AN EVALUATION OF PRICE TO EARNINGS AND PRICE TO BOOK VALUES AS PREDICTORS OF STOCK RETURNS OF FIRMS LISTED AT THE NAIROBI STOCK EXCHANGE (NSE).

BY

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DECLARATION STATEMNT

I declare that this is my original work and has not been submitted for a degree in any other university.

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

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DEDICATION

I dedicate this project to my grandmother who passed on 2nd may 2006, may her soul rest in eternal peace! And to my beloved mother and father whose love and care has made me get to this stage. My special dedication to late brother Alfred Osano, Kenneth Oywaya,Mathias Opiyo , Odipo Osano and family members whose love, motivation and support largely contributed to the success of this work. Thanks to my wife and children who missed me all long during this tiring period. May God bless you!

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LIST OF ACRONYMS

B/V	Book Value
BPS	Book Values Per Share
CAPM	Capital Asset Pricing Model
CFA	Chartered Financial Analyst
CMA	Capital Markets Authority
DCF	Discounted Cash Flow
EBIT	Earnings Before Interest & Tax
EBITDA	Earnings before Int, Tax, Depreciation & Amortization
EPS	Earnings per Share
GAAP	Generally Accepted Accounting Principles
IFRS	International Financial Reporting Standards
MPS	Market Price per Share
M/V	Market Value
NSE	Nairobi Stock Exchange
P/B	Price to Book Value ratio
P/E	Price to Earnings Ratio
SEC	Security Exchange Commission

ABSTRACT

This research provides a test on the extent of predictive ability of price to earnings and price to book value ratios in the Nairobi stock market to determine future share returns. The use of P/E and P/B ratios as forecasting variable is examined using Nairobi Stock Exchange (NSE) data from 1998 to 2002.The study mirrors studies done earlier by Black (1980) ,Liu, et al (2007) and Block (1995) among other researchers which are in agreement on the importance of market valuation multiples.

The data used in this research was collected from Nairobi Stock Exchange daily stock prices for the period 1998 to 2007 from which the yearly returns were compiled .Earnings and Book values were also obtained from NSE.The study focused on two portfolios of the firms: those which had higher P/E and P/B ratios and those that had lower P/E and P/B ratios during the preceding period i.e. 1998 to 2002.The firms which had median P/E and P/B ratio were dropped. The returns for the subsequent five years 2003 to 2007 were used to evaluate the predictive power of the two valuation multiple. A qualitative analysis was conducted by use of paired T –tests to confirm whether there was significant difference between the average returns for the two types of portfolios.

The conclusions drawn from the research were that the portfolio for firms with low P/E and P/B ratios performed significantly better by achieving higher returns than the portfolio for firms with high P/E and P/B ratios. Portfolio with low P/E performed best then followed by portfolio with low P/B ratio. Coefficient of variation was used to measure performance and it turned out that portfolio with low P/E had lower coefficient of variation, followed by low P/B portfolio. The worst performers were portfolio with high P/B and P/E ratios.

Since many studies have continued to point at the importance of these valuation multiples in measurement or predicting stock returns, it is important that the policy and decision makers' needs to regulate the process of production of financial information so that they show accurate and correct data which analysts and other users may rely on. It is important to enforce provision of accurate information which may be useful to users of financial information. Investors and market players should be encouraged to use these valuation multiples and results could be compared with other valuation measures such as Discounted Cash flow Techniques.

CHAPTER ONE

1.0   INTRODUCTION

1.1   BACKGROUND TO THE STUDY

Traditionally the market P/E ratio and the market P/B ratio have been used by investors for equity valuation and to subsequently guide them during their asset selection decision which involves identifying which asset to invest in and determining the proportion of funds to invest in each of the assets. The main reason why investors have to construct a portfolio from a number of assets is to diversify risk against the unexpected outcome. A stock selection criterion is a strategy in which stock analyst or investor uses a systematic form of analysis to determine if a particular stock constitutes a good investment and should be added to their portfolio.

Two variables price to book ratio(P/B) and price to earnings ratio (P/E) will provide major input into the study to enable us understand which one a among them provides a better prediction of stock returns. Consistent with Cheng and McNamara (2000) who states that the P/E valuation method is one of the most popular valuation methods in the investment community, the P/E valuation method estimates a firm's stock price by capitalizing earnings at a benchmark P/E multiple determined from a set of comparable firms. The usefulness relies on the view that the P/E ratio captures risk and growth of a stock; hence, a firm's value can be reasonably assessed based on the P/E ratio of its comparable firms with similar risk and growth.

Other studies have also suggested that the P/B ratio is related to profitability as well as to risk and growth (Block 1995). Similarly, the P/B valuation method estimates a firm's stock price by capitalizing book value at a benchmark P/B multiple determined from a set of comparable firms. Block (1995) in his study of the price to book relationship, states that the price to book value ratio is important because it draws together the external and internal factors of price, completing the cycle of market and company analysis, i.e. the price relate to stock market aspect of a company whereas earnings to return on equity.

According to Foster (2005) what is observed in financial statements is the product of a diverse set of demand and supply forces. Parties demanding financial statements information include shareholders, investors and security analysts; managers; employees; lenders and other suppliers; customers; and government regulatory authorities. These parties demand financial statement information to facilitate decision making, monitoring of management or to interpret contracts or agreements that include provisions based on such information.

Supply forces affecting the content or timing of financial statements include regulation, market and costs associated with those disclosures. Thus there is a trade-off between demand and supply, again the parties demanding financial information will want more of it where as those responsible for supply will want to limit it.

Black (1980) argues that, there are many users of financial statements such as analysts, stockholders, creditors, managers, tax authorities and even economists, who really want an earnings figure that measures value, not change in value. Analysts, for example, want an earnings number they can multiply by a standard price-earnings ratio to arrive at an

estimate of the firm's value. Economists on the other hand use modified earnings figure as the corporate component of national income.

Black further argues that other users of financial statements are less clear in their thinking. Accountants, for example, sometimes say that a firm's earnings should represent its ability to generate cash. But one of the propositions of modern finance is that the best way to estimate a firm's ability to generate cash is to estimate its value. The end result of the current system of accounting is an earnings figure that usually gives a reliable estimate of value, plus other information that can be used to arrive at an even better estimate of value but the main thing that's lacking is recognition that this has been the goal all along!. Accountants generally has done good job in achieving this objective without noticing.

International Financial Reporting Standards (IFRS) defines financial statements to include balance sheets (statement of financial position), income statement (profit and loss accounts), statement of changes in equity, cashflow statements (statement of changes in financial position), notes, other statements and explanatory material which are part of the financial statements. IFRS states the objective of the general purpose financial statements is to provide information about the financial position, performance and cash flow that is useful in making economic decisions, this includes information about enterprise's assets, liabilities, equity, income and expenses including gains and losses and cash flows.

Wilcox and Philips(2005) argue that a good model relating stock prices to fundamental variables is of use to corporate managers who want to understand how best to increase the value of their firm; fundamental analysts who want to evaluate corporate managements and predict the results of their efforts; buyers and sellers who need to set prices for risky

assets not already well-priced by liquid markets; and active investors who attempt to forecast abnormal returns on the basis of mismatches between current price and indicated equilibrium prices supported by a firm's fundamentals and current macro-economic conditions.

Again they argue that clearly, no single model will be absolutely best for all applications. For example a model optimized as an explanatory tool for corporate managers may work poorly as a predictive tool for active investors, and vice versa.

Likewise, a parsimonious linear approximation may be more usefully estimated, and more useful for predicting stock returns, than a more complex and comprehensive model that provides precise insights. This paper will attempt to accomplish competitive results in several directions with a relatively simple and robust two-stage valuation model structure in which Price -to-Book and Price-to-Earnings ratios are used to test stock returns for correlations.

Consistent with Black (1980) Liu et al (2007) states that industry multiples are used often in practice, both to provide stand-alone "quick and dirty" valuations and to anchor more-complex discounted cash flow valuations. To obtain a company valuation, one simply multiplies a value driver (such as earnings) for the company by the corresponding multiple, which is based on the ratio of stock price to that value driver for a group of comparable companies. Choices for value drivers include various measures of cash flow, book value, earnings, and revenues, but earnings and cash flows are by far the most commonly used.

Earnings is useful as a measure of value and as noted by Dechow (1993) Accounting Earnings are the summary measure of firm performance used by a wide range of users, produced under the accrual basis of accounting. For example, they are used in executive compensation plans, in debt covenants, in the prospectuses of firms seeking to go public, and by investors and creditors, whereas Economic Earnings refers to the real flow of cash that a firm could pay out forever in the absence of any change in the firm`s productive capacity.

Dechow (1993) assumes that stock markets are efficient in the sense that stock prices unbiasedly reflect all publicly available information concerning firms' expected future cash flows. Therefore, stock price performance is used as a benchmark to assess whether earnings or realized cash flows better summarize this information. Since earnings are a major component used in major economic decisions its quality and value is of significance to any study, however in this case, we will not follow Dechow use of cash flow but restrict ourselves to the firm's earnings.

