THE RELATIONSHIP BETWEEN CAPITAL STRUCTURE, EARNINGS GROWTH AND PRICE EARNINGS RATIO OF FIRMS LISTED AT THE NSE

By

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DECLARATION

This research is my original work and has not been presented for the award of any degree in any other university. Any references have duly been acknowledged in the study.

Signed..... **Date**.....9th November 2009.

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

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DEDICATION

To my father Andrea Nyaata Keang'o, mum Serefina Kemunto Mogeni, my cousins King'oina King'oina and Akama Ondiba whose support I can never forget.

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ACRONYMS

DPS	-	Dividends Per Share
EPS	-	Earnings Per Share
MM	-	Modigliani and Miller
NSE	-	Nairobi Stock Exchange
P/E Ratio	-	Price / Earnings Ratio

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

This study was an attempt to determine if there is a relationship between the P/E ratio and the capital structure, and between the P/E ratio and earnings growth. Capital structure, price-earnings ratio and earnings growth are very important elements in the study of finance. Earnings growth refers to the change in earnings per share from year to year. The P/E ratio is the most basic and fundamental yardstick for valuing stocks (Siegel, 2002). It is obtained by dividing the market price of an ordinary share or common stock by the earnings per share. Capital structure is the way in which assets are financed (Ross et al, 1990) or it refers to the mix of debt, preferred stock and common equity with which the firm finances its operations (Brigham and Houston, 2004). In this study it is calculated by dividing non- current liabilities (debt) by shareholders' funds. Assets can be financed by using only equity, that is ordinary shares (stocks), reserves and retained profits or by a mixture of debt and equity. Shareholders' funds mean the same thing as equity in this work.

The modern theory of capital structure began with the celebrated paper of Modigliani and Miller (1958). They tried to find out how capital structure affects both the value of a firm and the returns on or cost of equity. Ever since, many studies have been undertaken concerning capital structure. Their studies gave birth to two propositions. One proposition stated that capital structure does not affect the value of the firm when taxes

do not exist. They opposed the traditional view which held that there is an optimum capital structure. This is the point where the cost of capital was minimum, while on either side the cost was higher (Bradley et al, 1984). Modigliani and Miller (1963) introduced the effect of tax on the firm value. They asserted that using more debt increased the value of the firm due to the benefit of the tax shield. The tax shield arises because interest on debt reduces taxable profits which leads to low taxes and higher profits after tax. Miller (1977) showed that by varying personal taxes the tax shield can change from a positive figure to a negative one. The implication of this was that the tax shield gains, brought about by corporate tax can be wiped out by personal taxes. This implied that the value of the firm may not be affected by capital structure. Myers (1984) added that when more debts are used costs of financial distress and bankruptcy arise which also lower the firm value.

A few studies have been done on the relationship between capital structure and the price-earnings ratio. MM showed that leverage can be expected to decrease the P/E ratio by increasing the riskiness of the returns of common stock relative to their expected values (Malkiel and Cragg, 1970). Mahmood and Zakaria (2007) found that capital gearing is negatively related with price/earnings ratio. Shroff and Singh (2009) have argued that unreasonable amounts of debt can lead to financial distress. This means companies with *high levels of debt may be avoided by investors which will lead to low P/E ratios.* Minjina (2008) found that the price/earnings ratio can decrease or increase with the leverage or capital structure depending on whether initially their unlevered P/E ratio is greater than or less than the reciprocal of the cost of debt. Leibowitz (2002) concluded

that the P/E ratio can fall or rise with increase in leverage, depending on whether the company was levered or unlevered at the start of the study. These results are not in agreement. The above studies refer to capital structure, but in this study the intention was also to find out how the P/E ratio is affected by the earnings growth of a firm. But before that, a mention of relevant studies follows.

Aga and Kocaman (2006) tested the hypothesis: P/E ratios are the significant explanatory variables for the stock returns in Istanbul Stock Exchange. Their results showed that the P/E ratios are significant explanatory variables for the stock returns. Pu Shen (2000) reports that Campbell and Shiller (1998) found that there was no correlation between price/earnings ratio and the subsequent earnings growth. In their work Murphy and Stevenson (1967) established that there was little systematic relationship between the two. To Penman (1996) the P/E ratio is positively related to expected future return on equity; this means it can forecast growth in earnings. Beaver and Morse (1978) found that the P/E ratios correlate negatively with earnings growth in the first year of the portfolio, positively in the second year but after that there was no correlation.

Ndete (1999) designed a study-testing whether the price earnings ratio was an indicator of investment performance of ordinary shares on the NSE. He had four variables, namely price earnings ratio - the dependent variable and the independent variables: earnings growth, dividend payout and variation in the growth of earnings on stocks. He used multiple regression analysis to determine the relationship between the P/E ratio and each of the three independent variables. His results indicated that there was a weak

relationship between the P/E ratio and earnings growth, variation in earnings growth and dividend pay out on stocks listed at the NSE. Muthui (2003) repeated the study of Ndete (1999) with some variations. His topic was: Price Earnings and Share Performance at NSE. He split the P/E ratios into low and high P/E ratios to investigate the effect of what each had on stock returns data from the NSE for the years 1996 to 2002. After obtaining the returns he analysed the data using the F-distribution and the findings showed that there is no significant difference in returns of share with low and high P/E ratios for the companies quoted in the NSE. The results from these studies are in disagreement.

1.2 Problem statement

In this study it was expected that: there is a relationship between the P/E ratio and earnings growth since it is one of the most important investment ratios in making investment decisions. If there was no relationship this ratio cannot be so popular in taking investment decisions; there is no theoretical agreement of the relationship between capital structure and P/E ratio.

