a perfect description of expected returns, the pronouncement that beta is dead appear to have been premature.

2.2 SOME POSSIBLE PROCEDURES AND THE SELECTED ESTIMATING RELATIONSHIPS.

Hamada (1972) gives four general procedures that can be used to estimate the effect of the firm's capital structure on the systematic risk of common stocks. These are:

2.2.1 The MM valuation Approach.

By estimating the capitalisation rate with an explicit valuation model (MM applied it in the electric utility industry), it is possible to relate this capitalisation rate with the use of the CAPM to a nonlevered systematic risk measure β_u. Then the difference between the observed systematic risk, β_l, and β_u would be due solely to leverage. But the difficulties in this approach for all firms are many.

Disadvantages:

a) The MM valuation approach specification, in advance, of risk classes. All firms in a risk - class are then assumed to have the same capitalisation rate for an all-common equity firm. Unfortunately, there must be enough firms in a risk-class so that a cross-section analysis will yield statistically significant coefficients.

b) The MM approach requires estimating expected asset earnings and estimating the capitalisation growth potential implicit in stock prices. If it is possible to consider growth and expected earnings without having to specify their exact magnitude at a specific point in time, considerable difficulty and possible measurement errors will be avoided.

2.2.2 Regression of systematic risk with accounting and leverage variables approach.

This entails running a regression between the observed systematic risk of a stock and a number of accounting and leverage variables in an attempt to explain this observed systematic risk. Unfortunately, without a theory, we do not know which variables to exclude and which to include and whether the relationship is linear, multiplicative, exponential or curvilinear. Therefore this method will not be used here.

2.2.3 Measure systematic risk before and after a new debt issue.

Thus here the difference can be attributed to the debt issue directly. An attractive feature of this approach is that a good estimate of the market value of the incremental debt issue can be obtained.

Disadvantages:

a) The difference in the systematic risk may be due to not only to the additional debt, but also to the reason the debt was issued. It may be used to finance a new investment project in which case the project's characteristics will also be reflected in the new systematic risk measure.

b) The new debt might have been anticipated by the market if the firm had some long-term target leverage ratio which this issue will help maintain; conversely, the market may not fully consider the new debt issue if it believes the increase in leverage is only temporary. For these reasons, this seemingly attractive procedure will not be employed.

2.2.4 Assumption of the validity of the MM theory.

Here we assume the validity of the MM theory from the outset. Then the observed rate of return of a stock can be adjusted to what it would have been over the same period if the firm had no debt and preferred stock in its capital structure. The difference between the observed systematic risk, β_l, and the systematic risk for this adjusted rate of return time series, β_u, can be attributed to leverage. This approach will be adopted for this particular study in a specific procedure outlined by Hamada (1972).

2.3 STUDIES DONE ON THE RELATIONSHIP BETWEEN RISK AND CAPITAL STRUCTURE.

The study of individual firm's risk as related to their underlying characteristics began with the work of Beaver, Kettler and Scholes (1970). They examined the relationship of certain accounting ratios (dividend payout, liquidity, earnings variability, leverage, asset size and covariabilityof earnings) to firm's systematic risk and found a strong and significant association between them.

Using a similar set of explanatory variables on cross-section monthly regressions, Breen and Lerner (1973) presented additional evidence in support of this relationship. They found that although the variable's signs, on the whole, conformed to traditional literature, many of the reported coefficients were not significantly different from zero. Those that were significant displayed such wide variations from sample to sample that they could not have been drawn from the same underlying population. In particular, the sign, magnitude and statistical significance of the leverage variables were most unstable, a result which the authors viewed as a reflection of leverage-risk theoretical controversy.

Hamada (1969) carried out research on the relationship between portfolio analysis and corporate finance. He showed that systematic risk of a firm's common stock should be positively correlated with the firm's leverage.

Lev (1975) used the same approach adopted by Hamada and concludes that the firm's operating leverage is a variable affecting systematic risk.

Bowman (1979) tried in his paper to establish whether there was a theoretical relationship between systematic risk and financial (accounting) variables. He looked at: earnings variability, dividend payout, capital structure and growth. He concluded that:

- Systematic risk was not a function of earnings variability, growth, size of a firm or dividend payout.

- There was a theoretical relationship between systematic risk and the firm's leverage.