Cheng & McNamara (2000), assert that P/E valuation method is one of the most popular valuation methods in the investment community and its usefulness relies on the view that the P/E captures both risk and growth of a stock. Earnings is reflected both in stock price and book value as is evident that once earnings announcements are made stock prices go up and when dividend are subsequently paid there is a fall in the stock price. We believe that because impact of earnings features in both valuation models there should be a relationship between P/B and P/E, and this paper investigates their nature of relationship with stock returns.Dechow (1993) emphasizes earnings as a significance variable affecting the Price to Book value ratio and Price to Earnings ratio.

Cortes and Marsh (2002) stated that "Accountants provide several measures of corporate earnings that are used for many different purposes". One use of earnings estimates is equity valuation. There are different types of earnings, 'reported earnings' which is arrived at net of all charges, in accordance with generally accepted accounting principles (GAAP). It includes earnings from both operating and non-operating items. 'Operating earnings' are usually calculated as reported earnings, but without the deduction of some 'non-recurring' or 'non-cash' charges. The *numbers* look at the performance of companies 'as if' they had been operating together for several years when assessing likely future performance.

It has been nicknamed EBS ('earnings before bad stuff') by Lynn Turner; formerly Chief Accountant of the SEC.The reported earnings will be used in this study.

Liu, et al (2007) noted that contrary to the common perception that operating cash flows are better than accounting earnings at explaining equity valuations, recent studies suggest that valuations derived from industry multiples based on reported earnings are closer to traded prices than those based on reported operating cash flows. The question addressed in their article is whether the balance tilts in favour of cash flows when the following are considered:

(1) Forecasts rather than reported numbers, (2) dividends rather than operating cash flows, (3) individual industries rather than all industries combined, and (4) companies in non U.S. markets. In all cases studied, earnings dominated operating cash flows and dividends.

Further Liu et al (2007) states that valuation based on industry multiples boils down to a complex function of discount rates and future cash flows into a simple proportional relationship: Predicted value equals the level of the value driver for that company times the corresponding industry multiple. Because the industry multiple is an "average" ratio of stock price to value driver for the remaining companies in the industry, predicted values based on multiples will be close to traded stock prices if companies in the industry are relatively similar in terms of the price-to-value driver ratio.

The P/B ratio is calculated by first referring to the value of the firm's common stock determined using the most recent balance sheet data and calculating the total value of stockholders' equity. Second, the market capitalization of the firm's common stock is determined by taking the most recent market price for the firms' common stock and multiplying it by the number of shares outstanding. Last the market capitalization is divided by book value of stockholders equity to arrive at P/B ratio.

P/E ratio is derived by first determining the most recent price at which the firm's common stock was traded. Second, the accounting value of the firm's earnings per share which is determined by dividing the most recent earnings after taxes by the number of shares outstanding.Last, the market price of the stock is divided by the earnings per share to arrive at P/E ratio. (Sharpe, 2006).Investors uses these valuation variables in selecting the assets they use in their portfolio.

1.2 STATEMENT OF THE PROBLEM

Because of the importance placed on the two valuation multiples variables (Cheng & McNamara (2000), (Block 1995), our study will endeavour to establish whether the results of studies conducted and findings in European countries will be similar to the Kenyan market which is a proxy to emerging markets in Eastern and Southern Africa.

Security analysts are clearest in their thinking about earnings (Black 1980). They want an earnings figure they can multiply by a standard price-earnings ratio to get an estimate of value. Since they don't want to work at figuring out what the price earnings ratio should be, they need P/E ratio that they will multiply the earnings with to get price.

Thus would like the accounting process to give an earnings figure they can simply multiply by P/E ratio to get an estimate of value. The other competing ratio is price-to-book value, analyst would like a P/B ratio which they could simply multiply value with to get price of a security.

The question many analysts may want to ask is, whether the two valuation multiples P/E and P/B are different i.e. do they tell us different stories or the same thing under the local data environment? The idea is to identify one model from the two models that investors might find useful.

Several studies have been conducted, some indicate that P/E is better indicator of future stock prices, Cheng & McNamara (2000), assert that P/E valuation method is one of the most popular valuation methods in the investment community and its usefulness relies on the view that the P/E captures both risk and growth of a stock. They further states that earnings is reflected both in stock price and book value as is evident that once earnings announcements are made stock prices go up and when dividend are subsequently paid there is a fall in the stock price.

Other studies have also suggested that the P/B ratio is related to profitability as well as to risk and growth (Block 1995). Proponent for P/B valuation method argue that estimate of a firm's stock price can be achieved by capitalizing book value at a benchmark P/B

multiple determined from a set of comparable firms. Block (1995) further states that the price to book value ratio is important because it draws together the external and internal factors of price, completing the cycle of market and company analysis, i.e. the price relate to stock market aspect of a company whereas earnings to return on equity

As impact of earnings features in both valuation models there should be a relationship between P/B and P/E, and this paper investigates their nature of relationship with stock returns.

1.3   RESEARCH OBJECTIVE

The main objective of this research is to determine the extent to which P/E and P/B ratios predict share returns, the focus being companies listed at the Nairobi Stock Exchange (NSE).

Specifically the objectives of the study are as follows:-
  I.   Determine the relationship between Price – to – Earnings and stock Returns
  II.   Determine the relationship between Price – to – Book Values and stock Returns
  III. Determine the relationship between Price – to – Earnings and Price – to – Book Values.

The study seeks to establish the extent to which low Price –to-Earnings and Price – to – Book ratios explain future stock returns. It also seek to explore the extent to which high Price-to-Earnings and Price – to – Book ratios explain future stock returns.

1.4   IMPORTANCE OF THE STUDY

The research is relevant to practitioners, such as investment bankers and analysts, and the general public who use multiples to value companies as well as academic researchers as a basis for future empirical and conceptual research in determining factors affecting use of valuation .The results presented here may help such parties choose multiples that best predict future outcomes or minimize the potential bias embedded in the value measures, especially if the companies or company segment exhibit certain irregularities.

In theory, the valuation of a company is straight forward matter accomplished via the discounted cash flow method (DCF). This analysis involves estimating the cash flows associated with the company and then discounting those cash flows by a discount rate commensurate with their risk level. Because accurately estimating the company's cash flows and choosing the appropriate discount rate are difficult , DCF analysis is often a abandoned in favor of valuation multiples.

Valuation by multiples entails calculating particular multiples for a set of benchmark companies and then finding the implied value of the company of interest based on the benchmark multiples for example target firm's earnings figure can be multiplied by a standard price-earnings ratio to get an estimate of value. Since we don't want to work at figuring out what the price earnings ratio should be, we will clearly be happiest if it's always 10. Thus we would like the accounting process to give an earnings figure they can simply multiply by 10 to get an estimate of value.

CHAPTER TWO

2.0   LITERATURE REVIEW

2.1   INTRODUCTION

The chapter reviews equity investment valuation measures, valuation accuracy of the benchmark methods, relationship between price and earnings, and evaluation of various multiples used by practitioners to estimate value. It further considers the performance value and growth stocks and which one among them has exploitable value premium.

The Chapter also considers the correlation between risk and market value, the effect of rationalism and irrationalism on the share performance and earnings quality as basis for accurate valuation. Theories of valuation tools such as P/E ratio and P/B ratio provide various valuation models, there are also other several competing tools or valuation models such as Residential Income (RI),Enterprise value to Earnings before Interest ,Tax, Depreciation and Amortization(EV/EBITDA),Enterprise Value to Revenue (EV/R),Price to Sales (P/S),P/B ROE ,Discounted Cash Flow (DCF) Free Cash flow to Equity , DuPont Analysis and Dividend Discount Model (DDM) that have been studied with documented results.

There are major divisions in the rank of financial analysis namely Technical, Fundamental and Quantitative analysis. Technical Analysis relate to trading rules resulting form observations of past price movements of the stock market and individual stocks. The philosophy behind technical analysis is in sharp contrast to the efficient market hypothesis, which contends that past performance has no influence on future performance or market values. (Reilly, CFA and Brown, CFA (2005).

Reilly and Brown (2005) further states that fundamental analysis involves making investment decisions based on the examination of the economy, an industry and company variables that lead to an estimate of intrinsic value for an investment, which then compared to its prevailing market price. In contrast to the efficient market hypothesis or fundamental analysis, technical analysis involves the examination of past market data such as prices and volume of trading, which leads to an estimate of future price trends and, therefore, an investment decision.

Quantitative analysis are essential in almost any type of financial analysis , the basic concepts of statistics and probability theory will be employed in this study which incorporates both technical and fundamental analysis.

2.2   THEORETICAL AND EMPIRICAL LITERATURE

2.2.1   MARKET VALUATION MEASURES

The price earning ratio (P/E) is perhaps the most widely used measure of the cheapness or richness of an equity investment. It is used cross-sectionally to assess comparative values across particular sectors of the market and as a shorthand assessment of the valuation of the aggregate market. Market multiples considerably above historical norms inevitably lead to warnings in the financial press of a coming correction. In fact, the "warranted" level for the market P/E multiple can vary considerably with the real interest rate, the expected inflation rate and the stage of the business cycle. Kane et al study reinforces the need for our study to establish relations of the valuation multiples to traded prices.

Block (1995) states that price is more closely related to "normal earnings," "average earnings," "basic earning power, intrinsic value," etc., than to temporary earnings deviations within an expectable range of fluctuations.

The two important characteristics of earning are counter movement that is the tendency of P/E ratio to move in opposite direction with earnings and "U" characteristics which is observed because the earnings multipliers rise with expectations of growth, closely related to the basic profitability and firm's assets. Valuation based on current years or next years earnings does not provide accurate value if they represent cyclical fluctuations in earnings and the "U" movement implies that when earnings decline the price would remain high due to market expectation of asset earning capacity .

