MOMENTUM INVESTING USING THE 52-WEEK HIGH METHOD AT THE NAIROBI STOCK EXCHANGE

WAINAINA GEORGE M

D61/P/8146/02

A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE IN MASTER OF BUSINESS ADMINISTRATION

UNIVERSITY OF NAIROBI

FACULTY OF COMMERCE

I DECLARATION

I, George M. Wainaina declare that this dissertation represents my own original work and that it has not been submitted to this or other institution in application for a degree, diploma or any other qualifications.

Student: **WAINAINA GEORGE M.**

Admission Number: **D61/P/8146/02**

Signature: 

Date: 29/OCT/2007

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

Supervisor: **LISHENGA JOSEPHAT L.**

Signature: 

Date: 29-10-07

II DEDICATION

This thesis is dedicated to the men and women of the Nairobi Stock Exchange.

III ACKNOWLEDGEMENTS

I would like to acknowledge the guidance and mentoring provided by my supervisor Mr. J. L. Lishenga in developing this topic.

I also acknowledge the publishers of the Journal of Finance and those eminent persons who continue to contribute to the world of Finance.

TABLE OF CONTENTS

IV LIST OF TABLES

V LIST OF APPENDICES

VI ABBREVIATIONS

AIMS – Alternative Investment Market Segment

ATS – Automated Trading System

CAPM – Capital Asset Pricing Model

CDS - Central Depository System

CDSC - Central Depository System Corporation

EMH – Efficient Market Hypothesis

FISMS – Fixed Income Securities Market Segment

GH – George and Hwang

JT – Jegadeesh & Titman

MG – Moskowitz & Grinblatt

MIMS – Main Investment Market Segment

NARC – NAtional Rainbow Coalition

NSE - Nairobi Stock Exchange

VII ABSTRACT

When coupled with a stock's current price, a readily available piece of information—the 52-week high price–explains a large portion of the profits from momentum investing. Nearness to the 52-week high dominates and improves upon the forecasting power of past returns and for future returns.

This study set out to determine the presence of momentum at the Nairobi Stock Exchange and the possibility of generating abnormal returns using the 52-week high method. The various formation strategies for 3, 6, 9 and 12 months was developed and the ratios that determined their rankings was calculated. The stocks were then ranked in ascending order with the winner portfolio consisting of a third of the counters whose ratios were the furthest from 1 and the loser portfolios drawn from the stocks whose ratio was nearest to 1. The t-statistic is used to test the hypothesis.

From the results it can be inferred that it is possible to beat the NSE market by investing in stocks whose prices are furthest from the its 52-week high in the short-term and divesting from those whose prices are at or closest to their 52-week highs also in the short-term.

Future returns forecast using the 52-week high does not reverse in the long run. These results indicate that short-term momentum and long-term reversals are largely separate phenomena, which presents a challenge to current theory that models these aspects of security returns as integrated components of the market's response to news.

1.0 INTRODUCTION

1.1 Background of study

An efficient market is one, which security prices adjust rapidly to the arrival of new information, and therefore current prices reflect all information about the security. The efficient market hypothesis implies that it is not generally possible to make above average returns in the stock market by trading, except through luck or obtaining and trading on inside information.

Jegadeesh and Titman (1993) presented a serious challenge to the view that markets are semi strong-form efficient. Indeed there is substantial evidence that stock prices do not follow random walks and that returns are predictable. Jegadeesh and Titman (1993) showed that stock returns exhibited momentum behaviour at intermediate horizons. A self-financing strategy that buys the top 10% and sells the bottom 10% of stocks ranked by returns during the past 6 months, and holds the positions for 6 months, produces profits of 1% per month.

Momentum is the rate of acceleration of a security's price or volume. Once a momentum trader sees an acceleration in a stock's price, earnings, or revenues, the trader will often take a long or short position in the stock with the hope that its momentum will continue in either an upwards or downwards direction. This strategy relies more on short-term movements in price rather then fundamental particulars of companies.

