TESTING WHETHER THE PRICE-EARNINGS RATIO IS AN INDICATOR OF INVESTMENT PERFORMANCE OF ORDINARY SHARES ON THE NAIROBI STOCK EXCHANGE

BY

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DECLARATION

This Management Project is my original work and has not been Presented for a Degree in any other University.

Signed _____   Date ___12 · 07 · 2000___

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This Management Project has been submitted for the examination with my approval as the University Supervisor

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DEDICATION

To my loving Wife Jennifer, for her patience with me and a lot of encouragement to continue with this course; My Father Mwangi and my Mother Wangari, who put in me the value of education and who invested in me a lot of resources to pursue the same.

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ABSTRACT

Investors constantly evaluate performance of different firms and their aim is to determine which firms are doing better so that they can invest their funds in them and which ones are deteriorating in performance so that they can withdraw their investment from them. One of the basic techniques used by investors and the financial analysts is the P/E ratio. This study sought to determine whether the P/E ratios of companies quoted on the Nairobi stock exchange have any relationship with some three basic investment performance indicators namely the Earnings growth, Dividend payout and Earnings growth variations.

Using a sample of 30 firms out of the total 55 firms listed at the Nairobi Stock Exchange over the 1993 to 1998 period the researcher examined the relationship between a company's P/E ratio and the indicators mentioned above.

The multiple regression technique was used for the analysis of data collected and the results showed that a relationship exists between the P/E and the three indicators. The conclusion was that investors can improve their investment portfolio performance if they use the P/E Ratios as the earnings growth is positively related to P/E. The other two factors, that is Dividends payout and Earnings variations had unclear relationships with P/E and this also needs to be taken into account by investors and analysts.

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1. INTRODUCTION:

1.1 Background

Investors have expectations on the value of their investment and these expectations enable them to make decisions on whether to sell or buy or hold particular shares. The objective of the investors is mainly to maximize the returns on their investments thus increasing their wealth. According to Lee, 1983, one of the factors that increase the equity shareholders wealth is the management's success in fulfilling the market expectations of the shareholders.

The returns of the shareholders depend on the profitability of the business enterprise they have invested in. This profitability is expressed in form of earnings computed by accountants using the Generally Accepted Accounting Principles (GAAPs). From the earnings, the investors receive dividends which are distributed profits and the retained earnings (part of earnings which is undistributed) are reinvested into the business. The investors not only obtain their returns from dividends but also from the capital gains that are realised when they sell their shares (holdings) at a gain, that is, where the share prices have risen over and above the prices the shareholders purchased them at.

Every rational investor would wish to maximise these returns in terms of dividends and capital gains and would be willing to buy the shares that he or she expects to earn highest returns. Miller, 1974 observed that investors hold securities for consumption opportunities they offer and will evaluate them in terms of their yields (quoted by Obonyo, 1989). The problem is how to tell which share is expected to earn the highest returns. It is very hard to predict the future. Legendary investor Peter Lynch once said *" Nobody can predict interest rates, the future direction of the economy or the stock market. Dismiss all such forecasts and concentrate on what is actually happening in the company in which you want to invest in."*

Shareholders constantly evaluate company performance in order to determine whether to buy or sell or hold the shares. "The only practical way in which an investor can today give expression to his conclusions in regard to the management of a corporation in which he is interested in, is by retaining, increasing or disposing off of his investment" (Glady 1967, quoted by Stone 1967). Different shareholders have different methods of filtering and screening companies with the return maximisation goal in mind. There are a number of signals that investors in the stock market usually check or evaluate when buying shares. Some investors have recommended a thorough technical analysis as well as looking at the company's specific fundamentals such as earnings and dividend forecasts, management capabilities, and intensity of competition within the industry the

company is in. Others are not interested at all in the detailed analysis and so they evaluate companies by use of other factors. Warrant Buffet, (Quoted by Peter Gachuba in Daily Nation, 1st June 1999) another famous investor, dismisses most analytical data and urges potential investors to disregard any data that will lead to speculation, and invest in well managed companies whose products they fully understand.

There are a number of ratios that are usually provided by Financial analysts especially to equity investors in order to help them make decisions on which securities to purchase or sell. These include Dividends per share, Dividends Yield, Dividends Pay out, Earnings per share, Earnings yield, Price to Asset Book Value, Net Assets per share, Price Earnings Ratio, and many others depending on the information needs of the investors.

One of the important basic numerical method used in practice, to evaluate the shares of a company is the Price Earnings Ratio. Indeed according to Pandey, 1990, Price Earning Ratio is one of the most widely used method of determining the value of common stocks by investors.

1.2   Price Earnings Ratio

Price Earnings Ratio is the value of a company's share price relative to the company's earnings. This ratio is determined by dividing the price of the share by the company earnings per share. For example; If the share of XYZ company has a closing price of Shs.150 per share and the company's earnings per share is Shs.15, then the Price Earnings ratio is 10. So the price of XYZ,s share is ten times the company's earnings per share.

Many money market managers use Price to Earnings ratio as a basic screen for companies that they are considering for purchase. The P/E ratio places a value on the share price, and this allows a money manager to determine whether a share is priced relatively high or low. Once this first step is undertaken, the manager can then scrutinize the company in a more detailed qualitative fashion.

The P/E ratio is interpreted differently according to a money manager's particular style. For example, whether a manager seeks value or growth will influence whether the stocks sought have high or low Price Earnings Ratios. Low Price Earnings ratio shares tend to be in low growth industries, in stock groups that have fallen out of favour, or in established companies with long records of earnings stability and regular dividends. Low Price Earnings Ratio shares tend to have higher yields or dividends than high P/E   Ratio Shares. Conversely, growth

oriented companies pay out little or no dividends because they are reinvesting earnings into capital equipment. This reinvestment strategy anticipates greater future growth for earnings and stock price. This type of company has a high P/E ratio. The earnings are low but stock price is high, reflecting the future potential of the company. The P/E ratio allows an investor to gauge whether a share is priced high or low based on earnings. Generally speaking, the stock market is prepared to put a higher Price Earnings ratio on a company which has the potential for above-average growth in profits and dividends than on a company which is only managing sluggish growth.

1.3   Statement of the Problem.

The investors have a decision to make on where to invest their funds and make returns. There are many options for investment for example, Government treasury bills and other bonds, Bank deposits, insurance policies, Real estate, Shares at NSE (either ordinary or preference shares). The investor makes the decision depending on the amount of returns he is looking for, the period of investment and the risks associated with particular forms of investment. If an investor has invested in ordinary shares he may from time to time buy more or sell or decide to hold shares of certain companies depending on the expected returns.

"The simplest and most widely used ratio used to predict the market is the Price earnings Ratio." (Shiller, 1996). Price earnings ratio is used by investors to gauge various company stocks and to evaluate the market expectations on a particular share. "In practice analysts frequently attempt to view the P/E ratio on a given stock in relation to the P/E ratio prevailing on some broad market index.

