BOOK-TO- MARKET RATIO AS A PREDICTOR OF PERFORMANCE: A CASE STUDY OF COMPANIES LISTED AT THE NAIROBI STOCK EXCHANGE (NSE)

BY

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DECLARATION STATEMENT

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

Signed: ---------- Date: 17/11/2007

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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 father who passed on in 2001, may his soul rest in eternal peace! And to my beloved mother whose love and care has made me get to this stage. My special dedication to Dr. and Mrs. Davy Koech whose love, motivation and support largely contributed to the success of this work. May God bless you!

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LIST OF ACRONYMS, ABREVIATIONS AND SYMBOLS

ANOVA	-Analysis of Variance
ARM	- Athi River Mining
BBK	- Barclays Bank of Kenya
BtM	- Book-to-Market Ratio
B/M	- Book-to-Market Ratio
DY	- Dividend yield
E/P	- Earnings per share
GDP	- Gross Domestic Product
NSE	- Nairobi stock exchange
NYSE	- New York Stock Exchange
PBV	- Price-to-book value Ratio
P/E	- Price Earnings Ratio
SPSS	- Statistical Package for Social Sciences
SCHB	- Standard Chartered Bank
USA	- United State of America.

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ABSTRACT

This research provides a test on the extent of predictive ability of book-to-market ratio in the Kenyan stock market. The use of book-to-market ratio as forecasting variable is examined using Nairobi Stock Exchange (NSE) data from 1996 to 2002.This study mirrors studies done earlier by Fama and French (1992), Chan, Hamao and Lakonishok (1996),Kothari, Shanken and Sloan (1997) among other researchers. These studies yielded varying results; others are in agreement that these ratios do well in forecasting stock returns while others conclude otherwise.

The data used in this research was collected from NSE's daily stock prices for the period 1999 to 2002 from which the weekly returns for the listed firms were compiled for the same period. Book-to-market values for the firms included in the sample were also obtained from the NSE. This study focused on two portfolios of firms: those which consistently have the highest book-to-market ratios over the period 1996 to1998, and for those which consistently have the lowest book-to-market ratios over the same period. The returns for the subsequent five years (1999 to 2002) are used to evaluate the predictive power of the book to market. A qualitative analysis was conducted in which various statistical tests were carried out. Chi square tests of independence were conducted to test whether the book-to-market ratio has significant explanatory power on the companies' future returns. Paired sample T-tests were used to confirm whether there is a significant difference between the average returns for the two portfolios while F-tests were conducted to test whether there is significant difference between variance for the two samples.

The conclusions drawn from the research were that the portfolio for firms with low book to market ratio made significantly higher returns than the portfolio for firms with high book to market ratio. The portfolio with low book-to-market firms had an average return of 2% between 1999 to 2002 while the portfolio with high book to market ratio had average return of -10% during the study period. The book to market ratio is found to have predictive ability, though returns of the two portfolios did not differ significantly.

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Investment is diverse and ranges from real investments, which generally involves tangible assets to financial investments, which involve contracts written on pieces of paper such as common stocks and bonds. There is evident tremendous growth in the market value of common stocks worldwide. "Since 1970, the total value of the world's major equity markets has grown from less than $ 1 trillion to over $ 17 trillion" (Sharpe, 1999). In Kenya, security exchange has been the focus of much recent attention by individual investors, the business community, government and researchers.

Investors have various motives for investing but for most, their reason is largely pecuniary, to earn a maximum return either from capital gains or dividends. (Lee, 1983) asserts, "… he investor is deemed, in so far as he acts rationally, to seek the maximum of his wealth or his rate of return on his investment … and to judge the company's performance accordingly". Both current and potential investors are constantly evaluating the performance of companies by analyzing the annual financial statements in order to determine whether to buy or sell shares that they hold. Furthermore, there is evidence to suggest many investors no longer ascribe to buy-and-hold philosophy. Citing evidence from mutual funds, Quill (2001) reports that investors' trade much more frequently than is good for their financial health.

While a rational investor may not be able to synthesize all of the information from the political-economic universe that may impact a security's performance, investors do believe that there are some fundamental factors of the firm that are positively correlated with performance through time. Thus, historical data with wide support from conventional investing wisdom probably helps determine stock selection. (Beltz and Moore, 2000)

Investment policy is crucial in determining the investors' objectives and the amount of investable wealth thereof. What is important here is to note that the investor will attempt

to achieve high returns while recognizing that there is some chance that big losses may be incurred. To set up investment policy, identification of the potential categories of financial assets for inclusion in the portfolio is paramount. This process is termed as security analysis and usually done in two broad approaches namely technical and fundamental analysis. Technical analysis assists in identifying the market values of stocks. Technical analysis involves the study of the stock market prices in an attempt to predict future price movements for the common stock of a particular firm. On the other hand, fundamental analysis involves determining the values of the outstanding claims on firm's income (Sharpe, 1999).

Whereas fundamental analysts use economic data that are usually separate from the market, the technical analysts believes that using data from the market itself is a good idea because "the market is its own best predictor". Therefore, technical analysis is an alternative method of making the investment decision and answering the questions: What securities should an investor buy or sell? When should these investments be made? (Reilly and Brown, 1997). This study takes the form of technical as well as fundamental analysis to test whether book-to-market is a good predictor of returns hence answering the above questions.

From the investors' standpoint, predicting the future is what financial statement is all about, while from management standpoint, financial statement analysis is useful both to help anticipate future conditions and, more important, as a starting point for planning actions that will improve the firm's future performance (Brigham and Daves 2004) "Financial statements analysis can help an analyst understand a company's current situation, where it may be going, what factors affect it, and how those factors affect it. Financial ratios are designed to help evaluate financial statements" (Sharpe 1999).

Common stock provides an expected future cash flow stream, and a stocks value is found in the same manner as the value of other financial assets i.e as the present value of the expected future cash flow stream. The expected cash flow consists of the dividends expected at the year-end and the price investors expect to receive when they sell the stock. The expected final stock price includes the return of the original investment plus

an expected capital gain. Thus, if a stock started the year at Kshs.100, paid Kshs.5 in dividends at the end of the year, and had a price of Kshs.105 at the end of the year, the return would be 10%.

Financial ratios are useful indicators of a firm's performance and financial situation. From the investors' point of view, the specification and classification of financial ratios is useful in assessing the uncertainty of their forecast. Financial ratios may be used by financial analysts as well as both potential and current investors in analyzing trends and to compare the firm's financials to those of other firms and hence make informed investment decisions.

Technically, there are several market value ratios. The major ones include Book-to-Market (BtM) ratio, Price–Earnings (P/E) ratio, Dividend yield (D/Y) ratio and Price–Sales ratio. These ratios share several common features; first the ratios all measure several stock prices relative to fundamentals. According to the mispricing view, the ratios are low when stocks are overpriced; they predict low future returns as prices return to fundamentals. The rational-pricing theory states that the ratios track time-variation in discount rates; the ratios are low when discount rates are low; and high when discount rates are high; they predict returns because they capture information about the risk premium. D/Y, BtM, and P/E also share similar time-series properties. At a monthly frequency, they have autocorrelations near one and most of their movement is caused by price changes in the denominator. These statistical properties are said to have big impact of tests of return predictability (Lewellen, 2004).

Earlier studies analyze the relation between portfolio performance and share past returns, company size, price to earnings ratio, price to book ratio. Campbell and Shiller (2001), Fama and French (1992), Stambaugh (1986) seek to find out the valuation ratio with higher value in predicting future returns. Rosenberg, Reid and Lanstein (1985) report a significant positive relationship between a firm's price to book value ratio and future stock returns.

Market value ratios are important for an investor who is interested in the market prices of the shares of a company on the stock exchange. 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 accounting but also the current price.

The main concept in this study is to establish the extent to which book-to-market ratios can predict future investment returns. There is one advantage of BtM relative to its peers; since book value is a "stock" variable, while earnings, cash flow and sales are "flow" variables; there is a tendency for BtM rankings to be somewhat more stable over time than the rankings based on the other three variables. This reduces portfolio turnover for strategies that are based on BtM rankings. So, in addition to providing at least as much return dispersion as its competitors, BtM may also reduce the number of transactions that are triggered by stocks moving in and out of the portfolio's buy range. This can be especially important for taxable investors (Davis, 2001).

The book-to-market value (BtM) is suggested as useful to investors in choosing shares that are to be acquired as an investment. The book-to-market value (BtM) ratio compares the value in stock market with the shareholders investment in the firm. In an efficient market, this ratio (BtM) compares a future driven value, namely the market price per share with a historical value, thus helping investors determine whether their investment have diminished or not. The book-to-market ratio is assumed to summarize the stock market investors' view or perception of the effectiveness of a firm's management's policy, its profitability potential, its liquidity, future profits and risk. The power of price to book ratio is that it can be used in valuation of non-dividend paying firms. (Reilly and Brown , 2000).

In this study the stock return which is the dependent variable will be calculated by taking the difference between closing and opening weekly prices of the selected firms and adding any cash dividends announced in the week.

1.2 Importance of the Stock Market

The stock market is where financial assets with a term to maturity of typically more than one year are traded. The stock markets play a crucial role in efficient allocation of resources. The stock market is where investors, both local and foreign, can raise long term capital voluntary from the public and on large scale and in a short space of time. It bridges the gap between organizations, which need to borrow money for the long term or to raise permanent capital and investors who only wish to put up money for a time. The stock market should facilitate as wide an ownership of national tools of production as possible by stimulating investment in securities by as many people as possible (Munga 1974). On the other hand, the money market is a market for short-term financial assets that are close substitutes for money, facilitates the exchange of money for new financial claims in the primary market as also for financial claims, already issued, in the secondary market. It provides a mechanism for meeting the liquidity needs of the lenders and the short-term requirements of the lenders and the short-term requirements of borrowers with the minimum of delay. (Pandey 1995)

Nairobi stock exchange (NSE) is a typical capital market in the emerging markets. Emerging markets are differentiated from developed markets with respect to their heterogeneous nature and inherent dynamics. These are markets characterized by high volatility and high average returns. It has been shown that they are not integrated to the developed markets of the world as evidenced by very low correlation with the rest of the world and among them (Bekaert etal., 1998). The Nairobi Stock Exchange, which was formed in 1954 as a voluntary organization of stockbrokers, is now one of the most active capital markets in Africa. The Stock Exchange deals in the exchange of securities issued by publicly quoted companies, corporate bodies and the Government.

The major role that the stock exchange has played, and continues to play in many economies is that it promotes a culture of saving. The very fact that institutions exist where savers can safely invest their money and in addition earn a return is an incentive to people to consume less and save more.

The stock exchange assists in the transfer of savings to investment in productive enterprises as an alternative to keeping the savings idle. It should be appreciated that in as much as an economy can have savings, the lack of established mechanisms for channeling those savings into activities that create wealth would lead to misallocation or waste of those savings. Therefore, even if a culture of saving were to be encouraged, the lack of developed financial markets may lead to economic stagnation.

A robust stock market assists in the rational and efficient allocation of capital, which is a scarce resource. The fact that capital is scarce means systems have to be developed where capital goes to the most deserving user. An efficient stock market sector will have the expertise, the institutions and the means to prioritize access to capital by competing users so that an economy manages to realize maximum output at least cost. If an economy does not have efficient financial markets, there is always the risk that scarce capital could be channeled to non-productive investments as opposed to productive ones, leading to wastage of resources and economic decline.

Stock markets promote higher standards of accounting, resource management and transparency in the management of business. This is because financial markets encourage the separation of owners of capital, on the one hand, from managers of capital, on the other. This separation is important because we recognize that people who have the money may not necessarily have the best business ideas, and people with the best ideas may not have the money.

The stock exchange improves the access to finance of different types of users by providing the flexibility for customization. This is made possible as the financial sector allows the different users of capital to raise capital in ways that are suited to meeting their specific needs. It also provides investors with an efficient mechanism to liquidate their investments in securities. The very fact that investors are certain of the possibility of selling out what they hold, as and when they want, is a major incentive for investment as it guarantees mobility of capital in the purchase of assets (www.nse.co.ke, 2006).

1.3 Statement of the Problem

Investors must be kept abreast of the current developments in their investments so that they can maximize the value of their firms' stocks based on the stream of cash flows their firms will generate in the future. This is determined by how an investor estimates future cash flows and how he/she decides which actions are most likely to increase cash flows.

According to Beltz and Moore (2000), the hunt for factors that systematically drive equity returns has a long history and has taken a variety of forms. For years, ordinary investors have tried various screening mechanisms based on firm-specific observable variables such as return on equity, growth in earnings, and others, in the hope of isolating subsets of firms with potentially superior returns. Such 'research' is usually conducted purely to make profits in the investment arena. Academics have also been actively involved in this research issue. While their motives may also involve potential profits, they are often more interested in proving (or disproving) equilibrium models such as the Capital Asset Pricing Model and Arbitrage Pricing Theory and in developing statistical models that identify priced factors and thus the return generating process.

Both potential and current investors have at their disposal a number of valuation ratios to choose from. It is however their wish to choose a model that enables them to select assets whose returns are commensurate with the inherent risk. The usefulness of valuation ratios is primarily their ability to enable the investor(s) to accurately forecast share price and returns. They are used to determine whether share prices are over, under or correctly valued. From this information the potential investor would be in a position to make a wise and sound investment decision on which shares to buy and which to sell. Although performance ratios are widely used in the Kenyan environment, investors hardly understand information content of such ratios; furthermore the empirical evidence of the predictive power of such ratios is scarce.

The question that arises is whether Book-to-market ratios can give an indication of the share performance in our market. In Kenya very little has been done to ascertain the

existence and nature of this relationship. This study attempts to establish a relationship between book-to-market ratio and share values of companies quoted at the Nairobi Stock Exchange (NSE).

1.4 Objective of the Study

The purpose of this research is to explore the predictability of common stock returns of companies, the focus being companies listed at the Nairobi Stock Exchange (NSE). The main objective of this study is to establish the extent to which book-to-market value ratio predicts future stock performance of the companies listed at the Nairobi Stock Exchange (NSE).

The study seeks to establish the extent to which low book-to-market ratio explains future stock returns.

It seeks to explore the extent to which high book-to-market ratio explains future stock returns.

1.5 Significance of the Study

- **Investors**

Important to current and potential investors, who need to make decisions on whether to buy, sell or hold shares. The established relationship could then be used as a proxy of determining the share values of quoted companies.

- **Policy makers**

This would help them with information focused towards formulation of policies aimed at improving the efficiency of the capital market to spur economic growth

- **Academicians**

It is of importance to scholars who need information for market-based research. It is also useful to the scholars who may wish to do further research on the investment ratios.

- **Regulatory agencies**

Regulatory agencies such as the Nairobi Stock Exchange (NSE) and the Capital Markets Authority are also interested in the predictability of stock performance and movement of prices in general. The study will give invaluable information, which will facilitate the regulation and development of capital markets in Kenya.

- **Stockbrokers**

This will help them in making investment decisions and in advising their clients on investment portfolio.

- **Firm managers**

It is useful to the firm managers who being the financial analysts, it is their responsibility to see that resources of the firm are used effectively and efficiently to maximize the returns. This study will help them achieve the same.

CHAPTER TWO
LITERATURE REVIEW

2.1 Background

Forecasting future returns is central to an investment decision given that investors enjoy a number of investment opportunities to choose from. Identifying the forces that drive stock returns is a major concern for practice and academic research. From a theoretical perspective, several models are available. The most widespread model is the CAPM that hypothesizes that stock returns are driven solely by one factor, the market portfolio. The underlying principle of the Capital Asset pricing Model (CAPM) is that there is a linear relationship between systematic risk, as measured by beta, and expected share returns. According to this theory, stocks with beta lower than one were considered passive stocks and stocks with beta higher than one were considered aggressive and risky. Depending on their appetite towards risk, investors would choose the stocks in their portfolio according to the value of beta (Cauchie, Hoesli and Isakov 2002).

The Capital Asset pricing model (CAPM) is widely used by analysts, investors, and corporations. However, despite the CAPM's intuitive appeal, a number of studies have raised concerns about its validity. One much known critic in literature belongs to Fama and French (1992), who discovered a negative relationship between risk and return. Fama and French came up with the conclusion that a more realistic approach of the risk in the market is the multi-index models. They argued that size of the firm and the book-to-market values have a significant influence on the performance of a stock.

CAPM is based on several assumptions that have since been criticized. For instance, the assumptions that there are no taxes and no transaction costs do not conform to reality. In addition, the assumption of homogeneous expectation is as also open to doubt, because investors usually have divergent expectations, apply various investment holding periods and differ in their decision-making. According to Watson and Head (1998), most of such assumptions are unrealistic and are the cause of flaws in the CAPM.