Barberis, Shleifer, and Vishny (1998), Daniel, Hirshleifer, and Subrahmanyam (1998), and Hong and Stein (1999) presented theoretical models that attempted to explain the coexistence of intermediate horizon momentum and long horizon reversals in individual stock returns as the result of systematic violations of rational behaviour by traders. In

Barberis, Shleifer, and Vishny and in Hong and Stein, momentum occurred because traders were slow to revise their priors when new information arrives. Long-term reversals occurred because when traders finally do adjust, they overreacted. In Daniel, Hirshleifer, and Subrahmanyam, momentum occurred because traders overreacted to prior information when new information confirmed it. Long-term reversals occurred as the overreaction was corrected in the long run. In all three models, short-term momentum and long-term reversals were sequential components of the process by which the market absorbed news.

An extensive body of finance literature documents that the cross-section of stock returns is predictable based on past returns. For example, DeBondt and Thaler (1985, 1987) reported that long-term past losers outperformed long-term winners over the subsequent three to five years. Jegadeesh and Titman (1993) added a new twist to this literature by documenting that over an intermediate horizon of three to twelve months, past winners on average continued to outperform past losers, so that there was "momentum" in stock prices.

Chan, Jegadeesh and Lakonishok (1996) traced the sources of the predictability of future stock returns based on past returns. They related the evidence on momentum in stock prices to the evidence on the market's under-reaction to earnings-related information.

Another possibility is that the profitability of momentum strategies stems from overreaction induced by positive feedback trading strategies of the sort discussed by DeLong, Shleifer, Summers and Waldman (1990). This explanation implies that "trend-chasers" reinforce movements in stock prices even in the absence of fundamental information, so that the returns for past winners and losers are (at least partly) temporary in

nature. Under this explanation, we expected that past winners and losers will subsequently experience reversals in their stock prices.

Finally, it is possible that strategies based either on past returns or on earnings surprises (the latter is referred to as "earnings momentum" strategies) exploit market under-reaction to different pieces of information. For example, an earnings momentum strategy may benefit from under reaction to information related to short-term earnings, while a price momentum strategy may benefit from the market's slow response to a broader set of information, including longer-term profitability. In this case we would expect that each of the momentum strategies is individually successful, and that one effect is not subsumed by the other. True economic earnings are imperfectly measured by accounting numbers, so reported earnings may be currently low even though the firm's prospects are improving. If the stock price incorporates other sources of information about future profitability, then there may be momentum in stock prices even when weak reported earnings.

In their findings George and Hwang like Jegadeesh and Titman (1993) before them also presented a serious challenge to the view that markets are semi strong-form efficient. This finding was remarkable because the nearness of a stock's price to its 52-week high is among the information that is most readily available to investors. One need not even compute a past return. Virtually every newspaper that publishes stock prices also identifies those that hit 52-week highs and lows. For example, the Daily Nation & The Standard newspapers both print lists of these stocks each day, and the NSE's website http://www.nse.co.ke prints a comprehensive weekly list of stocks hitting 52-week highs and lows.

Their most interesting results emerged from head-to-head comparisons of a strategy based on the 52-week high with traditional momentum

strategies. They found that nearness to the 52-week high was a better predictor of future returns than were past returns, and that nearness to the 52-week high has predictive power whether or not stocks have experienced extreme past returns. This suggested that price levels were more important determinants of momentum effects than were past price changes.

An explanation of behaviour that is consistent with these results is that traders' use the 52-week high as a reference point against which they evaluate the potential impact of news. When good news has pushed a stock's price near to a new 52-week high, traders are reluctant to bid the price of the stock higher even if the information warrants it. The evidence in Grinblatt and Keloharju (2001) was consistent with this. They found price-level effects in investors, trading patterns. Using detailed data from the Finnish stock market, they found that investors are much more likely to sell (than hold or buy) a stock whose price is near a historical high and more likely to buy (than sell) a stock that is near a historical low. The information eventually prevailed and the price moved up, resulting in a continuation. Similarly, when bad news pushed a stock's price far from its 52-week high, traders were initially unwilling to sell the stock at prices that are as low as the information implied. The information eventually prevails and the price fell. In this respect, traders' reluctance to revise their priors is price-level dependent. The greatest reluctance is at price levels nearest and farthest from the stock's 52-week high. At prices that are neither near nor far from the 52-week high, priors adjust more quickly and there is no pronounced predictability when information arrives.