The empirical studies in case of P/E ratio and earnings growth shows that: there is no relationship (Pu Shen, 2000); P/E ratio increase will lead to decrease in earnings growth (Beaver and Morse, 1978; Fairfield, 1994), this is negative correlation; P/E ratio will increase with earnings (Penman, 1996; Beaver and Morse,1978). In case of P/E ratio and capital structure empirical studies are as follows: increase in capital structure can increase or decrease with P/E ratio (Minjina, 2008; Leibowitz, 2002); capital structure increase will lead to decrease in P/E ratio (Malkiel & Cragg, 1970; Mahmood & Zakaria, 2007).

Studies done so far on how the P/E ratio is affected by the capital structure have no definite conclusion and they are only a few. In addition all of them have been done in foreign countries. There was need to do a local study to find out how the results compare with those available. Since the P/E ratio is one of the most used instruments in the stock markets to select investment portfolios, the way capital structure affects it will be valuable knowledge to investment analysts and all the other interested parties.

The last study done in Nairobi to determine how the P/E ratio affects the earnings growth was by Ndete (1999). He never investigated the strength of this relationship. The conclusions from these studies are not in agreement Therefore this study was carried out to bridge this gap and also by analyzing the involved variables to determine whether the same results of Ndete (1999) still obtain and the strength of the relationship using regression analysis.

1.3 Objective of this Study

The objective of this study was to determine the relationship between capital structure and the price-earnings ratio and between earnings growth and the said ratio.

1.4 Importance of the study

The following groups of people will find this study very helpful.

Managers and directors of companies.

This group of persons is required to run the business using sound business decisions, so as to maximize shareholder wealth by using the capital structure which results in a P/E ratio which results in high earnings, that is they can use this information to choose the best capital structure for their companies. At the same time they will be educated on how

earnings growth are related to the price-earnings ratio. This information is very important in making investment decisions.

Foreign Investors

The contribution of foreign investors to the growth of the economy is immensely great. In a world which has been a global village foreign capital is greatly needed. Foreign investors will use these results in choosing their investments, for example the knowledge of the relationship between capital structure and the price-earnings ratio will assist in choosing firms with a specific capital structure which has a price-earnings ratio with high returns. This also applies to the relationship between the price-earnings ratio and earnings growth.

Individual Investors

The findings of this study will show individual investors whether to invest in firms with a high or low debt to equity ratios, if there is a relationship between the capital structure and the P/E ratios. They will have additional information on how the price-earnings ratio will affect the earnings growth. This means they will select an investment using a specific price- earnings ratio which leads to high returns

Academicians

Academicians can use findings of this work to do further advanced research on this subject. Other scholars can repeat this work after five years to find out how their conclusions compare with this work. More work can also be done by using a longer duration than the 6 year period which was used in this study.

Regulators

Regulators will find this study important in decision making. They will be able to make laws and regulations which maximize wealth of shareholders. Examples of regulators include the government, capital markets authority and Nairobi Stock Exchange. They will be able to make sound financial decisions for example when they are called upon to advice.

Investment advisors

The stockbrokers are a good example of investors. They need the results of this study in order to advice their clients in which companies to invest using the relationship of capital structure to price-earnings ratio. Also they will be able to explain how the said ratio affects the earnings growth. This will be an additional basis to earnings per share and dividends paid which the investors use in analyzing stock values.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers: the theoretical framework which consists of the traditional view, the Modigliani Miller hypothesis and financial distress; empirical studies which deal with P/E ratios and capital structure and also P/E ratio and earnings growth; related studies to this topic and ends with the conclusion.

2.2 Theoretical Framework

2.2.1 The Traditional View

This view is also called an intermediate approach. It holds that the value of a firm can be increased or cost of capital reduced by using an appropriate mix of debt and equity capital. The cost of capital does not decrease all the way until the firm capital is 100% debt. As debt increases the cost decreases up to a certain point called the optimum capital structure, beyond which the cost of capital starts to increase. This means cost of capital will decrease within a relevant range. The fall of capital cost up to the optimum point is because the cost of debt is cheaper than equity before the optimum point is reached, but after that it goes up as the rate of interest on debt increases with the use of more debts. . Also bankruptcy or financial distress costs arise (Bradley et al 1983). The cost of capital is the weighted average cost. To Bradley et al (1984) the optimal capital structure involves balancing the tax advantage of debt against the present value of bankruptcy costs.

There are two variations of optimum capital structure. One view is that there is only one point of the optimum capital structure, that is, only one proportion of debt to equity exists. On a graph this is shown as a u-shape. The other is that the optimum capital mix has a range of several proportions of debt to equity; represented by a horizontal line in the middle of a curve in a graph (Pandey, 2001; Gitman, 1997). Taggart (1977) points out that it seems there is some consensus that a finite optimal debt to equity ratio exists. After the optimum point, costs of capital increase because at higher levels of debt, bankruptcy or financial distress costs arise (Bradley et al, 1983).

2.2.2 The Modigliani –Miller hypothesis

Modigliani and Miller (1958) carried out a study on capital structure, on whether it affected the value of the firm and the rate of return on equity. They worked on assumptions which included the absence of taxes, transaction costs, and bankruptcy costs (Castanias, 1983). These assumptions imply the existence of perfect markets which do not exist in real life. The results which obtained, that is, capital structure does not affect the firm value, is very important in making finance decisions. MM showed that in the absence of taxes, capital structure does not affect the value of the firm. This was their proposition I without taxes. It is also called MM debt irrelevance proposition, because the debt policy of a firm does not matter to shareholders. The value of a firm relies on its real assets, but not on the securities it issues (Brealey and Myers, 2000).

Modigliani and Miller (1963) issued a correction of their 1958 paper in which they introduced corporate taxes and came up with modified propositions. In their proposition I with taxes they stated that the value of a levered firm is equal to the value of the

unlevered firm plus the value of the tax shield (Brigham and Daves, 2004). The implication is that in the presence of corporate taxes, a firm should increase its debt to equity ratio to increase value. Tax shields crops up because interest on debt is allowed to reduce taxable profits, resulting in lower amounts of taxes.