Cheng and McNamara (2000) evaluate the valuation accuracy of benchmark valuation methods. Performance of the benchmark valuation methods relies on the definition of comparable firms. Comparable firms are selected based on industry membership, size and return on equity as well as combinations of industry membership with size and with return on equity. In sum, the results suggest that, when firm's value is unknown, the combined P/E-P/B valuation approach in selecting comparable firms based on industry membership performs the best among all the approaches evaluated.

Lie and Lie (2002) evaluated various multiples practitioners use to estimate company value. They found that the asset multiple (market value to book value of assets) generally generates more precise and less biased estimates than do the sales and the earnings multiples and although adjusting for companies' cash levels does not improve estimates of company value, using forecasted earnings rather than trailing earnings does. The earnings

before interest, taxes, depreciation, and amortization (EBITDA) multiple generally yields better estimates than does the EBIT multiple. Finally, the accuracy and bias of value estimates, as well as the relative performance of the multiples, vary greatly by company size, company profitability, and the extent of intangible value in the company.

Liu et al (2007) states that contrary to the common perception that operating cash flows are better than accounting earnings at explaining equity valuations, recent studies suggest that valuations derived from industry multiples based on reported earnings are closer to traded prices than those based on reported operating cash flows.

Cole et al (1996) argues that traditional market indicators have pointed to an overvalued stock market throughout the 1990s, because the dividend yield dropped to a record low and the market-to-book ratio reached a record high. Their article examines the predictive power of these measures and addresses the claim that the dividend yield and market-to-book ratio are no longer valid indicators. Share repurchase activity has not been especially high through most of the 1990s and that, adjusting for buybacks, the dividend yield remains low. Likewise, the market-to-book ratio remains at a record high once charges for retiree health liabilities have been taken into account. This paper will differ from Cole et al because it shall not consider buybacks and dividends or make adjustment for retirement benefits.

Lee and Swaminathan (1999) use a bottom-up approach to estimate the intrinsic value of the 30 stocks in the Dow Jones Industrial Average, they find that in recent years, traditional aggregate market multiples (e.g., book to price, earnings to price) have had little predictive power for overall market returns. They show that as an alternative to

market multiple , an aggregate value -to-price ratio, in which "value" is based on a discounted residual income model, has statistically reliable predictive power, not only for returns on the Dow but also for returns on the S&P 500 Index and for a small-stock portfolio. They discuss the implications of these findings for tactical asset allocation strategies, the current level of the U.S. equity market, and the issue of equity valuation in general.

2.2.2   VALUE VERSUS GROWTH STOCKS

In the U.S. market, if stocks with a high B/M (book-to-market ratio) are considered value stocks and stocks with a low B/M are classified as growth stocks ,similarly they classify value stocks as (those with low ratios of price to book value) and still conclude that they have higher average returns than growth stocks (high P/Bs) "Previous research has shown that value stocks have higher returns than growth stocks—a difference referred to as the value premium"Fama and French (2006), the authors examine the relationship between company size and the value premium and whether the capital asset pricing model (CAPM) explains the value premium, they also consider whether returns are, in general, related to beta in the manner indicated by the CAPM. Evidence from earlier studies is not conclusive regarding whether the value premium is limited to small-cap stocks and whether the value premium is consistent with the capital asset pricing model (CAPM) in all time periods.

In the Anatomy of Value and Growth Stock Returns study, Fama and French (2007) break down average returns on value and growth portfolios into dividends and three sources of capital gain: (1) growth in book equity, primarily from earnings retention, (2) convergence in price-to-book ratios (P/Bs) from mean reversion in profitability and

expected returns, and (3) upward drift in P/B during 1927–2006. The capital gains of value stocks trace mostly to convergence: P/B rises as some value companies become more profitable and their stocks move to lower-expected-return groups. Growth in book equity is trivial to negative for value portfolios but is a large positive factor in the capital gains of growth stocks. For growth stocks, convergence is negative: P/B falls because growth companies do not always remain highly profitable with low expected stock returns.

Dhatt et al (1999) investigated whether an exploitable value premium existed for stocks in the Russell 2000 Index, the commonly used U.S. small-cap benchmark, in the 1979–97 periods. For portfolios formed on the basis of price -to-earnings, price -to-sales, and market-to-book ratios, value stocks in the study out performed growth stocks by 5.28–8.40 percentages points a year and had lower standard deviations and lower coefficients of variation than growth stocks did. Combining the valuation measures to identify value boosted returns and improved the risk–return characteristics of value portfolios. Most of the value premium for small-cap stocks occurred outside the month of January and was available for reasonably liquid stocks. These findings suggest that small-cap stocks offer a substantial value premium that is of practical significance to investors.

Ramezani et al (2002) argue that associating corporate performance and shareholder value creation with growth in earnings (or sales) has been the modus operandi in the investment industry. It has greatly influenced managerial compensation schemes and portfolio decisions. They shed light on the relationship between growth and performance by addressing two broad questions. First, what is the relationship between corporate profitability metrics, such as economic value added, and the company's earnings or sales

growth rate? Second, does maximizing corporate profitability necessarily enhance shareholder value (as measured by Jensen's alpha)? Using multivariate analysis, they show that, although the corporate profitability measures generally rise with earnings and sales growth, an optimal point exists beyond which further growth destroys shareholder value and adversely affects profitability. In summary the writers suggest that beyond a certain level of growth shareholders value decline as it happened with Enron and similar firms whose present modest goal would be survival.

Investment strategies that call for the purchase (sale) of stocks with low (high) prices relative to dividends, earnings, book value, or other measures of value have been popular in the U.S. market since Graham and Dodd (1934). Nevertheless, the fact that value stocks (those with high book-to-market ratios) earn higher returns than growth (or "glamour") stocks (those with low book-to-market ratios) remains a puzzle in asset pricing according to Doukas et al (2004).They argue the evidence is strongly in favour of the view that investors perceive small-cap and high- BV/MV stocks to be exposed to greater disagreement among analysts than large-cap and low-BV/MV stocks. Because small-cap and value stocks are often associated with higher returns, their findings also suggest that disagreement about a stock's future prospects is of concern to investors.

The market multiple is highly sensitive to volatility. Kane et al (1996). This empirical result suggest that a permanent 1 percentage point increase in market volatility can, over time, reduce the market multiple by 1.8. Hence, any assessment of market valuation that ignores the impact of volatility on the equilibrium P/E is inherently perilous.

2.2.3   RISK VERSUS RETURN

Garza-Gomez (2001) explores whether the correlation between risk and the market value of equity can explain the premium obtained by investment strategies based on the ratio of price – to - book value of equity (P/B), use of data from the Japanese stock market show that the correlation between P/B and risk is weak. Findings show that two factors contribute to this result. First, market value correlates not only with risk but also with variables measuring liquidity and past performance. Second, book value of equity has a strong correlation with financial risk, suggesting that the high correlation between book value and risk reduces the role of market value as a risk proxy and makes other information contained in market value appear to be the main source of the P/B premium. Many investors/analysts use technical approach in security valuation without actually blending it with fundamental analysis.

Buckley (2006) presents that the stock selection and portfolio construction processes used by non-quantitative investors can be enhanced with quantitative methodologies. The risk models that quantitative managers use are also helpful to "traditional" investors for forecasting the sources and level of risk in a portfolio and for analyzing the sources of under- and over performance in a portfolio.

Where as Damodaran (2005) argues that risk can be both a threat to a company's financial health and an opportunity to get ahead of competition. Most analysts, when referring to risk management, focus on the threat and emphasize protecting against that threat (i.e., risk hedging). The risk associated with an investment is generally reflected in the discount rate used in conventional discounted cash flow models, and because analysts also assume that only market risk affects discount rates, the firms that spend time and

resources on hedging company-specific risk may well lose value. But risk management can increase firm value—by altering investment policy and creating competitive advantages, which can have consequences for expected growth rates and excess returns. Therefore the measure of how P/E and P/B ratio ratio vary with traded prices is extremely important to any economy.

2.2.4 RATIONAL VERSUS IRRATIONAL INVESTOR

Investors behave differently and possess different abilities in assessing importance of information before hand and as stated by Madhavan (2002) knowledge of market microstructure—how investors' latent or hidden demands are ultimately translated into prices and volumes—has grown explosively in recent years. This literature is of special interest to practitioners because of the rapid transformation of the market environment by technology, regulation, and globalization. Yet, for the most part, the major theoretical insights and empirical results from academic research have not been readily accessible to practitioners.Ananth discusses the practical implications of the literature, with a focus on price formation, market structure, transparency, and applications to other areas of finance. Daniel and Titman (1999) discuss why investors are likely to be overconfident and how this behavioral bias affects investment decisions. Their analysis suggests that investor overconfidence can generate momentum in stock returns and that this momentum effect is likely to be strongest in those stocks whose valuations require the interpretation of ambiguous information. They found that momentum effects are stronger for growth stocks than for stable stocks. A portfolio strategy based on this hypothesis generated strong abnormal returns from U.S. equity portfolios that did not appear to be attributable to risk. Although these results violate the traditional efficient market hypothesis, they do not necessarily imply that rational but uninformed investors could have actually achieved

the returns without the benefit of hindsight. To examine whether unexploited profit opportunities exist, they tested for a somewhat weak form of market efficiency, adaptive efficiency, which allows for the appearance of profit opportunities in historical data but requires these profit opportunities to dissipate when they become apparent. Their tests rejected the notion that the U.S. equity market is adaptive efficient. Similarly the momentum created by herd buying could have effects on prices independent of fundamentals.