Due to the shortcomings of CAPM, other models have been developed. Stephen Ross (1976) proposed an approach called the Arbitrage Pricing Theory (APT). The Arbitrage

Pricing Theory (APT) provides a theoretical framework to determine the expected returns on stocks, but it does not specify the number of factors nor their identity. According to this theory, factors can be extracted by means of statistical procedures, such as factor analysis or be pre- specified using macro-economic variables.

Factor analysis has been criticized for many reasons; the factors are not selected in the same order between two different samples, their sign is not reliable and they have scaling problems. Additional problems occur when implementing the APT using factor analysis. The number of factors extracted and priced increases with the number of stocks in the sample and the length of time series. According to Brigham and Daves (2004), the usage of APT model is still limited to date.

Valuation ratios fall under the relative valuation model. This is because it involves estimating the value of future returns using the pricing of assets relative to common variables. The book-to-market value ratio belongs to a family of relative valuation ratios that is widely discussed in finance and investment literature. Investors use this ratio together with price-to-earnings ratio, price-to-cash flows ratios, and price-to-sales ratios, dividend yield as indicators of relative value (Reilley and brown 2000).

Book-to-market ratio is a basic measure of the relative value that the market places on a share of stock. A stock's book value per share remains the best easily accessible measure of the assets which lie behind each share. Since the work of Rosenberg, Reid and Lanstein (1985), empirical literature has shown how stocks of firms with high book- to-market ratios offer high returns.

Market value ratios are important for an investor who is interested in the market prices of the shares of a company on the stock exchange. The value of an investment in ordinary shares in a listed company is its market value and so market value ratios must have regard not only to information in the company's published accounting but also the current price.

This study examines the relationship between book-to-market ratios and the returns of stocks listed at the Nairobi stock exchange

2.2 Theoretical Justification of the Market Value Ratios

2.2.1 Book-To-Market Value Ratio

$$\text{Book-to-Market value ratio} = \frac{\text{Book value per share}}{\text{Market value per share}}$$

Book-to-market ratio (BtM) is the ratio of a firm's book value of equity to its market value of equity. The firm's accountants using historic cost information determine book value of equity while buyers and sellers of the stock using current information determine market value of equity. The relationship between the market price of a stock and its book value per share can be used as a relative measure of valuation because, under theoretically ideal conditions, the market value of a firm should reflect its book value. Book-to-market ratio in a way indicates the value that the financial markets attach to the management and the organization of the company as a going concern (Limmack and Fox, 1988).

The Book-to-market value ratio has become important as a measure of relative value of stocks. Analysts will observe the stock's book-to-market over time, examine it relative to a comparable market and industry ratio, and hence use this information in investment decision. It is important that its relative value be evaluated along with its relative growth rate and risk characteristic. Comparisons of book-to-market ratios across firms and/or across time that do not take into account these differences are likely to be flawed. (Damodaran, 1996)

The book-to-market ratio of equity has a dual role in empirical studies. It is used as a measure of market mis-valuation (over or under-pricing) and is also utilized as a proxy for future growth opportunities in the trade-off framework. Firms with higher growth opportunities, which typically have higher valuations, may prefer to lower their leverage to maintain their financial flexibility (Myers, 1977). Baker and Wurgler (2002) utilize historical book-to-market ratio to capture the cumulative effects of equity market-timing attempts and use the current book-to-market ratio to control for firm's growth opportunities while investigating firms' observed capital structure.

Chan, Hemao and Lanonishok (1991) found that the book-to-market value ratio has a strong role in explaining the cross-section of average returns on Japanese stocks. Capaul, Rowley, and Sharpe (1993) extended the analysis of price/book value ratios across other international markets and conclude that the value stocks, that is, stocks with low Price to book ratios (high BtM), earned excess returns in every market that they analyzed between 1981 and 1992.

The relationship between book and market value has always attracted the attention of investors. Stocks selling for well below their book values are generally considered as good candidates for undervalued portfolios while those selling for more than their book values have been targets for overvalued portfolios. Price/book value ratio has become an increasingly useful tool in investment analysis for a number of reasons. The first is that the book value provides a relatively stable, intuitive measure of value that can be compared to the market price. The second is that, given reasonably consistent accounting standards across firms, Price to book ratios can be compared across similar firms for signs of overvaluation. Finally, even firms with negative earnings, which cannot be valued, using price/earnings ratios, can be evaluated using book-to-market ratios (Damodaran, 1996).

It is however necessary that the investors be aware of the several disadvantages associated to the PBV (BtM) ratios. First, the book values, like earnings, are affected by accounting decisions on depreciation and other variables. When accounting standards vary widely across firms, the PBV ratios may not be comparable across firms. Secondly, the book value may not carry much meaning for service firms that do not have significant fixed assets. Third, the book value of equity can become negative if a firm has a sustained string of negative earnings reports, leading to a negative PBV ratio (Damodaran, 1996).

The PBV ratio of a firm is determined by its expected payout ratio, its expected growth rate in earnings, and its riskiness. The most important determinant, however, is the return on equity earned by the firm. Higher (lower) returns lead to higher (lower) PBV ratios.

Given the relationship between PBV ratios and returns on equity, it is not surprising to see firms that have high returns on equity selling for well above book value and firms that have low returns on equity selling at prices below their book value. The firms that should draw attention from investors are those that provide mismatches of PBV ratios and returns on equity (Damodaran, 1996).

Reilly and brown (1997) perceived that under ideal conditions, the price/book value (PBV) ratio should be close to 1. It is easy to see why the PBV ratio of an industrial firm would exceed 1. The book value of assets, which are based on historical cost, will almost always be lower than either their current replacement value or the firm's break up value i.e estimated market value of selling divisions of a firm to others. An increase in the estimate of break up value has caused the average PBV ratio for industrial firms to experience a volatile increase over time.

To use this ratio as part of an investment decision rule, it has been suggested that stocks with low PBV ratios should outperform those with high PBV just as stocks with low P/E ratios outperform stocks with high P/E ratios. A study by Rosenberg Reid, and Lanstein (1985), found that stocks with low PBV (high BtM) ratios experienced significantly higher risk-adhered rates of return than the average stock. They found a significant positive relationship between the book-to-market ratio and future stock returns and contented that this relationship was evidence against efficient market hypothesis

A study by Fama and French (1992) provided even greater support for this ratio as a useful measure of relative value. The purpose of the study was to examine alternative variables that would explain the cross section of rates of return on common stock. The results indicated that both the size of firms and the ratio of book value to market value (BtM) of equity were significant explanatory variables.

Shefrin and Statman (1995) in their survey showed that the respondents believed that good companies are large companies with high P/Bv ratios and they believed that the stock of such companies would be good stocks. This survey is however inconsistent with

empirical results which show that stocks with high P/Bv ratios are not good stocks in terms of risk-adjusted rates of return (Reilly and Brown 1997).

2.2.2 Other Market Value Ratios

2.2.2.1 Price- Earnings Ratio (P/E)

P/E is short for the ratio of a company's share price to it's per- share earnings. As the name implies, to calculate the P/E, you simply take the current stock price of a company and divide by its earnings per share (EPS):

$$P/E = \frac{\text{Market value per share (MPS)}}{\text{Earnings per share (EPS)}}$$

The P/E ratio is also called the earnings multiple because it shows how much investors are willing to pay per shilling of earnings. If a security is trading at KShs.24 a share, for instance and earnings came in at KShs.2 a share, its P/E would be 12 i.e. (24/2). That means investors are paying KShs.12 for every KShs1 of the Company's earnings.

There are two types of P/E i.e. the traditional "trailing" P/E which is the stocks price divided by earnings per share for the previous 12 months while the other is "forwarded" P/E which considers earnings per share for the coming year (Campbell and Shiller, 1988).

The question would be which is better P/E? The trailing P/E has the advantage that it deals in facts – its denominator is the audited earnings number the firm reported to the stock exchange. Its disadvantage is that those earnings will almost certainly change for better or for worse in the future. By using an estimate of future earnings, a forward P/E takes expected growth into account. And though the estimate may turn out to be wrong, it at least helps investors anticipate the future the same way the market does when it prices a share (Braeley, Richard, and Myres 1984)

The P/E is so far one of the popular ratio among investors. Other things being equal, one would like to find stocks with rising P/E ratios, because higher P/E multiples usually translate into higher future stock prices and better returns to stockholders. Thus "the level of the P/E ratio indicates the degree of confidence (or certainty) that investors have in the firm's future performance. The higher the P/E ratio, the greater the investor confidence in the firm's future (Gitman 1997)

Thomas (1994) observed that "While accepting that high P/E ratio is a sign of high expectations, analysts and brokers nonetheless are quick to caution that the ratios are only part of the puzzle". A company may post an artificially high P/E ratio as a result of factors that can either boost stock prices or diminish earnings per share. Restructuring charges, merger, acquisition rumours and high dividend yields all have the capacity to push a company's P/E ratio upwards. In other instances, legitimately, high P/E ratios can be adversely impacted down by such factors as market conditions, technology and increased competition. Since so many factors can influence a company's P/E ratio, industry analysis caution against relying on it too heavily in making investment decisions.

Although the EPS figure in the P/E is usually based on earnings from the last four quarters the P/E is more than a measure of a company's past performance. It also takes into account market expectations for a company's growth. A company with a high P/E ratio will eventually have to live up to the high rating by substantially increasing its earnings, or the stock price will need to drop. Sears and Trennepohl (1922) assert "stocks with high P/E ratios are considered to have more subjectivity in their price attributed to the expected growth in their earnings. If in the future it is revealed that the market has overestimated the growth rate in earnings, the stock price will fall". Conversely, because low P/E stocks have low growth expectations in their price, the chance that the market will be disappointed by the future earnings growth is much less. As a result, a better way

of interpreting the P/E ratio is a reflection of the market's optimism concerning a company's growth prospects.

Strategies based on P/E ratios call for investors to buy stocks with low P/E ratios and sell or avoid those with high P/E ratios. In an efficient market, selecting stocks based on P/Es should not provide any greater returns than any other stocks that are in the same risk class i.e. any information contained in the P/E ratio should already be included in the security's price. "If markets are efficient, information contained in the size of the firm or in its P/E should already be impounded in the stock price and thus independent of future performance (Sears & Trennepohl 1992).

2.2.2.2 Dividend Yield

Dividends are payments made by a company to its shareholders. When a company earns a profit, some of it is reinvested in the business and called retained earnings, and some of it can be paid to its shareholders as a dividend. In most companies, the board of directors will propose the payment of a dividend to shareholders at the annual meeting who will then vote on the proposal. Decisions' regarding the amount and frequency of dividends is solely at the discretion of the board of directors.

Dividend yield is the rate of return expressed in percentage form. The formula for calculating dividend yield is

$$\text{Dividend yield} = \frac{\text{Dividend per share}}{\text{Market price per share}}$$

The ratio shows the percentage of purchase price the firm will return to the investor in form of dividends. For instance if stock ABC has a market price of Ksh 20 and pays Ksh 2 as dividend, its dividend yield is $2/20*100 = 10\%$.

The dividend yield evaluates the shareholders return in relation to the market value of the share. According to Goetzmann and Jorion (1993), dividend yields have long been used

to evaluate the expected return to investment in common stocks. If the stock price represents a claim to the future stream of dividends, the price can be exactly determined assuming constantly growing dividends and a known discount rate.

2.2.2.3 Price-To-Sales Ratio

Price-to-sales ratio is the firm's price divided by its sales (or revenue).

$$\text{Price Sales Ratio} = \frac{\text{Market Price Per Share}}{\text{Revenue per share}}$$

Price/Sales ratio is important when valuing companies with erratic earnings or no earnings at all. Unlike the more common price/earnings ratio, price/sales ratio can be used to value any public company as it provides a more stable valuation measure than P/E does (Martin & Senchack, 1987).

The ratio of price to sales has proved attractive to scientists for a number of reasons: The price to sales ratio multiples are not as volatile as price/earnings multiples and hence may be more reliable for use in valuation. For instance, the Price/earnings ratio of a cyclical firm changes much more than its price/sales ratio, because earnings are much more sensitive to economic changes than revenue. Furthermore, the price sales ratio provides a convenient handle for examining the effects of changes in pricing policy and other corporate strategic decisions (Damodaran, 1996).

Use of revenues instead of earnings and book value is a disadvantage when the firm's problems lie in cost control. In such a case, the revenues may not decline even though the earnings and value drop precipitously. Thus, while it is tempting to use price/sales multiples to value troubled firms with negative earnings and book value, the failure to control for differences across firms in costs and profit margins can lead to very misleading valuations.

2.3 Predictability of Stock Returns

Undoubtedly, the predictability of stock market returns is one of the most controversial and intensely debated issues in empirical finance. A voluminous literature around the

issue has evolved during the last two decades, rendering its overall assessment extremely difficult or, perhaps, an elusive goal. The variety of markets and the different sample periods that have been examined, in conjunction with the numerous and complicated methodologies that have been employed to address the question of whether returns are predictable, have failed to yield a general consensus. Nelson and Kim (1993) observed that the proposition that stock returns are not predictable was until very recently regarded as one of the most firmly established empirical results in economics.

Investors look at different returns depending on their availability and reliability. We have returns in form of dividends, return on assets, return on equity and return per share. These returns are different because what they measure is different. The first two are accounting measure while the third one is market driven. From a series of any of the three measures of return we can derive a mean and its spread around its mean. It is the spread or standard deviation that is used as a proxy for a firm's risk. Theoretically we expect firms in different industries to show different returns and risks.

There is much evidence that share returns are predictable. Indeed, a recent series of papers including Keim and Stambaugh (1986), Campbell and Shiller (1988), have emphasized that share returns can be predicted. Cutler, Poterba and Summers (1991) report that "Fundamentals" such as dividend yield and price-earnings ratio explain 25% or more of the variation in stock returns measured over intervals of several years.

Recent research in empirical finance has shown that variables like dividend yields, Price-earning (P/E) ratios, book-to-market ratios as well as past returns have significant explanatory power for the variation in cross-section of expected returns even after controlling for market risk.

Campbell and Shiller (1998) concluded in their paper that the conventional valuation rates, the dividend price and price-earnings ratios, have a special significance when compared with many other statistics that might be used to forecast stock prices. These valuation ratios deserves a special place among forecasting variables because of

availability of long-time series of data on these ratios, and because they relate stock prices to careful evaluations of the fundamental value of corporations.

Fama and French (1992), in examining the cross-section of expected stock returns between 1963 and 1990, established that the positive relationship between book values/price (BtM) ratios and average returns persists in both the univariate and multivariate tests, and is even stronger than the size effect in explaining returns. When they classified firms on the basis of book value/price ratios into twelve portfolios, firms in the lowest book value/price (higher PBV) class earned an average monthly return of 0.30%, while firms in the highest book value/price (lowest PBV) class earned an average monthly return of 1.83% for 1963-90 period.

Goetzmann and Jorion (1993) used bootstrap methodology as well as simulations to examine the distribution of test statistics in a period of 4 years. Under the null hypothesis of no forecasting ability their observed statistics were within 95% bounds of their simulated distributions. They concluded that overally there is no strong statistical evidence indicating that dividend yields can be used to forecast stock returns. The argument was other regression studies of long-horizon returns on dividend yields that have been interpreted as providing strong evidence of predictability in stock returns have failed to recognize the serious biases arising from regressions on lagged dependent variables.

Advocates of the efficient market theory feel that the stock market is properly valued no matter how high or low the stock price is at any one time. Campell and Shiller (2001) argue that the efficient markets model is not empirically correct. Shiller is able to correlate current high P/E rates with low or even negative ten -year future returns. If the efficient markets theory is correct, the markets should be perfectly random and have no long run correlation to any valuation ratio.

Return predictability does not necessarily give way to excess profits in the market. In their general equilibrium model that yields predictable stock returns, Balvers, Cosimano and Mc Donald (1990) suggest that advantages of predictive ability are offset by

fluctuations in consumption patterns. Empirically, Fuller and Kling (1994) cannot uncover any evidence for superior profits using return prediction models.

In the Kenyan environment, a related study has been done by Macharia (2002). She tested the predictive ability of valuation ratios. These ratios included the price earnings ratio, dividend yield ratio and price sales ratio. Using a linear regression model, she established that the dividend yield ratio, the price sales ratio and the price-earning ratio significantly predicted future returns. She omitted the financial segment of the stock exchange due to the fact that firms in this segment, mainly being banks and insurance companies, did not generate sales in the normal business sense. This omission means that her findings are not applicable to all segments in the Nairobi Stock Exchange. Obell (2004) studied the extent to which risk, measured as standard deviation of share returns, return on assets, and return on equity explain variations in the price to book ratio of firms listed at the Nairobi Stock Exchange. Using regression analysis and cross-tabulation statistics, he established that there is a significant correspondence between variability (risk), return in equity and price to book ratio. He thus recommended that at the NSE, investors interested in estimating equity risk can as well look at price to book equity ratio.