In their proposition I without taxes, MM used arbitrage to show that the levered and the unlevered firms had the same value. The problem is that for arbitrage to work it needs perfect capital markets, not imperfect markets (Pandey, 2001). Durand (1959) did not agree with MM concerning the arbitrage process and the assumptions of the riskless world. To Durand (1959) these assumptions were unrealistic to be accepted.

Miller (1977) argued that debt's tax advantage over equity at the corporate level might be partially or fully offset by a tax disadvantage at the individual level. This will mean, the value of the firm will still not be affected by the capital structure.

Miller (1977) considered three types of taxes, namely corporation tax, personal income tax on common stock and personal income tax on bond income. When all taxes are zero, the gain from leverage is zero. Some values of these taxes give this gain a negative number. Bradley et al (1984) put it this way: "Miller presented a new challenge by showing that under certain conditions the tax advantage of debt financing at the firm level is exactly offset by the tax disadvantage of debt at personal level." The studies which have been done since Modigliani and Miller (1958) and Miller (1977) papers, have not been very successful in determining the importance of the relative tax advantage of debt when compared to retained earnings for firm leverage (Rajan and Zingales, 1995).

Studies by Huizinga et al (2008) show that multinational companies use more debt than equity in a country with high tax rates. In nations with low tax rates more equity capital is used. This is because national tax policies do matter for corporate debt structures.

2.2.3 Financial Distress

Financial distress arises when a business is unable to pay creditors, when payments are due. This can lead to bankruptcy. Financial distress costs are very high. A firm using less debt is not likely to encounter financial distress. But using excess debt can lead to trouble. This means there is an optimal capital structure which maximizes the firm value. Cost of financial distress include legal and administrative costs of bankruptcy, agency, moral hazard, monitoring and contracting costs. They reduce the firm value (Myers, 1984).

2.3 Empirical Studies

2.3.1 P/E ratio and capital structure.

Does capital structure affect the P/E ratio? Since the P/E ratio can be described as an indicator of future growth in earnings (Penman, 1996), it can be very fruitful to determine if the capital structure change can improve it. If this happened then we can improve the value of a given firm by altering its capital structure and we can also determine the P/E ratio given a particular capital structure value.

Mahmood and Zakaria (2007) in Malaysia, did research on the relationship between the P/E ratio and capital structure of property and construction sectors and established a negative correlation. This meant, to increase the leverage ratio lead to a decrease of the

P/E ratio. The reason for this was that those firms which are highly geared pay large amounts of interest on the debts, this lowers the profit margin and the P/E ratio. Shroff and Singh (2009) argued that since high leverage can lead a company into financial distress, investors will avoid such companies leading to low stock market prices and P/E ratios. They supported the idea that high leverage will lead to low P/E ratios. Leibowitz (2002) did not arrive at a particular relationship between capital structure and the P/E ratio. If capital structure increased, the P/E ratio could either increase or decrease depending on what point of view is under consideration. He considered two points of view namely: Corporate finance point of view- ascertaining how adding debt to an unlevered company affects its value; a market perspective- here the investment analyst starts dealing with a company which is already levered and its returns are known. In a market perspective increasing leverage reduces the P/E ratio quite significantly. In the corporate perspective, increasing leverage causes a modest increase or decrease of the P/E ratio.

Minjina (2008) using a formula developed by Kollar et al (2005) placed companies in three groups namely: Companies with unleveraged P/E (the ratio obtained if no debt is used) greater than the reciprocal of the cost of debt, P/E ratio increased with the leverage while; those with an unleveraged P/E less than the said reciprocal, had a P/E ratio decrease as leverage increased; Companies with unleveraged P/E ratios equal to the reciprocal of debt cost showed no relationship between the P/E ratio and leverage.

2.3.2 The P/E Ratio and Earnings Growth

The dividend discount model predicts a positive correlation between the P/E ratio and growth in earnings (Fairfield, 1994). Penman (1996) expressed that the P/E ratio indicates future growth in earnings, and that it is positively related to expected future return on equity. He cautioned that this ratio is not a sufficient indicator of future returns on equity. Other indicators should be used with the P/E ratio such as the market – to – book ratio (P/B) to provide a good guide to future earnings. Aga and Kocaman (2006) tested the hypothesis: P/E ratios are the significant explanatory variables for the stock returns in Istanbul Stock Exchange. Their analysis showed that the P/E ratio was a significant explanatory variable for the stock returns. The coefficient of determination was high. The hypothesis was accepted.

Beaver and Morse (1978) showed that P/E ratios correlate negatively with the growth of earnings in the year the portfolio was formed, but positively in the subsequent year. Beyond two years growth did not have any effect on differences between P/E ratios, that, is there was no correlation been growth of earnings and the P/E ratios. These two scholars also came to the conclusion that the P/E ratios can be affected by the accounting method used for example the method of depreciation or stock valuation used can give rise to different values of the P/E ratios using the same accounting figures. Murphy and Stevenson (1967) came to the conclusion that there was little systematic relationship between relative P/E ratio in one period and relative growth of earnings in subsequent periods. They were saying neither a high P/E ratio can predict superior earnings growth nor a low P/E ratio can prophecy inferior earnings growth.

Fama and French (1998) felt that the growth style is associated with stocks with relatively high P/E ratios, high profitability and consistent growth. Higher profits will result in higher stock prices and P/E ratio. High P/E ratios will signal faster growth in the short term stock prices. Dave et al (1992) in their USA study which covered the period 1973 – 1990, provided evidence that low P/E ratios tended to generate low earnings growth whilst high P/E stocks gave high future earnings growth. Whitbeck and Kisor (1963) produced results which showed that higher P/E ratios were associated with higher growth rate while low P/E ratios gave lower growth rates of earnings.

Firms with lower P/E ratios produce higher returns than firms with the P/E ratios above the average (Nicholson, 1960). In his studies he found that appreciation of five stocks of the firms with the lowest P/E ratio was 56% on the average in the period of three years, while for the highest P/E ratio the increase was 21% for the same number of firms and years of study. This study implies that P/E ratios are positively correlated to the earnings.