The traditional economic paradigm assumes individuals are "rational", meaning they make optimal decisions based on the information available to them. In the field of asset pricing , the implication derived from this view , are that prices reflect all available information , so opportunities to earn extraordinary returns arise only from private information, this means that investors without special information, cannot improve on the performance of index portfolio. Behavioural finance offers an alternative paradigm to the efficient market theory, individuals make systematic mistakes in the way they process information and a myriad of behavioural biases that explain observed deviations from the efficient market hypothesis, however the most prominent anomalies can be explained by what is called " investor overconfidence" Titman and Daniel (1999)

Market efficiency is at the centre of the battle of standard finance versus behavioural finance versus investment professionals argues Statman(1999).Meir explains battle is not joined because the term "market efficiency" has two meanings. One meaning is that investors cannot systematically beat the market. The other is that security prices are rational. Rational prices reflect only utilitarian characteristics, such as risk, not value-expressive characteristics, such as sentiment. Behavioral finance has shown, however,

that value-expressive characteristics matter in both investor choices and asset prices. Therefore, the discipline of finance would do well to accept the first meaning of market efficiency and reject the notion that security prices are rational. We could then stop fighting the market efficiency battle and focus on exploring (1) asset-pricing models that reflect both value-expressive and utilitarian characteristics and (2) the benefits, both utilitarian and value expressive, that investment professionals provide to investors. This paper also asserts that the likelihood of the NSE stock prices reflecting both fundamental value and value expressive characteristic is very high because of herd buying effects especially in the recent past.

The behavioural biases effect is expected to be higher in certain stocks than other, for example Scott et al (1999) examined the consequences of behavioral biases in the context of valuation theory. It not only allows a rationalization of previous findings, but it also makes possible identification of the types of stocks for which specific biases will be strongest. They provide empirical evidence concerning the ability of an array of commonly used active investment strategies, such as value and growth tilts, to exploit biases. They also use the framework to test the relative importance of prospect theory and the overconfidence hypothesis as justification for momentum investing. Further studies may be conducted to find out within the Kenyan environment and as a proxy to emerging markets whether there exit biases and their variation with value or growth stocks.

 Lerman et al (2007) notes that post-earnings-announcement drift is the well-documented ability of earnings surprises to predict future stock returns. The authors compare the magnitude of the drift when historical time-series data are used to estimate earnings surprise with the magnitude when analyst forecasts are used. They show that the drift is

significantly larger when analyst forecasts are used. Furthermore, using the two models together does a better job of predicting future stock returns than using either model alone. Similarly Brown (1996) offered a perspective on analyst earnings forecast errors and their implications for security analysis. Among other arguments, they contended that the errors are too large to be reliably used by investors; the forecasts are less accurate than forecasts by time-series models, the errors are increasing over time, the analysts' forecasts are too optimistic, and the investment community relies too heavily on analyst forecasts.

2.2.5   EARNINGS QUALITY

"Earnings are a major input into investors' valuation models, affecting asset measurement attributes, securities prices and, in turn, managers' compensation and wealth. Earnings are also used by corporate boards and institutional investors to gauge enterprise performance and quality of management. Loans and other contractual arrangements often include provisions (covenants) stipulating the fulfilment of certain profitability targets. These crucial resource allocation and monitoring functions of earnings—the bottom line—naturally create strong incentives to manipulate earnings. (Vila & Weeken 2002). Despite extensive effort being made by corporate governance and regulatory community the tendency to manipulate earnings remain high, recognising this ,Accounting profession is at the forefront to ensure that investor are given value through quality reporting.

Cornell and Landsman (2003) states that from a valuation perspective, no "best"—or even consistent—measure of pro forma earnings exists. The paper explains that two forces have combined to focus increasing attention on the issue of the quality of reported corporate earnings .On the one hand, a growing number of companies are including proforma earnings as well as net income figures in their earnings releases . The

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explanation is that proforma numbers reflect the company's true earning power more accurately than does net income. Analysts have echoed the company support for these "street" estimates of earnings. On the other hand , regulators are concerned about the potentially misleading qualities of non-GAAP (generally accepted accounting principles) earnings measures .For instance ,the U.S. SEC's former Chief Accountant , Lynn Turner (2000) , has argued with respect to pro forma releases ," often they appear to be trying to lead investors away from real numbers, from real net income" Although use of proforma earning may bring us closer to intrinsic ,average or basic company earning power , they are subject to abuse and not consistent with generally accepted accounting principles, as such this study will rely more on reported earnings figure for its analysis.

Jennings et al (2001) study provides evidence of the effect of goodwill amortization on the usefulness of earnings data as an indicator of share value for a large sample of publicly traded companies over the 1993–98 periods. This issue is of special interest because the Financial Accounting Standards Board recently adopted new accounting standards that eliminate the systematic amortization of goodwill in favour of a requirement to review goodwill for impairment when circumstances warrant.

We found that earnings before goodwill amortization explain significantly more of the observed distribution of share prices than earnings after goodwill amortization and that when share valuations are based on earnings alone, goodwill amortization simply adds noise to the measure. These results suggest that eliminating goodwill amortization from the computation of net income will not reduce its usefulness to investors and analysts as a summary indicator of share value. Since our aim will be to see how close traded prices are to P/E and P/B ratios, we shall also use similar approach where earnings will be

before interest, tax, depreciation and amortization. We therefore expect to make adjustment into reported figures where necessary.

2.3   CONCLUSIONS

Kane et al (1996), reinforces the need for our study to establish relations of the valuation multiples to traded prices as they inevitably lead to warnings in the financial press of a coming correction. P/E and P/B are better valuation indicators because they best capture normal earnings Block (1995). Damodaran (2005) also suggests that the measure of how P/E and P/B ratio vary with traded prices is extremely important to any economy;

Cheng and McNamara (2000) suggest that, when firm's value is unknown, the combined P/E-P/B valuation approach in selecting comparable firms based on industry membership performs the best among all the approaches evaluated. This will vary with our approach as we shall use the two variables in isolation.Lie and Lie (2002) found that the asset multiple (market value to book value of assets) generally generates more precise and less biased estimates than do the sales and the earnings multiples and although adjusting for companies' cash levels does not improve estimates of company value, using forecasted earnings rather than trailing earnings does. Though our study will not use forecast earnings, earnings will be adjusted to take effect of depreciation and amortization of goodwill.

Cole et al (1996) article examines the predictive power of valuation measures and addresses the claim that the dividend yield and market-to-book ratio are no longer valid indicators. This paper will differ from Cole et al because it shall not consider buybacks and dividends or make adjustment for retirement benefits

Lee and Swaminathan (1999) found that in recent years, traditional aggregate market multiples (e.g., book to price, earnings to price) have had little predictive power for overall market returns.Previous research has shown that value stocks have higher returns than growth stocks—a difference referred to as the value premium" Fama and French (2006), Our goal is to determine whether similar observations do exist in the local environment. Similarly Dhatt et al (1999) found that for portfolios formed on the basis of price -to-earnings, price -to-sales, and market-to-book ratios, value stocks in the study out performed growth stocks by 5.28–8.40 percentages points a year and had lower standard deviations and lower coefficients of variation than growth stocks did. These findings suggest that small-cap stocks offer a substantial value premium that is of practical significance to investors and we would like to find out if similar trend is observable in the Nairobi Stock Exchange (NSE).

Ramezani et al (2002) show that although the corporate profitability measures generally rise with earnings and sales growth, an optimal point exists beyond which further growth destroys shareholder value and adversely affects profitability. In summary the writers suggest that beyond a certain level of growth shareholders value decline as it happened with Enron and similar firms whose present modest goal would be survival hence need for investigation under local condition, arena left to future researchers.

Investment strategies that call for the purchase (sale) of stocks with low (high) prices relative to dividends, earnings, book value, or other measures of value have been popular in the U.S. market since Graham and Dodd (1934). Nevertheless, the fact that value stocks (those with high book-to-market ratios) earn higher returns than growth (or "glamour") stocks (those with low book-to-market ratios) remains a puzzle in asset

pricing according to Doukas et al (2004).Because small-cap and value stocks are often associated with higher returns, their findings also suggest that disagreement about a stock's future prospects is of concern to investors. This may require future academician to research in this area.

In summary, this study attempts to address the importance of two valuation measures P/E and P/B in explaining the share returns in the context of emerging markets using Nairobi Stock Exchange (NSE) as proxy.

CHAPTER THREE

3.0   RESEARCH METHODOLOGY

3.1   INTRODUCTION

This paper is a case study of the Nairobi Stock Exchange (NSE). The aim of the study was to determine the extent to which P/E and P/B ratios predict share returns in an emerging stock market such as Kenya with the focus being companies listed at the Nairobi Stock Exchange (NSE).The design was a cross sectional model to analyze the cross section returns over five years from 2003 to 2007.