Hamada (1972) carried out a research on the effects of a firm's capital structure on the systematic risk of its common stock. In this study of 304 firms over a 20-year period, he found out that approximately 21 to 24% of the observed systematic risk of common stocks can be explained merely by the added financial risk taken on by the underlying firm with its use of debt and preferred stock. Hence concluding that corporate leverage does count considerably.
On the Nairobi Stock Exchange, Ndiangui (1992) contends that there are positive effects of capital structure on the total risk of common stocks at the NSE.

Summary of the literature review and its link with this research.

Previous studies have sought to establish the effect that a firm's capital structure has on the systematic or total risk of its common stocks.

We have seen from the research done that sometimes the coefficients obtained in the relationship between systematic risk and capital structure were quite unstable (Breen and Lerner 1973). Yet in other studies, a strong and significant relationship between systematic risk and leverage was found, (Beaver, Kettler and Scholes, 1970).

In conclusion, the literature review highlights the important positions that systematic risk, as measured by beta, and capital structure occupy in the finance literature.

Amid these positions therefore, this research would like to find out whether the relationships tested elsewhere hold on the Nairobi Stock Exchange.

This study hopes to bring new knowledge and hence a better understanding of our stock market.

CHAPTER THREE.

3.0 RESEARCH DESIGN.

The main purpose of this study is to determine the effect of a firm's capital structure on the systematic risk of its common stock. We therefore apply the approach where the observed rate of return can be adjusted to what *it would have been* over the same time period *if* the firm had no debt and preferred stock in its capital structure. The difference between the observed systematic risk, β_l, and the systematic risk for the adjusted rate of return time series, β_u, can be attributed to leverage.

To be able to make this empirical test using shares quoted at the Nairobi Stock Exchange, an extensive analysis must be carried out, to provide the return of each share.

3.1 THE POPULATION AND SAMPLING PROCEDURE.

This consisted of all the 52 firms listed on the NSE for the period 31st December 1992 to 31st December 2001. The period under study was nine years. The reliability of data before 1993 was not guaranteed because it was not available at the NSE.

The banks were excluded because of their nature of business of accepting deposits. The remaining firm's, 31 in total, formed the sample for this study.

3.2 DATA COLLECTION.

The data used in this study is secondary data obtained from the NSE secretariat. This was in form of annual capitalisation reports and annual price lists for the period of 9 years covered under study.

Thus to come up with a valid empirical evidence to the issues of capital structure-systematic risk relationship, the following variables were obtained.

1. The stock prices at the beginning and end of each year.

2. Total amount of interest earning debt outstanding, the corresponding annual interest payment each year and the total number of shares in issue.

3. Total annual ordinary dividends per share and gross preferred dividend paid, if any.

4. The annual corporation tax for each year.

3.3 DATA ANALYSIS METHOD.

3.3.1 Validity of the MM theory.

The assumption of the validity of the MM theory approach will be applied in this case.

Determination of returns.

To discuss this approach specifically, we consider the relationship for the shilling return to the common shareholder from the period t-1 to t. This, according to Hamada (1972), is as follows:

$$C_t = (X - I)_t (1 - T)_t - P_t + \Delta G_t = D_t + Cg_t \quad \text{-------------------------------------(1)}$$

Where,

C_t = Total shilling return to the common shareholder from period t-1 to t,

X_t = Earnings before interest and preferred dividends,

I = Interest expense,

T = Corporation tax rate,

P_t = Preferred dividends paid,

ΔG_t = The change in capitalised growth over the period,

D_t=Common stock dividends,

Cg_t = Common stock capital gains.

It is noted here that there is the need to add any change in capitalised growth since we are trying to explain the common shareholder's market holding period shilling return. ΔG_t must be added for growth firms to the current period's profits from existing assets since capitalised growth opportunities of the firm-future earnings from new assets over and above the firm's cost of capital which are already reflected in the stock price at (t-1)- should change over the period and would accrue to the common shareholder.

Since the systematic risk of a common stock is:

$$\beta_l = \frac{\operatorname{cov}(R_{lt}, R_{mt})}{\delta^2(R_{mt})} \quad \text{---(2)}$$

Where,

R_{lt} = The common shareholders rate of return,

R_{mt} = The return on the market portfolio.