Ndete (1999) did a study of companies quoted in the NSE to find out whether the P/E ratio is an indicator of investment performance of ordinary shares. His results indicated that there was a weak relationship between the P/E ratios and earnings growth. Muthui (2003) tried to find out between low and high P/E ratios which ones gives higher returns. He found that returns of shares are not much different between high and low P/E ratios although low P/E ratios show slightly higher returns. This difference was so small that it could be ignored as it was not statistically significant. His final analysis was that in the

NSE, the strategies of using a low or high P/E ratios do not apply and therefore investors should use other screening methods in selecting stocks for their portfolios

In her study Fairfield (1994) divided P/E ratios into 3 groups namely High, Medium and low. She carried out studies on these and found that there is a negative correlation between P/E and current earning changes. High P/E ratios yielded lower than average percentage changes in earnings. In addition growth in earnings were highest in the high P/E group while the low P/E group showed much slow earnings growth. In his studies Mcwilliams (1966) came up with the following findings:

A portfolio of low P/E ratios is better than one of a high P/E ratio in investment performance. For individual securities any P/E ratio may yield good performance. The very poor performances are most frequently found among stocks with high P/E ratios. Low P/E ratios provide greater returns than high P/E ratios (Fairfield, 1994; Nicholson; 1960). This result contradicts the one which holds that high P/E ratios are expected to have a high market price in the future.

McWilliams (1966) evaluated the usefulness of the P/E ratio as an analytical tool. Using a sample of 390 stocks from 1953 to 1964 his study showed that a portfolio consisting of low P/E ratio stocks produced a better investment performance than a portfolio of high P/E ratio stocks. For individual securities good performance may be obtained by any P/E ratio. He also observed that stocks selling at large premiums relative to earnings were most frequently found to be very poor performers. It should be noted that P/E ratios never remain stationery ,they rise and fall.

Dave et al (1998) have reported a study which provided evidence that low P/E stocks tended to generate low earnings growth while high P/E stocks provided high future earnings growth. In his analysis he obtained the following results concerning the use of a P/E ratio as an analytical tool: Low P/E ratio portfolios performed better than high P/E ratio portfolios, for individual securities any size of P/E ratio can produce very good performance, high P/E ratio stocks were most frequently found to be very poor performers, so using this ratio care should be taken to ensure that the company under consideration will continue to grow in the future. This means other factors should be taken into account before a decision to invest is made.

2.4 Related Studies

Lutomia (2002) investigated the relationship between capital structure and the systematic risk of common stocks of NSE stocks. He did not find any relationship between the two. Munene (2006) studied capital structure and profitability relationship. He found a weak positive relationship which was not statistically significant and concluded that firm profitability is a minor determinant of capital structure in NSE.

Onsomu (2003) investigated the relationship between debt financing and the value of the firms quoted at the NSE using regression analysis. She found that there was a weak relationship between debt and the value of the firm. To her this meant that changes on debt level may not leave significant effect on the value of the quoted firms.

Sagala (2003) did a study on the relationship between the cost of capital and leverage for companies quoted in the Nairobi Stock Exchange. Using regression analysis he found out that the relationship varied from company to company. For some companies cost

increased with leverage, that is, more debts meant more costs. For others, costs decreased with leverage, this implied, using more debts increased the value of the firm.

In other words the firm value depends on leverage. This difference arose because the companies acquired debt at higher or lower interest rates than the cost of equity depending on their negotiation strengths with the lenders. To obtain debt at low interest rates meant that the value of the firm would go up while higher interest rates would lead to lower returns A high ratio can arise because investors think that the company has good growth opportunities or because earning are temporarily depressed (Brealey et al, 2007)

2.5 Conclusions

Many of studies done on P/E ratio and earnings growth are from developed countries. They have not yielded the same conclusions. Most of them have been on how the earnings growth is affected by the P/E ratio or which of the two-low and high P/E ratio gives a higher earnings growth. In Kenya a few studies have been done on this area and since the conclusions are not in agreement more research is needed. This study is different in that the strength of the relationships will be calculated using regression analysis. Since capital structure is very important as concerns financing there is a reason to find out how it affects the P/E ratio (one of the most important ratios in making investment decisions). A little empirical work has been done in this area and the results are not in agreement. There is no evidence that any work has been done in this topic in Nairobi. To fill this gap this research was carried out.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

This causal study, was seeking to determine the relationship between a) capital structure and price-earning ratio, and b) P/E ratio and earnings growth, for all companies quoted at the Nairobi Stock Exchange. The determination of the relationship was done using regression analysis since it is a very powerful method of establishing any relationship that may exist. Graphical methods were also used to present and show any emerging trend between the Price-Earnings ratio which was the dependent variable and the (Debt/Equity ratio) capital structure and earnings growth which were the independent variables.

3.2 The population

The population of the study consisted of all the 53 companies listed in the Nairobi Stock Exchange as at 31st December 2007.

3.3 Sampling plan

Although all companies trading in the NSE qualify, only those which have continuously traded between 1 January 2002 and 31 December 2007 were included in the sample. Those which have been disqualified from the NSE namely Hutchings Biemer Ltd, Uchumi Supermarkets Ltd, B.O.C. Kenya Ltd and Carbacid Investments Ltd were also excluded. This applied as well to companies in the financial sector such as banks because their businesses tend to accept deposits without limit. This makes them have higher debt to equity ratios than other sectors.

3.4 Data Collection

Secondary data was collected from the offices of Capital Markets Authority library in electronic form. To calculate the figure for capital structure ratio we divided non-current liabilities by shareholders funds. These were extracted from the balance sheets obtained from the Capital Markets Authority. The P/E ratios and earnings per share were also available in the published accounts. Earnings growth was calculated using the earnings per share. The data covered the said period of study only.