3.2   RESEARCH DESIGN

Empirical study (no questionnaire data) of firms quoted at the Nairobi Stock Exchange (NSE) was used. Companies included in the sample had traded continuously during the period 1998 to 2007 to allow for sufficient data for computation of five year valuation multiples ratios (1998 to 2002) and for testing their predictive ability in the subsequent five years (2003 to 2007)

3.3   POPULATION & SAMPLE

The population of the study includes all the publicly quoted companies of the Nairobi Stock Exchange (NSE). All the data required for the study was readily available at the Nairobi Stock Exchange. There were 55 companies quoted at the Nairobi Stock Exchange (**Appendix I).**

The sample consisted of companies that have traded continuously during the period 1998 to 2007 to allow for sufficient data for computation of five -year price-to-earnings ratios and price-to-book ratios (1998 to 2002) and for testing their predictive ability in the subsequent five years (2003 to 2007).

3.4   DATA COLLECTION

The study was confined to companies listed at the Nairobi Stock Exchange (NSE). Daily data on stock prices was collected for the period 2003 to 2007.Price-to-Earnings; Price-to-Book for the firms included in the sample was computed for years 1998 to 2007. From the data collected at the NSE, the yearly returns for the firms were then computed for the years 2003 to 2007.

3.5   VARIABLES OF THE STUDY

The main objective of this study was to establish the predictive power of the price-to-earning ratio and price-to-book value ratio in predicting future returns.

Returns: This is the dependent variable. The study attempted to establish whether price-to-earning ratio or price-to-book value ratio of a firm can significantly predict the returns and which one among the two is a better predictor of future returns.

Price-to-book ratio and Price-to-earnings ratio: These is the predictor variable. The study aims was to establish their effect on future returns and whether the effect is significant or not.

CHAPTER FOUR

4.0   DATA ANALYSIS AND FINDINGS

4.1   INTRODUCTION

The assumption in this study is that investors rely on various parameters when picking assets to invest in. some investors are only interested in growth stocks while others prefer dividend yield. This study compare the superiority of two investment indicators namely price to book ratio and price to earnings ratio. Dechow (1993) emphasizes earnings as a significant variable affecting the Price to Book value ratio and Price to Earnings ratio, Whereas Cheng & McNamara (2000) assert that P/E valuation method is one of the most popular valuation method in the investment community. Block (1995) suggests that P/B ratio is related to profitability as well as risk and growth. The findings is this study do confirm some of the assertions that have been found to be true in developed economies , as shown in later sections ,the low P/E stocks tend to earn higher return followed by low P/B stocks.

Lie and Lie (2002) evaluated various multiples practitioners use to estimate company value, they found that asset multiple (market value to book value of assets) generally generates more precise and less biased estimates than do the sales and earnings multiples.Liu et al (2007) also suggested that valuations derived from industry multiples based on reported earnings are closer to traded prices thus confirming the same findings of this study.

Appendix 1 shows current number of companies listed as 55 with exclusion of fixed income security market, which differs with the number of companies used to generate information on tables 1 and 2 because 4 companies were included but later delisted, these include Dunlop Kenya Ltd, East Africa Packaging Company Ltd, Kenya National Mills Ltd and Lonrho and a total of 11 companies getting listed in the subsequent period i.e. after the year 2002,these are Access Kenya Group Ltd,Hutchings Biemer Ltd,Safaricom Ltd,Scan Group Ltd,Equity Bank Ltd,Kenya Re-insurance Corporation Ltd,Olympia Capital Holdings Ltd,Eveready East Africa Ltd,Kengen Ltd,Mumias Sugar Company Ltd and Kenya Orchards Ltd.

4.2   DATA ANALYSIS

The study focused on two portfolios of firms: those which consistently have the highest valuation multiple ratios over the period 1998 to 2002, and for those which consistently have the lowest valuation multiples ratios over the same period.

The valuation multiple ratios were computed as follows:

Price-to-Earnings   (P/E)   ratio   =   Market   value   of   Security   i
……………………….…..(1)

Earnings per Share of Security i

Price-to-Book (P/B) ratio =   Market value of Security i ………………………..….
(2)

Book value of Security i

The firms were ranked on the basis of valuation multiple ratios i.e. form the highest to the lowest. The top and bottom firms were then extracted from the list. The same procedure was then carried out for all the years from 1998 to 2002 on all the firms on the sample. Firms that have highest valuation measures for at least three years in the five years 1998

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up to 2002 were then retained in the top portfolio. Similarly, firms that appear in the bottom for at least three years in the five years were retained.

The remaining firms, which did not consistently demonstrate low or high valuation multiples were omitted from further analysis. Thus, two portfolios were obtained, that representing the top category (which contains firms with the highest valuation multiples) and those representing the bottom category (which contains firms with the lowest multiples).

The top portfolios were assigned a code, 1 and the firms retained in the bottom ten portfolios were assigned a code, 0. The assigning of these codes enables testing for differences in future returns of the two portfolios. The next step required the calculation of the average daily returns for each portfolio. Daily returns were calculated for the period beginning 2003 to 2007

To calculate returns for each category, the following steps were adopted:

Step 1 – Calculate the returns for each security i.e.

$$r = \frac{P_1 - P_0 + D}{P_0} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (3)$$

Where:

r = returns per period

P_1 = end period price

P_0 = opening period price

D = any cash dividends announced during the period

The tabulation of the results after this step was as follows:

Table (a): Format for tabulating returns of Portfolios 1 (High)

Year $\quad$ C_{11} C_{21} C_{31} ……C_{n1} Average Returns (1)

1

2

3

n

Where C_{x1} = Returns for company x of portfolio 1

Table (b): Format for tabulating returns of Portfolios 2 (Low)

Year $\quad$ C_{10} C20 $\quad$ C_{30} $\quad$ … C_{no} $\quad$ Average Returns (0)

1

2

3

n

Where Cxo = Returns for company x of portfolio 0

Step 2 – In this step we calculate average returns for each category of portfolios i.e. assigning 1's for (high values) and assigning 0's for (low values).

The average returns for the two portfolios were then compared. A value of 1 (high) was assigned to the portfolio with a higher average P/E or P/B and a value of 0 (low) to the portfolio with a lower average P/E or P/B.

Paired sample t-tests

Two sample-paired t-tests were then used to confirm whether there is a significant difference between the average returns for the two portfolios. The t-statistic is given by:

$$t = \frac{AR1 - AR0}{\sqrt{\dfrac{(n_1 - 1)S_1^2 + (n_0 - 1)S_0^2}{n_1 + n_0 - 2}} \quad \dfrac{1}{n1} + \dfrac{1}{n0}} \qquad \text{……………….. (5)}$$

Where:

AR_1 = average returns for portfolio of firms with high valuation multiples ratios.

AR_0 = average returns for portfolio of firms with low valuation multiples ratios.

n_x = number of firms in a given portfolio

S_x = standard deviation for a given portfolio

If a particular valuation multiple significantly predicts future returns, then the portfolio of firms with high ratio should have significantly higher average returns or lower variability than the portfolio with lower ratios or vice versa in the five years i.e. (2003 to 2007).

All these tests should confirm whether the future returns for the two portfolios are significantly different when either of the two valuation measures are used and hence answer the research

4.3 PRICE TO BOOK RATIO AND PRICE TO EARNINGS RATIO

The raw data are presented in **Appendix 11**.There are a total of 48 companies, however, 6 companies A. Baumann & Company Ltd, East Africa Packaging Ltd,Jubilee Holdings Ltd, Kenya National Mills Ltd, Lonhro, and Pan Africa Insurance Holdings Ltd are

dropped either because complete data were unavailable or the individual firm was delisted.

Table 1 and **Table 2** are a summary of the average and standard deviations of the two ratios.

Table 1 shows that mean P/B ratio was highest in 1998 with low standard deviation (risk), lower mean was realised during 1999 to 2001 with higher standard deviation. The year 2002 show a rise in the mean and fall in the standard deviation which could have been caused by new hope when KANU lost and NARC taking over running of Government of Kenya.

The above observation shows that there could be other factors affecting variability apart from the share returns for example liquidity , interest rates and inflations which may need to be investigated.

Table 1: Summary Statistics - Price to Book Ratio

Variable	N	Mean	StDev
PBr2002	42	1.291	1.761
PBr2001	42	1.197	2.162
PBr2000	42	1.161	1.212
PBr1999	42	1.211	2.547
PBr1998	42	1.483	1.077

PBr = Price to Book Ratio

Table 2: Summary Statistics - Price to Earnings Ratio

Variable	N	N*	Mean	StDev
PEr2002	40	2	6.2	22.74
PEr2001	40	2	7.07	19.09
PEr2000	41	1	5.31	13.98
PEr1999	42	0	8.01	14.58
PEr1998	41	0	9.29	9.35

PEr = Price to Earnings Ratio

Table 2 shows that mean P/E ratio was highest in 1998 with low standard deviation (risk), lower mean P/E ratio was realised in the year 2000 same with P/B ratio. Although the year 2001 a rise in both mean P/B and P/E ratios , the year 2002 shows a mix reaction for both mean P/B and P/E ratio whereas mean P/B ratio rises with lower standard deviation and mean P/E falls with higher standard deviation.

The highest market price to book ratio was in 1998 i.e. 1.483 while lowest was in 2000 i.e. 1.161. The highest price to earnings was in 1998 i.e. 9.29 while the lowest was in 2000 i.e. 5.31.All pointing to the same direction.