2.4 Predictive ability of Book-To-Market Ratio

The book-to-market ratio (BtM) is suggested as useful to investors in choosing shares that are to be acquired as an investment. The book-to-market ratio compares the value in stock market with the shareholders investment in the firm. In an efficient market, this ratio (BtM) compares a future driven value, namely the market price per share with a historical value, thus helping investors determine whether their investment have diminished or not. The book-to-market ratio is assumed to summarize the stock market investors' view or perception of the effectiveness of a firm's management's policy, its profitability potential, its liquidity, future profits and risk. The power of book-to-market ratio is that it can be used in valuation of non-dividend paying firms. It has been found that a number of firms' characteristics such as size, market-to-book ratio and earnings divided by price are related to excess return. It is therefore noticeable that book- to-

market ratio contains information about the infinite future of conditional expected returns and profitability i.e. information on risk and returns.

Various studies attempt to establish the relationship between book-to-market and share returns. These studies have yielded varying results. Lewellen (2002) used dividend yield, book-to-market value and price-to-earnings ratio to predict aggregate market returns. He finds a relationship between these ratios and future returns. Chan, Hamao and Lakonishok (1996) find that a firm's size, earnings yield, cash flow yield, and book-to-market ratio have a reliably positive impact on expected returns. Shiller and Campbell (1988) using vector autoregressive approach find that data on accounting returns are useful in predicting present value of dividends. Kothari, Shanken and Sloan (1997) find that the relationship between price to book ratio and returns is periodic and largely insignificant. Kent, Titman, Wei (2001) report that in Japan the relationship between stock returns and price to book value is stronger than in USA.

Many studies have found that buying stocks with high book to market ratios has resulted in excess returns. Rosenberg, Reid and Lanstein (1985) provide a piece of evidence against the CAPM by showing that stocks with high ratios of book value of common equity to market value of common equity (also known as book-to-market equity, or BtM) have significantly higher returns than stocks with low BtM. Rosenberg, Reid and Lanstein analyzed the performance of a strategy of purchasing stocks with low price-to-book ratios using data from January 1973 to March 1980 from the COMPUSTAT database. The stocks analyzed were mainly New York Stock Exchange (NYSE) stocks. The study was constructed as a hedge study, which means that stocks with low price-to-book ratios were bought and stocks with high price-to-book ratios were sold short. The study showed that this strategy gave excess returns; i.e., it resulted in a positive return of 0.32% per month. When Chan, Hamao and Lakonishok (1991) found similar results in the Japanese market, BtM began to receive serious attention as a variable that could produce dispersion on average returns. In contrast, Capaul, Rowley, and Sharpe (1993) analyzed the performance of stocks with low price-to-book ratios (called value stocks) and stocks with high price-to-book ratios (called growth stocks) from January 1981 to June 1992 in France, Germany, Switzerland, the UK, Japan, and the USA. They found

that the value stocks outperformed the growth stocks in all countries studied, as they gave higher average returns when adjusted for risk during the period under study.

Ibbotson (1986) studied the relationship between stock prices as a percentage of book value and investments returns. To test this relationship, all stocks listed in the New York Stock Exchange (NYSE) were ranked on December 31 of each year according to stock prices as a percentage of book value and sorted into deciles (ten percent of the stock listed on the NYSE). The compound average annual values were measured for each decile for the 18-year period, December 1966 through December 31, 1984. His findings is that stocks with a low price to book value (high BtM) ratios had significantly better investment returns and risk over the 18 year period than stocks priced as a percentage of book value.

In New Zealand, Bryant and Eleswarapu (1997) investigated the role of beta, firm size and book-to-market ratio in explaining security returns over the period 1971 to 1993. They found beta of little use in explaining cross sectional returns. They find a significant positive relation between book-to-market and average returns but not a strong firm size effect. On the other hand, Vos and Pepper (1997) also using an adaptation the Fama and French (1992) methodology found over the period 1991-1995 that stock returns are negatively related to size and positively related to book-to-market ratios. And contrary to Bryant and Eleswarapu (1997), they found the size effect to be stronger than the book-to-market effect.

Fama and French (1992) examined the effects of market capitalization and price as a percentage of book value on investments. All the finance NYSE ASE (American Stock Exchange) and NASDAQ companies were ranked according to the stock prices as a percentage of book value and sorted into deciles. After examining investment returns from July 1963 to December 1990, they concluded that smaller market capitalization companies, at the lowest prices in relation to book values provided the best returns. Furthermore, within every market capitalization category, the best returns were produced with low prices in relation to book value. They concluded that the price to book ratio is the best for explaining the cross section average stock returns.

Lakonishok, Vishny and Sheifer (1993) ranked all companies on NYSE and ASE according to stock price as a percentage of book value and sorted the companies into deciles. Portfolios were initially formed on April 30 1968 and new portfolios were then formed on each subsequent April 30. The study period ended on April 1990. The deciles portfolios were held for five years returns and the average cumulative totals five years returns were calculated. The investments returns were equally weighed. They also examined the consistency of investment returns for low price to book value of companies as compared to the high price to book value over 1 year 3 year and 5 year holding period from 1968 through 1990. The investment returns for companies in the highest two deciles ranked on price to book value were subtracted from returns for companies in the lowest two deciles. Their conclusion is that the firms with lowest price to book values (high BtM) provided the best returns. They concluded that low price to book value stocks outperformed the high price to book value stocks in 16 of the 22 years, or 73% of the time for the 3 year holding period. For the five-year holding periods, the low prices to book value companies were a better choice than the high price to book companies' overtime.

Further, Fama and French (1995) on examining whether the behaviour of stock price to size and book- to-market value reflected earnings changes, conclude that high book value to market value ratio securities experience low return on equity and that low book value to market value ratio securities experience high return on equity. That variability in return on equity is linked to book-to-market value ratio implying a relationship between book value to market value ratio and risk in a security.

The above studies concentrated on the effect of the book-to-market ration on returns. In addition to having an effect on returns, book to market ratio has been shown to affect the liquidity of a firm. Lettau and Ludvigson (2001a), explain that low book-to-market ratio stocks have higher (consumption) betas in bad times or when the consumption-wealth ratio is high than they have in good times or when the consumption-wealth ratio is low. These results are closely related to the credit channel of business cycle propagation in the macroeconomic literature. Firms of high book-to-market ratio, for example, have less

access to credit and, therefore, are justified by the fact that liquidity is an important pricing factor and that value stocks are more sensitive to liquidity stocks than growth stocks when business conditions are bad.

The book-to-market ratio may also reflect several risk factors whose effects may depend on market value as well. In particular, a firm with a very low book-to-market and small market value has higher mean excess return than their medium book-to-market counterpart. One explanation may be that investors demand an extra premium for small growth firms, given that such firms have low fixed assets, causing them to have low recovery rates in the event of default (Akgun and Gibson, 2001).

In conclusion, findings from most researchers have indicated that there appears to be a relationship between the book-to-market ratios and the stock returns. Majority of the findings report that firms with a high book-to-market ratio tend to attain better returns than those with a low book-to-market ratio. However, some authors had different findings, for instance Capaul, Rowley and Sharpe (1993) who reported that firms with low book-to-market ratios produced better returns. Also, Fama and French (1995) indicated that firms with low book-to-market ratios also provided better returns on equity than firms with high book-to-market ratios. Kothari, Shanken and Sloan (1995) on the other hand, indicated that the relationship between book-to-market ratio and returns was not significant over long periods. Given that majority of the findings indicate that the book-to-market ratios have a significant effect on returns; it will be interesting to observe the effect that this ratio has on the Nairobi Stock Exchange securities.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This paper is a case study of the Nairobi Stock Exchange (NSE).The aim of the study is to establish whether book-to-market ratio do have predictive power in an emerging stock market such as Kenya. The design is cross-sectional, as the model will then be used to analyze the cross-section returns over four years from 1999 to 2002.

3.2 Population

The population of the study included 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 are currently 52 companies quoted at the Nairobi Stock Exchange (Appendix I).

3.3 Sample Design

Companies included in the sample should have traded continuously during the period 1996 to 2003 to allow for sufficient data for computation of three-year book-to-market ratios (1996 to 1998) and for testing their predictive ability in the subsequent four years (1999 to 2002).

3.4 Data Source

The study is confined to companies listed at the Nairobi Stock Exchange (NSE). Daily data on stock prices was collected for the period 1999 to 2002. Book-to-market values for the firms included in the sample were computed for years 1996, 1997 and 1998. From the data collected at the NSE, the weekly returns for the firms were then computed for the years 1999 to 2002.

3.5 Variables of the study

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

Returns: This is the dependent variable. The study attempted to establish whether the book- to-market value of a firm can significantly predict the returns.

Book-to-market ratio: This is the predictor variable of the study. The study established its effect on future returns and whether this effect is significant or not.

3.6 Data Analysis

The study focused on two portfolios of firms: those which consistently have the highest book-to-market ratios over the period 1996 to1998, and for those which consistently have the lowest book-to-market ratios over the same period. Chi square tests of independence were conducted to compare future returns for the firms with high book-to-market ratios against those with low book-to-market ratios. If a population is classified into several categories with respect to two attributes, chi square tests are appropriate to determine whether the two attributes are independent of each other (Levin, 1997). In this study the two attributes are book-to-market ratio versus returns

First, the book-to-market ratios for the firms in the sample were computed for year1996. The book to market ratio were computed as follows:

$$\text{Book-to-Market (BtM) ratio} = \frac{\text{Book value of Security i}}{\text{Market value of Security i}} \quad \ldots\ldots (1)$$

The firms were ranked on the basis of book-to-market ratios i.e. from the highest to the lowest. The top ten and bottom ten firms were then extracted from the list. The same procedure was then carried out for years 1997 and 1998 on all the firms on the sample. Ten firms that have highest book to market ratios for at least two years in the three years

1996 up to 1998 were then retained in the top portfolio. Similarly, ten firms that appear in the bottom for at least two years in the three years were retained there.

The remaining firms, which did not have consistently have low or high book-to-market ratios, were omitted from further analysis. Thus, two portfolios were obtained, that representing the top ten (which contains firms with the highest book-to-market ratios) and those representing the bottom ten (which contains firms with the lowest book-to-market ratios).

The firms that were retained in the top ten portfolio were be assigned a code, 1 and the firms that were retained in the bottom ten portfolio were assigned a code, 0. The assigning of these codes enabled testing for differences in future returns of the two portfolios. The next step required the calculation of the average weekly returns for each portfolio. Weekly returns were calculated for the period beginning 1999 to 2002. In any case, portfolios have a life of between three to four years (Sharpe 1999).

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

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

$$r = \frac{P_1 - P_0 + D}{P_0} \quad \ldots\ldots (2)$$

Where:

r = returns per week

P_1 = end week price

P_0 = opening week price

D = any cash dividends announced during the week

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

Table (a): Format for tabulating returns of Portfolios 1 (High Book-to-market)

Week	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 Book-to-market)

Week	C_{10}	C_{20}	C_{30}	...	C_{n0}	Average Returns (0)
1						
2						
3						
.						
.						
.						
n						

Where C_{x0} = Returns for company x of portfolio 0

Step 2 – In this step, the researcher calculated the weekly average returns for each category of portfolios i.e. assigning 1's for (high book-to-market values) and assigning O's for (low book-to-market values).

Chi Square tests of independence

The Chi square tests of independence using contingency tables were used to test whether the book-to-market ratio had significant explanatory power on company future returns. A contingency table consists of two or more columns and rows. The columns represent the values of the independent variable (book-to-market ratio) and the rows represent the values of the dependent variable (future returns). The chi square statistic is given by the formula:

$$\chi^2 = \Sigma \frac{(O-E)^2}{\Sigma E^2} \quad \ldots\ldots(3)$$

Where:

χ^2 = the computed chi square statistic

O = the observed value from the sample

E = the expected value

The average weekly returns for the two portfolios were then compared. A value of 1 (high) were then be assigned to the portfolio with a higher average BtM, and a value of 0 (low) to the portfolio with a lower average BtM. The results obtained were then cross tabulated and a chi square test of independence conducted to establish whether there is significant relationship between the book-to-market ratio and future returns.

Paired sample t-tests

Two sample-paired t-test 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:

$$t = \frac{AR_1 - AR_0}{\sqrt{\left(\frac{(n_1 - 1)\,S_1^2 + (n_0 - 1)\,S_0^2}{n_1 + n_0 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_0}\right)}} \quad \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where:

AR_1 = average returns for portfolio of firms with high book-to-market ratios.

AR_0 = average returns for portfolio of firms with low book-to-market ratios

n_x = number of firms in a given portfolio

S_x = standard deviation for a given portfolio

If the book-to-market ratio significantly predicts future returns, then the portfolio of firms with high BtM ratios should have significantly higher average returns than the portfolio with low BtM ratios or vice versa in the four years i.e. (1999 to 2002).

F tests for difference in variance

The F statistic was used to test for significant difference between variance for the two samples. The test of difference in variance was used to establish whether one portfolio tends to be more volatile than the other over the study period.

The F statistic is given by:

$$F = \frac{S_1^2}{S_0^2} \quad \ldots\ldots (5)$$

Where:

S_x = standard deviation for a given portfolio

All these tests should confirm whether the future returns for the two portfolios are significantly different, and hence answer the research objective.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Background

This chapter presents the findings of the research on the effect of book-to-market ratio on prediction of future performance of firms. The first section presents demographics of the various firms in the portfolios. Descriptives used include frequency and percentage tables and pie charts. The descriptives are followed by an inferential analysis on the effect of book-to-market ratio on returns of the selected portfolios. Inferential analysis used includes chi square tests of independence, Student's t tests and Analysis of Variance (ANOVA).

4.2 Descriptive Information

This section provides background information on the various portfolios and the companies included in the portfolios. The Nairobi Stock Exchange has fifty two companies trading at the moment. All the consistently trading firms were selected for the analysis. The two portfolios require the top and bottom ten firms with regard to book-to-market ratio. The list of firms' book-to-market ratio is provided in Appendix II. Consistency in being in the top or bottom decile for firms ranked by book-to-market ratio over three years was used to establish which firms to include or exclude from the portfolios. A three-year analysis from 1996 to 1998 was conducted on the data.

Table 1: Portfolio of firms with low Book-To-Market Ratio

	1996	1997	1998	AVERAGE
BOC	0.70	0.69	0.76	0.72
NIC	0.56	0.52	0.72	0.60
EAPC	0.51	0.36	0.80	0.56
SCBK	0.35	0.43	0.48	0.42
Sameer	0.29	0.39	0.42	0.37
Total	0.26	0.39	0.42	0.36
Uchumi	0.40	0.27	0.28	0.32
BBK	0.28	0.29	0.31	0.29
Limuru Tea	0.09	0.19	0.21	0.16

Included in Table 1 above are firms with low book-to-market ratios consistently over the three-year period 1996 to 1998. A firm, which was in the portfolio for at least two out of three times over the period, and out of the top ten, was at least within the top 30% range. This method was preferred to the average method to avoid exposure to other variables e.g. in one particular year a firm may have a drastic revaluation of shareholders equity, resulting in an average biased to that extreme book-to-market value.

The Industrial and Allied sector, which has majority of the companies listed at the bourse, had the highest representatives in the portfolio with four companies namely: BOC Gases (BOC), East Africa Portland Cement (EAPC), Total Kenya (Total) and Sameer Africa (formerly Firestone). The second largest sector, the financial, has three firms namely Barclays Bank of Kenya (BBK), Standard Chartered Bank (SCHB) and NIC Bank (NIC. The commercial and services sector has Uchumi Supermarkets while the alternatives investment segment has one company represented by Limuru Tea. The portfolio thus appears to be well balanced, with firms from the various sectors well represented. The average book to market ratios in the portfolio is below 1, indicating that the shares of these firms were trading at a premium.