Fischer and Jordan, 1996, observed that the principal determinants of standard P/E would be determined by the extent to which the following variables exceed and fall below the broad market averages.

a) Expected five year growth of earnings

b) Dividend payout ratio

c) Sales stability

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d) Institutional ownership of stock

e) Financial leverage (use of debt financing)

Several other studies have been conducted in relation to the company stocks performance indicators and how they affect the P/E ratio. Malkiel and Cragg (1970) studied the effects of historical growth of earnings, dividend payout ratio and the stocks rate of return relative to the market in determining P/E ratios. Earnings growth was found to have a positive effect on the P/E ratio. The closer the stock return followed that of the market, the more negative was the P/E effect. The dividend pay out effect was not clear as in some years, the higher the payout the higher the P/E, but this was not true for all the years. Other studies were by Whitbeck and Kisor, (1963), Bower and Bower (1969), Nicholson (1960), Basu (1978) and Shiller (1996) and the results obtained are described further under Literature Review.

All these studies have been performed in other markets in developed countries and not on the Nairobi stock exchange. The general conclusion from them is that the P/E ratios can be positively explained by the growth of earnings and the dividend payout ratios but has a negative relationship with the rate of return and risk in terms of variation of earnings and share prices. This study sought to investigate the case for Price Earnings Ratios at the Nairobi stock exchange, whether the differences on P/E ratios of different stocks could be explained by the same factors

or by other factors peculiar to the NSE and probably to the developing world. The aim was to establish the nature and type of relationships between the Price Earnings Ratio and the rate of growth of earnings; the variation in earnings growth (risk) and the dividend payout ratios of the quoted companies on the Nairobi Stock Exchange.

1.4 Objectives of the Study

The objectives of this study were :

- Identify the relationship between Price Earnings Ratios and the growth rate of earnings, the Dividend payout ratios at the NSE, and the variations in the earnings growth of companies at the Nairobi stock exchange.

- Determine the significance of the relationships between Price Earnings Ratio and the three factors, Growth rate of Earnings, Dividend payout ratios, and earnings growth variation

1.5 Significance of the Study:

The results of the study will be used by both current and potential investors at the Nairobi Stock Exchange in the evaluation of various quoted companies' shares, whether to rely on P/E ratios or not and whether the shares are over or undervalued.

The study will be important also to corporate managers especially when they are involved in setting of share offering prices where earnings and expected P/E ratios are used to compute share prices.

Secondly, when the managers and business or Financial advisors are considering the buying and selling of businesses in mergers and acquisitions they may use the P/E ratios if they are indicators of business performance and valuation.

The study will also be important to the scholars and academicians in their pursuit for knowledge and further research.

2. Literature Review

2.1 Investment Performance Indicators

Investment ratios or indicators are important for the investors(both current and potential) and the financial manager or analyst who is interested in the market prices of the shares of a company. These ratios help equity shareholders and other investors to assess the value of an investment in ordinary shares of a company. The value of an investment in ordinary shares in a listed company is its market value, and so investment ratios must have regard not only to information in the company's published accounts, but also to the current prices.

Some of the indicators used include

a) Earnings Per Share. (EPS)

EPS is a measure to which both management and shareholders pay a great deal of attention to. It is widely used in the valuation of shares. Eps calculations made over the years indicate whether or not the firm's earnings power has changed over the period (Pandey, 1990). Earnings per share is a special ratio since it has been given official recognition in an accounting standard, SSAP3. SSAP 3 defines EPS as the profit in pence attributable to each equity share. Based on the consolidated profit for the period after tax and after deducting minority interests and preference

dividends, such profit being divided by the number of ordinary shares (Lee 1983).
This ratio is quoted in the annual reports

b) Dividends Per share (DPS)

Dividends are generally declared publicly on a per share basis by a company's board of directors, and in most cases no calculation is necessary. DPS is the total dividend declared or paid divided by the total Number of ordinary shares,

c) Earnings yield

This ratio expresses the rate of return on the investment. Earnings Yield is computed by dividing the Earnings per Share by the Market price of the share.

d) Dividends Yield

When the dividend paid per share is divided by the market price per share the result is called the dividend yield. This ratio is also of much interest to shareholders and investors.

e) Dividend payout

The Payout ratio of a share can be computed as the dividend per share divided by the Earnings per share. A payout of 75 % means that the company paid out 75 % of its earnings in the form of dividends.

"Some investors are attracted by the stock of companies that pay out a large percentage of their earnings. Other investors are attracted by the stock of companies that retain and re-invest a large percentage of their earnings. The tax status of the investor has a great deal to do with this preference. Investors in high tax brackets often prefer to have the company reinvest the earnings with the expectation that this reinvestment will result in share price appreciation" (Hermanson, Edwards, and Maher)

f) Price Earnings Ratio

Foster (1986) notes that this is one of the most frequently cited financial indicators about a publicly traded company. He argues that the P/E ratio can be given a theoretical foundation via an equity valuation model of the form

$$P_i = E_i / r$$

where P_i is the price of one equity share of firm I and E_t is the expected annual earnings whereas r is the market rate of interest for riskless investments.

Key assumptions underlying this theoretical foundation include

1. Differences across firms in their riskiness either are irrelevant in the determination of P_i (as would be the case in a risk neutral market), or these differences can be fully captured by *r* term

2. The future earnings stream can be fully represented by a single number (a

scalar). One such case is where the future stream is constant.

Where these assumptions are not met, the P/E ratio should not be imbued with any

theoretical importance. In most contexts, it is best viewed as a summary indicator

of the capital market's perception of earnings generating power in the same way

that many financial ratios are viewed as indicators of attributes such as liquidity,

profitability and leverage.

The Price Earnings Ratio and the Dividend Pay-out

Frank Reilly and Keith Brown in their book "Investment Analysis and Portfolio

management" state that the infinite period dividend discount model can be used to

indicate the variables that should determine the value of P/E Ratio. This dividend

Discount model which is used for estimating the value of a stock can be simplified

to the following expression.

$$P_i = \frac{D_1}{k-g}$$

Where

P_i = the Price of stock i

D_1 = the expected dividend at the end of period 1

k = the required rate of return

g = the expected constant growth rate of dividends for the stock

If we divide both sides of the equation by E_1 (the expected earnings during the next 12 months) the result is as follows:

$$\frac{P_1}{E_1} = \frac{D_1 / E_1}{k-g}$$

Thus the P/E is determined by:

1. The expected dividend pay-out ratio (D_1/E_1 i.e. dividends divided by earnings)

2. The required rate of return (k)

3. The expected growth rate of dividends for the stock (g).

"Based on the P/E equation there is a positive relationship between payout ratio and the P/E ratio. Therefore if the (k-g) spread is constant and the Dividend ratio increases, there will be an increase in the P/E ratio or the earnings multipier. At the same time we should recognise that the dividend payout ratio is equal to one minus the earnings retention rate. Therefore if the dividend pay-out increases, there will be a decline in the earnings retention rate which will cause a decline in the growth rate (g). Thus there is partial offset between changes in the dividend payout rate and the expected growth rate." (Reilly and Brown)

Limitations Of Ratios

Users of ratios must be careful in interpreting trends and comparisons computed from financial statements as they have certain limitations

Companies may not be comparable. Data among companies may not provide meaningful comparisons because of factors such as use of different accounting methods, size of the companies, and the diversification of product lines. According to Montegomery (1982), in any investment decision, qualitative information not measured and reported by accountants can be very significant in decision making. These include

- the quality of the firm's management and work force, and the selection and training programs needed to ensure maintenance or improvement of this quality,

- the quality of its labour relations and prospects for continued operations at competitive labour force,

- the quality of its product and of research directed towards new and improved products in a rapidly changing world.