4.3.1 FIVE YEAR SUMMARIES

The summaries for the five years 1998 to 2002 are presented in **Table 3.** The price to earnings ratio show highest variability (standard deviation). The coefficient of variation (CV) does not show significant differences between the mean P/B and P/E ratio.

Table 3: 5 Year Average of Price to Book Ratio and Price to Book Ratio

Variable	N	Mean	StDev	CV
PBrA5Yr	42	1.269	1.41	1.111
PErA5Yr	42	7.22	9.41	1.303

The correlation coefficient is calculated to measure the degree of linear relationship between the two prices to book ratio and price to earning ratio. The Pearson correlation between the two ratios is 0.201. The P-value of 0.20 is greater than 0.001 and there is sufficient evidence at α=0.01 that the correlations is zero, this is consistent with Pearson correlation coefficient which shows a low correlation of 0.20.This is particularly important because we are interested in establishing the relationship between P/E, P/B and share returns and not relationship between P/b and P/B ratio.

4.3.2 CLASSIFYING P/B RATIOS AND P/E RATIOS

After computing the five year averages for each ratio the companies are to be ranked from the highest to the lowest and then divided into three classes of 14 each **(See Appendix111).**

Class 1 in the table 4 below is the average of 14 companies with the highest value of the ratios. The class one (1) average is 2.459 while the class three averages are 0.4345 for price to book ratio. The difference is large enough to make one expect differences in return.

The same observation applies to price to earnings ratio ,the highest is 17.22 times while the lowest is -2.2 times.

Each class constitutes a portfolio whose returns are to be monitored. However, only the returns of groups 1 and 3, because the difference in the ratios is large enough for one to expect differences in return hence the middle class 2 is omitted from the calculations of future returns.

The results are in table 4 below.

Table 4 : Ranking and Classification of Market Ratios

Variable	PBrCLASS	N	Mean	StDev
PBrA5Yr	1	14	2.459	1.947
	2	14	0.9124	0.1701
	3	14	0.4345	0.2068
Variable	PErCLASS			
PErA5Yr	1	14	17.22	6.29
	2	14	6.638	1.496
	3	14	-2.2	5.85

PBrA5Yr = Five Year Average of Price to Book Ratio

PErA5Yr = Five Year Average of Price to Earnings Ratio

4.4 SHARE RETURNS

The daily returns for class 1 i.e. high price to book ratio are in **Appendix 1V**. The class 3 i.e. low price to book ratio is in **Appendix V**.

The daily returns for class 1, i.e. high price to earnings ratio are in **Appendix V1**, while the class 3 i.e. low price to earnings ratio is in **Appendix V11**.

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The correlations of the returns of different classes are presented in **table 5.** The highest correlation is between high price to earnings ratio and high price to book ratio and is statistically significant.

Table 5: Correlations:	**PBrRank1,**	**PBrRank3,**	**PErRank1,**	**PErRank3**
	PBrRank1	PBrRank3	PErRank1	
PBrRank3	0.306			
	0.000			
PErRank1	**0.751**	0.286		
	0.000	0.000		
PErRank3	0.413	0.616	0.391	
	0.000	0.000	0.000	

Cell Contents: Pearson correlation

           P-Value

The summary of returns for each class is on **table 6** below.

Table 6 : Summary Returns For Each Class

Variable	N	Mean	StDev	SE Mean	CV
PBrRank1	1056	0.232	1.769	0.054	7.630
PBrRank3	1058	0.267	1.725	0.053	6.450
PErRank1	1058	0.301	2.543	0.078	8.458
PErRank3	1056	0.296	1.650	0.051	5.580

The result shows that investors who choose shares with lowest price to earnings ratio (PERatK3) would have earned the best returns (see co-efficient of variation). The next best portfolio was the one with the lowest price to book ratio (PBrRank3)

However the two-t-sample test show no significant differences across classes-see table 7 this could be due to using to daily returns. Minitab displays a table of the sample sizes, sample means, standard deviations, and standard errors for the two samples.

Table 7: Two Sample T – Test across classes

Two-Sample T-Test and CI: PBrRank1, PBrRank3

Two-sample T for PBrRank1 vs PBrRank3

	N	Mean	StDev	SE Mean
PBrRank1	1056	0.23	1.77	0.054
PBrRank3	1058	0.27	1.72	0.053

Difference = mu PBrRank1 - mu PBrRank3

Estimate for difference: -0.0355

95% CI for difference: (-0.1845, 0.1136)

T-Test of difference = 0 (vs not =): T-Value = -0.47 P-Value = 0.641 DF = 2110

Decision rule: We fail to reject the Null hypothesis that there is no difference; the observed difference could have been by chance.

Two-Sample T-Test and CI: PErRank1, PErRank3

Two-sample T for PErRank1 vs PErRank3

	N	Mean	StDev	SE Mean
PErRank1	1058	0.30	2.54	0.078
PErRank3	1056	0.30	1.65	0.051

Difference = mu PErRank1 - mu PErRank3

Estimate for difference: 0.0049

95% CI for difference: (-0.1778, 0.1877)

T-Test of difference = 0 (vs not =): T-Value = 0.05 P-Value = 0.958 DF = 1813

Decision rule: We fail to reject the Null hypothesis that there is no difference; the observed difference could have been by chance.

Two-Sample T-Test and CI: PBrRank1, PErRank1

Two-sample T for PBrRank1 vs PErRank1

	N	Mean	StDev	SE Mean
PBrRank1	1056	0.23	1.77	0.054
PErRank1	1058	0.30	2.54	0.078

Difference = mu PBrRank1 - mu PErRank1

Estimate for difference: -0.0687

95% CI for difference: (-0.2555, 0.1181)

T-Test of difference = 0 (vs not =): T-Value = -0.72 P-Value = 0.471 DF = 1886

Decision rule: We reject the Null hypothesis that there is no difference; the observed difference is statistically significant.

Two-Sample T-Test and CI: PBrRank1, PErRank3

Two-sample T for PBrRank1 vs PErRank3

	N	Mean	StDev	SE Mean
PBrRank1	1056	0.23	1.77	0.054
PErRank3	1056	0.30	1.65	0.051

Difference = mu PBrRank1 - mu PErRank3

Estimate for difference: -0.0637

95% CI for difference: (-0.2097, 0.0822)

T-Test of difference = 0 (vs not =): T-Value = -0.86 P-Value = 0.392 DF = 2099

Decision rule: We reject the Null hypothesis that there is no difference; the observed difference is statistically significant.

Two-Sample T-Test and CI: PBrRank3, PErRank1

Two-sample T for PBrRank3 vs PErRank1

	N	Mean	StDev	SE Mean
PBrRank3	1058	0.27	1.72	0.053
PErRank1	1058	0.30	2.54	0.078

Difference = mu PBrRank3 - mu PErRank1

Estimate for difference: -0.0332

95% CI for difference: (-0.2184, 0.1520)

T-Test of difference = 0 (vs not =): T-Value = -0.35 P-Value = 0.725 DF = 1859

Decision rule: We fail to reject the Null hypothesis that there is no difference; the observed difference could have been by chance.

Two-Sample T-Test and CI: PBrRank3, PErRank3

Two-sample T for PBrRank3 vs PErRank3

	N	Mean	StDev	SE Mean
PBrRank3	1058	0.27	1.72	0.053
PErRank3	1056	0.30	1.65	0.051

Difference = mu PBrRank3 - mu PErRank3

Estimate for difference: -0.0283

95% CI for difference: (-0.1722, 0.1157)

T-Test of difference = 0 (vs not =): T-Value = -0.38 P-Value = 0.700 DF = 2108

Decision rule: We fail to reject the Null hypothesis that there is no difference; the observed difference could have been by chance.

Since we previously found no evidence for variances being unequal, we chose to use the pooled standard deviation by choosing assume equal variances. The pooled standard deviation, 2.88, is used to calculate the test statistic and the confidence intervals.

A second table gives a confidence interval for the difference in population means. For this example, a 95% confidence interval is (-1.45, 0.98) which includes zero, thus suggesting that there is no difference. Next is the hypothesis test result. The test statistic is -0.38, with p-value of 0.70, and 88 degrees of freedom.

Since the p-value is greater than commonly chosen a-levels, there is no evidence for a difference in means of the various P/B Versus P/E ranks as analysed above.

The correlation coefficient is calculated to measure the degree of linear relationship between price to book ratio and price to earning ratio. The Pearson correlation between the two ratios is 0.201. The P-value of 0.20 is greater than 0.001 and there is sufficient evidence at $\alpha=0.01$ that the co-relations is zero.

Class 1 in the table 4 shows the average of 14 companies with the highest value of 2.459 while class 3 averages are 0.4345 for price to book ratio. The difference is large enough to make one expect differences in return. The standard deviation which is a measure of volatility stands at 1.947 for class 1 and 0.2068 for class 3 price to book ratio.

The same observation applies to price to earnings ratio- the highest is 17.22 times while the lowest is -2.2 times. Each class constitutes a portfolio whose returns are to be monitored. However, only the returns of groups 1 and 3 are considered, because the

difference in the ratios is large enough for one to expect differences in return. The standard deviation stands at 6.29 for class 1 and 5.85 for class 3 price to earnings ratio.