3.5 Data Analysis

Data analysis was done using the Microsoft Excel Program. Capital structure was calculated by dividing the average non-current liabilities (debt) by the average shareholders funds. The change in earnings per share from year to year was used to calculate the earnings growth rate per year after which an arithmetic mean was found. Taking capital structure as the x-axis and the P/E ratio as the y-axis a scatter graph was drawn. Another scatter graph was drawn with earnings growth as the as x-axis and P/E ratio as the y-axis. These two graphs gave a hint about the relationship between the variables under consideration. In other words they were intended to indicate the overall trend.

In this study the dependent variable was the P/E ratio and the independent variables were the capital structure and the earnings growth. The values used for the variables were the arithmetic mean for the six years. The regression models were: simple regression:

$Y_j = A_0 + A_1X_{1j}$: P/E with capital structure.

$Y_j = A_0 + A_2X_{2j}$: P/E with earnings growth.

Multiple regressions

$Y_j = A_0 + A_1X_{1j} + A_2X_{2j} + e_j$

Where

Y_j is the value of the P/E ratio – independent variable

A_1 and A_2 are regression coefficients for capital structure and earnings growth respectively.

A_0 is the value of the P/E ratio when either capital structure or earnings growth is zero.

X_1 is capital structure.

X_2 is earnings growth.

X_{1j} , X_{2j} = Observed values of the independent variables X_1 and X_2 respectively i.e. capital structure and earnings growth.

e_j is the error term.

The multiple regression model described how the P/E ratio was related to any one of the independent variables while holding the other variable constant, and the total effect on the P/E by combining the two independent variables. Any extreme values (outliers) of the variables were omitted from the analysis. If the regression coefficient, the constant and the value of one variable are known the figure for the second variable can easily be calculated in simple regression analysis. To find the strength of the relationship between the independent and the dependent variables the correlation coefficient (r) was calculated. If this coefficient is near +1 or -1 then the relationship is very strong. When the correlation coefficient is squared, the coefficient of determination is obtained. The

coefficient of determination shows by how much the values of the independent variable explain the change in values of the dependent variable. In other words it explains by what percentage the capital structure or earnings growth brings change in the P/E ratio. If the coefficient of determination is one then the change in the dependent variable is brought about by the independent variable 100%.When it is 0.64, the independent variable contributes 64% towards the change in the dependent variable, the remaining change of 36% (100%-64%) is caused by other factors other than the independent variable.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

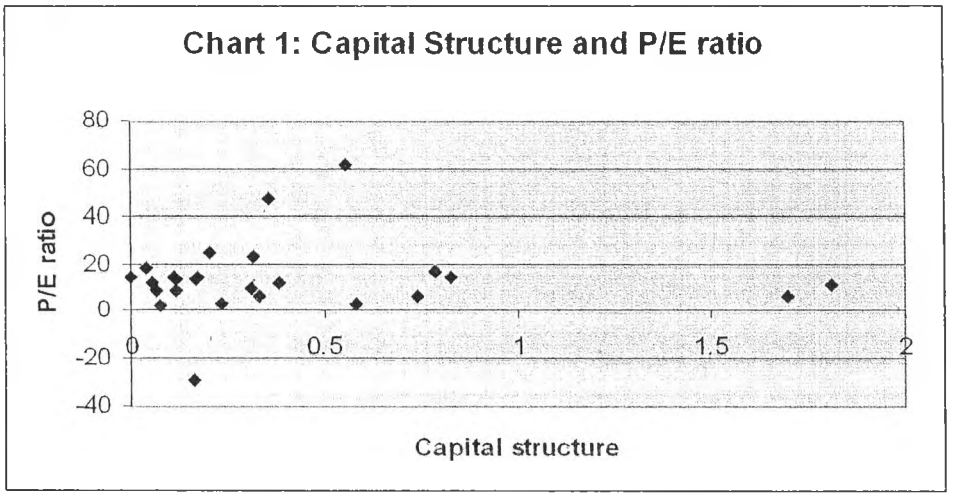
This chapter deals with the analysis of collected data. The findings of the study are highlighted. The aim of this project was to determine the relationship between earnings growth and price – earnings ratio on one hand and capital structure and price – earnings ratio on the other.

4.2 Findings and Discussion of the Analysis

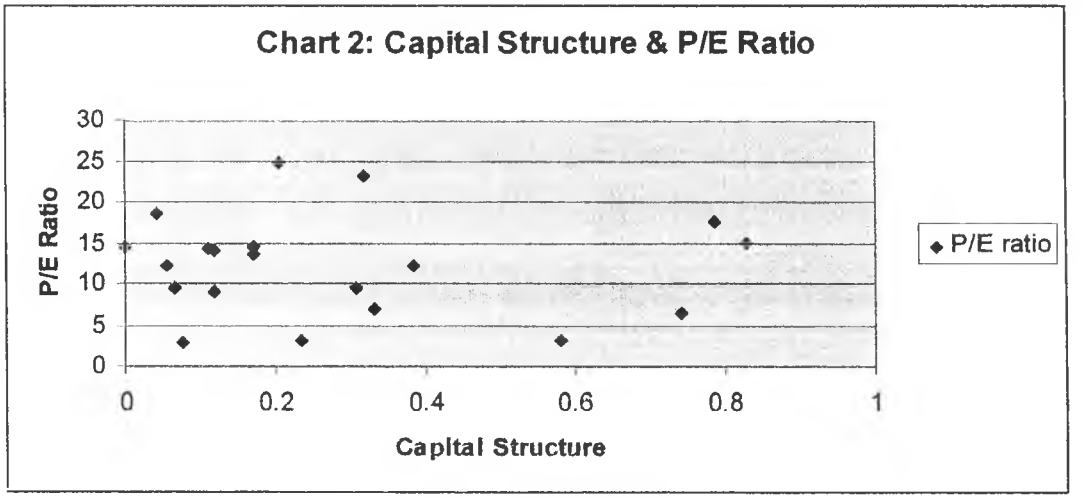
Scatter graphs were drawn using Microsoft excel program. The regression equations were obtained and the correlation coefficients were calculated using the same program. Findings are analyzed under two headings, namely: the relationship between capital structure and price earnings ratio; and between earnings growth and price earnings ratio. Capital structure was obtained by dividing non-current liabilities by shareholders funds. Earnings growth rate was extracted by using the changes in earnings per share from year to year as a percentage. The P/E ratio was obtained from the published accounts.