- the environment of the firm including overall economic forecasts, industry forecasts and the future share of the market that the firm might reasonably anticipate.

Financial analysis is performed on historical data, primarily for the purpose of forecasting future performance. The historical relationship may not continue in future because of changes in the general state of the economy, or in the business environment of the firm, or in management and policies established by the management.

Another limitation is that the measurement base in computing the analytical measures is historical cost. Failure to adjust for inflation or for changes in fair values may result in some computations providing misleading information on a trend basis and in comparison between companies.

Another limitation is the use of year end data. These data may not be typical of the firms position during the year. This is because the management with the knowledge that certain ratios are computed at the year end, may improve a ratio by entering into certain types of transactions near the end of the year.

2.2   Using Price Earnings Ratios

One of the most fundamental measures of a company's value is the Price to Earnings Ratio (P/E), or a multiple of a company. Price to Earnings is the value of a company's stock price relative to company earnings. A P/E ratio is better than

Price in comparing two shares. For Example a Share with a Price of Kenya Shillings 10.00 and a P/E of 40 is not of the same worth with one selling at the same price but has a P/E of 6. As noted in Chapter one, the P/E is better placed to help the investor in measuring which stocks are highly or low priced with regard to the earnings. The question that arises to the investor is; which is better between a high P/E and a low one? It is very difficult to answer that question, but it is important to note that a share with a high P/E ratio may have the following advantages:

- The wealth of a company's owners is increased in proportion as the Price rises.

- If the company needs additional funds, these funds can be raised at favourable prices.

- When the P/E is high the possibility of a successful hostile take over bid is much reduced.

- Most importantly the company has the means to make acquisition on favourable terms by using its paper shares as opposed to cash.

Where P/E is used for valuation of companies, analysts and investors seek various rules of thumb for selecting the appropriate P/E ratios that can be applied to company's earnings to determine the normal or 'right' valuation for its shares. This P/E may be computed from the historical records of the stock by the use of mean P/E over a period of time or median P/E or a computed range over time, relative to the market P/E. Although the industry P/E provides some guidelines in

such computations care is taken as different companies in the same industry frequently carry quite different P/E ratios. Using this normal P/E a fair price of the share is computed and compared with the current market share price to assess any bargains or overpricing of the share. For example if a company is expected to earn Kenya Shillings 10 per share and normally sells at a P/E ratio of 12, the analyst might conclude that a fair price is currently Kenya Shillings 120. If the share is selling at Kenya Shillings 110, some analyst might consider it undervalued. Should the share be sell for Kenya Shillings 130 it might be judged overpriced or overvalued.

In a study conducted by R. A. Bing, he found out that several techniques are favoured by analysts in determining proper P/E multiples. In majority of the analysts

1) Used time horizons from one to three years

2) Preferred to use several techniques in combinations rather than sticking to one. 75 % of analysts surveyed used "normal" multiplier rules of thumb under the following techniques.

- They compared current actual P/E with what they considered normal for the stock in question

- They compared price times the estimated future earnings with what they considered a normal multiplier for the stock in question.

- They compared the multiplier and the growth of earnings of individual stocks with industry group multiple and earnings growth.

2.3 Previous Research on Price Earnings ratios

In addition to the studies mentioned in Chapter 1 there are other studies that have been conducted on P/E ratio especially its relation to returns and growth of the firms. Robert Shiller did a study on Price Earnings Ratios as forecasters of the returns in the US markets and concluded that more than half of the variance of stock price changes could be explained in advance by the Price earnings ratio.(Shiller, 1996). Even earlier in 1967, a study carried out by Hammel and Hodes on the factors influencing Price Earnings ratio showed that a relationship existed between the stock prices and the P/E ratio. (Hammel et al 1967)

Whitbeck and Kisor (1963) studied a number of stocks over the same time span. They speculated that differences in P/E ratios between stocks could be explained by

1) Projected earnings growth

2) expected dividend payout

3) the variation in the rate of earnings growth or growth risk.

They applied the correlation technique across a cross section of 135 stocks to explain differences in individual P/E ratios. They concluded that P/E ratio is an increasing function of growth and payout and inversely related to the variation in

the growth rate. In other words higher P/E ratios were associated with higher growth and payout and less variation in the growth rate.

Bower and Bower (1969) used a similar approach for different time period with another sample of firms. They used earnings growth and payout as variables but divided risk into sub components including marketability of the stock, its price variability and its conformity with the market. They showed results similar to whitbeck and Kisor for a cross section of stocks. They saw the same positive effects of earnings growth and payout. However their examination of risk was more detailed. They discovered that higher P/E ratios were associated with more rapid earnings growth and higher dividend payout. Lower P/E ratios with less marketability greater conformity to the market price movements and higher price variability.

Nicholson, (1960) published the first extensive study of the relationship between P/E multiples and subsequent total returns, which showed that low P/E stocks consistently provided returns greater than average stocks.(quoted by Donald and Ronald). Basu introduced the notion that P/E ratios may explain violations of the Capital Asset Pricing Model (CAPM) and found that, for his sample of New York Stock Exchange firms, there was a distinct negative relation between P/E ratios and average returns in excess of those predicted by the CAPM.

Price Earnings ratios have been a concern especially when two or more markets were compared. An extensive study in regard to this to explain why the Japanese companies have generally higher P/E ratios than the USA companies. In one such a study done by Niso Abuaf and Kathleen Carmody who were comparing the cost of capital in both countries, it was concluded that the high Japanese P/E ratios prove that Japanese firms have a lower cost of equity capital. They observed that to the extent that the Japanese companies are expected to grow more rapidly than those of the US companies, Japanese companies should have a higher P/E ratios even with identical cost of equity capital.(Abuaf and Carmody,1990)

Fama and French in their study on the cross section of expected returns observed that the P/E ratio effect could be used in the extensions of the CAPM model in the attempt to predict returns. They noted that holding beta constant in the extended model, observed returns tend to be higher for low P/E ratio stocks and lower for high P/E ratio stocks. Expressed differently low P/E ratio stocks earn excess returns above what CAPM would predict and high P/E ratio stocks earn less that what the CAPM would predict. Similar to the P/E ratios, the ratio of market to book value was used to explain security returns.(Fama and French, 1992). Also Kent Daniel et al in their tests to explain the cross section of expected returns in Japanese companies a more closer relation between the returns and these ratios. (Daniel, Titman, and Wei, 1999).

Others researchers have done studies on how returns and investment values relate to or can be predicted by various factors. Staubus, 1965 carried out a study on correlation on common stock values and various financial accounting variables. He concluded that earnings and current flows were better individual indicators of stocks values than dividends and book values.

In 1978 Basu examined the degree to which earnings of corporate equities affect the association between annual income numbers and security prices. His conclusion was that earnings yields of corporate equities are indicators of future investment performance and as such, affect the association under consideration. In another study, Phillips et al, 1970 tested the relationship between income measures and the bank stock values. They took the dependent variable as the value of bank's stock and found evidence of a strong association between bank stock values and operating earnings per dollar of assets.