Table 2: Portfolio of firms with high Book-To-Market Ratio

	1996	1997	1998	AVERAGE
Unga	6.46	2.51	1.31	3.43
EA Breweries	4.64	2.34	2.06	3.01
Marshalls	3.33	2.68	3.41	3.14
Crown Berger	2.73	2.69	3.23	2.88
Kenol	1.59	1.61	2.15	1.78
Jubilee	1.57	2.65	2.63	2.28
Sasini	2.31	1.46	0.85	1.54
ARM	-	1.05	1.44	1.25
Williamson	1.76	1.65	1.03	1.48
CMC Motors	1.41	1.27	1.57	1.42

Table 2 indicates the firms in the portfolio of high book-to-market ratio classification. The average book-to-market ratio of these firms is above 1.00, indicating that their market capitalization was below their book value of equity. The bulk of firms again are

from the industrial and allied sector, represented by 50% of the firms in this portfolio. These firms are Unga Group, East Africa Breweries, Kenya Oil Ltd (Kenol), Athi River Mining and Crown Berger, Jubilee Insurance Company Ltd., CMC Motors represents the financial sector and Marshalls represent the commercial and services sector while Williamson Tea and Sasini Tea represent the agricultural sector.

Should book-to-market ratio be a predictor of performance, the value stocks (firms with high book-to-market ratio) should show a consistency in providing the investor with a "value premium" for investing in their potentially more risky shares (Davis, 2001). The descriptive statistics of the returns of the various stocks obtained over the four years 1999 to 2002 are summarized in table 3 below.

Table 3: Central Tendency and Variance Statistics from 1999 to 2002

Variable	Mean	Median	Std. Dev	SE Mean
Low BtM	0.021	-0.147	2.048	0.142
High BtM	-0.098	-0.195	2.018	0.140

Table 3 indicates that the mean returns for the low book to market firms were 0.021, against -0.098 for the high book to market firms. This indicates that their average return for the four year period was positive, as opposed to a negative return for the high book to market firms. The median values for the returns are not far off, with the low book to market firms registering a median of -0.147 and the high book to market firms a median of -0.195. The standard deviations as well appear similar, with the low book to market firms registering a standard deviation of 2.048 as opposed to 2.018 for the high book to market firms. The standard error of the mean statistic is obtained by dividing the standard deviation by the square root of the sample size. This statistic is 0.142 for low book to market firms and 0.140 for the high book to market firms. The analysis of the returns indicates that the two portfolios do not seem to have differed significantly with regards to central tendency and variance over the four year period. The range statistics for the two portfolios are further analyzed in table 4 below.

Table 4: Range Statistics for Returns from 1999 to 2002

Variable	Minimum	Maximum	Quartile 1	Quartile 3
Low BtM	-5.341	11.382	-1.055	0.951
High BtM	-6.848	7.246	-1.172	0.663

As shown above on Table 4, the minimum return for the low book to market firms was -5.341 as opposed to -6.848 for the high book to market firms. On the higher end, the low book to market firms realized a highest average return of 11.382 as opposed to 7.246 for the high book to market firm. These statistics suggest that the low book to market firms generally performed better than the high book to market firms on both extremes, having higher maximum and minimum returns than the other portfolio. These results seem to agree with those of Capaul, Rowley and Sharpe (1993) who reported that firms with low book-to-market ratios produced better returns. Also, Fama and French (1995) indicated that firms with low book-to-market ratios also provided better returns on equity than firms with high book-to-market ratios.

The first and third quartiles for both firms are both between -1.2 and 1.0. The interquartile ranges are therefore quite small compared to the ranges themselves. This indicates a distribution that is leptokurtic in shape: a large concentration of returns around the median. The first and third quartiles for the low book to market firms are also above those for the high book to market firms, suggesting a slightly better performance during the period 1999 to 2002.

Table 5 below summarizes the four year returns for all the selected companies for the two portfolios.

Table 5: Average Four Year Returns From 1999 – 2002

LOW BtM		HIGH BtM	
Counter	Return	Counter	Return
BOC	-10%	Unga	-64%
NIC	17%	EA Breweries	44%
EAPC	13%	Marshalls	-42%
SCBK	-17%	Crown Berger	15%
Sameer	44%	Kenol	64%
Total	-22%	Jubilee	-20%
Uchumi	20%	Sasini	-69%
BBK	-3%	ARM	21%
Limuru Tea	-24%	Williamson	-42%
		CMC Motors	-3%
AVERAGE	2%	AVERAGE	-10%

Table 5 above suggests that the value stocks are usually potentially volatile, thus their reaction to market movements would be expected to be more amplified. During the four years 1999 to 2002, the NSE 20 share index shed approximately 900 points, moving from 2200 at the end of 1999 to levels of 1363 in 2002. Thus, in a falling market, the value stocks would be expected to be harder hit, due to their potentially higher beta values. The reverse would be true in a rising market. The value stocks would be expected to realize higher returns. Fama and French (1995) on examining whether the behaviour of stock price to size and book to market value reflected earnings changes concluded that high book value to market value ratio (value stocks) securities experienced low return on equity and that the low book to market ratio (growth stocks) securities experience high return on equity. That variability in return on equity linked to book to market value ratio implies a relationship between book value to market value ratio and risk in a security.

The average weekly returns for the two portfolios were compared using contingency tables. A value of 1 (high) was assigned to the portfolio with a higher average BtM, and a value of 0 (low) to the portfolio with a lower average BtM. The results obtained were then cross tabulated to form the contingency table as shown below.

Table 6: Contingency Table for Chi Square Test of Independence

			Book-to-Market Ratio		Total
			Low BtM Ratio	High BtM Ratio	
Returns	High Returns	Count	111	97	208
		% of Total	26.7%	23.3%	50.0%
	Low Returns	Count	97	111	208
		% of Total	23.3%	26.7%	50.0%
Total		Count	208	208	416
		% of Total	50.0%	50.0%	100.0%

As shown in table 6 above, low book-to-market firms outperformed the high book-to-market firms in 111 out of the 208 (four years) weeks analyzed. This is a rate of 53.4%, which is just above a 50-50 scenario. The firms with high BtM ratios outstripped their low BtM counterparts 97 out of the 208 weeks analyzed. This represents 46.6%. The difference does not appear to be very high, with firms of either portfolio not consistently outperforming the other portfolio.

After generation of the contingency table, chi square tests of independence were conducted. A significance value of 5% was selected for the analysis. This is a value frequently used for business and financial related research. The results of the chi square test are shown in Table 7 below:

Table 7: Chi Square Test of Independence Results

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.885	1	0.170		
Continuity Correction	1.625	1	0.202		
Likelihood Ratio	1.886	1	0.170		
Fisher's Exact Test				0.202	0.101
Linear-by-Linear Association	1.880	1	0.170		

Table 7 above shows the results of the Chi Square analysis. The default unit of choice for chi-square in this scenario is usually the Pearson Chi Square. However, other techniques were used for reference: continuity correction, likelihood ratio, Fisher's exact test and linear by linear association. The test had one degree of freedom, being the number of rows in the contingency table (two) minus one, multiplied by the number of columns

(two) minus one i.e. (rows – 1) * (columns – 1). The chi square value is 1.885, with a P – Value of 0.170. Should the P-Value fall below 0.05, the null hypothesis that the two variables are independent will be rejected. Our P value fails to go below 0.05, thus we fail to reject the null hypothesis. This test thus indicates that book-to-market ratio on itself cannot be used as a predictor for the stock returns. An equivalent analysis was conducted on the data using parametric tests in the form of t-tests.

4.3 Testing the Relationship between Book - to- Market Ratio and Return

A paired sample t-test was conducted on the two data sets for the two portfolios. Average weekly returns for the two portfolios were paired over the four years and analyzed. These span a total of 208 weeks. These returns are indicated in Appendices II and III. The paired sample t-test was conducted using a significance level of 5%. The results are indicated in Table 8 below.

Table 8: Results of Paired Sample Students t-test

	Mean	Std Dev	SE Mean	95% Confidence Interval	t-Value	P-Value
Low BtM	0.021	2.048	0.142			
High BtM	-0.098	2.018	0.140			
Difference	0.119	2.350	0.163	-0.202, 0.440	0.73	0.466

The output above indicates the results of the paired sample t-test. The two pairs are the weekly returns over 208 weeks from 1999 to 2002 for low BtM firms versus high BtM firms. The table indicates that the overall mean difference 0.11 with standard deviation of 2.35. The calculated standard error of the mean difference is 0.163. Thus the 95% confidence interval is -0.202 to 0.440. The t-value obtained is 0.730.

The rule for rejecting the null hypothesis that the two portfolios are similar is that: should t be greater than 2.0 or P-Value less than 0.05, reject the null hypothesis, else fail to reject. With t being 0.730 with a P- Value of 0.466, we fail to reject the null hypothesis

and conclude that the book-to-market ratio alone does not have significant explanatory power for stock returns over the short to medium term. This has been confirmed by the Chi Square test and the t-test. Kothari, Shanken and Sloan (1997) find that the relationship between price to book ratio and returns is periodic and largely insignificant.

The descriptives, however, seem to indicate that the classification of the two portfolios did determine whether an investor would have received positive or negative returns on his portfolio over the period. Furthermore, chi square test was not strongly rejected with a P-Value of 0.170. The results could either mean that the ratio does not have significant explanatory power or was influenced by other variables during the time period chosen.

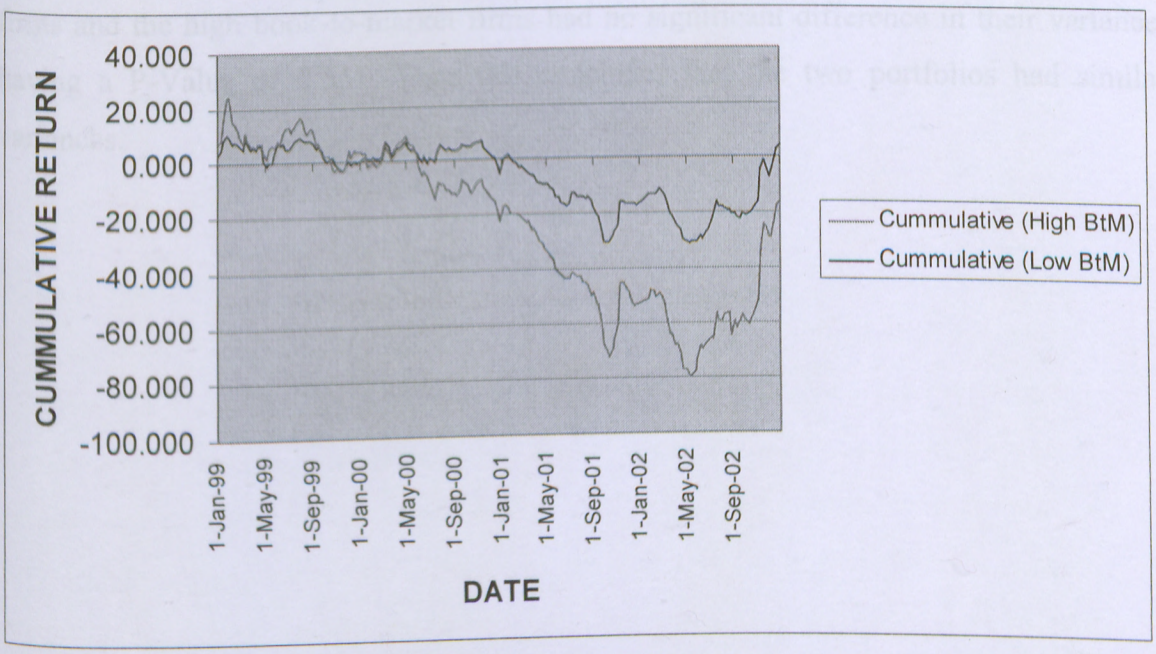
Table 9: Correlation between Low BtM and High BtM Portfolios

		Low Book To Market Ratio	High Book To Market Ratio
Low Book To Market Ratio	**Pearson Correlation**	1.000	0.332(**)
	Sig. (2-tailed)	.	.000
	N	208	208
High Book To Market Ratio	**Pearson Correlation**	0.332(**)	1.000
	Sig. (2-tailed)	0.000	.
	N	208	208

** Correlation is significant at the 0.05 level (2-tailed).

Table 9 above presents the Pearson Correlation tests conducted on the data for the two firms. The test indicates that the correlation between returns for the two portfolios is 0.332. The test goes further to indicate that the results are significant at the 5% level. This shows that the returns for the two portfolios were somewhat in tandem at some point in time. Chart 1 indicates the cumulative returns realized by the two portfolios over 208 weeks.

Chart 1: Cumulative Returns for the Portfolios (1999 – 2002)



The chart above indicates the cumulative returns realized by the two portfolios. The trends appear to be similar, indicating that the company fundamentals for the listed firms were at the time under influence by other macro-economic conditions in the Kenyan Industry. The graph for high book-to-market firms is lower, indicating higher losses. This is indicative of their "high risk" nature; and a reflection of the risk return trade off.

4.4 Comparison of Variance between Low Book-To-Market Firms and High Book-To-Market Firms using Anova

Having been established that there is no significant difference in the means of the two portfolios using t-tests, the variances were compared. Variance tests enable a financial researcher to establish the volatility of various portfolios. Generally, value stocks tend to be more volatile than their low book-to-market counterparts, due to the risks involved in their trading.

Table 10: Analysis of Variance of Low-BtM and High-BtM Portfolios

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.473	1	1.473	0.356	0.551
Within Groups	1711.099	414	4.133		
Total	1712.572	415			

The variance tests indicated by Table 10 above indicate that the low book-to-market firms and the high book-to-market firms had no significant difference in their variance, having a P-Value of 0.551. Thus this concludes that the two portfolios had similar variances.

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

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 establish the extent to which book to market ratio predicts future stock performance in the Kenyan stock market. The dependent variable in the research was the stock returns. This was compared to the independent variable, which was the book-to-market ratio. Various inferential analyses were used in the research to derive the results. Results indicated that there was no significant difference between the returns of firms with low book-to-market ratios and their counterparts of high book to market ratios in the Kenyan stock market. It is however evident that those with low book to market ratios tend to perform better, thus answering the research objective.

5.2 Conclusions

The portfolio for firms with low book to market ratio made significantly higher returns than the portfolio for firms with high book to market ratio. The firm for low book-to-market firms returned an average return of 2% for the period from 1999 to 2002 as opposed to -10% for the high book-to-market firms. One may argue that this is the risk – return trade off (Davis, 2001), in which risky stocks make better returns when the market is on an up and vice versa when the market is low. During the period mentioned, the NSE 20 Share Index fell from a value of approximately 2200 to a value of 1363 in 2002. Thus, a risk averse investor would have made 2% returns during this bear period as opposed to the riskier portfolio which made a loss of -10%.

The Chi Square test of independence indicated that the relationship between the portfolio of firms with high book-to-market ratio and those with low book-to-market ratio was not significant. The run count however indicated that the low book to market firms had

higher returns in 111 weeks out of 208, which is 53.4% of the time, as opposed to 46.6% for the high book to market firms.

The results from the Chi square test were echoed after an independent samples t-test on the data to establish whether the long run weekly returns for the portfolio of firms with low book to market ratio were significantly higher than for firms with high book to market ratio. The differences in the means and variability of the two portfolios were found not to be statistically significant over the period. The counters in the portfolios may not have been showing their true behaviour, due to the macroeconomic problems which existed in the economy during the time of the study. Business cannot flourish in the face of poor macroeconomic policies and infrastructure; thus it may be possible that all the companies in the country were similarly affected by this problem, perhaps some more than others. This may explain the similar trend in returns observed for the two portfolios over the four-year period (Chart 1).

The variation in returns for the two portfolios did not differ significantly. This again may be pegged down to the macroeconomic situation in the country during the period of the study. Previous research depicts that high book to market (value) stocks are generally riskier stocks, and thus tend to have a higher beta than their low book to market counterparts, given that they must compensate for having higher risk (Davis, 2001). This in part means that they are more volatile with regard to shifts in market movements than the low book to market counterparts.

Listed companies from the high book to market portfolio were Unga Group, EABL, Sasini Tea and George Williamson. Thus 40% of the firms in the high book to market portfolio were included in the NSE 20 share index. From the low book to market portfolio, the listed companies were BOC, NIC Bank, Standard Chartered, Sameer, Total Kenya, Uchumi Supermarkets and Barclays Bank. This portfolio had 78% of its firms being NSE 20 Index members. Thus, this portfolio can be concluded to include mature firms whose performance had been steady over the years, hence their inclusion in the NSE 20 Share Index. Thus, given that selection criterion for the index is unclear, one

cannot draw the conclusion that these firms indeed had been performing well over the years.

5.3 Limitations of the Study

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

5.4 Recommendation and Suggestions for Further Research

It is apparent that book to market ratio is useful in distinguishing the value from the growth stocks, and the relevant risks and returns that come with these stocks. However, given that the inferential tests yielded results of no significance, it is apparent that variability in the returns is explained by other variables. However, one may recommend the use of book to market ratio, along with other variable(s) such as size and beta, to establish whether significant results will be obtained. Vos and Pepper (1997) found the size effect to be stronger than the book to market effect in predicting returns.