4.2.1 The Relationship between capital structure and price – earnings ratio.

First a graph of price earnings ratio and capital structure was drawn and labeled chart 1 as shown below. This used all the data obtained which appears in Appendix 1, that is the data includes extreme values of the variables.

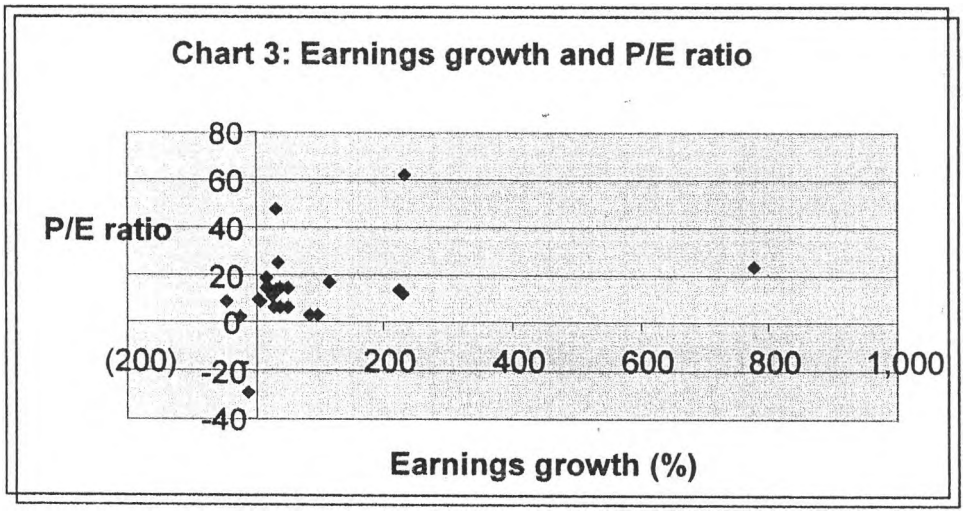


This scatter graph as shown in chart 1 does not show a clear trend. When the correlation coefficient was calculated it was a weak negative 0.1. If companies with very large capital structure and P/E ratios like Limuru Tea , TPS EA (Serena) Ltd., Kenya Airways Ltd, E.A. Portland , and Sasini are omitted chart 2 is the result. The regression equation for the data of this chart is $Y_j = 14.6 - 0.16\ X_{1j}$ where X_1 is capital structure and Y_j is the P/E ratio. The negative coefficient of X_1 which is 0.16 shows that the P/E ratio changes in an inverse proportion to capital structure. The correlation coefficient, r is - 0.06, that is if outliers are removed the capital structure and P/E ratio have a very small negative correlation. Increasing the capital structure will lead to a very small decrease in the P/E ratio, while decreasing the capital Structure will result in a very small increase of the P/E ratio. The coefficient of determination r^2 is 0%. This means the price earnings ratio is never affected by the capital structure and vice versa. For the data see Appendix 2.



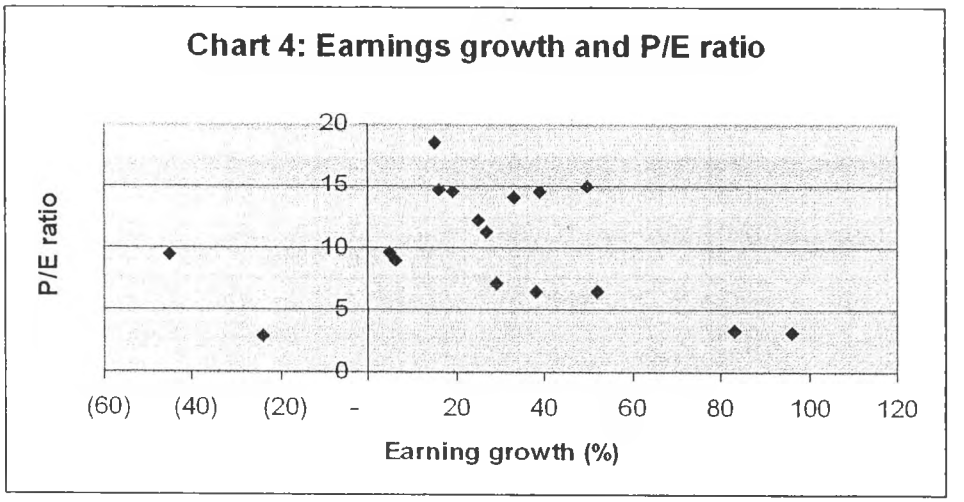
4.2.2 The relationship between earnings growth and price -earnings ratio.

The scatter graph for this item is shown in chart 3. The data includes the outliers.



From chart 3 the trend was not very clear although it appears to be negative. The correlation coefficient was obtained as positive 0.3. This is a weak relationship between earnings growth and the P/E ratio. An increase in the P/E ratio results in an increase in the earnings growth and vice versa. The data for this chart is shown in appendix 3. If

companies with very large figures for the P/E ratios and earnings growth such as Limuru Tea, TPS (Serena), Rea Vipingo and Sasini, Car and General, Standard Group, and E.A. Cables are omitted chart 4 will result. The regression equation for this data is $Y_j = 11.4 - 0.043X_{2j}$ where X_2 is the earnings growth and Y_j is the P/E ratio. Since the coefficient of X_2 is negative 0.043 it means that the increase in earnings growth leads to decrease in the P/E ratio and vice versa. The correlation coefficient, r is negative 0.21 which is a small value. This means the relationship between the two variables is weak. The coefficient of determination, r^2 is 0.044 or 4.4%. This implies that 4.4% of the change in the price-earnings ratio is due to the change in earnings growth and vice versa. The remainder of the change in the price earnings ratio or earnings growth of 95.6% in due to other factors. This means the change in the P/E ratios in affected in a very small degree by the change in earnings growth. Given a small negative correlation coefficient of 0.21 it means an increase in the P/E ratio will lead to a decrease in earnings growth.