Benston 1967, did a study to find out which published data are used by investors as reflected by changes in the market prices of common stocks. To provide a meaningful test the relationship between common stock prices, published accounting information and other factors were specified. He found out that only relatively small though significant relationship was found between the rates of change of data in corporate reports and rates of change of stock prices.

In another fairly recent study by Owen Lamont, 1996 on Earnings and Expected Returns he concluded that the aggregate dividend payout ratio forecasts aggregate excess returns on both stocks and corporate bonds in post-war US data. He observed that both high corporate profits and high stock prices forecast low excess returns on equities, and that when the payout ratio is high, expected returns are high. The payout ratio's correlation with business conditions gives it predictive power for returns.

Walter Good, (1991) observed that there are two conflicting views of P/E ratios that compete for the investors attention. One approach looks to the efficient market hypothesis for support. It holds that the P/E ratio is high or low for good reason, because information as it becomes available is quickly discounted by a rational stock market. The other approach has the backing of the contrarian logic. It considers a high P/E to be a reason to sell and a low P/E an opportunity to buy. According to this view, investors, driven by extremes of their greed or fear, often act irrationally. As a result, they push stocks prices too high or too low, setting up the stock market for a subsequent correction or rebound. History seems to provide support for the both points of view.

3. RESEARCH DESIGN

3.1 Population and Sampling

The population of the study comprised of all companies quoted at the Nairobi stock exchange. The total number of firms in the population was 55 as analysed below by groupings. The study was on the variables that are generated from this market, and which could only be obtained from quoted companies. The Information on the listed companies was obtained from the "Quoted Companies Results" books which are published every year by the Nairobi Stock Exchange, and the Researcher was interested in the companies' published results for the last ten years from 1989 to 1998. However due to the structural changes that took place between 1990 and 1992 in Kenya and at the NSE, after Liberalisation of the Financial Markets, only the data for period between 1993 to 1998 was used for the study as these were taken to be free to structural change bias.

Selection of the sample firms used the following criteria.

- The Firms' Published Accounts for the years of study were available at the stock exchange and had been included in the "Quoted Companies Results" book

- Each sample comprised of firms whose fiscal year end was the same. In this regard all the listed companies were classified by their fiscal year end into five groups as shown by **Table 3.1.1** below. This classification was necessary because the dependent variable, Price Earnings Ratio was to be taken at a

particular point in time and the point chosen was the last day of the Fiscal year of each company. At this point in time the stock prices are free from effects of results announcement and are ex dividend.

Table 3.1.1

YEAR - END	No of Firms
31-March	7
30-June	11
31-July	2
30-September	10
31-December	25
TOTAL	55

- Out of the total 55 companies, 7 were listed at the Stock Exchange after 1993 and so they could not be included in the sample.

- In addition to that 3 of the remaining 48 firms did not submit information for some of the years of study and therefore could not also be included.

- Some companies had negative Price Earnings Ratios in some of the years under study. This was a reflection of the loss these firms had made specifically in those years. George Foster in his book, Financial Statement Analysis recommends that the best way of dealing with negative P/E ratios in Research is to exclude them from the study. In the light of this, 15 companies which had negative P/E ratios in any of the years between 1993 and 1998 were excluded

from the study. This left us with a total of 30 companies which were classified as follows in **Table 3.1.2**

Table 3.1.2

YEAR - END	No of Firms
31-March	3
30-June	6
31-July	1
30-September	5
31-December	15
TOTAL	30

- The total sample is relatively small. Furthermore there is inadequate representation of firms whose year end was 31 March and 31 July. Because of this the pooled time series, cross -sectional research design was used. This is the same design that was used by Darryl Craig, Glenn Johnson and Maurice Joy in their study on P/E ratios and Accounting methods. In the case of this study five samples were used as indicated by Table 3.1.3 below. There was 90 observations for companies whose year end was 31st December obtained from 15 companies over six years. Within this sample two more sub- samples of 36 observations each were selected as there was six companies in each of the two sectors, Financial and Industrial sectors. The other two samples were for those companies whose year ended 30th June and 30th September and the number of observations were 36 and 30 respectively. Craig, Johnson and Joy did their

research on Industrial companies whose year end was 31st December only. The list of companies in the samples of this research and their variables are given in Appendix.

Table 3.1.3

Sample	Year End	Sectors	No of Companies	No of Observations
A	31st December	All sectors	15	90
B	31st December	Financial only	6	36
C	31st December	Industrial only	6	36
D	30th June	All sectors	6	36
E	30th September	All sectors	5	30

3.2 Data Collection

As indicated above under Population and Sampling, the study involved secondary data which was collected from the annual reports published by the Nairobi Stock Exchange. The data collected for the study included

- the Price Earnings ratios on last day of the each company's accounting year from 1992 to 1998. The reason for choosing the last day of the accounting year is that prices at this time are ex dividends. In addition the prices are unaffected by the announcements of results as the results are usually announced about three months after the year end.

- the dividends pay out ratios of each company in the sample for the years of study were also collected from the NSE annual results publications.

- The annual earnings growth rates for each company for the years of study were obtained in two ways for comparison. This was computed by dividing the increase in earnings in one year by the previous year's earnings.

1. The following year earnings growth rate for every year of study and

2. by computing the five years average of earnings growth, to eliminated the effects of short term considerations. As long ago as 1934, Benjamin Graham and David Dodd, in their now famous textbook Security Analysis, said that for purposes of examining such ratios, one should use an average of earnings of "not less than five years, preferably seven or ten years." (p. 452). Earnings in any one year tend to be affected by short-run considerations, that cannot be expected to continue. Obonyo also used five year average dividends yields in his study on the characteristics of the Dividend yield clientele phenomenon among the equity stock investors in Kenya.

- Variations in the annual earnings growth for the period of study was computed in form of the five year moving standard deviation of earnings growth rates for the previous five years.

3.3 Data Analysis

The data collected was analysed to establish relationships using the Multiple Regression Analysis. This is the same method that was used by Asienwa (1992) to analyse the relationship between investment ratios and the share performance of quoted companies at the NSE; by Staubus,1965 in study on the association of financial accounting variables with common stock values; Phillips et al also used the regression analysis to determine the relationship between income measures and bank stock values.

The data involved in the model included the variables collected as indicated under 3.2 Data collection above. In addition zero-one dummy year variables were included to pick up unspecified influences that may vary from year to year. This was the same approach used by Craig, Johnson and Joy where they argued that, capturing the effect of time in this way does not impose an arbitrary linearity restraint on the time P/E relation.

In this study all data for the five samples were run in a SPSS computer package to obtain the coefficient of the Regression Equation. The error terms of the Regression dependent variable were investigated and confirmed to be normal. This gave the researcher confidence to rely on the coefficients obtained from the data.

4. DATA ANALYSIS AND FINDINGS

4.1 Introduction

This study sought to determine the nature and type of relationships between the Price Earnings Ratio and the rate of growth of earnings; the variation in earnings growth and the dividend pay out ratios of the quoted companies on the Nairobi Stock Exchange. In this chapter the hypothesis that there is a relationship between P/E ratios and Growth of Earnings, Variation in Earnings growth and Dividend pay out ratios is investigated in detail. The data collected was studied and the findings are recorded and discussed.