Then the substitution of (1) into (2) yields:

$$\beta_l = \frac{COV\left[\left(\frac{(X-I)(1-T)_t - P_t + \Delta G_t}{S_{lt-1}}\right) R_{mt}\right]}{\delta^2 R_{mt}} \quad \text{------------------------------------(2a)}$$

Where S_{lt-1}=Market value of common stock at the beginning of the period.

The systematic risk for the same firm over the same period if there was no debt and preferred stock in the capital structure is:

$$\beta_u = \frac{\operatorname{cov}(R_{ut}, R_{mt})}{\delta^2(R_{mt})} = \frac{\operatorname{cov}\left[\left(\frac{X(1-T)_t + \Delta G_t}{S_{ut-1}}\right) R_{mt}\right]}{\delta^2(R_{mt})} \quad \text{-----------------------------------(3)}$$

Where R_{ut} and S_{ut-1} represent the rate of return and the market value, respectively, to common shareholder if the firm had no debt and preferred stock.

From (3) we obtain:

$$\beta_u S_{ut-1} = \frac{\operatorname{cov}[X(1-T)_t + \Delta G_t, R_{mt}]}{\delta^2(R_{mt})} \quad \text{---(3a)}$$

Next, by expanding and rearranging (2a), we have:

$$\beta_l S_{lt-1} = \frac{\operatorname{cov}[X(1-T)_t + \Delta G_t, R_{mt}]}{\delta^2(R_{mt})} - \frac{\operatorname{cov}[I(1-T)_t, R_{mt}]}{\delta^2(R_{mt})} - \frac{\operatorname{cov}[P_t, R_{mt}]}{\delta^2(R_{mt})} \quad \text{-----------(2b)}$$

If we assume as an empirical approximation that interest and preferred dividends have negligible covariance with the market, at least relative to the (pure equity) common stock's covariance, then substitution of the LHS of (3a) into the RHS of (2b) yields:

$$\beta_l S_{lt-1} = \beta_u S_{ut-1} \quad \text{---(4)}$$

Or,

$$\beta_u = \left(\frac{S_l}{S_u}\right)_{t-1} \beta_l \quad \text{---(4a)}$$

Because, S_{ut-1}, the market value of common stock if the firm had no debt and preferred stock is not observable since most of the firms do have debt and/or preferred stock, a theory is required to measure what this quantity would have been at t-1. The MM theory will be employed for this purpose, (Modigliani and Miller, 1963). That is:

$$S_{ut-1} = (V - TD)_{t-1} \quad \text{---(5)}$$

Where,

D=the market value of debt,

V_{t-1}=the observed market value of the firm (sum of common stock, debt and preferred stock.

The problem here is that in estimating β_u in (4a), it is not clear which period's ratio of market values to apply to estimate the firm's systematic risk. In this event, a leverage-free rate of return time series for each firm should be derived and the market model applied directly to this time series. In this manner, the beta coefficient would give us a direct estimate of β_u which can then be used as a criterion to determine if any of the market value ratios, (S_l/S_u), can be applied to (4a) successfully.

For this purpose, the would have been rate of return for the common stock if the firm had no debt and preferred stock is:

$$R_{ut} = \frac{X_t(1-T)_t + \Delta G_t}{S_{ut-1}} \quad \text{--(6)}$$

The numerator of (6) can be rearranged to be:

$$X_t(1-T)_t + \Delta G = [(X-I)_t(1-T)_t - P_t + \Delta G_t] + P_t + I_t(1-T)_t$$

Substituting (1),

$$X_t(1-T)_t + \Delta G_t = [D_t + Cg_t] + P_t + I_t(1-T)_t$$

Therefore, (6) can be written as:

$$R_{ut} = \frac{D_t + Cg_t + P_t + I_t(1-T)_t}{S_{ut-1}} \quad \text{---(7)}$$

Since S_{ut-1} is unobservable for the firms with leverage, the MM theory, equation (5), will be employed; then:

$$R_{ut} = \frac{D_t + Cg_t + P_t + I_t(1-T)_t}{(V-TD)_{t-1}} \quad \text{--(8)}$$

On the other hand the observed rate of return on the common stock is:

$$R_{lt} = \frac{(X-I)_t(1-T)_t - P_t + \Delta G_t}{S_{lt-1}} = \frac{D_t + Cg_t}{S_{lt-1}} \quad \text{--------------------------------------(9)}$$

Equation (8) is the rate of return to the common shareholder of the same firm and over the same period of time as (9). However, in (8) there are the underlying assumptions that the firm never had any debt and preferred stock; (9) incorporates the exact amount of debt and preferred stock that the firm actually did have over this time period and no leverage assumption is being made. Both (8) and (9) are now in forms where we can measure them using the data available from the market.