George and Hwang's findings also suggested that models in which agents' valuations depend on nearness of the share price to an anchor would be

successful in explaining price dynamics. Two theoretical papers take this approach. In Klein's (2001) model, the representative agent was motivated by tax avoidance. His demand for shares was positively related to the imbedded capital gain, so the anchor is the price at which shares are acquired. Klein used this structure to explain long-term return reversals. In Grinblatt and Han (2002), a subset of agents was subject to a disposition effect making them averse to selling shares that resulted in the recognition of losses. The anchor in their model was also the acquisition price of the shares, but demand functions were negatively related to imbedded gains.

In the context of their model, Grinblatt and Han showed that this dependence results in momentum behaviour for stocks whose prices are at or near long-run (e.g., 52-week) highs and lows. GH found that strategies based on Grinblatt and Han's anchor do generate significant profits that do not reverse. However, profits from this strategy were also strongly dominated by profits from the 52-week high strategy.

1.1.1 Nairobi Stock Exchange

In Kenya, dealing in shares and stocks started in the 1920s when the country was still a British colony. There was however no formal market, no rules and no regulations to govern stock broking activities. Trading took place on gentlemen's agreement in which standard commissions were charged with clients being obligated to honour their contractual commitments of making good delivery and setting relevant costs. At that time, stock broking was a sideline business conducted by accountants, auctioneers, estate agents and lawyers who met to exchange prices over a cup of coffee. Because these firms were engaged in other areas of specialization, the need for association did not arise.

In 1954 the Nairobi Stock Exchange (NSE) was constituted as a voluntary association of stockbrokers registered under the Societies Act and later under the Companies Act in 1991. Since then the NSE has undertaken a number of reforms. The market is now divided into 4 market segments and the instruments traded are Equities, Preference shares, Treasury Bonds & Corporate Bonds. The main Index is the NSE 20 Share index with is computed based on the 20 most active securities in the market which is reviewed from time to time. The introduction for the Central Depository System (CDS) allowed shares to be immobilised and traded electronically doing away with the need for share certificates. Finally the Automated Trading System (ATS) has done away with the Open Outcry System allowing for faster matching of asks and bids.

Due to the Fiscal & Monetary policies adopted by the NARC government since 2003 the Nairobi Stock Exchange has experience a boom due to the liquidity experience in the economy in 2005/2006. Together with the reforms undertaken by the NSE, this has given rise to a larger number of retail investors. According to the statistics from the CDSC the number of CDS accounts has grown from 78,000 at the beginning of 2006 to stand at 580,000 at the end of the same year. While some of these are corporate investors the majority are retail investors who do not have access to sound investment strategies. This paper goes a long way in providing these retail investors with strategies that are available to institutional investors and investment banks.

1.2 Statement of problem

In an MBA project titled "An empirical analysis of momentum in prices at the Nairobi Stock Exchange", Atiti (2005) examined the presence of momentum at the Nairobi Stock Exchange and the possibility of generating abnormal profits based on this anomaly. By examining

whether momentum strategy employed on zero-cost portfolios for three, six, nine and twelve month holding periods for a total of six years generates abnormal returns. The results of the study showed that stocks listed on the NSE experienced price continuation. Stocks experiencing a decline in their prices continued depreciating in price for a period not more than twelve months. On the other hand, stocks experiencing price rise continued appreciating for a period not more than twelve months. Portfolios constructed on these stocks are held for periods of six, nine and twelve months indicated that momentum profits are present on the NSE. However results on portfolios held for three months yielded insignificant results. The implication for the study is that it's possible to beat the NSE market by investing in stocks whose prices have returned an appreciation in the short term and divesting from stocks whose prices have depreciated in the short term. From Atiti (2005), it could be inferred that the NSE is not efficient hence the presence of the momentum anomaly.

George and Hwang (2004) found that a readily available piece of information—the 52-week high price–largely explained the profits from momentum investing. They examined the 52-week high because the models predicted, in particular, that traders were slow to react, or overreact, to *good* news. A stock whose price is at or near its 52-week high is a stock for which good news has recently arrived. This may be the time when biases in how traders react to news, and hence profits to momentum investing, are at their peaks.

The researcher was therefore motivated to enquire and explore as to whether these empirical findings are reflected within the context of the Nairobi Stock Exchange.

1.3 Objective

This paper set out to test the profitability of the 52-week high momentum strategy at the Nairobi Stock Exchange.