4.2 Findings and Discussions

4.2.1 Data Tests

The Correlation Coefficient for Earnings growth and Earnings Variations, slightly exceeded an absolute value of 0.7 in three of the sample, but this was expected as earnings growth and the standard deviation for the earnings growth are related. Nevertheless most of all the other correlation coefficients were having an absolute of below 0.3 and those that exceeded did so only barely. Craig et al considered Correlation coefficients of around 0.3 in absolute values as low as thus not necessary to take multicollinearity as a problem. Table 4.2.1 gives analysis of the Pearson's Correlation coefficients. From the table the conclusions were that

multicollinearity was not considered an important problem at least for the samples

under study.

Table 4.2.1   Pearson's Correlation Coefficients

		Earnings Growth	Earnings Variation	Dividend payout
Earnings Growth	Sample 1	1.00	0. 68	-0.05
	Sample 2	1.00	0.19	-0.04
	Sample 3	1.00	0.76	-0.33
	Sample 4	1.00	-0.06	-0.04
	Sample 5	1.00	0.78	-0.28
Earnings Variation	Sample 1	0.68	1.00	0. 02
	Sample 2	0.19	1.00	0.22
	Sample 3	0.76	1.00	-0.18
	Sample 4	-0.06	1.00	-0.24
	Sample 5	0.78	1.00	-0.12
Dividend payout	Sample 1	-0.05	0.02	1.00
	Sample 2	-0.04	0.22	1.00
	Sample 3	-0.33	-0.18	1.00
	Sample 4	-0.04	-0.24	1.00
	Sample 5	-0.28	-0.12	1.00

Table 4.2.2 below gives the regression results. There are five regression models one for each sample. Model A is the model for all companies whose fiscal year end was 31st December. Model B was for those companies in the Financial sector of NSE and whose year end was also 31st December, whereas Model C was for companies with the same year end but from the Industrial sector of the Exchange. Models D and E were for all companies whose year end was 30th June and 30th September respectively.   079417/2000

The F statistic was used to test for the significance of the regression relationship in each of the models. The results showed that there was strong regression in Models A where the F statistic was significant at 0.01 level. In other words we could confirm a significant regression relationship with 99 % confidence in these two models. For Model C, D and E, the F statistic showed significance at level 0.05 thus with 95 % confidence it was concluded that a regression relationship existed. Model B was just below the 0.10 level of significance.

4.2.2 Results for Earnings Growth

The main interest in the study was with the investment performance variables, the Earnings Growth rates, the Earnings variation, and the Dividend Payout ratios. However looking briefly at the time dummy variables it was noted that P/E ratios were low around 1993 -1994 period, but they rose steadily in 1995 and 1996 after which, they started falling steadily from 1997 and fell further in 1998.

Other things being equal it was expected that the Earnings growth coefficient to be positive; that is, relatively large high-growth companies should have relatively high P/E ratios. This was the case for four of the models studied which included A, for all companies whose year end was 31st December; B, for Financial sector companies with year end as 31st December; C, for all Industrial Sector companies whose year end was 31st December; and D, for all companies with year end 30th June.

This was in line with the findings of the studies performed by Malkiel and Cragg (1970), Bower and Bower (1969) and Whitbeck and Kisor (1963) who concluded that higher P/E ratios were associated with higher earnings growth. However this was not the case for model E for companies whose year end was 30th September. This sample had the smallest number of observations and this could have had some effect on the results. The Earning growth coefficients for models D and E were significant at level 0.01 and 0.10 respectively The results of the earnings growth variable used in the study where one year's P/E was compared with the earnings growth rate of the following year were not significantly different from when average of the five year growth rates was used for every year.

Table 4.2.2 Regression Results (Dependent variable is P/E; t - scores in parentheses)

Variable	Sign Expectation	**A** All Companies with year end 31st Dec.	**B** Financial Sector Companies with year end 31st Dec.	**C** Industrial Sector Companies with year end 31st Dec.	**D** All Companies with year end 30th Jun.	**E** All Companies with year end 30th Sep.
Intercept		0.5577	8.7757	6.4549	7.8120	1.5677
Earnings Growth	+	4.6140	0.0573	1.3234	28.8410	-8.7884
		(1.016)	(0.014)	(0.185)	(3.766) *	(-1.987) *¹
Earnings Variation	+/-	2.9937	-5.7517	2.1118	1.2604	6.9231
		(1.608)	(-1.538)	(0.741)	(0.449)	(1.705) *¹
Dividends Payout	+/-	-0.0238	-0.0521	-8.3899	-2.6186	4.8401
		(-0.085)	(-0.517)	(-1.129)	(-0.756)	(1.109)
Y98	+/-	6.8611	-0.5478	10.2668	0.0127	1.6479
Y97	+/-	7.2670	-0.0511	11.0662	-2.0683	3.3973
Y96	+/-	10.6540	2.8942	10.7275	0.3791	2.7639
Y95	+/-	12.3536	4.0115	24.5501	2.0146	5.3553
Y94	+/-	2.0362	1.3012	2.4001	-4.9175	-1.1601
R^2		0.25	0.31	0.39	0.43	0.53
Standard Error		9.58	3.11	11.67	8.15	5.60
F		3.38 *	1.51	2.19 **	2.56 **	2.99 *¹
Durbin Watson		1.55	1.54	1.34	1.55	0.95
No of Firms		15	6	6	6	5
No of Observations		90	36	36	36	30

*   Significant at 0.01 level
**   Significant at 0.05 level
*** Significant at 0.10 level
^ Within Durbin Watson given range

4.2.3 Results for Earnings Growth Variation

The earnings growth variation coefficient sign was expected to move in either direction. In this study it is important to note that the Coefficient for the Earnings Variation was negative only in one model, and positive in four out of the five models. For the model E, the coefficient was significant at 0.10 level (90 % level of confidence) whereas it was slightly below 0.10 level significance for Models A (89 % significant)and B (87 % significant). In their study Beaver and Morse examined the relationship between P/E and the relative risk (beta) and concluded that beta "explains little" of the diversity across the firms in their P/E ratios. Beaver and Morse argued that the risk variable relationship with E/P (reciprocal of P/E) could be positive or negative depending on the level of transitory earnings.

4.2.4 Results for Dividend Payout Ratios

The other coefficient which was expected to move in either positive or negative direction was the Dividend payout ratio. This ratio had a negative relationship in 4 out of the 5 cases studied and only one positive. In some previous studies however, there is a stronger argument that Dividends payout ratio should have a positive relationship with the Price Earnings ratios. Bower and Bower (1969) and Whitbeck and Kisor (1963) found a positive relationship between the two variables. On the other hand Malkiel and Cragg (1970) found out that the dividend pay out effect was not clear. In this study all the models except the one (Model E) for companies

whose year end was 30th September, showed a negative relationship between Dividends payout and the Price Earnings Ratios. These findings are more in line with results of reported by Malkiel and Cragg where in some cases the dividends payout coefficient was negative and in others positive.

The other aspect of the results that warrant mention is the R-squared. The R-squared values are not especially large as they range between 0.25 to 0.53 for all the models. This was again in line with the study conducted by Craig, Johnson and Joy who obtained R-squared values ranging between 0.31 to 0.33 even though the models included three accounting methods as independent variables in addition to the Earnings Growth, Beta and Dividends payout variables.