3.3.2 Regression analysis.

The standard procedure for estimating beta is to regress stock returns against market returns. Therefore, for each of the firms in the sample, the following regressions were run:

$$R_{uit} = \alpha_{ui} + \beta_{ui} R_{mt} + \varepsilon_{uit} \quad \text{---(10a)}$$

$$R_{lit} + \alpha_{li} + \beta_{li} R_{mt} + \varepsilon_{lit} \quad \text{--(10b)}$$

Where,

R_{mt} = is the observed NSE annual arithmetic stock market rate of return for period under study,

α_l and β_l = are constants for each firm's regression

This will be in the form:

$\mathbf{R_i = a_i + b_i R_m}$

Where $\mathbf{b_i}$ is the beta estimate for the security.

Statistical tests.

The interpretation of the estimated coefficient must take into consideration possible statistical measurement errors. For instance, the standard error of beta (SEβ) is an indication of the extent of the possible measurement error. The larger the standard error, the less certain is that measured beta a close approximation of the true value. We shall test this.

Where $SE\beta = \dfrac{SE}{\sqrt{\sum X^2 - \frac{(\sum X)^2}{n}}}$ and $SE = \sqrt{\dfrac{\sum Y^2 - a\sum Y - b\sum XY}{n-2}}$

This statistic measures the extent to which the true value of beta can be considered to be different from zero.

The hypothesis was tested at 5% level of significance. $t = \dfrac{\bar{X}_1 - \bar{X}_2}{\hat{\delta}_{\bar{X}_1 - \bar{X}_2}}$

CHAPTER FOUR

4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

The main objective of this study was to establish whether there is a relationship between the firm's capital structure and the systematic risk of its common stocks. In order to achieve this objective, an approach based on the MM capital structure was adopted. This has been detailed in the previous chapters. The expectation here is that the higher the level of debt, the higher will be the systematic risk of its common stocks as measured by the levered beta estimate as compared to the unlevered beta estimate. In this chapter therefore, the results of the data analysis are presented and briefly discussed.

The data collected was analysed as follows. Two sets of data were collected for each company in the sample. The first set was for the computation of levered returns and the second set was for the computation of the un-levered returns of the same companies assuming that they did not have debt as discussed in the previous chapters. These two sets of the returns, levered and un-levered, are presented in the appendix.

The second stage was to use the regression analysis technique to obtain the beta estimates of the systematic risk of the common stocks, both the levered and the un-levered estimates. This was achieved by regressing every company's returns against the observed average market returns for the period under study.

Finally, the t-test was applied to test the statistical importance of the difference between the levered beta estimates and the un-levered beta estimates.

4.2 General Findings

The computation of levered and un-levered returns generally tend to indicate that the levered returns are higher than the un-levered returns. It is important to mention here that this difference in returns does not appear to be substantial. In some cases we even have these returns being almost equal.

A further finding of this study is that most companies tend to borrow on short-term basis in the form of short-term loans and bank overdrafts.

Similarly it can also be observed in table 1 that the levered estimates of beta tend to be larger than the un-levered estimates of beta.

Table 1

Levered and un-levered estimates of systematic risk, beta, of selected companies quoted at the NSE.