The correlations of the returns of different classes show that the highest correlation is between high price to earnings ratio and high price to book ratio at 0.751 which is statistically significant, this is followed by low price to earning ratio and low price to book ratio of 0.616 correlation coefficient

4.5   CONCLUSION

The summary of returns for period 2003 to 2007 for each class shows that firms with low price to earnings performed best as indicated by lowest coefficient of variation at 5.580, followed by low price to book ratio at CV of 6.450

Listed companies that formed part of low price to earning ratio category were CMC Holdings Ltd,East Africa Portland Cement Company Ltd,Kenya Oil Company Ltd,Marshall East Africa Ltd,National Bank of Kenya Ltd,East Africa Cables Ltd,Kenya Power & Lighting Company Ltd,Kenya Commercial Bank Ltd,CFC Stanbic Holdings Ltd,Unga Group Ltd,Express Ltd,Kakuzi, Rea Vipingo Ltd and Standard Group Ltd

Listed companies that formed part of low price to book ratio category were CMC Holdings Ltd,Athi River Mining Company Ltd,Kenya Oil Company Ltd,Marshall East Africa Ltd,George Williamson Kenya Ltd,CFC Stanbic Holdings Ltd,Unga Group Ltd,Express Ltd,Kakuzi, Rea Vipingo Ltd, Kenya Airways Ltd, City Trust , Crown Berger Ltd and Standard Group Ltd

Nine listed companies that formed part of both low price to book ratio and low price to earnings ratio category were CMC Holdings Ltd,,Kenya Oil Company Ltd,Marshall East Africa Ltd,,CFC Stanbic Holdings Ltd,Unga Group Ltd,Express   Ltd,Kakuzi, Rea Vipingo Ltd and Standard Group Ltd

CHAPTER FIVE

5.0   CONCLUSIONS AND RECOMMENDATION

5.1   INTRODUCTION

This chapter presents the findings of the research, the conclusions arising from the findings and the recommendations of the study. The main objective of the study was to determine the extent to which P/E and P/B ratios predict share returns, the focus being companies listed at the Nairobi Stock Exchange (NSE).The study was to establish the extent to which low Price –to-Earnings and Price – to – Book ratios explain future stock returns. It also was to explore the extent to which high Price-to-Earnings and Price – to – Book ratios explain future stock returns.

The dependent variable in the research was stock returns .This was compared with the independent variables price to book and price to earnings ratios. Various inferential analyses were used in the research to derive the results. Results indicated that investors who choose shares with lowest price to earnings ratio would have earned the best returns as evidenced by lower coefficient of variation. The next best portfolio was the one with the lowest price to book ratio. This support the findings of Liu,et al (2007) who suggested that valuation derived from industry multiples are closer to traded prices.

The assumption in this study is that investors rely on various parameters when picking assets to invest in. some investors are only interested in growth stocks while others prefer dividend yield.

This study compare the superiority of two investment indicators namely price to book ratio and price to earnings ratio. Dechow (1993) emphasizes earnings as a significant variable affecting the Price to Book value ratio and Price to Earnings ratio, Whereas Cheng & McNamara (2000) assert that P/E valuation method is one of the most popular valuation method in the investment community. Block (1995) suggests that P/B ratio is related to profitability as well as risk and growth. The findings is this study do confirm some of the assertions that have been found to be true in developed economies , as shown in later sections ,the low P/E stocks tend to earn higher return followed by low P/B stocks.

Lie and Lie (2002) evaluated various multiples practitioners use to estimate company value, they found that asset multiple (market value to book value of assets) generally generates more precise and less biased estimates than do the sales and earnings multiples.Liu et al (2007) also suggested that valuations derived from industry multiples based on reported earnings are closer to traded prices thus confirming the same findings of this study

5.2   CONCLUSIONS

The portfolio for firms with low price to earnings ratio would have earned the best returns next best portfolio was the one with the lowest price to book ratio as evidenced by lower coefficient of variation. The portfolios that are likely to perform worst are those for firms with high price to earnings and high price to book ratios. The study concludes that the valuation multiples such as P/E and P/B ratios are very useful to investors and analysts in determining which securities to invest and which ones to divest from. Generally these

valuation multiples have been used to select the cheap or overvalued securities to buy or sell.

5.3   LIMITATIONS OF THE STUDY

The major limitation in this kind of study is the availability of time and accurate data to facilitate reviews .The available data was not in the format required and therefore required adjustments. Share split and bonus issues normally required adjustment of P/E and P/B ratios together with the calculation of share returns.

The valuation multiples effects on the returns could have been diluted due macro economic factors such as poor monetary and fiscal policy, low access to debt, poor infrastructure etc. The projection period of this study covered five years, a study with longer projection period may give better results than the ones in the study. The accounting earnings and book values are at times incorrigible and whenever accounting practice varies considerably, the resulting valuation ratios may not be comparable across firms.

The assumption that markets are efficient may not fully hold under our environment, therefore the prices may not reflect only fundamental factors but may be distorted by noise. Further more the book values may have problem in terms of measurement and accuracy. The accounting standards may not be fully applied and there could be pressure to manipulate earnings for various reasons.

A number of companies were included but later delisted, these include Dunlop Kenya Ltd, East Africa Packaging Company Ltd, Kenya National Mills Ltd and Lonrho and a

total of 11 companies getting listed in the subsequent period i.e. after the year 2002,these are Access Kenya Group Ltd,Hutchings Biemer Ltd,Safaricom Ltd,Scan Group Ltd,Equity Bank Ltd,Kenya Re-insurance Corporation Ltd,Olympia Capital Holdings Ltd,Eveready East Africa Ltd,Kengen Ltd,Mumias Sugar Company Ltd and Kenya Orchards Ltd.The results may be different if this situation did not arise.

5.4   RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Further research is necessary to find the relationships that would exist in the various segments of the stock exchange. It would be also useful to account for the effects of other factors such as risk and growth stocks in the share returns. Similar studies looking at the relationship between value and growth stock in explaining future returns. Effects of quality of earnings as a basis of measuring future returns could also be investigated.

The study considered daily market prices in the calculation of returns; it would also be useful to see how the results of the study would be suppose we had used monthly or quarterly market prices as opposed to daily market figures in this study. The result of the new study would show whether there are more pronounced or magnificent differences in stock returns and conclusions reached if monthly or quarterly figures are used as opposed to daily market figures

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APPENDIX 1 COMPANIES LISTED AT THE NAIROBI STOCK EXCHANGE.

AGRICULTURE

1   Unilever Tea Kenya Ltd Ord 10.00

2   Kakuzi Ord 5.00

3   Rea Vipingo Plantations Ltd

4   Sasini Ltd

COMMERCIAL AND SERVICES

5   Access Kenya Group Ltd

6   Car & General(K) Ltd

7   CMC Holdings Ltd

8   Hutchings Biemer Ltd

9   Kenya Airways Ltd

10 Marshalls (E.A) Ltd

11 Nation Media Group

12 Safaricom Limited

13 Scan group Ltd

14 Standard Group Ltd

15 TPS Eastern Africa (Serena) Ltd

16 Uchumi Supermarket Ltd

FINANCE AND INVESTMENT

17 Barclays Bank Ltd

18 Centum Investment Company Ltd

19 CFC Stanbic Holdings Ltd

20 Diamond Trust Bank Kenya Ltd

21 Equity Bank Ltd

22 Housing Finance Co Ltd

23 Jubilee Holdings Ltd

24 Kenya Commercial Bank Ltd

25 Kenya Re-Insurance Corporation Ltd

26 National Bank Of Kenya Ltd

27 NIC Bank Ltd

28 Olympia Capital Holdings Ltd

29 Pan Africa Insurance Holdings Ltd

30 Standard Chartered Bank Ltd

INDUSTRIAL AND ALLIED

31 Athi River Mining

32 B.O.C Kenya Ltd

33 Bamburi Cement Ltd

34 British American Tobacco Kenya Ltd

35 Carbacid Investments Ltd

36 Crown Berger Ltd

37 E.A Cables Ltd

38 E.A Portland Cement Ltd

39 East African Breweries Ltd

40 Eveready East Africa Ltd

41 Kenya Oil Co Ltd

42 Kenya Power & Lighting Ltd

43 Kengen Ltd

44   Mumias Sugar Co Ltd

45   Sameer Africa Ltd

46   Total Kenya Ltd

47   Unga Group Ltd

ALTERNATIVE INVESTMENT MARKET

SEGMENT

48   A. Baumann & Co. Ltd

49   City Trust Ltd

50   Eaagads Ltd

51   Express Ltd

52   Williamson Tea Kenya Ltd

53   Kapchorua Tea Co. Ltd

54   Kenya Orchards Ltd

55   Limuru Tea Co. Ltd

FIXED INCOME SECURITIES MARKET

SEGMENT

56   Kenya Power & Lighting Ltd 4% pref

57   Kenya Power & Lighting Ltd 7% pref

Source: Nairobi Stock exchange

APPENDIX 11 YEARLY PRICE TO BOOK RATIO AND PRICE TO EARNINGS RATIO (1998 - 2002)