5. SUMMARY AND CONCLUSIONS

5.1 Summary

The objectives of this study were to Identify the relationship between Price Earnings Ratios and the growth rate of earnings, the Dividend payout ratios at the NSE, and the variations in the earnings growth of companies at the Nairobi stock exchange, on one hand, and to determine the significance of such relationships. The data used for the study was secondary data collected from the Nairobi Stock Exchange and the Research Design involved using the multiple regression analysis to establish the relationship between the three independent variables and the dependent variable P/E ratios. The results of the study as presented in chapter 4 shows that there is a relationship albeit not a strong one between the Price Earnings Ratios and the three variables, Earnings growth Dividend payout and variations in earnings growth on stocks quoted at the Nairobi Stock Exchange. While the evidence is less conclusive, The findings were consistent with the assertions of earlier researchers in the same area. In this chapter the conclusions derived from the results are presented. In addition the limitations of the study are highlighted and the recommendations for future research are suggested.

5.2 Conclusions

This study endeavoured to test the association between the Price Earnings ratios and some investment performance indicators namely the Earnings Growth rate, Earnings growth Variations and Dividend pay out ratios. Even though the results do not show statistically very strong associations, from our samples we can conclude that firms that have high earnings growth rate tend to have high P/E ratios. Like the observation of Whitbeck and Kisor (1963), the study results on Earnings growth showed that P/E ratio is an increasing function of growth. This was also consistent with the findings of Malkiel and Cragg (1970). On the other hand the results regarding dividend payout ratios and earnings growth variation were contrary to the findings of Whitbeck and Kisor as these two variables show positive relationship to P/E ratios in some cases and negative relationship in others cases. Whitbeck and Kisor observed a positive relationship for payout ratios and inverse relationship for the variation in the growth rate. However the findings on the payout though inconsistent in regard to some studies were found to be in line with the observations of Malkiel and Cragg. On balance the interpretation of these results support earlier assertions that there exists association relationships between these variables and the P/E Ratios.

The implication of this is that Financial Analysts and Investors may use the P/E ratios to improve the returns on their investment. The results of the study show a

positive relationship between earnings growth and P/E ratio, which means that the higher the P/E, the higher the expected growth rate of the firm. On the other hand there was unclear relationship between P/E ratios and the other two variables which provides only mixed signals to the investors. The challenge for the financial analysts is the extent to which this kind of information can be translated into improved stocks portfolio performance, of course having in mind the limitations of the study and also other factors that influence the P/E ratios.

There are other factors that explain the variability of P/E among different firms and which should be the subject of further studies. One of explanation is the differences across firms in their accounting methods. Other explanations as observed by Modigliani and Cohn include the inflation effects, changes of real rates of interest overtime, and tax related effects.

5.3   Limitations of the study

One of the limitations of this study was the that the study covered a period of six years only. This was a result of the need to avoid structural effect on the data where pre-1992 Nairobi Stock Exchange and companies under the study operated under controlled environment. The period of six years is short a time for such a study to give conclusive findings.

Another limitation was that the number of firms studied was quite small due to the fact that some companies do not submit all their performance reports to the NSE, and also due to the fact that quite number of companies were listed at NSE after

1993 and others had negative P/E ratios over the period of study and therefore were excluded from the study.

Another limitation is that inflation effects were not adjusted for in the variables under study. This would be the subject of further research

5.4   Suggestions for Further Research

This study attempted to establish the type and the nature of relationship between P/E Ratios and three performance indicator variables only. Further Research will be required to include other variables that affect the P/E ratio, examples of which are the accounting methods of firms, inflation, strength of currency, and firms cost of capital or the borrowing interest rates. This will assist more in explaining why different firms have different P/E ratios and why different countries have different levels of P/E ratios.

Another related area for further research is the relationship between P/E and stock returns of different firms. Also the Price to Book value ratio could be used to test the effect of all the variables mentioned on the price of shares.

The effect of the use of different accounting methods on the P/E ratios of different firms also needs to be investigated. These factors together with inflation and interest rates have been observed elsewhere and their relationships with P/E ratios have been recorded as significant.

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APPENDICES

LL COMPANIES WITH YR END 31/DEC

Oct 84 SPSS for MS WINDOWS Release 6.0

* * * *   M U L T I P L E   R E G R E S S I O N   * * * *

istwise Deletion of Missing Data

quation Number 1   Dependent Variable..   PE

lock Number 1. Method: Enter
     EARNINGG EARNINGV PAYOUT   Y94   Y95   Y96   Y97   Y9

ariable(s) Entered on Step Number
   1..   Y98
   2..   PAYOUT
   3..   EARNINGV
   4..   Y95
   5..   Y97
   6..   Y96
   7..   Y94
   8..   EARNINGG

ultiple R   .50048
 Square   .25048
djusted R Square   .17645
tandard Error   9.57982

nalysis of Variance
                        DF   Sum of Squares   Mean Square
egression   8   2484.16086   310.52011
esidual   81   7433.61563   91.77303

 =   3.38357   Signif F =   .0021

---------------- Variables in the Equation ------------------

ariable   B   SE B   Beta   T   Sig T

Page 49

RNINGG	4.613952	4.542405	.148722	1.016	.3128
RNINGV	2.993739	1.861456	.217699	1.608	.1117
YOUT	-.023808	.280206	-.008459	-.085	.9325
4	2.036186	3.561278	.072288	.572	.5691
5	12.353630	3.508737	.438574	3.521	.0007
6	10.653954	3.548260	.378232	3.003	.0036
7	7.267012	3.574830	.257991	2.033	.0453
8	6.861134	3.773567	.243581	1.818	.0727
onstant)	.557716	2.942598		.190	.8502

d Block Number   1   All requested variables entered.

Oct 84 SPSS for MS WINDOWS Release 6.0

          * * * *   M U L T I P L E   R E G R E S S I O N   * * * *

quation Number 1   Dependent Variable..   PE

siduals Statistics:

	Min	Max	Mean	Std Dev	N
PRED	2.1665	32.0017	11.0889	5.2832	90
RESID	-15.3403	41.4208	.0000	9.1391	90
PRED	-1.6888	3.9584	.0000	1.0000	90
RESID	-1.6013	4.3238	.0000	.9540	90

otal Cases =   90

rbin-Watson Test =   1.54534

. Oct 84 SPSS for MS WINDOWS Release 6.0

                    - - Correlation Coefficients - -

           EARNINGG   EARNINGV   PAYOUT   PE

ARNINGG   1.0000   .6862   -.0517   .2287

```
                  (    90)        (    90)        (    90)        (    90)
                  P=  .          P=  .000       P=  .629       P=  .030

RNINGV            .6862         1.0000         -.0179          .2816
                  (    90)        (    90)        (    90)        (    90)
                  P=  .000       P=  .          P=  .867       P=  .007

YOUT             -.0517         -.0179         1.0000         -.0623
                  (    90)        (    90)        (    90)        (    90)
                  P=  .629       P=  .867       P=  .          P=  .560

                  .2287          .2816         -.0623         1.0000
                  (    90)        (    90)        (    90)        (    90)
                  P=  .030       P=  .007       P=  .560       P=  .
```

efficient / (Cases) / 2-tailed Significance)