	LEVERED			UNLEVERED	
	beta	SEB		beta	SEB
BAMBURI	0.850083	0.13		0.842769	0.13
BAT	0.489519	0.24		0.489519	0.24
BROOKE BOND	1.682658	0.6		1.682658	0.65
CROWN BERGER	0.160294	0.18		0.154299	0.17
DUNLOP	1.267084	0.47		1.267084	0.49
EA CABLES	0.599994	0.19		0.599994	0.20
EXPRESS	0.800077	0.11		0.76031	0.12
JUBILEE	0.255292	0.13		0.255292	0.04
KAKUZI	0.589714	0.17		0.550589	0.18
K ORCHARDS	-0.09011	0.69		-0.02691	0.42
LIMURU	1.315439	0.38		1.315439	0.41
NATION	0.90809	0.43		0.902349	0.45
PAN AFRICA	0.418148	0.2		0.41383	0.20
TOTAL	1.074539	0.19		1.074539	0.20
EA PACKAGING	1.274463	0.12		1.274463	0.13
EA BREWERIES	0.640251	0.13		0.675193	0.13
ICDC	0.723718	0.09		0.727355	0.10
KPLC	0.900041	0.15		0.1856	0.13
KN MILLS	2.46408	0.12		2.205466	0.13
UCHUMI	0.855766	0.09		0.855038	0.09
UNGA	1.729506	0.17		1.191728	0.20
CARBACID	0.937321	0.07		0.937321	0.07
BOC	0.585855	0.05		0.585857	0.05
CAR& GEN	0.248611	0.13		0.221368	0.13
CMC	1.83247	0.13		1.824341	0.13
KENOL	1.37852	0.11		1.379872	0.10
SASINI	0.330604	0.12		0.330604	0.13
STD NEWS	-0.15901	0.59		-0.09799	0.48
BAUMANN	1.80328	0.35		1.636047	0.32
EAAGADS	2.477444	1.48		2.464083	1.58

G WILLIAMS	2.656261	0.52		2.328004	0.47
TOTAL	**31**	**8.53**		**29.00612**	**8.27**
Mean	**1**	**0.275161**		**0.935681**	**0.26672**
t-test calculated			0.721125		
t-test tabular			2		

The general analysis seem to confirm the presupposed relationship between a firm's capital structure and the systematic risk of its common stocks as the mean of the levered beta estimates appear to be different from, actually larger, from the mean of the un-levered beta estimates. Statistically, as demonstrated by the t-test, this difference in the means of the levered and un-levered estimates of beta is insignificant to lead to any conclusion of there being a relationship between the firm's capital structure and the systematic risk of its common stocks.

The t-value calculated 0.721125 falls within the acceptance region of –Ve 2 or +Ve 2 and hence we fail to reject the null hypothesis.

4.3 CONCLUSIONS

This study concludes that there is no established relationship between the firm's capital structure and the systematic risk of its common stocks. Though there are positive effects of leverage leading to the difference between the means of the levered and un-levered estimates of beta, this difference is statistically insignificant to lead to a conclusion to the contrary.

4.4 Limitations of the study

Considering that it is difficult to have a perfect research situation, it is then expected that this research will have limitations. We therefore take note of these limitations so that the conclusions be understood against this backdrop of the weaknesses of the study. It is also important to mention them so that future studies can look for ways of arresting these limitations.

1 Lack of sufficient data

It is noteworthy to say that the operations of the NSE have been low before the period of study covered by this project. Therefore, the data before this period is not readily available from the stock market. Other sources may not guarantee its reliability. It becomes extremely difficult to obtain data before this period under study.

2 Lack of market values of interest rates.

The unavailability of market rates of interest led the researcher to assume that interest rates on these debts were close to the market rates and so could be used as proxies of the market rates.

Suggestions for Further Research

With the consideration that no one study can be fully exhaustive, this area of capital structure is still fertile ground for future research. We therefore suggest the following areas as possible focus for further studies:

1. This study focussed on the establishment of whether there exists a relationship between a firm's capital structure and the systematic risk of its common stocks. An improvement of this would be to attempt to determine the clear-cut framework that would show how companies choose between debt and equity as a source of financing their operations.
2. In this study the computation of a firm's systematic risk of its common stocks was based on annual returns. An improvement to this would be to use shorter period returns, for instance weekly returns, to help capture well the accuracy factor and hence help eliminate any errors that might be associated with the annual returns. A longer period of study is also suggested.

Further studies along these areas will help define more the underlying characteristics of the leverage-systematic risk relationship.