There is need for the business community to highlight the existing macroeconomic effects on company's performance. Therefore government should provide an enabling environment that is required for the companies to provide value for their shareholders. The downward spiral of the NSE 20 share index due to the economic problems experienced in the 1990's demonstrates the powerful effect of macroeconomic factors on stock market performance.

The variation in returns for the two portfolios did not differ significantly. This again may be pegged down to the macroeconomic situation in the country during the period of the study. Previous research depicts that high book to market (value) stocks are generally

riskier stocks, and thus tend to have a higher beta than their low book to market counterparts, given that they must compensate for having higher risk (Davis, 2001). This in part means that they are more volatile with regard to shifts in market movements than the low book to market counterparts.

Individuals with varying investment objectives should invest in various companies, and may use the book-to-market ratio as a preliminary but not final tool in analyzing where to invest. The results indicated that high book-to-market firms tend to be more volatile, an indication that speculators may prefer such portfolios. Low book to market firms had less risky results, thus indicating that the firms in the portfolio are good for long-term investments. Firms in this portfolio such as Barclays Bank and Standard Chartered have provided investors with steady returns over the past ten years, dividends included. It should be reiterated that the book-to-market ratio appears to have slight but not significant explanatory power on company performance on its own.

The study should be carried out over a different time frame e.g. 2003 to 2006 so as to provide for a cross sectional analysis of the results. The study should also be carried out by including other variables into the model such as dividend yield, size.

REFERENCES

Akgun, A. and Gibson, R., 2001, "Recovery risk in stock returns", Journal of Portfolio Management.

Baker, M., Wurgler, J., 2000, The equity share in new issues and aggregate stock returns. Journal of Finance, 55, 2219 – 2257.

Balvers, R.J., Cosamino, T.E. and MacDonald, 1990, "Predicting Stock Returns in an Efficient Market." *Journal of Finance*, 43, pp. 661 – 676.

Bekaert, Geert, C.B. Erb, C.R. Harvey and T.E. Viskanta, 1998, "The Cross-Sectional Determinants of Emerging Market Equity Returns." in Carman, Peter, Ed., *Quantitative Investing for the Global Markets*, Glenlake.

Braeley, Richard, and Steward Myers, 1984, Principles of Corporate finance. MC Graw-Hill Book Company.

Brigham, F., Eugene and Daves R., Philip,2004, Intermidiate Financial Management, 8th edition, Elm street publishing services, Inc.: USA

Beltz C. Jess and Moore S. James, 2000, Share Price Performance and Observable Factors: A perspective from Rule Induction. Unpublished Research Project. University of Michigan Business School.

Bryant, P.S. and V.R. Eleswaparu, 1997, Cross-sectional determinants of New Zealand share market returns, *Accounting and Finance*, 37, 181-205.

Campbell, John and Shiller, Robert, 1988, "The Dividend-Price Ratio And Expectations of Future Dividends and Discount Factors", Review of Financial Studies 1, 195 -228.

Capaul, C., I Rowley and W. Sharpe, 1993, International value and growth stock returns ,*Financial Analysts Journal*, 49, 27-36.

Cauchie, S.,Hoesli, M.,and isakov, D., 2002, The determinants of stock returns: An analysis of industrial sector indices. Geneva

Chan, L., Hamao Y., and Lakonishok, J., 1991, Fundamentals and stock returns in Japan,*Journal of Finance*, 46, 1739-1789.

Chiu, A.C.W., and K.C.J. Wei, 1998, Book-to-market, firm size and the turn-of-the-year effect: Evidence from Pacific-Basin emerging markets, *Pacific-Basin Finance Journal* 6, 275-293

Cutler, D., Poterba J., Summers. L, 1991, "Speculative Dynamics", Review of Economic Studies 58, 529 – 546.

Damodaran, Aswath, 1996, Investment Valuation Tools And Techniques For Determining The Value of Any Asset, John Wiley & Sons, Inc: Canada.

Davis, J.L. 2001: "Is There Still Value in the Book-to-Market Ratio?" Dimensional Fund Advisors Inc.

Fama, Eugene, 1991, "Efficient Capital Markets: II." *Journal of Finance*, 46, pp. 1575 – 1617.

Fama, Eugene and French, Kenneth R.,1992, "The Cross-Section of Expected Returns." *Journal of Finance*, 47, pp. 427-466.

Fama, E. and French, K., 1995, "Size and book-to-market factors in earnings and returns", Journal of Finance, 50, pp. 131 – 155.

Fama, Eugene and French, Kenneth R., 1999, "Value versus Growth: The International Evidence." *Journal of Finance*, 53, pp. 1975 – 1999.

Gitman J. Lawrence : Principles of management Finance 8th edition.1997. Addison-Wesley Longman, Inc : USA

Goetzmann N. William and Philippe Jorion : Testing the predictive power of dividend Yields Journal of Finance. Vol. XLV111, No.2 June 1993

Ibbotson, R., 1986, "Deciles portfolios of the New York Stock Exchange 1967 – 1984", Working Paper, Yale School of Management.

Keim, Donald and Stambaugh, Robert, 1986, "Predicting Returns In The Stock And Bond Markets", Journal of Financial Economics 17, 357 – 390.

Kent, D., Sheridan T., Wei, K.C.J., 2001, "Explaining the cross-section of stock returns in Japan; factors or characteristics?", Journal of Finance, 56, 743-766.

Kothari S.P., Jay Shanken, and Richard G. Sloan, 1995, "Another look at the Cross-section of Expected Stock Returns". Journal of Finance, 50, pp.185-224

Lakonishok, J. Vishny R.W., Sheifer A, 1993, "Contrarian Investment Extrapolation and Risk", Working Paper No 4360 National Bureau of Economics Research.

Lee, G.A., 1983, Modern Financial Accounting, Van Nostrand Reinhold, London.

Lettau, M. and Ludvigson, S., 2001 a, Consumption, Aggregate Wealth and Expected Stock Returns, Journal of Finance 56, 815-849.

Lewellen, Jonathan, 2002, "Predicting returns with financial ratios", Journal of Financial Economics 74 (2004), 209 – 235.

Limmack J. Robin and Fox F. Alan: Managerial Finance 1988: Cassell Educational Limited: Great Britain, London, 2nd Edition.

Macharia, Gathoni, 2002, Forecasting Ability of Valuation Ratios, Unpublished Research Project, MBA University of Nairobi.

Martin John, Senchak, A.J, 1987, "The Relative Performance Of the PSR And PER Investment Strategies", Financial Analysts Journal, 46 – 67.

Munga, D.M., 1974, The Nairobi Stock Exchange: Its History, Organization and Role in the Kenyan Economy. Unpublished MBA Thesis, University of Nairobi.

Myers, S.C., 1977, Determinants of corporate borrowing. Journal of Financial Economics 5, 147 – 175.

Nairobi Stock Exchange. 2006, What is the Nairobi Stock Exchange [online]. Available from www.nse.co.ke. Cited on 6th October 2006.

Nelson R. Charles and Kim J. Myung, 1993, Predictable Stock Returns. The Role of Small Sample Bias, Journal of Finance Vol. 48, 641 – 661.

Obell, G.O., 2004, Evaluation of Risk in the Price-to-Book Value Ratio Of Firms at the Nairobi Stock Exchange, Unpublished Research Project, MBA University of Nairobi.

Pandey IM, 1995 Financial Management 7th edition, Vikas Publishing House PVT Ltd: New Delhi

Quill, Gavin. "Investors Behaving Badly: An Analysis of Investor Trading Pattern in Mutual Funds". Journal of Financial Planning, Vol. 14, No. 11, 2001,pp.82-91

Reilly K. Frank and Brown C. Keith, 1997 Investment Analysis and Portfolio Management, 5th Ed. The Dryden Press: USA (Florida).

Reilly K. Frank and Brown C. Keith, 1997 Investment Analysis and Portfolio Management, 6th Ed. The Dryden Press: USA (Florida).

Rosenberg Barr, Reid Kenneth, and Lanstein Ronald Persuasive Evidence of Market Inefficiency, Journal of Portfolio Management II, No. 3 (Spring 1985): 9 – 17.

Sears Stephen R and Trennepohl L. Gary, 1993, Investment Management, The Dryden Press: USA, Florida.

Senchak, A., and Martin John, 1987, The Relative Performance Of The PSR And PER Investment Strategies, Financial Analysts Journal, 46 – 67.

Sharpe, W., 1999, Investments, 6th Ed: Prentice Hall.

Shelfrin H., and Statman, M.,1995, "Making Sense of Better Size and Book-to-market". Journal of Portfolio Management, pp. 26 – 34.

Stambaugh, Robert, 1999, Predictive Regression Models, Journal Of Financial Economics 54, 375 – 421.

Thomas, John B.1994, " P/E Ratios Driven by Variety of Factors, Carry variety of meanings," Indianapolis Business Journal.

Vos, E., & Pepper B., 1997, "The size and book to market effects in New Zealand", The New Zealand Investment Analyst, 18 (1), 35 – 45.

Watson, D. and Head, A. 1998. Corporate Finance: principles and practice, Financial Times/ pitman, London

APPENDIX 1: FIRMS LISTED IN THE NSE

AGRICULTURAL SECTOR
Unilever Tea Kenya Ltd
Kakuzi
Rea Vipingo Plantations Ltd
Sasini Tea & Coffee Ltd Ord
COMMERCIAL AND SERVICES
Car & General (K) Ltd Ord
CMC Holdings Ltd Ord
Hutchings Biemer Ltd Ord
Kenya Airways Ltd Ord
Marshalls (E.A.) Ltd Ord
Nation Media Group Ord.
Scangroup Ltd Ord
TPS Eastern Africa (Serena) Ltd Ord
Uchumi Supermarket Ltd Ord
FINANCE AND INVESTMENT
Barclays Bank Ltd Ord
C.F.C Bank Ltd
Diamond Trust Bank Kenya Ltd
Equity Bank Ltd
Housing Finance Co Ltd
I.C.D.C Investments Co Ltd
Jubilee Holdings Ltd
Kenya Commercial Bank Ltd
National Bank of Kenya Ltd
NIC Bank Ltd
Pan Africa Insurance Holdings Ltd
Standard Chartered Bank Ltd
INDUSTRIAL AND ALLIED
Athi River Mining
B.O.C Kenya Ltd
Bamburi Cement Ltd0
British American Tobacco Kenya Ltd
INDUSTRIAL AND ALLIED cont...
Carbacid Investments Ltd

Crown Berger Ltd
E.A.Cables Ltd
E.A.Portland Cement Ltd
East African Breweries Ltd
Eveready East Africa Ltd
Kenya Oil Co Ltd
Kenya Power & Lighting Ltd
KenGen Ltd.
Mumias Sugar Co. Ltd
Olympia Capital Holdings ltd
Sameer Africa Ltd
Total Kenya Ltd
Unga Group Ltd
ALTERNATIVE INVESTMENT MARKET SEGMENT
A.Baumann & Co.Ltd
City Trust Ltd
Eaagads Ltd
Express Ltd
Williamson Tea Kenya Ltd
Kapchorua Tea Co. Ltd
Kenya Orchards Ltd
Limuru Tea Co. Ltd
Standard Group Ltd

Source: Nairobi Stock Exchange

APPENDIX II

Weekly Returns For Low Book To Market Firms (1999 to 2002)

DATE	Limuru Tea	Total	BBK	Sameer	SCBK	Uchumi	EAPC	NIC	BOC	AVERAGE
1-Jan-99	0.00	17.42	-3.88	0.81	5.70	-2.98	3.39	8.15	0.00	3.18
8-Jan-99	0.00	9.24	3.32	0.00	-0.21	-1.44	0.00	3.70	0.00	1.62
15-Jan-99	0.00	0.48	2.17	11.72	0.57	2.39	0.00	15.63	-0.20	3.64
22-Jan-99	0.00	11.72	0.78	19.11	-3.53	0.39	1.14	-10.61	1.31	2.26
29-Jan-99	0.00	-1.07	-6.60	-6.71	1.44	-1.16	9.83	-5.75	0.69	-1.04
5-Feb-99	0.00	-7.53	-1.02	-0.01	-10.99	-1.53	2.70	-9.39	4.25	-2.61
12-Feb-99	0.00	-4.95	6.49	-4.65	0.59	2.26	-0.11	7.66	-0.54	0.75
19-Feb-99	0.00	-7.10	0.03	-1.25	1.84	2.21	-4.45	0.91	-0.23	-0.89
26-Feb-99	0.00	-6.04	-1.64	0.40	3.39	2.62	0.35	-1.93	0.11	-0.31
5-Mar-99	0.00	0.54	-2.87	0.09	-1.48	2.71	5.56	0.74	-18.21	-1.44
12-Mar-99	0.00	24.88	-2.29	-4.86	0.90	2.59	0.03	2.30	13.99	4.17
19-Mar-99	0.00	-15.06	-2.02	-0.07	0.91	1.43	0.18	-3.28	0.36	-1.95
26-Mar-99	0.00	-7.22	-12.19	-5.44	-3.23	1.55	-1.41	5.12	1.07	-2.42
2-Apr-99	0.00	0.46	5.62	-0.05	2.66	-0.52	0.00	-2.72	0.00	0.61
9-Apr-99	0.00	8.80	2.15	-7.67	-2.76	-2.48	0.00	-2.24	0.00	-0.47
16-Apr-99	0.00	0.45	-0.86	6.80	-0.58	0.45	0.00	4.90	0.00	1.24
23-Apr-99	0.00	0.08	0.22	1.53	1.03	-0.45	0.00	0.96	-2.82	0.06
30-Apr-99	0.00	0.61	-0.66	-0.08	-0.33	-3.17	-55.00	11.94	-1.01	-5.30
7-May-99	0.00	0.54	-3.10	0.01	-1.23	-0.14	0.00	-17.15	1.98	-2.12
14-May-99	0.00	2.36	0.66	-0.86	0.73	-1.07	11.11	-2.54	0.75	1.24
21-May-99	0.00	-0.11	2.09	0.33	-6.45		0.00	5.83	0.73	0.30
28-May-99	0.00	-3.93	0.25	0.54	2.00	-0.19	26.00	3.48	-0.13	3.11
4-Jun-99	0.00	4.07	-0.01	0.02	8.47	0.69	14.24	0.17	0.58	3.14
11-Jun-99	0.00	-1.98	-1.30	-0.01	-2.35	-0.20	0.00	-0.18	1.15	-0.54
18-Jun-99	0.00	2.61	1.10	0.15	2.55	2.68	3.03	-1.63	-1.09	1.05
25-Jun-99	-13.33	-0.44	-0.25	-1.62	0.72	-2.51	-1.48	-0.24	0.65	-2.06
2-Jul-99	0.00	0.07	0.76	-1.65	1.48	0.27	-0.76	-0.69	0.00	-0.06
9-Jul-99	0.00	0.63	1.85	-1.25	1.60	0.23	-3.45	5.32	0.00	0.55
16-Jul-99	0.00	3.14	2.23	4.52	2.52	2.19	3.57	1.64	-4.90	1.66
23-Jul-99	0.00	1.03	3.72	0.07	5.86	0.51	0.00	-0.83	0.00	1.15
30-Jul-99	0.00	1.94	-0.81	-0.07	0.87	0.63	-0.37	-4.20	4.41	0.27
6-Aug-99	0.00	-0.47	0.78	-0.07	-1.30	1.03	0.00	-3.09	0.00	-0.35
13-Aug-99	0.00	0.54	1.43	0.02	0.99	0.07	-3.09	-4.69	-0.08	-0.54
20-Aug-99	0.00	1.28	-3.31	0.06	3.66	-1.75	0.36	0.40	-1.33	-0.07
27-Aug-99	0.00	-0.08	-5.91	-2.95	0.42	2.67	0.00	3.05	0.00	-0.31
3-Sep-99	0.00	2.13	-0.64	-5.87	-2.25	0.29	0.00	3.07	0.17	-0.35
10-Sep-99	0.00	-0.01	-8.12	-10.13	-1.25	0.07	0.00	-2.56	0.00	-2.44
17-Sep-99	0.00	-0.43	3.45	-1.44	0.88	-0.24	0.00	7.07	-0.17	1.01
24-Sep-99	0.00	-3.40	-0.45	1.70	-0.38	-2.58	-0.43	-9.97	-0.11	-1.74
1-Oct-99	0.00	-3.44	-3.97	-1.11	-0.28	-1.16	-17.71	4.59	0.06	-2.56
8-Oct-99	0.00	-3.43	0.71	1.45	0.61	-4.81	-3.18	0.37	0.00	-0.92
15-Oct-99	0.00	-1.87	2.18	0.18	1.41	0.03	0.00	3.35	0.06	0.59
22-Oct-99	0.00	1.71	2.13	0.23	0.63	-1.08	0.00	1.53	0.00	0.57
29-Oct-99	0.00	2.91	-0.01	0.28	1.75	2.02	-23.29	-2.53	-2.86	-2.42
5-Nov-99	0.00	-0.08	-0.53	1.30	2.06	-11.79	0.00	-0.52	0.00	-1.06