" is printed if a coefficient cannot be computed

Oct 84 SPSS for MS WINDOWS Release 6.0

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- - S P E A R M A N   C O R R E L A T I O N   C O E F F I C I E N
S - - -

```
RNINGV            .5258
                  N(    90)
                  Sig  .000

YOUT             -.2774         -.0004
                  N(    90)        N(    90)
                  Sig  .008       Sig  .997

                 -.0733          .1186          .1898
                  N(    90)        N(    90)        N(    90)
                  Sig  .492       Sig  .266       Sig  .073

                  EARNINGG       EARNINGV       PAYOUT
```

(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed

11 Oct 84 SPSS for MS WINDOWS Release 6.0

FINANCIAL SECTOR COMPANIES WITH YR END 31/DEC

        * * * *   M U L T I P L E   R E G R E S S I O N   * * * *

Listwise Deletion of Missing Data

Equation Number 1   Dependent Variable..   PE

Block Number 1. Method: Enter
    EARNINGG EARNINGV PAYOUT   Y94   Y95   Y96   Y97   Y9
8

Variable(s) Entered on Step Number
    1..   Y98
    2..   PAYOUT
    3..   Y97
    4..   Y95
    5..   EARNINGV
    6..   Y96
    7..   Y94
    8..   EARNINGG

Multiple R   .55657
R Square   .30977
Adjusted R Square   .10526
Standard Error   3.11170

Analysis of Variance

```
                  DF       Sum of Squares      Mean Square
Regression         8           117.33081         14.66635
Residual          27           261.43147          9.68265

F =        1.51470       Signif F =   .1985


---------------- Variables in the Equation ------------------

Variable                B        SE B         Beta           T    Sig T

EARNINGG          .057250    4.041448      .003215         .014   .9888
EARNINGV        -5.751702    3.740033     -.279783       -1.538   .1357
PAYOUT           -.052132     .100932     -.093980        -.517   .6097
Y94              1.301215    1.935746      .149503         .672   .5072
Y95              4.011516    1.824326      .460904        2.199   .0366
Y96              2.894246    1.844225      .332535        1.569   .1282
Y97              -.051096    1.965830     -.005871        -.026   .9795
Y98              -.547811    2.413151     -.062941        -.227   .8221
(Constant)       8.775680    2.950442                     2.974   .0061


End Block Number    1    All requested variables entered.


11 Oct 84 SPSS for MS WINDOWS Release 6.0


            * * * *    M U L T I P L E    R E G R E S S I O N    * * * *

Equation Number 1    Dependent Variable..    PE




Residuals Statistics:

           Min       Max      Mean    Std Dev    N

*PRED     3.9210   10.4218    7.0958    1.8309   36
*RESID   -4.4960    9.2432     .0000    2.7330   36
*ZPRED   -1.7340    1.8165     .0000    1.0000   36
*ZRESID  -1.4449    2.9705     .0000     .8783   36
```

Total Cases = 36

Durbin-Watson Test = 1.53772

11 Oct 84 SPSS for MS WINDOWS Release 6.0

                           - - Correlation Coefficients - -

                EARNINGG   EARNINGV   PAYOUT   PE

EARNINGG   1.0000   .1924   -.0449   .1004
                (36)   (36)   (36)   (36)
                P= .   P= .261   P= .795   P= .560

EARNINGV   .1924   1.0000   .1851   -.2000
                (36)   (36)   (36)   (36)
                P= .261   P= .   P= .280   P= .242

PAYOUT   -.0449   .1851   1.0000   -.1456
                (36)   (36)   (36)   (36)
                P= .795   P= .280   P= .   P= .397

PE   .1004   -.2000   -.1456   1.0000
                (36)   (36)   (36)   (36)
                P= .560   P= .242   P= .397   P= .

(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed

11 Oct 84 SPSS for MS WINDOWS Release 6.0

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- - - S P E A R M A N   C O R R E L A T I O N   C O E F F I C I E N
T S - - -

```
EARNINGV             .2491
              N (    36)
              Sig .143

PAYOUT             -.4190        -.2167
              N (    36)    N (    36)
              Sig .011     Sig .204

PE                 .0419        -.3196         .0183
              N (    36)    N (    36)    N (    36)
              Sig .808     Sig .057     Sig .916

              EARNINGG     EARNINGV      PAYOUT

(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed


11 Oct 84 SPSS for MS WINDOWS Release 6.0


INDUSTRIAL SECTOR COMPANIES WITH YR END 31/DEC


          * * * *   M U L T I P L E   R E G R E S S I O N   * * * *


Listwise Deletion of Missing Data

Equation Number 1    Dependent Variable..    PE

Block Number  1.  Method:  Enter
   EAANINGG EARNINGV PAYOUT    Y94         Y95         Y96         Y97         Y9
8


Variable(s) Entered on Step Number
   1..    Y98
   2..    PAYOUT
   3..    EARNINGV
   4..    Y94
   5..    Y95
   6..    Y96
```

```
   7..     Y97
   8..     EAANINGG


Multiple R                .62692
R Square                  .39303
Adjusted R Square         .21319
Standard Error         11.67200

Analysis of Variance
                     DF      Sum of Squares      Mean Square
Regression            8          2381.84775       297.73097
Residual             27          3678.36208       136.23563

F =        2.18541        Signif F =   .0616


----------------- Variables in the Equation ------------------

Variable                 B          SE B          Beta          T   Sig T

EAANINGG          1.323426      7.153943       .048146        .185   .8546
EARNINGV          2.111834      2.851087       .177916        .741   .4653
PAYOUT           -8.389877      7.432034      -.187322      -1.129   .2689
Y94               2.400050      6.771608       .068938        .354   .7258
Y95              24.550067      6.920889       .705170       3.547   .0014
Y96              10.727458      6.917142       .308133       1.551   .1326
Y97              11.066221      6.945715       .317863       1.593   .1227
Y98              10.266758      7.047878       .294900       1.457   .1567
(Constant)        6.454860      6.920649                      .933   .3592


End Block Number   1    All requested variables entered.


11 Oct 84 SPSS for MS WINDOWS Release 6.0



            *  *  *  *    M U L T I P L E    R E G R E S S I O N   *  *  *  *

Equation Number 1     Dependent Variable..    PE


Residuals Statistics:
```

```
                Min        Max       Mean   Std Dev    N

*PRED        2.4155    40.3770   14.0378    8.2494   36
*RESID     -22.2274    29.3045     .0000   10.2516   36
*ZPRED      -1.4089     3.1929     .0000    1.0000   36
*ZRESID     -1.9043     2.5107     .0000     .8783   36

Total Cases =        36


Durbin-Watson Test =    1.34471


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            - -   Correlation Coefficients   - -

              EAANINGG    EARNINGV     PAYOUT        PE

EAANINGG      1.0000        .7641      -.3310       .2064
            (    36)     (    36)    (    36)    (    36)
            P=  .        P=  .000    P=  .049    P=  .227


EARNINGV       .7641      1.0000      -.1778       .1825
            (    36)     (    36)    (    36)    (    36)
            P=  .000     P=  .        P=  .299    P=  .287


PAYOUT        -.3310      -.1778      1.0000      -.1090
            (    36)     (    36)    (    36)    (    36)
            P=  .049     P=  .299    P=  .        P=  .527


PE             .2064       .1825      -.1090      1.0000
            (    36)     (    36)    (    36)    (    36)
            P=  .227     P=  .287    P=  .527    P=  .


(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed
```