1.4 Importance of the Study

This study is important to the following:-

Investors: This study assists both small and institutional investors to ascertain the common stock portfolios to invest in and the strategy which yields the highest return.

Investment Banks: Will gain added value to their advisory services to their clients.

Government of Kenya: Enables establishment of taxes vis-à-vis dividend income and capital gains taxes.

Management of listed companies: Creates a better understanding of the Stock market returns as it may be tied to their compensation in terms of Employee Stock Options.

Academia: To verify whether various models related to returns are relevant outside of theory

2.0 LITERATURE REVIEW

2.1 Introduction

Fama (1970) made the following assumptions that imply an Efficient Capital Market:

- A large number of competing profit-maximizing participants analyze and value securities each independently of one another;
- Information regarding the security come into the market in a random manner
- The competing investors attempt to adjust security prices rapidly to reflect new information

The efficient market hypothesis implies that it is not generally possible to make above average returns in the stock market by trading (including market timing), except through luck or obtaining and trading on inside information.

There are three common forms in which the efficient markets hypothesis is commonly stated - weak form efficiency, semi-strong form efficiency and strong form efficiency.

2.1.1 Weak-form efficiency

Weak form efficiency is where stock prices fully reflect all security-market information, including the historical sequence of prices, rates of return, trading volume data, and other market generated information such as odd lot transactions, block trades and transactions by exchange specialists or other unique groups.

No excess returns can be earned by using investment strategies based on historical share prices or other financial data. Technical analysis will not be able to produce excess returns.
To test for weak-form efficiency it is sufficient to use statistical investigations on time series data of prices. In a weak-form efficient market current share prices are the best, unbiased, estimate of the value of the security. The only factor that affects these prices is the introduction of previously unknown news. News is generally assumed to occur randomly, so share price changes must also therefore be random.

2.1.2 Semi-strong form efficiency

Semi strong form efficiency includes current prices that fully reflect all public information. The semi strong hypothesis encompasses the weak form hypothesis because all market information considered by the weak-form hypothesis such as stock prices; rates of return and trading volume is public. Public information also includes all non-market information such as earnings; dividend announcements; price to earnings ratios; dividend yield; book value-market value; stock splits news about economy and stock splits.

Share prices adjust instantaneously and in an unbiased fashion to publicly available new information, so that no excess returns can be earned by trading on that information.

To test for semi-strong-form efficiency, the adjustments to previously unknown news must be of a reasonable size and must be instantaneous. To test for this, consistent upward or downward adjustments after the initial change must be looked for. If there are any such adjustments it would suggest that investors had interpreted the information in a biased fashion and hence in an inefficient way.

2.1.3 Strong-form efficiency

Share prices reflect all information and no one can earn excess returns. This means that no groups of investors can monopolistic access to the information relevant to the formation of prices

To test for strong form efficiency, a market needs to exist where investors cannot consistently earn excess returns over a long period of time. When the topic of insider trading is introduced, where an investor trades on information that is not yet publicly available, the idea of a strong-form efficient market seems impossible. Studies on the US stock market have shown that people do trade on inside information. It was also found though that others monitored the activity of those with inside information and in turn followed, having the effect of reducing any profits that could be made.

Even though many fund managers have consistently beaten the market, this does not necessarily invalidate strong-form efficiency. We need to find out how many managers in fact do beat the market, how many match it, and how many under perform it. The results imply that performance relative to the market is more or less normally distributed, so that a certain percentage of managers can be expected to beat the market. Given that there are tens of thousand of fund managers worldwide, then having a few dozen star performers is perfectly consistent with statistical expectations.

The early test surveyed by Fama & French (1970) generally provides evidence in support of the Efficient Market Hypothesis. However some recent studies provide evidence of predictability of returns on market indices and size-sorted portfolios. For example Fama & French (1988) report negative serial correlation in market returns over observation

intervals of 3 to 5 years and Lo & McKinley (1997) report positive serial correlation in weekly returns.

Many observers dispute the assumption that market participants are rational, or that markets behave consistently with the efficient market hypothesis, especially in its stronger forms. Many economists, mathematicians and market practitioners cannot believe that man-made markets are strong-form efficient when there are prima facie reasons for inefficiency including the slow diffusion of information, the relatively great power of some market participants (e.g. financial institutions), and the existence of apparently sophisticated professional investors.