4.3 Summary of Analysis and interpretation.

4.3.1 The relationship between price Earnings Ratio and Capital structure

The correlation coefficient was -0.06. This is a very small negative relationship which can be ignored. The coefficient of determination was 0%, implying a lack of relationship between capital structure and price earnings ratio.

4.3.2 The relationship between price earnings ratio and earnings growth.

The correlation coefficient was -0.21. This is a small negative correlation coefficient. It only shows a weak negative correlation between the price earnings ratio and earnings growth. The coefficient of determination was 4.4.%. This means 4.4% of the change in the price earnings ratio is caused by earnings growth while the remainder, 95.6% is brought about by other factors. Therefore the change in earnings growth affects the change in price earnings ratio in a very small degree. An increase in earnings growth leads to a small decrease in the P/E ratio.

4.3.3 Conclusions

There is no relationship between the capital structure and price earnings ratio because their coefficient of determination is zero. For the price earnings growth, there is a small negative correlation. This means the ratio can be affected by earnings growth, although in a small degree. They have a coefficient of determination of 4.4%. An increase in earnings growth leads to a small decrease in the P/E ratio.

CHAPTER FIVE

5.0 Summary of Findings, Conclusions, Recommendations and Suggestions for Further Research

5.1 Summary of Findings and Conclusion

5.1.1 Summary of Findings

The objective of this study was to ascertain whether there was a relationship between the price earnings ratio and earnings growth and also between capital structure and the same ratio for firms quoted in the Nairobi Stock Exchange. The data used covered a period of six years from 1 January, 2002 to Dec 31, 2007 and was obtained from the Capital Markets Authority Electronic library. The project used regression analysis to determine the relationships. Companies with extremely large values for earnings growth, P/E Ratio and Earnings growth were excluded from the study. Therefore the results of charts 3 and 4 were used in the conclusions arrived at in this project.

The results from this study show that the price –earnings ratio is negatively correlated with earnings growth for companies listed in the Nairobi Stock Exchange. But at a correlation coefficient of -0.21, this is a weak negative correlation. This study partly agrees with Beaver and Morse (1978) – who found both negative and positive correlation, but agrees with Stevenson (1967) who concluded that there is little systematic relation between the two variables and Ndete (1999) who found a weak relationship. It disagrees with Pu Shen (2000), who cited Campbell and Shiller (1998) as having concluded that there was no relationship. From these results investors should use other indicators of

investment as well, in selecting their investments. They should not wholly rely on the P/E ratio alone because the relationship is very weak.

The other result shows that there is an extremely weak negative correlation of 0.06 between capital structure and price earnings ratio. This means an increase in capital structure will lead to a very small decrease in the price-earnings ratio. This leads to the coefficient of determination of zero, which means there is no relationship between capital structure and the P/E ratio.

5.1.2 Conclusion

For companies quoted in the NSE there is no relationship between capital structure and the price earnings ratio. There exists a weak relationship between the price earnings ratio and earnings growth. A decrease in the earnings growth will lead to an increase in the price earnings ratio and vice versa. The earnings growth is one of the factors that affect the change in the price earnings ratio and vice versa. To choose a project the P/E ratio should not be used alone other measures should be used as well. These other measures include the earnings per share, dividend cover, dividends paid, etc.

5.2 Limitations of the Study

The study only considered companies listed in the Nairobi Stock Exchange. Since private companies were not covered the conclusions of this work cannot apply to them. Work should be done on private companies as well to arrive at a result which covers all. In that way the study could improve.

The study covered only six years, a project of a longer period can yield different conclusions. Covering a longer period for example of ten to fifteen years can give better results than for a shorter period. This can lead to vigorous studies which can can produce extra good information.

The shortage of time put limitations on how much was to be covered in this study. Given more time lots of analysis could be done to arrive at more conclusions. With extra time it is possible to obtain primary data from unquoted companies for the project. This will lead to better conclusions because many firms are involved in the research.

5.3 Recommendations for Further Research

There is need to carry out a similar research concerning both private companies and public companies. The study here would be to determine the relationship between price earnings ratio and earnings growth. The results would yield better conclusions because many companies are considered.

Research can be done to find out between low and high P/E ratios which ones yields higher earnings growth. This is an area where many scholars are working on at present. The results so far have not been conclusive and therefore more work is needed to be carried out.

A similar study on P/E ratios and earnings growth can be carried out over a longer duration than the one covered in this research. This would provide more useful information on this area. There is also need to have such information to see how it compares with the results of this study.

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APPENDICES

Appendix I: Capital Structure and P/E Ratio (All Data)

	Non current liabilities	Equity	Capital Structure	P/E ratio
Kakuzi	611,349	1,052,600	0.580799	3.33
Rea Vipingo	184,848	578,784	0.319373	23.34
Sasini Ltd	426,290	2,632,804	0.161915	-29.08
Car & Gen	93,368	548,397	0.170256	
CMC	354,865	2,978,952	0.119124	9.06
Kenya Airways Ltd	21,118,167	12,443,00	1,697,193	6.44
Marshalls	103,026	310,772	0.331516	7.06
Nation Media Group	127,917	3,114,917	0.041066	18.54
Standard Group Ltd	212,262	269,981	0.786211	17.57
TPS EA (Serena Ltd)	1143024	2042475	0.559627	62.51
Athi River Mining Ltd	965,223	1,164,027	0.82921	15.06
Bamburi	2,352,333	11,446,167	0.205513	24.85
British American Tobacco	715,357	4,142,244	0.172698	14.75
Crown Berger	78,524	665,567	0.117981	14.13
E.A. Cables	185,855	483,065	0.384741	12.35
E.A. Portland	4457083	2464683	180838	11.31
E.A. Breweries	1,618,548	14,473,913	0.111825	14.52
Kenya Oil	242,038	3,602,379	0.067188	9.46
K. Pow. & L.	10,319,744	13,920,490	0.741335	6.46
Mumias	1,934,015	6,243,270	0.309776	9.58
Total Kenya Ltd	-	4,349,764	0	14.6
Unga	106,330	1,379,714	0.077067	2.99
Eaagads Ltd	36,108	153,497	0.235236	3.34
Limuru Tea Col Ltd	14,165	39,641	0.357332	47.65

r = - 0.100454689

Appendix 2: Capital Structure and P/E Ratios (Outliers Omitted)