DATE	Limuru Tea	Total	BBK	Sameer	SCBK	Uchumi	EAPC	NIC	BOC	AVERAGE
12-Nov-99	0.00	0.29	-2.46	-2.06	0.97	-6.23	0.00	0.96	0.00	-0.95
19-Nov-99	0.00	0.00	0.17	-0.03	2.24	0.15	-0.58	1.33	-3.68	-0.04
26-Nov-99	0.00	0.10	0.46	0.11	-0.29	-0.13	17.72	-2.94	0.00	1.67
3-Dec-99	0.00	0.02	2.04	0.70	-0.47	-5.63	16.53	-6.40	3.82	1.18
10-Dec-99	0.00	0.50	0.05	0.20	-6.66	2.34	-5.67	-0.94	-1.47	-1.29
17-Dec-99	0.00	1.37	-2.02	12.86	-0.95	1.00	1.66	-0.22	0.75	1.60
24-Dec-99	0.00	-1.95	2.10	0.10	0.47	0.06	0.18	-5.38	-2.22	-0.74
31-Dec-99	0.00	0.10	-0.70	0.16	0.11	2.95	0.00	5.70	-2.27	0.67
7-Jan-00	0.00	0.49	0.49	-0.14	0.63	0.23	0.17	1.59	0.00	0.38
14-Jan-00	0.00	-0.08	0.61	3.48	0.68	2.38	-0.12	0.25	-0.78	0.71
21-Jan-00	0.00	-0.45	0.02	-1.19	1.39	-1.77	0.00	-2.35	0.00	-0.48
28-Jan-00	0.00	1.90	-2.15	-0.68	0.71	0.23	2.43	-0.58	0.00	0.21
4-Feb-00	0.00	0.11	-0.50	-0.54	1.26	2.71	0.17	0.15	0.00	0.37
11-Feb-00	0.00	-0.03	-4.41	-0.99	-3.29	4.23	-0.30	0.37	0.00	-0.49
18-Feb-00	0.00	-2.38	-0.52	0.00	1.90	-1.25	0.00	1.90	0.00	-0.04
25-Feb-00	0.00	1.56	1.34	-0.20	10.97	-2.17	-0.31	-3.39	0.00	0.87
3-Mar-00	0.00	7.06	15.14	-14.93	20.32	2.26	0.00	-0.49	0.00	3.26
10-Mar-00	0.00	18.32	1.52	-8.69	-1.43	2.38	0.00	2.73	0.00	1.65
17-Mar-00	0.00	-14.51	-1.71	-1.65	1.06	3.17	-12.07	7.32	1.05	-1.93
24-Mar-00	0.00	-8.06	-18.68	2.88	-0.37	1.53	0.00	-3.31	0.00	-2.89
31-Mar-00	0.00	1.20	23.68	3.58	-3.59	-6.71	0.00	0.28	0.00	2.05
7-Apr-00	0.00	-1.48	0.11	-2.91	7.27	3.53	0.00	-0.63	0.00	0.66
14-Apr-00	0.00	2.37	0.03	-0.87	1.19	-0.91	0.00	0.49	-0.39	0.21
21-Apr-00	0.00	0.27	0.50	3.44	0.88	0.05	0.00	-1.37	0.90	0.52
28-Apr-00	0.00	-0.88	-0.54	-3.03	-0.43	2.74	14.93	0.42	0.00	1.47
5-May-00	0.00	-0.12	-1.16	-0.30	-7.70	-2.65	0.00	-0.32	-3.00	-1.69
12-May-00	0.00	0.11	0.38	-4.08	-2.02	0.01	-3.90	0.74	-4.84	-1.51
19-May-00	0.00	0.01	-0.72	1.94	-1.56	0.21	0.00	-0.33	5.00	0.51
26-May-00	0.00	0.56	0.28	-0.90	2.26	-0.69	0.00	0.56	-10.75	-0.96
2-Jun-00	0.00	-0.48	-0.56	-1.02	-0.13	0.05	0.00	1.33	-10.19	-1.22
9-Jun-00	0.00	0.78	-2.79	-14.92	-1.71	-1.49	0.00	-1.26	0.00	-2.38
16-Jun-00	0.00	-0.95	-1.21	26.27	-4.75	-1.41	-0.36	-0.83	0.00	1.86
23-Jun-00	0.00	1.00	-0.15	-10.77	3.43	1.02	0.00	-0.79	-14.40	-2.30
30-Jun-00	0.00	1.43	1.20	13.10	0.18	1.10	0.00	-0.92	0.00	1.79
7-Jul-00	0.00	2.26	0.24	-1.07	0.77	1.18	4.29	-15.88	0.00	-0.91
14-Jul-00	0.00	3.32	0.70	-0.26	1.00	-0.44	0.00	-8.68	0.00	-0.48
21-Jul-00	0.00	3.04	-0.55	-2.62	5.29	-0.11	14.69	14.38	9.04	4.80
28-Jul-00	0.00	-0.81	0.22	-0.31	0.48	0.30	0.00	9.83	0.00	1.08
4-Aug-00	0.00	-1.45	-1.99	0.00	0.39	0.25	-4.38	-0.68	0.00	-0.87
11-Aug-00	0.00	2.40	-3.75	-3.71	1.23	-2.81	-1.19	3.58	-6.49	-1.19
18-Aug-00	0.00	3.79	3.93	0.00	2.10	1.44	0.00	-2.13	-2.45	0.74
25-Aug-00	0.00	-0.17	0.86	-5.68	0.60	1.21	0.00	-0.09	0.00	-0.36
1-Sep-00	0.00	-1.34	0.90	-2.53	0.54	2.59	0.00	-0.11	-4.65	-0.21
8-Sep-00	0.00	-1.66	0.46	0.16	1.29	0.04	0.00	0.12	0.00	0.05
15-Sep-00	0.00	-2.71	-0.30	5.00	1.41	0.43	0.00	0.37	0.00	0.47
22-Sep-00	0.00	0.28	1.00	4.47	1.09	1.28	0.00	2.97	2.44	1.50
29-Sep-00	0.00	1.59	0.54	-0.98	-0.10	0.60	0.00	-3.40	-1.76	-0.39
6-Oct-00	0.00	0.85	1.13	0.30	0.01	-0.12	0.00	-7.76	4.02	-0.17
13-Oct-00	0.00	-1.79	1.43	0.77	-0.59	2.79	-2.00	0.21	0.19	0.11

DATE	Limuru Tea	Total	BBK	Sameer	SCBK	Uchumi	EAPC	NIC	BOC	AVERAGE
20-Oct-00	0.00	1.08	1.82	0.08	0.23	2.69	0.00	-0.18	0.00	0.64
27-Oct-00	0.00	-0.12	3.06	-0.69	-0.23	0.94	0.00	0.01	0.00	0.33
3-Nov-00	0.00	0.89	1.72	0.07	0.53	2.70	0.00	-3.11	0.00	0.31
10-Nov-00	0.00	0.30	0.99	0.77	0.06	3.91	-1.27	-0.08	2.33	0.78
17-Nov-00	0.00	0.58	-10.14	-0.25	-4.57	-1.36	-2.21	-5.02	0.00	-2.55
24-Nov-00	0.00	-0.76	-2.66	-0.90	-5.59	0.00	0.00	-4.13	1.14	-1.44
1-Dec-00	0.00	-0.24	-3.59	-0.12	-0.62	-0.59	0.00	0.39	0.00	-0.53
8-Dec-00	0.00	-1.11	-1.30	-0.05	0.54	-7.70	-0.64	-3.81	0.00	-1.56
15-Dec-00	0.00	-0.71	-4.39	-1.77	-0.39	0.93	0.00	-2.69	6.18	-0.32
22-Dec-00	0.00	-0.14	-9.12	-0.74	-9.84	0.71	-0.43	-10.11	0.00	-3.30
29-Dec-00	0.00	-0.60	-11.79	-0.17	-8.90	1.42	0.00	-4.22	0.00	-2.69
5-Jan-01	0.00	0.00	21.85	0.00	19.37	2.64	0.00	3.87	0.00	5.30
12-Jan-01	0.00	-5.54	0.36	-0.02	6.73	-2.30	-2.14	11.55	0.00	0.96
19-Jan-01	0.00	-3.93	5.90	-0.45	-2.55	0.69	0.00	3.74	0.00	0.38
26-Jan-01	0.00	-1.20	-4.40	-1.03	-3.63	2.28	2.18	-2.03	0.53	-0.81
2-Feb-01	0.00	-0.57	-5.87	-8.63	-5.75	5.25	0.00	-0.60	-1.05	-1.91
9-Feb-01	0.00	-0.05	1.51	-4.82	6.81	0.02	0.00	1.48	-1.06	0.43
16-Feb-01	0.00	-10.10	1.74	-3.81	3.09	-0.20	0.00	-11.10	-0.34	-2.30
23-Feb-01	0.00	0.21	2.30	-1.31	-1.23	-3.22	0.00	7.48	0.00	0.47
2-Mar-01	0.00	0.00	-0.11	-0.17	4.00	0.44	-1.28	-4.23	0.00	-0.15
9-Mar-01	0.00	-10.22	3.72	-14.29	12.03	0.10	1.30	-0.21	-9.30	-1.87
16-Mar-01	0.00	-4.31	3.59	-1.36	-3.30	-0.75	1.42	3.13	-0.07	-0.18
23-Mar-01	0.00	8.25	-4.83	0.13	1.65	-5.01	0.00	-8.82	0.00	-0.96
30-Mar-01	0.00	2.52	-1.36	0.49	0.84	-2.02	3.02	-3.89	-0.95	-0.15
6-Apr-01	0.00	0.66	2.75	-0.76	-19.27	0.94	0.00	-5.21	0.00	-2.32
13-Apr-01	0.00	2.61	-0.29	-6.34	7.93	-2.07	-3.48	0.66	0.96	0.00
20-Apr-01	0.00	2.15	0.42	0.10	0.85	0.01	0.00	-2.70	-4.76	-0.44
27-Apr-01	0.00	-2.61	-0.43	0.06	0.09	-0.10	0.00	-0.38	0.00	-0.37
4-May-01	0.00	1.42	0.82	-0.61	-0.04	-2.21	3.06	-3.02	0.00	-0.06
11-May-01	0.00	5.01	-9.48	-6.14	2.06	-2.05	-1.21	-0.18	0.00	-1.33
18-May-01	0.00	-2.49	-2.23	-0.11	1.48	-0.17	-3.94	0.01	0.00	-0.83
25-May-01	0.00	-2.02	0.71	1.34	-0.28	-6.95	0.00	-0.23	-12.88	-2.26
1-Jun-01	0.00	-2.86	-0.15	-1.32	0.13	5.85	0.00	-5.52	0.00	-0.43
8-Jun-01	0.00	-3.90	1.96	0.65	-3.01	-0.38	0.00	-1.01	-11.06	-1.86
15-Jun-01	0.00	-2.10	7.97	-0.64	1.75	-0.22	-4.67	0.58	-9.00	-0.70
22-Jun-01	0.00	-6.18	-1.37	-2.80	2.65	1.24	0.00	3.87	-2.58	-0.57
29-Jun-01	0.00	0.69	2.96	0.07	4.10	-0.51	-0.02	2.95	1.90	1.35
6-Jul-01	0.00	5.27	7.37	2.81	2.70	3.84	0.00	-0.09	10.71	3.62
13-Jul-01	0.00	-0.06	-1.08	0.00	-2.46	0.05	0.00	0.26	0.00	-0.37
20-Jul-01	0.00	1.70	-4.89	-0.02	-1.77	0.09	-9.09	1.17	0.00	-1.42
27-Jul-01	0.00	1.77	0.57	0.02	0.16	-0.09	0.00	0.30	0.00	0.30
3-Aug-01	0.00	-4.53	0.73	0.55	1.93	-0.04	0.00	3.61	-2.26	0.00
10-Aug-01	0.00	-5.29	0.70	-0.11	-0.37	-1.35	0.00	0.03	0.00	-0.71
17-Aug-01	0.00	0.24	1.30	-0.41	1.54	-0.87	2.50	-2.12	0.66	0.31
24-Aug-01	0.00	1.13	-2.60	-5.73	-1.65	-0.07	0.00	0.31	-1.64	-1.14
31-Aug-01	0.00	-5.51	-0.95	6.79	-8.71	-7.17	-2.44	-3.30	0.00	-2.37
7-Sep-01	0.00	-4.77	-2.96	1.42	-5.68	-1.11	-10.00	-7.47	1.67	-3.21
14-Sep-01	0.00	0.00	-4.75	6.09	-0.75	-0.99	0.00	0.56	-1.64	-0.17
21-Sep-01	-7.58	-11.37	-2.30	-3.61	-4.06	-3.15	-15.93	-0.08	0.00	-5.34

DATE	Limuru Tea	Total	BBK	Sameer	SCBK	Uchumi	EAPC	NIC	BOC	AVERAGE
28-Sep-01	0.00	-4.72	-1.73	-11.83	1.64	-4.33	0.00	-12.77	-2.17	-3.99
5-Oct-01	0.00	-9.49	0.04	-3.37	10.35	-1.25	0.00	-0.95	2.22	-0.27
12-Oct-01	0.00	-0.65	0.23	5.87	0.06	-1.65	5.72	-7.76	0.00	0.20
19-Oct-01	0.00	-1.55	4.76	0.76	0.64	5.57	0.00	4.24	0.00	1.60
26-Oct-01	0.00	-0.02	4.33	3.84	-0.05	7.89	0.00	11.41	-5.31	2.45
2-Nov-01	0.00	9.97	1.20	-7.19	0.67	6.74	0.01	3.61	-1.19	1.54
9-Nov-01	0.00	10.37	-4.20	17.30	-3.46	-17.60	64.97	13.13	-0.24	8.92
16-Nov-01	0.00	1.05	-2.06	0.08	-1.87	0.38	0.00	2.65	0.00	0.03
23-Nov-01	0.00	-4.10	2.61	-6.85	3.27	0.15	2.21	-4.82	3.57	-0.44
30-Nov-01	0.00	0.31	0.67	1.29	-0.80	-5.45	0.00	1.15	1.50	-0.15
7-Dec-01	0.00	-0.31	-0.77	-0.82	2.06	-3.80	0.08	0.05	0.00	-0.39
14-Dec-01	0.00	-0.94	3.11	-0.49	1.93	-3.57	-5.19	0.13	5.95	0.10
21-Dec-01	0.00	-0.54	-2.36	0.14	1.45	1.19	0.00	0.07	-3.81	-0.43
2-Jan-02	0.00	0.00	8.00	0.83	0.64	0.00	0.00	-0.33	0.00	1.01
7-Jan-02	0.00	0.26	1.62	-1.06	5.27	1.59	0.00	0.33	0.00	0.89
14-Jan-02	0.00	-5.25	1.57	0.24	7.43	3.13	1.34	0.07	0.00	0.95
21-Jan-02	0.00	2.44	4.50	0.03	1.44	0.00	0.23	-0.07	0.00	0.95
28-Jan-02	0.00	0.00	2.69	0.12	0.86	-3.03	0.00	0.67	0.00	0.14
4-Feb-02	0.00	-10.49	4.02	4.84	1.24	-6.25	-0.39	4.64	0.00	-0.27
11-Feb-02	0.00	2.72	7.37	-4.76	-3.25	0.00	0.00	1.27	0.00	0.37
18-Feb-02	0.00	-0.29	-3.26	14.29	6.24	0.00	-1.17	-0.19	0.05	1.74
25-Feb-02	0.00	0.29	2.50	-3.26	-3.75	-3.33	1.57	0.81	0.00	-0.57
4-Mar-02	0.00	0.00	-0.89	0.78	-7.33	-6.90	0.00	-0.62	-0.05	-1.67
11-Mar-02	0.00	-8.24	-2.81	-1.28	0.41	0.00	-7.75	-1.69	0.00	-2.37
18-Mar-02	0.00	-5.13	1.17	-1.30	-0.26	-22.22	-7.56	-2.73	-5.00	-4.78
25-Mar-02	0.00	-1.69	2.50	-7.89	2.60	0.00	0.00	-0.98	0.00	-0.61
3-Apr-02	0.00	-0.48	-12.07	0.00	-11.44	0.00	0.00	-1.06	0.00	-2.78
10-Apr-02	0.00	-3.04	-4.48	7.62	1.38	0.00	-2.73	-8.61	0.00	-1.10
17-Apr-02	0.00	-1.21	-1.40	0.86	0.92	-9.52	0.00	-2.92	0.00	-1.48
24-Apr-02	0.00	-0.50	-1.36	-13.80	-2.64	0.00	-1.68	-5.49	-1.75	-3.03
2-May-02	0.00	1.67	2.15	2.75	2.70	-10.53	0.00	-3.98	0.00	-0.58
9-May-02	0.00	-7.34	1.32	4.02	-0.72	0.00	0.00	-0.58	-3.57	-0.76
16-May-02	0.00	-0.08	4.65	-5.54	0.75	0.00	0.00	3.42	0.00	0.36
23-May-02	0.00	-11.93	1.97	9.64	1.11	0.00	0.00	0.81	0.00	0.18
30-May-02	0.00	-21.50	-0.64	4.83	2.81	-5.88	18.82	1.52	0.00	-0.01
6-Jun-02	0.00	-2.56	0.69	11.84	1.23	6.25	0.00	2.36	0.04	2.21
13-Jun-02	0.00	0.00	1.71	-2.35	3.79	0.00	-20.00	1.92	-0.04	-1.66
20-Jun-02	0.00	0.00	4.51	-4.82	-0.79	0.00	25.00	-0.38	-1.85	2.41
27-Jun-02	0.00	5.14	1.27	3.16	-0.40	0.00	0.00	0.38	0.00	1.06
4-Jul-02	0.00	23.91	-1.27	-1.83	2.15	0.00	0.00	6.64	0.00	3.29
11-Jul-02	0.00	21.05	-0.79	0.93	0.25	0.00	0.00	0.50	-3.77	2.02
18-Jul-02	0.00	44.93	0.86	-0.32	2.83	-11.76	8.80	2.11	0.23	5.30
25-Jul-02	0.00	-21.00	1.45	1.84	1.49	0.00	0.00	0.00	-0.59	-1.87
1-Aug-02	0.00	-2.15	1.86	3.69	-2.26	0.00	0.00	0.34	0.37	0.20
8-Aug-02	0.00	-2.98	-0.35	-0.80	-1.95	0.00	0.00	-0.27	0.00	-0.71
15-Aug-02	0.00	0.00	-6.53	-2.75	5.12	0.00	0.00	-1.79	0.00	-0.66
22-Aug-02	0.00	0.00	3.54	-8.54	-1.53	0.00	0.00	3.16	-0.56	-0.44
29-Aug-02	0.00	0.00	-0.93	3.33	-8.01	0.00	0.00	-3.06	-3.38	-1.34
5-Sep-02	0.00	13.33	-1.30	-2.60	1.39	0.00	0.00	-6.32	-1.43	0.34