- - -   S P E A R M A N   C O R R E L A T I O N   C O E F F I C I E N
 T S   - - -

EARNINGV   .6386
                N(36)
                Sig .000

PAYOUT   - .2206   - .1666
                N(36)   N(36)
                Sig .196   Sig .332

PE   - .1836   .0126   .1565
                N(36)   N(36)   N(36)
                Sig .284   Sig .942   Sig .362

                EAANINGG   EARNINGV   PAYOUT

(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed

ALL COMPANIES WITH YR END 30/JUNE

            * * * *   M U L T I P L E   R E G R E S S I O N   * * * *

Listwise Deletion of Missing Data

Equation Number 1   Dependent Variable..   PE

```
Block Number  1.  Method:  Enter
    EARNINGG EARNINGV PAYOUT    Y94        Y95         Y96         Y97         Y9
8


Variable(s) Entered on Step Number
    1..    Y98
    2..    EARNINGV
    3..    Y94
    4..    EARNINGG
    5..    Y96
    6..    PAYOUT
    7..    Y95
    8..    Y97


Multiple R              .65688
R Square                .43149
Adjusted R Square       .26304
Standard Error         8.14849

Analysis of Variance
                    DF       Sum of Squares      Mean Square
Regression           8          1360.66608        170.08326
Residual            27          1792.74401         66.39793

F =       2.56157        Signif F =  .0321


------------------ Variables in the Equation ------------------

Variable                 B        SE B         Beta           T   Sig T

EARNINGG          28.841034    7.658116      .639715       3.766   .0008
EARNINGV           1.260440    2.808708      .068261        .449   .6572
PAYOUT            -2.618568    3.461455     -.120375       -.756   .4559
Y94               -4.917519    4.891289     -.195813      -1.005   .3236
Y95                2.014566    4.866284      .080219        .414   .6822
Y96                 .379062    4.976389      .015094        .076   .9398
Y97               -2.068257    5.251026     -.082357       -.394   .6968
Y98                 .012724    5.359832    5.066E-04        .002   .9981
(Constant)         7.811991    4.379256                    1.784   .0857


End Block Number   1   All requested variables entered.
```

* * * *   M U L T I P L E   R E G R E S S I O N   * * * *

Equation Number 1   Dependent Variable..   PE

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	.6542	31.7579	10.8044	6.2351	36
*RESID	-13.9160	18.9737	.0000	7.1569	36
*ZPRED	-1.6279	3.3606	.0000	1.0000	36
*ZRESID	-1.7078	2.3285	.0000	.8783	36

Total Cases =   36

Durbin-Watson Test =   1.55266

- - Correlation Coefficients - -

	EARNINGG	EARNINGV	PAYOUT	PE
EARNINGG	1.0000	-.0578	-.0403	.6042
	(36)	(36)	(36)	(36)
	P= .	P= .738	P= .815	P= .000
EARNINGV	-.0578	1.0000	-.2435	.0708
	(36)	(36)	(36)	(36)
	P= .738	P= .	P= .152	P= .682
PAYOUT	-.0403	-.2435	1.0000	-.1112
	(36)	(36)	(36)	(36)
	P= .815	P= .152	P= .	P= .518
PE	.6042	.0708	-.1112	1.0000
	(36)	(36)	(36)	(36)
	P= .000	P= .682	P= .518	P= .

(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed

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- - - S P E A R M A N   C O R R E L A T I O N   C O E F F I C I E N
  T S   - - -

EARNINGV   .0163
             N(36)
             Sig .925

PAYOUT   -.1386   -.2421
             N(36)   N(36)
             Sig .420   Sig .155

PE   .3677   -.0892   .0067
             N(36)   N(36)   N(36)
             Sig .027   Sig .605   Sig .969

             EARNINGG   EARNINGV   PAYOUT

(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed

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ALL COMPANIES WITH YR END 30/SEPT

          * * * *   M U L T I P L E   R E G R E S S I O N   * * * *

Listwise Deletion of Missing Data

Equation Number 1   Dependent Variable..   PE

Block Number   1.   Method: Enter
    EARNINGG EARNINGV PAYOUT   Y94   Y95   Y96   Y97   Y9
8

Variable(s) Entered on Step Number
    1..   Y98
    2..   PAYOUT
    3..   Y96
    4..   Y97
    5..   EARNINGV
    6..   Y94
    7..   Y95
    8..   EARNINGG

Multiple R   .72958
R Square   .53229
Adjusted R Square   .35412
Standard Error   5.60491

Analysis of Variance
                     DF   Sum of Squares   Mean Square
Regression   8   750.81651   93.85206
Residual   21   659.71548   31.41502

F =   2.98749   Signif F =   .0211

------------------ Variables in the Equation ------------------

Variable   B   SE B   Beta   T   Sig T

EARNINGG   -8.788374   4.423151   -.681953   -1.987   .0601
EARNINGV   6.923135   4.059403   .528880   1.705   .1029
PAYOUT   4.840113   4.364102   .242267   1.109   .2799
Y94   -1.160126   3.588345   -.063053   -.323   .7497
Y95   5.355253   3.932795   .291060   1.362   .1877
Y96   2.763866   3.589131   .150217   .770   .4498
Y97   3.397250   3.604554   .184642   .942   .3567
Y98   1.647870   3.738162   .089562   .441   .6638

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```
(Constant)        1.567671     3.364887                       .466   .6461


End Block Number   1    All requested variables entered.


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              *  *  *  *    M U L T I P L E    R E G R E S S I O N   *  *  *  *

Equation Number 1    Dependent Variable..    PE


Residuals Statistics:

               Min       Max      Mean    Std Dev    N

*PRED        -3.7958   18.4458    7.8093    5.0882    30
*RESID      -11.2365   12.1446     .0000    4.7696    30
*ZPRED       -2.2808    2.0904     .0000    1.0000    30
*ZRESID      -2.0048    2.1668     .0000     .8510    30

Total Cases =         30


Durbin-Watson Test =      .94630


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                          - - Correlation Coefficients  - -

              EARNINGG    EARNINGV     PAYOUT        PE

EARNINGG      1.0000        .7794      -.2778      -.3481
             (    30)     (    30)    (    30)    (    30)
              P= .         P= .000     P= .137     P= .059

EARNINGV       .7794       1.0000       .1177       .0378
             (    30)     (    30)    (    30)    (    30)
              P= .000      P= .         P= .536     P= .843

PAYOUT        -.2778        .1177      1.0000       .5818
```

```
              (     30)     (     30)     (     30)     (     30)
              P= .137       P= .536       P= .          P= .001

PE                -.3481        .0378         .5818        1.0000
              (     30)     (     30)     (     30)     (     30)
              P= .059       P= .843       P= .001       P= .
```

(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed

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- - - S P E A R M A N   C O R R E L A T I O N   C O E F F I C I E N
  T S - - -


```
EARNINGV              .7625
              N(    30)
              Sig .000

PAYOUT               -.4106         .0875
              N(    30)     N(    30)
              Sig .024      Sig .646

PE                   -.4215        -.2355         .4428
              N(    30)     N(    30)     N(    30)
              Sig .020      Sig .210      Sig .014

              EARNINGG      EARNINGV       PAYOUT
```

(Coefficient / (Cases) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed

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