The efficient market hypothesis was introduced in the late 1960s and the prevailing view prior to that time was that markets were inefficient. Inefficiency was commonly believed to exist e.g. in the United States and United Kingdom stock markets. However, earlier work by Kendall (1953) suggested that changes in UK stock market prices were random. Later work by Brealey and Dryden, and also by Cunningham found that there were no significant dependences in price changes suggesting that the UK stock market was weak-form efficient.

Further to this evidence that the UK stock market is weak form efficient, other studies of capital markets have pointed toward them being semi strong-form efficient. Studies by Firth (1976, 1979 and 1980) in the United Kingdom have compared the share prices existing after a takeover announcement with the bid offer. Firth found that the share prices were fully and instantaneously adjusted to their correct levels, thus concluding that the UK stock market was semi strong-form efficient.

It may be that professional and other market participants who have discovered reliable trading rules or stratagems see no reason to divulge them to academic researchers; the academics in any case tend to be intellectually wedded to the efficient markets theory. It might be that there is an information gap between the academics who study the markets and the professionals who work in them. Within the financial markets there is knowledge of features of the markets that can be exploited e.g. seasonal tendencies and divergent returns to assets with various characteristics. E.g. factor analysis and studies of returns to different types of investment strategies suggest that some types of stocks consistently outperform the market (e.g. in the UK, the USA and Japan).

2.2 An alternative theory: Behavioural Finance

Opponents of the EMH sometimes cite examples of market movements that seem inexplicable in terms of conventional theories of stock price determination, for example the stock market crash of October 1987 where most stock exchanges crashed at the same time. It is virtually impossible to explain the scale of those market falls by reference to any news event at the time. The correct explanation seems to lie either in the mechanics of the exchanges (e.g. no safety nets to discontinue trading initiated by program sellers) or the peculiarities of human nature.

It is certainly true that "behavioural psychology" approaches to stock market trading are amongst the most promising that there are (and some investment strategies seek to exploit exactly such inefficiencies). A growing field of research called Behavioural finance studies how cognitive or emotional biases, which are individual or collective, create anomalies in market prices and returns and other deviations from the EMH.

2.3 Market Anomalies

In recent years a body of evidence on security returns has presented a sharp challenge to the traditional view that securities are rationally priced to reflect all publicly available information.

Daniel, Hirshleifer & Subrahmanyan (1998) classify some of the more pervasive anomalies as follows:-

(i) Event-based return predictability (public-event-date average stock returns of the same sign as average subsequent long-run abnormal performance)
(ii) Short-term momentum (positive short-term autocorrelation of stock returns, for individual stocks and the market as a whole)
(iii) Long-term reversal (negative autocorrelation of short-term returns separated by long lags, or "overreaction")
(iv) High volatility of asset prices relative to fundamentals
(v) Short-run post-earnings announcement stock price "drift" in the direction indicated by the earnings surprise, but abnormal stock price performance in the opposite direction of long-term earnings changes.

2.4 52-week high strategy

Ginsburgh and Van Ours (2003), examine the career success of pianists who compete in the Queen Elizabeth Piano Competition. The order in which competitors play both across the week of the competition and on the night they perform (two perform each night) predicts the judges' ranking, even though order is chosen randomly. The authors find that subsequent career success as measured by critical acclaim and number of recordings is significantly related to the component of the competition

ranking that is related to order, i.e., the component that cannot be related to musicianship. Thus, the competition rankings are similar to the random number drawn in the "anchoring" experiments. The ranking is an anchor against which critics and the recording companies judge talent, which results in career momentum for musicians. This finding is noteworthy because critics and recording executives are professionals who have a financial stake in identifying intrinsic musical talent, similar to investors who attempt to identify the intrinsic value of a stock. Nevertheless, they appear to anchor on criteria that are unrelated to intrinsic talent.

GH's findings also suggest that models in which agents' valuations depend on nearness of the share price to an anchor will be successful in explaining price dynamics. Two theoretical papers take this approach. In Klein's (2001) model, the representative agent is motivated by tax avoidance. His demand for shares is positively related to the imbedded capital gain, so the anchor is the price at which shares are acquired. Klein uses this structure to explain long-term return reversals. In Grinblatt and Han (2002), a subset of agents is subject to a disposition effect making them averse to selling shares that result in the recognition of losses. The anchor in their model is also the acquisition price of the shares, but demand functions are negatively related to imbedded gains.
In the context of their model, Grinblatt and Han show that this dependence results in momentum behaviour for stocks whose prices are at or near long-run (e.g., 52-week) highs and lows. GH find that strategies based on Grinblatt and Han's anchor do generate significant profits that do not reverse. However, profits from this strategy are also strongly dominated by profits from the 52-week high strategy.