APPENDIX 1

LIST OF COMPANIES STUDIED QUOTED ON THE NSE

CODE **NAME**

1. Bamburi Portland cement co ltd
2. British American Tobacco Kenya Ltd
3. Brooke Bond Kenya Ltd
4. Crown Berger Ltd
5. Dunlop Kenya Ltd
6. East African Cables Ltd
7. Express Kenya Ltd
8. Jubilee Insurance Ltd
9. Kakuzi Ltd
10. Kenya Orchards Ltd
11. Limuru Tea Co Ltd
12. Nation Media Group
13. Pan Africa Insurance
14. Total Kenya Ltd
15. East African Packaging Ltd
16. East African Breweries Ltd
17. ICDC Investments
18. Kenya Power & Lighting Ltd
19. Kenya National Mills
20. Uchumi Supermarkets
21. Unga Group Ltd
22. Carbacid Investments Ltd
23. BOC Kenya Ltd
24. Car & General Kenya Ltd
25. CMC Holdings Ltd
26. Kenya Oil Co Ltd
27. Sasini Tea & Coffee Ltd
28. Standard Newspapers Group
29. A.Baumann & co Ltd
30. Eaagads Ltd
31. George Williamson Kenya Ltd

APPENDIX 2

COMPUTATION OF LEVERED AND UNLEVERED RETURNS

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1.8	1.791460185
	1994	1.369642857	1.368492579
	1995	-0.434615385	-0.434422926
	1996	-0.160839161	-0.160759122
	1997	0.277777778	0.277689733
	1998	0.013793103	0.013801647
	1999	-0.243055556	-0.230420536
	2000	0.314285714	0.310234211
1	2001	-0.484444444	-0.447332266
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1.765	1.765
	1994	-0.139622642	-0.139622642
	1995	-0.580357143	-0.580357143
	1996	-0.224719101	-0.224719101
	1997	-0.111111111	-0.111111111
	1998	0.68	0.68
	1999	0.150326797	0.150326797
	2000	-0.117419355	-0.117419355
2	2001	-0.059504132	-0.059504132
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	5.804761905	5.804761905
	1994	-0.609964413	-0.609964413
	1995	-0.289962825	-0.289962825
	1996	-0.105263158	-0.105263158
	1997	-0.345238095	-0.345238095
	1998	0.318181818	0.318181818
	1999	-0.234042553	-0.234042553
	2000	-0.009615385	-0.009615385
3	2001	-0.237113402	-0.237113402
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	-0.121212121	-0.082694656
	1994	0.965517241	0.905180038
	1995	-0.176146789	-0.167282438
	1996	-0.5	-0.389166478
	1997	0.115789474	0.142800775
	1998	0.083333333	0.111813998
	1999	0.49068323	0.441467717
	2000	-0.05	-0.05
4	2001	-0.277777778	-0.277777778

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1	1
	1994	4.196078431	4.196078431
	1995	0.0959	0.0959
	1996	0.007905138	0.007905138
	1997	-0.584313725	-0.584313725
	1998	-0.803846154	-0.803846154
	1999	-0.48	-0.48
	2000	-0.32	-0.32
5	2001	-0.21875	-0.21875
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1.918918919	1.918918919
	1994	-0.110576923	-0.110576923
	1995	-0.131428571	-0.131428571
	1996	-0.0625	-0.0625
	1997	-0.064	-0.064
	1998	-0.19266055	-0.19266055
	1999	-0.125	-0.125
	2000	-0.203846154	-0.203846154
6	2001	0.113513514	0.113513514
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1.826086957	1.70446017
	1994	0.538461538	0.533752863
	1995	0.010526316	0.015319648
	1996	0.012954545	0.016275214
	1997	-0.28	-0.253191489
	1998	-0.512711864	-0.512711864
	1999	-0.339130435	-0.339130435
	2000	-0.057894737	-0.049681839
	2001	-0.608938547	-0.608938547
7			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	0.068493151	0.068493151
	1994	0.903846154	0.903846154
	1995	-0.313793103	-0.313793103
	1996	-0.275132275	-0.275132275
	1997	0.149253731	0.149253731
	1998	-0.163265306	-0.163265306
	1999	-0.083333333	-0.083333333
	2000	-0.213592233	-0.213592233
8	2001	-0.067567568	-0.067567568