	Non current liabilities	Equity	Capital structure	P/E ratio	
Kakuzi	611,349	1,052,600	0.580799	3.33	
Rea Vipingo	184,848	578,784	0.319373	23.34	
Car & Gen	93,368	548,397	0.170256	13.67	
CMC	354,865	2,978,952	0.119124	9.06	
Marshalls	103,026	310,772	0.331516	7.06	
Nation Media Group	127,917	3,114,917	0.041066	18.54	
Standard Group Ltd	212,262	269,981	0.786211	17.57	
Athi River Mining Ltd	965,223	1,164,027	0.82921	15.06	
BOC (K)	54,809	1,004,905	0.054541	12.26	
Bamburi	2,352,333	11,446,167	0.205513	24.85	
British American Tobacco	715,357	4,142,244	0.172698	14.75	
Crown Berger	78,524	665,567	0.117981	14.13	
E.A. Cables	185,855	483,065	0.384741	12.35	
E.A. Breweries	1,618,548	14,473,913	0.111825	14.52	
Kenya Oil	242,038	3,602,379	0.067188	9.46	
K. Pow. & L.	10,319,744	13,920,490	0.741335	6.46	
Mumias	1,934,015	6,243,270	0.309776	9.58	
Total Kenya Ltd	-	4,349,764	0	14.6	-0.06182
Unga	106,330	1,379,714	0.077067	2.99	
Eaagads Ltd	36,108	153,497	0.235236	3.34	

Appendix 3: P/E Ratio and Earnings Growth (All Data)

	Earning growth (%)	P/E ratio
Kakuzi	96	3.33
Rea Vipingo	778	23.34
Sasini Ltd	(12)	-29.08
Car & Gen	224	13.67
CMC	6	9.06
Kenya Airways Ltd	52	6.44
Marshalls	29	7.06
Nation Media Group	15	18.54
Standard Group Ltd	114	17.57
TPS EA (Serena) Ltd	233	62.51
Athi River Mining Ltd	50	15.06
BOC (K)	25	12.26
Bamburi	34	24.85
British American Tobacco	16	14.75
Crown Berger	33	14.13
E.A. Cables	230	12.35
E.A. Portland	27	11.31
E.A. Breweries	19	14.52
Kenya Oil	(45)	9.46
K. Pow. & L.	38	6.46
Mumias	5	9.58
Total Kenya Ltd	39	14.6
Unga	(24)	2.99
Eaagads Ltd	83	3.34
Limuru Tea Col Ltd	31	47.65

0.295805

Appendix 4: P/E Ratio and Earnings Growth (Outliers Omitted)

	Earning growth (%)	P/E ratio
Kakuzi	96	3.33
CMC	6	9.06
Kenya Airways Ltd	52	6.44
Marshalls	29	7.06
Nation Media Group	15	18.54
Athi River Mining Ltd	50	15.06
BOC (K)	25	12.26
British American Tobacco	16	14.75
Crown Berger	33	14.13
E.A. Portland	27	11.31
E.A. Breweries	19	14.52
Kenya Oil	(45)	9.46
K. Pow. & L.	38	6.46
Mumias	5	9.58
Total Kenya Ltd	39	14.6
Unga		2.99
Eaagads Ltd	83	3.34

r = -0.21064

Appendix 5: Companies Quoted in the Nairobi Stock Exchange As At 31st December 2007

AGRICULTURE SECTOR

Unilever Tea Kenya Limited
Kakuzi Limited
Rea Vipingo Plantations Ltd
Sasini Tea and Coffee Limited

COMMERCIAL AND SERVICES

Access Kenya Group
Car and General (Kenya) Limited
CMC Holdings Limited
Kenya Airways Limited
Marshalls (East Africa) Limited
Nation Media Group Limited
Scangroup Limited
Standard Group Limited
TPS (Tourism Promotion Services)
Eastern Africa Limited (Serena Hotels)

FINANCIALS AND INVESTMENTS

Barclays Bank of Kenya Limited
CFC Bank
Diamond Trust Bank (Kenya) Limited
Equity Bank Limited
Housing Finance Company Limited
Centum Investment Company (ICDCI) Limited
Jubilee Insurance Company Limited
Kenya Commercial Bank Limited
Kenya Reinsurance Company Limited
National Bank of Kenya Limited
NIC Bank Limited
Pan Africa Insurance Company Limited
Standard Chartered Bank Kenya Limited

INDUSTRIAL AND ALLIED

Athi-River Mining Limited
Bamburi Cement Company Limited
British American Tobacco Kenya Limited
BOC Kenya Limited
Crown-Berger Kenya Limited
Olympia Capital Holdings limited
East African Cables Limited
East African Portland Cement Company
East African Breweries Limited
Eveready East Africa Limited
Sameer Africa Limited (formerly- Firestone East Africa (1969) Limited
Kenya Oil Company Limited
Mumias Sugar Company Ltd
Kenya Power and Lighting Company Limited
Kenya Electricity Generating Company (KenGen)
Total Kenya Ltd
Unga Group Limited

ALTERNATIVE INVESTMENT MARKET SEGMENT (AIMS)

A. Baumann & Company Limited (suspended)
City Trust Limited
Eaagads Limited
Express Kenya Limited
Kapchorua Tea Company Limited
Limuru Tea Company Limited
Williamson Tea Kenya Limited