SNO	Security	PBr20 02	PBr20 01	PBr20 00	PBr19 99	PBr19 98	PEr20 02	PEr20 01	PEr20 00	PEr19 99	PEr19 98	PBrA5 Yr	PErA5 Yr
1	ARM	0.54	0.44	0.36	0.69	0.69	5.66	10.55	10.04	21.34	39.06	0.55	17.33
2	Bamburi	1.60	0.89	1.33	1.01	1.24	13.30	13.04	42.71	15.13	23.01	1.22	21.44
3	BAT	1.27	1.31	1.45	1.33	0.87	3.74	8.61	10.38	4.70	3.31	1.25	6.15
												#DIV/0!	#DIV/0!
4	Bauman											!	!
5	BBK	2.07	1.66	1.83	2.56	3.24	9.35	4.76	7.21	7.53	6.69	2.27	7.11
6	Bbond	0.66	0.82	1.15	1.28	1.30	19.16	15.97	10.59	23.61	30.00	1.04	19.86
7	BOC	8.00	6.20	6.00	14.00	1.31	7.40	8.07	7.84	9.41	8.96	7.10	8.34
	Car and								-				
8	Gen	1.10	3.33	1.20	0.91	0.94	50.99	-26.48	103.94	18.90	-7.90	1.50	-13.69
9	CARB	1.10	0.63	0.76	1.12	1.13	8.27	9.30	5.02	6.26	7.59	0.95	7.29
10	Cberg	0.41	0.40	0.42	0.31	0.31	3.91	9.35	11.14	1.99	0.84	0.37	5.45
11	CFC	0.48	0.48	0.58	0.47	0.89	6.36	-2.84	-5.77	-7.15	6.40	0.58	-0.60
12	CMC	0.27	0.11	0.12	0.34	0.64	3.86	2.53	1.98	3.77	5.63	0.30	3.55
13	CityTrust	0.44	0.34	0.41	0.50	0.54	11.46	7.27	8.93	11.75	2.78	0.45	8.44
14	DTB	0.65	0.59	0.91	1.82	1.84	10.53	17.48	6.80	19.83	8.47	1.16	12.62
15	Dunlop	0.52	0.77	0.65	0.91	1.89	9.90	-3.73	20.31	13.21	33.07	0.95	14.55
16	Eagads	1.07	1.09	1.07	1.48	1.29	42.68	54.00	-18.84	37.08	4.88	1.20	23.96
17	EABL	0.82	0.78	0.72	0.75	0.48	3.60	4.78	5.45	6.00	26.70	0.71	9.31
18	EACAB	0.79	0.71	0.66	0.96	1.16	-31.33	10.51	6.16	12.00	6.36	0.86	0.74
19	EAPort	0.68	0.46	0.69	1.53	1.24	10.23	1.53	-2.66	-1.43	5.63	0.92	2.66
													#DIV/0!
20	EAPack		0.21	0.27	0.25	0.44						0.29	!
21	Express	0.43	0.30	0.45	0.33	0.39	-0.61	-2.56	-20.49	-6.68	10.39	0.38	-3.99
22	Fires	2.42	1.02	1.73	1.72	2.38	19.37	5.84	11.13	8.24	7.32	1.85	10.38
23	GWK	0.28	0.52	0.56	0.41	0.97	-16.59	6.43	10.86	13.74	4.44	0.54	3.78
24	HFCK	0.64	1.37	0.89	1.00	1.20			24.22	21.96	6.46	1.02	17.55
25	ICDC	0.69	0.86	0.89	0.80	2.04	6.47	8.49	7.85	5.31	7.93	1.06	7.21
													#DIV/0!
26	Jubilee			0.19	0.28	0.38						0.28	!
27	Kakuzi	0.31	0.34	0.50	0.78	1.13	-39.01	-15.61	-38.13	46.46	20.62	0.61	-5.13
28	Kapchorua	0.65	1.17	1.42	1.41	1.12	-30.63	93.77	39.47	24.86	5.35	1.15	26.57
29	KCB	0.42	0.29	0.64	0.85	0.86	-0.72	6.42	-11.60	-4.84	9.57	0.61	-0.23
30	Kenol	0.52	0.38	0.43	0.51	0.46	2.47	1.84	3.40	2.59	2.47	0.46	2.55

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31	KenAir	0.47	0.46	0.48	0.48	0.52	11.37	3.86	2.57	1.18	3.06	0.48	4.41
32	KPLC	0.43	1.38	3.79	1.56	1.09	-0.80	-0.52	-9.34	6.86	4.51	1.65	0.14
33	Knmill		0.21	0.22	0.38	0.74						0.39	#DIV/0!
34	Limuru	7.97	13.06	3.96	4.06	4.73	221.35	130.74	10.99	13.98	7.22	6.75	24.56
35	Marshall	0.48	0.21	1.06	0.84	0.29	2.96	-0.23	-3.04	-1.60	9.83	0.57	1.58
36	Lonhro					1.91						1.91	#DIV/0!
37	NBK	0.42	0.25	0.19	0.57	4.23	4.02	2.07	-0.19	-0.49	-0.61	1.13	0.96
38	NIC	0.69	0.53	0.66	1.45	1.39	7.19	4.87	4.68	9.86	8.54	0.95	7.03
39	NMG	2.01	0.75	1.31	2.02	3.20	11.13	5.97	12.39	14.40	15.07	1.86	11.79
40	Pan											#DIV/0!	#DIV/0!
41	Rea	0.39	0.41	0.42	0.71	0.77	6.89	-26.91	-5.47	-51.79	8.85	0.54	-13.69
42	Sasini	0.30	0.27	0.58	0.95	1.18	80.97	22.80	15.96	15.68	10.84	0.66	29.25
43	SCHB	3.39	2.50	2.57	1.42	2.08	7.28	5.31	5.63	4.36	5.82	2.39	5.68
44	SNGroup	4.85	-0.71	-0.59	-7.84	3.23	-60.05	1.43	-0.98	-1.91	109.28	-0.21	-34.16
45	Total	1.20	0.91	1.85	1.81	2.56	10.39	-8.99	14.64	4.67	8.55	1.67	5.85
46	TPS	0.81	0.69	0.68	0.61	1.09	7.49	6.80	7.36	6.63	8.45	0.77	7.35
47	Uchumi	1.79	1.99	3.54	1.87	3.58	32.32	21.53	10.08	6.14	8.44	2.55	15.70
48	Unga	0.23	0.28	0.47	0.59	0.77	-2.91	-4.53	-1.51	-7.02	-3.52	0.47	-3.90

APPENDIX 111 CLASSIFYING P/B RATIO

AND P/E RATIO

SNO	Security	PBrA5 Yr	PBrRa nk	PBrCLA SS	Security	PErA5 Yr	PErRa nk	PErCL ASS
1	BOC	7.10	1	1	Sasini	29.25	1	1
2	Limuru	6.75	2	1	Kapchoru a	26.57	2	1
3	Uchumi	2.55	3	1	Eagads	23.96	3	1
4	SCHB	2.39	4	1	Bamburi	21.44	4	1
5	BBK	2.27	5	1	Bbond	19.86	5	1
6	NMG	1.86	6	1	HFCK	17.55	6	1
7	Fires	1.85	7	1	ARM	17.33	7	1
8	Total	1.67	8	1	Uchumi	15.70	8	1
9	KPLC	1.65	9	1	Dunlop	14.55	9	1
10	Car and Gen	1.50	10	1	DTB	12.62	10	1
11	BAT	1.25	11	1	NMG	11.79	11	1
12	Bamburi	1.22	12	1	Limuru	10.73	12	1
13	Eagads	1.20	13	1	Fires	10.38	13	1
14	DTB	1.16	14	1	EABL	9.31	14	1
15	Kapchor ua	1.15	15	2	Car and Gen	8.88	15	2
16	NBK	1.13	16	2	CityTrust	8.44	16	2
17	ICDC	1.06	17	2	BOC	8.34	17	2
18	Bbond	1.04	18	2	TPS	7.35	18	2
19	HFCK	1.02	19	2	CARB	7.29	19	2
20	Dunlop	0.95	20	2	ICDC	7.21	20	2

21	CARB	0.95	21	2	BBK	7.11	21	2
22	NIC	0.95	22	2	NIC	7.03	22	2
23	EAPort	0.92	23	2	BAT	6.15	23	2
24	EACAB	0.86	24	2	Total	5.85	24	2
25	TPS	0.77	25	2	SCHB	5.68	25	2
26	EABL	0.71	26	2	Cberg	5.45	26	2
27	Sasini	0.66	27	2	KenAir	4.41	27	2
28	KCB	0.61	28	2	GWK	3.78	28	2
29	Kakuzi	0.61	29	3	CMC	3.55	29	3
30	CFC	0.58	30	3	EAPort	2.66	30	3
31	Marshall	0.57	31	3	Kenol	2.55	31	3
32	ARM	0.55	32	3	Marshall	1.58	32	3
33	GWK	0.54	33	3	NBK	0.96	33	3
34	Rea	0.54	34	3	EACAB	0.74	34	3
35	KenAir	0.48	35	3	KPLC	0.14	35	3
36	Unga	0.47	36	3	KCB	-0.23	36	3
37	Kenol	0.46	37	3	CFC	-0.60	37	3
38	CityTrust	0.45	38	3	Unga	-3.90	38	3
39	Express	0.38	39	3	Express	-3.99	39	3
40	Cberg	0.37	40	3	Kakuzi	-5.13	40	3
41	CMC	0.30	41	3	Rea	-13.69	41	3
42	SNGroup	-0.21	42	3	SNGroup	-15.38	42	3