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1.682926829	1.605421906
	1994	0.120454545	0.125447629
	1995	-0.213114754	-0.201901268
	1996	0.060638298	0.066020902
	1997	0.012820513	0.018991792
	1998	0.497395833	0.490891897
	1999	-0.368794326	-0.355740226
	2000	-0.363218391	-0.295553899
	2001	-0.345454545	-0.256414224
9			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	0	0.025
	1994	0	0.025
	1995	4.666666667	2.570454545
	1996	0.147058824	0.13525641
	1997	-0.005128205	0.001704545
	1998	-0.742268041	-0.651255708
	1999	0	0.018333333
	2000	0	0.018333333
10	2001	0.06	0.058333333
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	4.239130435	4.239130435
	1994	0.0065	0.0065
	1995	0.32105	0.32105
	1996	0.023076923	0.023076923
	1997	-0.373076923	-0.373076923
	1998	0.113333333	0.113333333
	1999	-0.093333333	-0.093333333
	2000	0.084615385	0.084615385
11	2001	-0.393846154	-0.393846154
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	0.507142857	0.506308754
	1994	3.729487179	3.729487179
	1995	0.102777778	0.107626472
	1996	0.162371134	0.16286026
	1997	0.215909091	0.223064795
	1998	0.058396947	0.075557332
	1999	-0.25729927	-0.244526919
	2000	-0.2925	-0.2925
12	2001	-0.339130435	-0.314408326

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	0.25	0.249031279
	1994	1.45	1.428541909
	1995	0.084033613	0.084033613
	1996	-0.165322581	-0.165322581
	1997	-0.13	-0.13
	1998	-0.383233533	-0.383233533
	1999	0.08	0.08
	2000	-0.592592593	-0.592592593
	2001	0.190909091	0.190909091
13			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	2.714285714	2.714285714
	1994	0.819285714	0.819285714
	1995	-0.314229249	-0.314229249
	1996	-0.605263158	-0.605263158
	1997	-0.152307692	-0.152307692
	1998	-0.00952381	-0.00952381
	1999	0.054081633	0.054081633
	2000	0.139896373	0.139896373
	2001	-0.654545455	-0.654545455
14			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	2.974359	2.974358974
	1994	1.322179487	1.322179487
	1995	-0.286134021	-0.286134021
	1996	-0.142562592	-0.142562592
	1997	-0.37217484	-0.37217484
	1998	-0.400746269	-0.400746269
	1999	-0.183333333	-0.183333333
	2000	-0.322727273	-0.322727273
	2001	-0.201589061	-0.201589061
15			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1.921053	2.017546083
	1994	0.814299901	0.884361442
	1995	-0.314083558	-0.247483486
	1996	0.06547619	0.119912591
	1997	0.225	0.256581971
	1998	0.293553459	0.308524417
	1999	0.26983551	0.263281354
	2000	0.143521237	0.143926949
	2001	0.266767488	0.266767488
16			

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1.927273	1.934168302
	1994	0.913636364	0.919798139
	1995	0.068852459	0.071566446
	1996	0.400807346	0.396630237
	1997	0.204454887	0.200277778
	1998	0.065812102	0.065503971
	1999	0.190187102	0.189878971
	2000	0.041824495	0.041824495
	2001	-0.302922845	-0.302922845
17			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1.831111	0.227756723
	1994	1.437043159	0.273168007
	1995	0.38190427	0.106057902
	1996	0.445265152	0.30557957
	1997	0.663795853	0.432271704
	1998	-0.110526316	-0.100189143
	1999	-0.439473684	-0.38688009
	2000	-0.466019417	-0.369318696
	2001	-0.56815617	-0.318620275
18			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	5.73	5.095321927
	1994	3.127790698	2.810451661
	1995	0.313877654	0.313877654
	1996	0.053086957	0.053214616
	1997	-0.244808511	-0.244680851
	1998	-0.37506938	-0.367290125
	1999	-0.321243326	-0.335993665
	2000	-0.478696742	-0.477700835
	2001	-0.513492063	-0.432407911
19			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	2.184211	2.184210526
	1994	1.047060218	1.047060218
	1995	-0.078012078	-0.076295045
	1996	0.045032967	0.052321429
	1997	0.191125	0.196696429
	1998	0.15986413	0.15986413
	1999	0.02330163	0.02330163
	2000	0.027439693	0.027439693
	2001	-0.266705225	-0.266705225
20			