DATE	Limuru Tea	Total	BBK	Sameer	SCBK	Uchumi	EAPC	NIC	BOC	AVERAGE
12-Sep-02	0.00	0.00	0.74	-3.84	2.52	-13.33	0.00	-0.37	1.46	-1.42
19-Sep-02	0.00	-6.12	-1.82	-2.94	-0.61	0.00	0.00	4.21	0.00	-0.81
26-Sep-02	0.00	0.25	-3.04	0.77	2.33	15.38	-2.21	-2.96	9.17	2.19
3-Oct-02	0.00	-3.69	-1.89	0.00	2.83	0.00	0.00	-0.37	-0.93	-0.45
11-Oct-02	0.00	0.58	1.25	1.41	-0.67	0.00	0.75	-0.75	0.00	0.29
18-Oct-02	0.00	-3.23	1.29	0.69	1.61	0.00	0.00	-0.38	9.43	1.05
28-Oct-02	0.00	0.00	-1.33	-0.69	1.15	0.00	0.00	2.49	11.21	1.43
4-Nov-02	0.00	7.00	0.67	4.17	6.99	0.00	0.00	0.15	3.10	2.45
11-Nov-02	0.00	20.87	9.73	13.33	-0.03	13.33	-1.49	26.40	20.30	11.38
18-Nov-02	0.00	11.55	3.97	-5.88	-2.02	17.65	-1.52	7.91	0.00	3.52
25-Nov-02	0.00	-8.18	2.85	6.25	-0.28	-20.00	0.00	-0.27	-2.07	-2.41
2-Dec-02	0.00	-6.89	-8.57	0.00	-0.91	0.00	0.00	-12.16	-5.54	-3.79
9-Dec-02	0.00	0.59	5.60	2.94	4.83	6.25	0.00	-4.62	0.00	1.73
17-Dec-02	0.00	15.53	2.11	0.55	-1.91	11.76	0.00	15.29	0.00	4.82
24-Dec-02	0.00	2.33	3.09	-1.12	1.46	21.05	0.00	3.53	0.00	3.37
31-Dec-02	0.00	2.23	3.43	0.00	3.30	0.00	0.00	3.78	0.00	1.42

APPENDIX III

Weekly Returns For High Book To Market Firms (1999 to 2002)

DATE	Unga	EABL	Marsh	Cberger	Kenol	Jubilee	Sasini	ARM	GWK	CMC	AVERAGE
1-Jan-99	-2.02	17.12	0.00	0.00	0.00	9.84	-0.23	7.30	4.41	0.00	3.64
8-Jan-99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.70	0.00	-0.07
15-Jan-99	2.45	-12.16	2.00	9.57	0.00	2.31	5.22	11.60	-1.59	10.61	3.00
22-Jan-99	0.07	1.13	0.00	13.61	3.64	25.97	-0.48	17.90	4.70	-4.04	6.25
29-Jan-99	-2.47	4.49	0.00	9.78	0.00	-2.96	0.62	9.59	0.00	-0.07	1.90
5-Feb-99	-3.26	-7.25	0.80	-8.73	6.72	-10.68	-4.85	-33.10	-1.57	-5.26	-6.72
12-Feb-99	1.45	2.02	0.00	-5.38	-1.36	-4.87	-0.02	10.94	-4.87	-9.17	-1.13
19-Feb-99	-0.92	-0.72	0.00	-2.63	1.67	1.58	-4.79	-11.14	1.45	-0.39	-1.59
26-Feb-99	-3.70	1.53	0.00	-24.32	0.00	-0.77	-2.96	7.27	0.00	0.02	-2.29
5-Mar-99	-4.03	7.07	0.00	0.00	-8.20	-0.21	-6.98	-0.39	2.64	-3.16	-1.33
12-Mar-99	0.00	-0.30	0.00	1.29	1.79	0.34	-1.27	-4.69	-1.16	3.25	-0.08
19-Mar-99	-18.60	1.58	0.00	7.19	0.00	0.74	1.09	-0.63	0.00	-0.47	-0.91
26-Mar-99	1.17	8.73	0.00	7.89	0.00	0.82	-1.15	-6.73	0.00	-5.76	0.50
2-Apr-99	0.23	-1.92	1.62	3.66	4.11	0.08	-0.20	-9.08	0.00	-0.50	-0.20
9-Apr-99	-0.60	-0.69	0.00	0.00	1.11	1.10	-2.40	0.05	0.00	0.00	-0.14
16-Apr-99	-1.82	4.83	0.00	1.18	0.00	-1.19	-3.34	9.03	0.12	-7.14	0.17
23-Apr-99	-0.84	-1.57	-7.16	9.53	0.00	0.20	0.19	-12.94	1.19	9.62	-0.18
30-Apr-99	0.00	5.62	0.00	0.85	0.00	-0.14	4.03	10.03	-0.59	-1.16	1.86
7-May-99	-0.78	0.81	0.00	-14.11	0.00	-0.09	-1.79	12.91	0.00	-0.60	-0.36
14-May-99	1.66	0.03	-9.28	4.41	26.04	0.04	-1.50	0.78	1.16	0.00	2.33
21-May-99	-0.99	0.85	0.00	3.05	0.50	-0.01	0.69	7.44	-0.45	0.00	1.11
28-May-99	-12.10	-1.66	0.00	-2.73	0.00	0.01	-10.11	-7.69	0.00	-5.38	-3.97
4-Jun-99	-8.32	2.69	0.00	1.29	0.00	0.00	0.00	-7.48	0.00	5.69	-0.61
11-Jun-99	-6.27	-1.58	0.00	4.62	0.00	-6.61	2.39	-0.92	0.70	0.00	-0.77
18-Jun-99	23.24	-0.27	0.00	0.00	0.00	-5.82	3.29	9.43	-0.70	1.34	3.05
25-Jun-99	-1.15	-0.24	0.00	44.31	0.00	-2.84	0.00	-0.66	1.05	-1.32	3.91
2-Jul-99	0.20	0.53	0.00	5.67	0.00	0.75	0.11	-4.22	-0.34	0.00	0.27
9-Jul-99	1.07	1.56	0.00	-2.83	-20.86	2.51	0.00	-1.34	-0.76	0.89	-1.97
16-Jul-99	-0.97	0.48	0.00	-2.01	2.02	3.04	0.30	0.89	-1.35	0.88	0.33
23-Jul-99	-0.30	0.95	0.00	-8.68	2.68	-0.01	-0.30	2.87	0.00	1.75	-0.10
30-Jul-99	-3.80	0.33	0.00	9.83	4.56	0.41	1.18	2.33	0.00	3.10	1.79
6-Aug-99	-16.00	0.16	0.00	6.22	6.92	-0.16	-1.17	0.83	0.00	0.04	-0.32
13-Aug-99	-8.51	1.84	0.00	-3.00	-2.38	-0.29	0.00	-29.75	0.00	0.29	-4.18
20-Aug-99	0.08	1.71	12.50	-11.56	-5.46	0.00	1.85	-2.37	0.00	0.00	-0.32
27-Aug-99	-10.62	3.02	1.01	-16.49	-1.54	0.50	0.00	41.38	0.00	-0.01	1.73
3-Sep-99	7.55	-0.22	0.00	-0.40	0.00	-1.62	0.30	-6.24	0.00	0.01	-0.06
10-Sep-99	-9.29	-1.26	0.00	0.00	0.00	-5.17	4.23	0.00	-17.86	0.10	-2.92
17-Sep-99	0.01	-1.60	0.00	-1.30	0.00	2.46	0.25	-1.28	0.00	0.00	-0.15
24-Sep-99	-3.80	-2.84	0.00	-3.25	0.00	-4.68	-2.26	-11.77	0.00	1.57	-2.70
1-Oct-99	-1.26	4.43	0.00	0.31	0.00	4.51	-1.49	16.13	0.00	-1.53	2.11
8-Oct-99	0.00	0.92	0.00	5.33	0.00	-4.89	0.00	7.32	-1.86	-0.11	0.67
15-Oct-99	1.54	-4.77	0.00	3.47	0.00	-5.27	2.14	0.50	1.25	0.00	-0.12
22-Oct-99	-50.76	-1.55	0.00	0.58	0.00	-0.91	-2.97	0.00	0.00	0.00	-5.56
29-Oct-99	0.00	-1.24	0.00	25.74	0.00	1.45	-2.02	0.00	-3.74	-0.06	2.01

5-Nov-99	25.97	-0.46	0.00	0.61	0.00	-3.53	0.00	0.00	0.00	0.06	2.26
12-Nov-99	16.51	-10.04	0.00	-2.41	0.00	0.03	0.00	-8.48	2.42	0.00	-0.20
19-Nov-99	15.42	0.35	-5.48	-3.86	-5.47	-0.36	-8.32	7.54	-2.94	0.00	-0.31
26-Nov-99	23.25	-7.48	0.00	0.88	0.00	0.17	-3.52	-3.82	-3.98	0.00	0.55
3-Dec-99	31.13	13.46	0.00	1.35	15.66	3.33	-7.40	-11.96	-8.32	0.00	3.73
10-Dec-99	-0.37	-4.80	0.00	-12.33	0.66	1.08	-0.34	11.00	-3.39	0.00	-0.85
17-Dec-99	0.68	-0.44	0.00	1.25	-0.62	-0.06	-0.16	7.16	0.00	0.00	0.78
24-Dec-99	0.00	-0.05	0.00	0.97	0.00	-3.34	2.15	0.88	-0.92	0.00	-0.03
31-Dec-99	-1.48	2.85	0.00	-0.88	-3.21	-0.07	0.00	-1.10	0.00	0.00	-0.39
7-Jan-00	1.16	-2.82	0.00	-2.30	0.00	-8.91	0.00	0.00	0.00	0.00	-1.29
14-Jan-00	-12.12	0.06	0.00	0.00	0.00	9.14	0.00	-5.27	0.00	-0.54	-0.87
21-Jan-00	-18.14	-0.83	0.00	0.00	-0.37	-0.41	-8.62	-10.30	0.93	0.00	-3.77
28-Jan-00	-1.09	0.87	0.00	0.00	1.09	-1.09	8.05	-3.19	1.08	0.00	0.57
4-Feb-00	0.19	-3.01	0.00	0.00	2.70	2.31	0.00	2.05	-1.06	-6.16	-0.30
11-Feb-00	-2.86	2.02	0.00	0.00	-0.11	0.62	-11.92	0.37	0.00	7.14	-0.47
18-Feb-00	3.31	0.44	0.00	0.00	6.31	-0.61	-1.34	0.00	0.00	0.00	0.81
25-Feb-00	-1.07	1.29	0.00	0.00	12.34	-0.83	-6.49	0.00	-3.23	0.00	0.20
3-Mar-00	1.63	-0.62	0.00	0.00	-5.24	4.62	0.00	0.00	-1.62	0.00	-0.12
10-Mar-00	1.19	4.19	0.00	0.00	-0.28	1.14	-2.78	-0.32	-1.74	0.00	0.14
17-Mar-00	0.03	0.59	0.00	0.00	-1.01	2.12	0.02	-3.55	0.00	0.00	-0.18
24-Mar-00	-0.94	1.67	0.00	0.00	2.30	-3.87	2.83	4.01	-0.05	0.00	0.59
31-Mar-00	0.00	-5.65	0.00	0.00	-2.83	-0.23	-2.73	10.08	0.00	0.00	-0.14
7-Apr-00	28.02	-2.49	0.00	0.00	0.00	1.46	0.15	13.71	0.05	-16.67	2.42
14-Apr-00	8.97	1.93	0.00	0.00	0.31	0.20	-2.17	2.65	0.04	0.00	1.19
21-Apr-00	21.34	2.67	0.00	0.00	3.94	-1.63	-14.69	1.20	3.41	-20.21	-0.40
28-Apr-00	-0.05	-3.68	0.00	0.00	0.00	-1.85	7.14	0.74	0.00	0.41	0.27
5-May-00	-1.62	-0.30	0.00	0.00	3.64	0.00	0.00	-0.73	0.00	-1.29	-0.03
12-May-00	-3.71	1.46	0.00	0.00	1.11	0.00	5.23	-7.21	0.00	1.17	-0.20
19-May-00	0.09	-0.15	0.00	0.00	-4.63	-0.09	5.41	0.80	-9.71	1.65	-0.66
26-May-00	-1.84	-0.38	0.00	0.00	-6.58	-12.34	3.54	-1.11	-5.24	0.25	-2.37
2-Jun-00	-15.32	-1.30	0.00	0.00	0.44	-6.04	5.55	1.14	0.00	-11.20	-2.67
9-Jun-00	0.00	-3.99	0.00	0.00	0.66	0.73	-3.81	-1.35	0.05	-1.64	-0.94
16-Jun-00	-1.89	-3.44	0.00	0.00	0.78	0.46	0.00	0.00	0.00	0.00	-0.41
23-Jun-00	0.00	4.28	0.00	0.00	0.00	2.35	-4.20	0.00	-1.62	0.00	0.08
30-Jun-00	-20.29	-3.65	0.00	0.00	5.06	0.00	0.21	-15.01	-0.60	-5.26	-3.95
7-Jul-00	-18.54	1.51	0.00	0.00	1.03	0.53	0.00	-11.42	0.00	0.00	-2.69
14-Jul-00	-2.68	2.34	0.00	0.00	0.21	2.76	-0.31	-9.02	-4.47	-2.58	-1.37
21-Jul-00	-4.14	1.16	0.00	0.00	0.61	2.36	-1.80	9.62	-0.65	2.80	1.00
28-Jul-00	-1.89	0.42	0.00	0.00	-0.61	-4.35	0.00	-9.81	0.00	-0.33	-1.66
4-Aug-00	-0.53	0.64	0.00	0.00	-2.44	0.00	-1.08	11.05	0.00	-0.50	0.71
11-Aug-00	0.00	-0.95	0.00	0.00	0.00	0.00	0.77	-0.06	-4.90	0.00	-0.51
18-Aug-00	-6.41	0.08	0.00	0.00	0.00	0.00	-0.63	3.13	-5.88	-1.79	-1.15
25-Aug-00	1.69	6.36	0.00	0.00	0.00	-9.09	-0.29	-1.78	-7.50	0.00	-1.06
1-Sep-00	-2.75	7.23	0.00	0.00	-3.56	-1.00	0.00	2.82	0.00	0.00	0.27
8-Sep-00	0.22	-0.99	0.00	0.00	0.00	-0.45	0.16	-2.02	0.00	-0.30	-0.34
15-Sep-00	2.94	2.26	0.00	0.00	1.10	0.00	2.91	0.58	5.34	-0.22	1.49
22-Sep-00	9.71	0.26	0.00	0.00	6.05	-0.81	-7.82	3.51	3.18	0.00	1.41

29-Sep-00	3.11	0.53	0.00	0.00	0.00	-6.34	-0.70	-3.83	1.02	0.00	-0.62
6-Oct-00	-2.52	-0.05	0.00	0.00	-2.08	-1.34	0.47	-1.12	7.75	-2.22	-0.11
13-Oct-00	-2.42	1.70	-21.29	-17.10	0.62	-0.28	5.66	-0.74	0.00	0.00	-3.39
20-Oct-00	1.02	-0.38	0.00	-0.22	0.00	-0.08	0.00	-5.34	8.20	0.00	0.32
27-Oct-00	-1.47	0.09	0.00	8.86	0.61	0.75	0.00	-5.13	15.70	0.00	1.94
3-Nov-00	-0.48	0.98	0.00	-13.87	-1.89	4.77	0.00	10.82	3.75	0.00	0.41
10-Nov-00	-0.33	3.02	0.00	0.12	0.00	-0.12	0.00	0.30	0.03	0.00	0.30
17-Nov-00	-1.49	-0.64	0.00	-2.21	0.00	0.12	0.74	-0.52	0.00	0.04	-0.40
24-Nov-00	0.06	-0.02	0.00	-1.67	-3.05	1.39	1.40	0.53	-1.10	0.00	-0.25
1-Dec-00	0.00	-1.39	0.00	2.30	0.00	-0.10	0.00	-1.36	0.00	0.00	-0.06
8-Dec-00	0.00	-0.01	0.00	1.30	-3.36	-1.27	0.83	-1.06	0.29	-1.92	-0.52
15-Dec-00	-0.28	-4.68	0.00	2.92	-1.83	1.32	-0.11	0.00	0.82	0.00	-0.18
22-Dec-00	-0.99	-4.08	0.00	1.48	-5.41	-1.16	-0.05	-2.75	0.13	0.00	-1.28
29-Dec-00	0.00	-0.10	0.00	0.56	-3.57	-2.77	-2.76	-6.40	6.46	0.00	-0.86
5-Jan-01	-2.70	0.74	0.00	0.22	7.87	0.00	0.38	0.00	0.00	-2.20	0.43
12-Jan-01	-4.84	1.48	0.00	0.00	0.00	-0.19	-1.57	13.44	-3.09	-7.65	-0.24
19-Jan-01	-3.30	1.99	0.00	0.00	0.37	2.50	-4.75	-7.67	0.00	-4.79	-1.56
26-Jan-01	-4.79	-3.43	0.00	0.00	0.00	0.39	0.00	-4.75	2.66	-3.72	-1.36
2-Feb-01	-1.68	1.17	0.00	3.33	8.66	-2.54	0.03	0.46	1.04	4.36	1.48
9-Feb-01	-1.11	1.55	-1.61	2.69	-1.33	0.00	0.73	-0.39	0.00	0.99	0.15
16-Feb-01	-8.89	0.94	0.00	1.05	8.49	1.52	9.03	-0.07	-1.52	1.00	1.16
23-Feb-01	-14.00	0.18	0.00	-1.04	1.18	-2.44	1.96	0.45	1.90	0.00	-1.18
2-Mar-01	-3.03	0.71	0.00	0.63	-0.58	-4.61	-7.32	14.34	0.16	-0.71	-0.04
9-Mar-01	-1.45	1.81	0.00	0.00	2.92	-0.09	6.32	-12.28	7.14	-0.39	0.40
16-Mar-01	1.59	0.03	0.00	-1.14	2.52	-2.75	-0.52	7.98	-1.90	0.00	0.58
23-Mar-01	0.49	0.44	0.00	-4.74	-0.29	0.00	-6.67	3.55	0.03	-13.06	-2.03
30-Mar-01	6.51	-0.87	0.00	-7.62	-1.21	-1.47	9.69	-0.14	-0.03	0.00	0.49
6-Apr-01	1.20	1.36	0.00	0.00	3.34	1.31	-8.08	0.00	-2.91	0.00	-0.38
13-Apr-01	-7.58	0.62	0.00	-4.15	-4.15	0.18	-2.80	-0.38	0.00	-3.65	-2.19
20-Apr-01	-0.41	-0.72	0.00	-0.17	3.38	-1.08	0.00	0.22	0.00	0.00	0.12
27-Apr-01	0.00	0.51	0.00	0.00	0.00	-2.50	-3.49	0.16	0.00	-12.77	-1.81
4-May-01	-0.47	-0.04	0.00	0.00	-3.43	-1.65	-3.29	0.02	0.00	0.00	-0.89
11-May-01	0.48	-1.80	0.00	0.00	1.96	-0.77	0.25	-0.02	0.00	0.00	0.01
18-May-01	-10.39	1.03	0.00	4.02	4.33	0.00	-0.25	-0.55	2.00	-9.92	-0.97
25-May-01	-0.78	0.27	0.00	2.15	-0.40	-6.25	-1.61	0.55	-1.84	-2.31	-1.02
1-Jun-01	0.10	-2.21	0.00	0.00	4.25	0.17	-0.24	-11.11	0.00	0.00	-0.90
8-Jun-01	0.00	-3.97	0.00	-2.35	9.41	0.39	0.76	0.55	5.87	-0.04	1.06
15-Jun-01	-1.40	2.52	0.00	-3.61	-0.69	-0.42	-8.67	7.34	-2.87	2.31	-0.55
22-Jun-01	0.00	1.46	0.00	0.00	-1.10	0.66	3.34	0.61	1.01	-2.22	0.38
29-Jun-01	-2.50	-0.59	0.00	-8.89	-0.51	3.61	-3.57	-0.06	0.83	-1.14	-1.28
6-Jul-01	0.65	2.84	0.00	-16.91	-1.32	-0.09	-0.85	3.56	0.00	1.15	-1.10
13-Jul-01	0.00	0.09	0.00	-0.51	-0.84	-1.30	0.00	-6.23	0.48	3.98	-0.43
20-Jul-01	1.30	0.36	0.00	-0.42	-0.05	0.32	0.94	2.50	-0.35	0.00	0.46
27-Jul-01	1.90	0.15	0.00	1.05	-0.91	-1.19	-1.23	-3.68	0.95	0.00	-0.30
3-Aug-01	-10.79	1.09	0.00	3.20	-2.97	-1.12	-0.71	-3.07	-4.71	0.40	-1.87
10-Aug-01	-1.91	-0.02	0.00	4.52	-0.92	-3.93	0.00	-4.77	0.99	8.85	0.28
17-Aug-01	0.00	1.65	0.00	0.00	0.00	-9.54	-6.26	4.13	-0.98	0.00	-1.10

24-Aug-01	0.00	-0.83	0.00	0.00	-34.84	0.00	0.64	1.13	0.99	1.06	-3.18
31-Aug-01	-7.02	-1.66	0.00	-0.61	40.00	13.38	0.00	-1.12	-1.96	-0.20	4.08
7-Sep-01	-4.07	-1.36	0.00	-5.76	10.21	-1.01	0.00	0.00	-5.00	-0.85	-0.78
14-Sep-01	0.00	2.65	0.00	-0.65	0.81	-1.81	0.00	-6.80	0.00	0.00	-0.58
21-Sep-01	0.00	1.03	0.00	-5.46	0.00	-2.11	-10.00	0.00	0.00	0.00	-1.65
28-Sep-01	-11.55	-0.15	0.00	2.60	-1.28	3.29	-11.59	-7.46	0.00	-6.28	-3.24
5-Oct-01	-13.91	0.13	0.00	-3.44	-0.87	2.07	0.00	0.00	0.00	-10.07	-2.61
12-Oct-01	-15.67	-0.20	0.00	-10.01	2.19	-3.04	0.00	7.88	0.00	-5.13	-2.40
19-Oct-01	0.36	0.18	0.00	9.17	1.05	1.62	-3.27	7.76	-3.16	-2.44	1.13
26-Oct-01	18.11	0.41	0.00	0.00	0.37	0.34	-0.74	-0.27	0.00	0.00	1.82
2-Nov-01	27.61	2.69	0.00	1.68	1.41	-2.03	-0.50	1.10	1.02	0.00	3.30
9-Nov-01	41.03	-0.95	0.00	16.54	0.00	4.13	0.00	-4.13	2.22	8.55	6.74
16-Nov-01	-6.23	-3.16	0.00	-0.47	-0.08	2.65	0.50	0.00	0.00	0.28	-0.65
23-Nov-01	-8.28	0.60	0.00	0.00	0.63	-0.17	-10.41	3.17	0.00	10.03	-0.44
30-Nov-01	-4.84	-6.88	0.00	-0.24	1.53	0.63	5.20	0.00	-18.16	0.08	-2.27
7-Dec-01	0.00	-0.38	0.00	-0.59	-0.60	-1.09	-1.67	-5.11	-9.97	0.00	-1.94
14-Dec-01	-5.67	0.08	0.00	0.00	-17.74	0.00	-6.74	4.73	-1.41	-3.21	-2.99
21-Dec-01	-1.56	-0.40	0.00	-7.48	21.46	0.49	-0.31	0.63	0.00	0.00	1.28
2-Jan-02	-1.47	0.00	0.00	0.00	0.00	0.00	0.00	-2.46	0.00	0.00	-0.44
7-Jan-02	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
14-Jan-02	-2.99	3.19	0.00	0.00	0.00	3.87	0.75	-23.16	0.00	4.44	-1.39
21-Jan-02	-3.08	0.94	0.00	0.00	10.81	2.48	0.00	0.00	-13.64	0.53	-0.19
28-Jan-02	12.70	-2.06	0.00	0.00	1.78	0.00	0.00	33.33	-10.53	-4.76	3.05
4-Feb-02	-4.23	0.02	0.00	0.00	1.85	0.00	-1.69	0.00	0.00	0.00	-0.40
11-Feb-02	0.00	-0.68	0.00	0.00	-1.18	-1.82	-9.84	0.00	0.00	-5.56	-1.91
18-Feb-02	0.00	-1.24	0.00	-3.33	0.00	0.31	0.00	0.00	0.00	0.00	-0.43
25-Feb-02	-5.88	3.85	0.00	-1.29	0.00	-4.62	4.15	0.00	0.00	0.00	-0.38
4-Mar-02	-6.25	0.73	0.00	4.80	-0.80	0.00	0.00	-12.88	0.00	0.00	-1.44
11-Mar-02	-15.00	0.00	0.00	0.00	-1.60	0.00	2.50	0.44	0.00	-9.41	-2.31
18-Mar-02	-5.88	2.50	0.00	0.00	0.00	0.00	-1.06	-5.71	-5.88	3.90	-1.21
25-Mar-02	0.00	-3.69	0.00	0.00	0.00	0.00	0.00	6.06	0.00	0.00	0.24
3-Apr-02	-27.08	1.95	0.00	0.00	0.00	-1.03	0.00	1.43	0.00	10.63	-1.41
10-Apr-02	0.00	-0.43	0.00	5.00	0.00	-2.48	0.00	12.68	-2.08	5.65	1.83
17-Apr-02	-14.29	-2.82	0.00	-12.70	0.00	0.27	0.33	0.00	-4.26	10.14	-2.33
24-Apr-02	-3.33	-0.07	0.00	-9.10	0.00	4.13	-0.33	-10.00	-2.22	-2.89	-2.38
2-May-02	3.45	0.12	0.00	10.01	-13.60	-3.33	0.00	11.11	0.00	0.00	0.78
9-May-02	3.33	-0.66	0.00	-9.09	-1.20	0.00	0.00	-12.50	0.00	0.00	-2.01
16-May-02	-3.23	0.97	0.00	0.00	2.86	0.99	0.00	2.86	0.00	0.00	0.45
23-May-02	3.33	3.17	0.00	0.00	0.00	-0.07	0.00	2.78	-4.55	1.50	0.62
30-May-02	12.90	1.45	0.00	0.00	0.00	0.39	-11.47	0.00	0.00	48.54	5.18
6-Jun-02	20.00	0.94	0.00	1.25	0.00	1.31	-2.11	0.28	0.00	-1.19	2.05
13-Jun-02	-2.38	8.00	0.00	0.00	0.00	0.97	15.38	-5.67	0.00	-13.41	0.29
20-Jun-02	-2.44	-0.26	0.00	0.00	0.00	0.32	0.00	5.71	2.38	-6.20	-0.05
27-Jun-02	2.50	-3.83	0.00	-1.23	0.00	0.00	0.00	0.00	-4.65	0.00	-0.72
4-Jul-02	0.00	-5.31	0.00	2.00	3.47	-9.24	0.00	0.00	0.00	-9.34	-1.84
11-Jul-02	-2.44	0.56	0.00	0.00	-1.34	1.40	-10.00	-5.41	-2.44	-6.56	-2.62
18-Jul-02	30.00	1.43	0.00	-1.96	1.69	0.00	0.00	4.53	0.00	3.57	3.93

25-Jul-02	-17.31	1.75	0.00	0.00	0.00	4.50	0.22	7.97	0.00	0.00	-0.29
1-Aug-02	0.00	-2.43	0.00	0.00	2.02	2.65	-0.22	3.80	-10.00	0.00	-0.42
8-Aug-02	13.95	0.02	0.00	0.00	2.69	0.00	0.00	20.73	-8.33	0.00	2.91
15-Aug-02	12.24	3.71	0.00	0.00	0.00	1.29	0.00	-1.01	-9.09	5.51	1.27
22-Aug-02	-7.27	1.83	0.00	0.00	0.00	0.00	1.48	2.04	0.00	7.59	0.57
29-Aug-02	0.00	0.74	-72.68	0.00	0.26	1.59	0.36	0.00	0.00	1.24	-6.85
5-Sep-02	1.96	10.43	0.00	40.00	0.05	-1.57	0.00	0.00	-3.33	1.64	4.92
12-Sep-02	1.92	-1.89	0.00	0.00	1.22	0.00	0.00	-2.00	-17.24	4.84	-1.31
19-Sep-02	5.66	-0.25	1.95	0.00	0.63	0.00	0.00	-4.08	0.00	30.77	3.47
26-Sep-02	7.14	0.31	0.00	-1.43	1.25	-1.27	-5.45	0.00	0.00	0.00	0.05
3-Oct-02	-5.00	0.23	0.00	-10.14	0.00	0.00	1.54	0.00	0.00	-0.88	-1.43
11-Oct-02	0.00	2.16	0.00	-3.23	0.00	-3.23	-1.52	-14.89	0.00	-0.59	-2.13
18-Oct-02	-5.26	2.77	0.00	0.00	1.23	0.00	-1.92	2.50	12.50	1.56	1.34
28-Oct-02	1.85	1.77	0.00	0.00	0.00	-0.07	1.96	-2.44	0.00	10.51	1.36
4-Nov-02	0.00	2.78	0.00	0.00	3.66	0.40	-5.38	2.50	11.11	1.06	1.61
11-Nov-02	3.64	3.37	0.00	6.67	5.88	2.33	-2.44	0.00	26.67	5.26	5.14
18-Nov-02	0.00	-11.43	0.00	14.17	2.22	3.83	1.25	16.03	13.16	33.22	7.25
25-Nov-02	0.00	4.18	0.00	9.48	0.00	1.94	7.41	5.10	2.33	-12.74	1.77
2-Dec-02	-1.75	5.03	0.00	-3.85	0.00	-1.84	2.53	-4.66	0.00	0.00	-0.46
9-Dec-02	0.00	8.16	0.00	-8.02	0.00	0.00	0.00	-5.58	0.00	-9.68	-1.51
17-Dec-02	-16.07	11.75	9.86	-1.06	8.15	0.00	0.90	4.43	0.00	0.00	1.80
24-Dec-02	6.38	-3.82	0.00	0.00	6.94	0.00	0.74	1.02	0.00	0.00	1.13
31-Dec-02	0.00	6.39	0.00	0.00	0.53	0.00	0.00	-0.52	0.00	0.00	0.64