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	3.55	2.248861605
	1994	2.745588235	2.026325491
	1995	1.153196931	1.083117159
	1996	0.195429208	0.196506103
	1997	-0.294846154	-0.2838232
	1998	-0.522268437	-0.507981861
	1999	-0.47584208	-0.44951782
	2000	-0.509616933	-0.462258849
	2001	-0.483860494	-0.437025535
21			

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	2.242029	2.242028975
	1994	1.203304787	1.203304781
	1995	-0.112719744	-0.112719744
	1996	0.05200341	0.05200341
	1997	-0.041748366	-0.041748365
	1998	-0.044907407	-0.044907406
	1999	-0.074693532	-0.074693532
	2000	-0.160357981	-0.160357981
	2001	-0.097463768	-0.097463766
22			

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	1.22963	1.22962963
	1994	0.878367474	0.878367474
	1995	-0.140895232	-0.140895232
	1996	0.007968581	0.007968581
	1997	0.116687432	0.116687432
	1998	0.035515594	0.035515594
	1999	-0.031428571	-0.031428571
	2000	-0.2585	-0.258504212
	2001	-0.28425	-0.284264558
23			

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	0.508571	0.461328927
	1994	0.535198413	0.499766536
	1995	0.467687075	0.467687074
	1996	-0.030867347	-0.027318717
	1997	-0.2125	-0.187768351
	1998	-0.229166667	-0.17405901
	1999	0.1	0.117279647
	2000	0.556578947	0.503837669
	2001	-0.355263158	-0.317813348
24			

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	4	4
	1994	2.913690476	2.913690476
	1995	-0.091731119	-0.091731116
	1996	0.571036801	0.57103681
	1997	0.072395833	0.072395833
	1998	-0.444270833	-0.442173234
	1999	-0.219791667	-0.201243205
	2000	-0.44296875	-0.387703041
25	2001	-0.20861304	-0.194166918
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	3.25	3.250376211
	1994	2.50193299	2.502215148
	1995	0.263474408	0.263474408
	1996	0.172482838	0.172482838
	1997	-0.097036418	-0.097036418
	1998	0.079059829	0.079059829
	1999	0.211594203	0.211594203
	2000	0.36935051	0.36935051
	2001	-0.006150311	-0.017620285
26			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	0.6666667	0.666666667
	1994	0.393318966	0.393318966
	1995	-0.351539166	-0.351539166
	1996	0.124851434	0.124851434
	1997	0.612100501	0.612100501
	1998	-0.208267923	-0.208267923
	1999	-0.205907831	-0.205907831
	2000	-0.084906669	-0.084906669
	2001	-0.373635479	-0.373635479
27			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	0	0.058121882
	1994	0.025	0.069990943
	1995	-0.010743802	-0.006462322
	1996	1.09654218	0.799421402
	1997	3.876320755	2.994083303
	1998	-0.468541667	-0.452449266
	1999	0.124639798	0.146042609
	2000	-0.468394797	-0.282436069
	2001	-0.019840295	-0.004537906
28			

CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	5.153846	4.581983174
	1994	1.119711538	1.090507118
	1995	-0.197916667	-0.196655342
	1996	0.086706349	-0.002579365
	1997	-0.395171958	-0.395171958
	1998	-0.111448688	-0.134886188
	1999	0.002041331	0.00738153
	2000	-0.388715317	-0.129942243
	2001	0.200640187	-0.059159872
29			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	0.95	0.95
	1994	12.1625	12.1625
	1995	3.64425	3.86475
	1996	-0.089607798	-0.089607798
	1997	0.461207657	0.158323042
	1998	0.283199064	0.283199064
	1999	-0.262294099	-0.058152087
	2000	-0.237071006	-0.239826108
	2001	-0.099878049	-0.06421105
30			
CO CODE	YR	LEV RETURN	UNLEV RETURN
	1993	7.8	6.683418521
	1994	1.567760618	1.555932738
	1995	-0.478603604	-0.440762133
	1996	-0.014790765	-0.072738557
	1997	0.748376623	0.734194362
	1998	0.260154062	0.24012611
	1999	-0.27657563	-0.27657563
	2000	0.060529557	-0.03209448
31	2001	-0.334525862	-0.309574304

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