A Small Stock is classified as the bottom 30 percent of the stock in terms of market capitalisation and Large Stocks are classified as the top 30 percent of the stock in terms of market capitalisation.

A stock that tends to trade at a lower price relative to its fundamentals (i.e. dividends, earnings, sales, etc.) and thus considered undervalued by a value investor is referred to as a Value Stock. Common characteristics of such stocks include a high dividend yield, low price-to-book ratio and/or low price-to-earnings ratio. A value investor believes that the market isn't always efficient and that it's possible to find companies trading for less than they are worth.

A Growth Stock is one whose shares in a company whose earnings are expected to grow at an above average rate relative to the market. A growth stock usually does not pay a dividend, as the company would prefer to reinvest retained earnings in capital projects. Most technology companies are growth stocks. Note that a growth company's stock is not always classified as growth stock. In fact, a growth company's stock is often overvalued. It is also known as a "glamour stock".

The strategy is to hold, for (3, 6, 9, 12) months, a self-financing portfolio that is long the winner and short the loser portfolios. In any particular month j, the return to winners is calculated as the equally weighted average of the month j returns from winner portfolios, each formed in one of the prior months. The same is done to compute the month–j return to losers. The month–j return to the overall strategy is the difference between the month–j return to winners and the month-j return to losers.

The monthly returns of JT's strategy and the 52-week high strategy are obtained the same way. The only difference is that stocks are ranked using different measures of past performance than industry return. For

JT's strategy, stocks are ranked based on their own individual returns. For the 52-week high strategy, stocks are ranked based on the ratio of their price in that month to the highest price of that stock in the preceding 52 weeks.

2.5 Momentum and other Trading Strategies

According to GH it is possible that strategies based either on past returns or on earnings momentum strategies exploit market under-reaction to different pieces of information. For example an earnings momentum strategy may benefit from under reaction to information related to short-term earnings, while a price momentum strategy may benefit from the market's slow response to a broader set of information, including longer-term profitability. In this case we would expect that each strategy is individually successful and that one effect is not subsumed by the other. True economic earnings may be currently low even though the firm's prospects are improving. If the stock price incorporates other sources of information about future profitability, then there may be momentum in stock prices even with weak reported earnings.

The strategy, which is unique to this study, measures performance of individual stocks by reference to how close the current price is to the 52-week high. Long (short) positions are taken in stocks whose current price is close to (far from) the 52-week high.

Other methods of trading are based on the determination of the value of a firms' share. The expected cash flow of common stocks is determined by two elements:

- The dividends expected in each year
- The price the investors expect to receive when they sell their stock

The expected final stock price includes the return of the original investment plus an expected capital gain.

2.5.1 Stochastic Growth Rates

There does appear to be few more flagrant affronts to the idea of large excess returns to simple momentum strategies in the stock market. So naturally do these profit suggest underreaction by the market and so uncompromising seems the attempt to associate the rewards with risk factors, that asset pricing theories have mostly seen the task as simply one of deciding which set of irrationality is at work.

Johnson (2002) advances the hypothesis that stochastic growth rates may account for some or the entire momentum anomaly. The argument works because stock prices depend on growth rates in a highly sensitive, nonlinear way. Other things equal, recent performance is correlated with levels of expected growth rate, which is monotonically related to risk. This relationship is demonstrated analytically by means of a simple partial-equilibrium model. A more sophisticated version incorporating the notion of episodic, highly persistent growth rate shocks was able to achieve agreement with observation along a number of challenging dimensions. The results raise the possibility that the same basic mechanism could play a role in all the anomalism that fall under the general heading of underreaction.

In fact a simple standard model of firms cash flows discounted by an ordinary pricing kernel can deliver strong positive correlation between past realized returns and current expected returns. The framework is simplified and ignores many features crucial to valuating real firms.

Johnson sought to call attention to a direct, plausible and rational mechanism that may contribute to the momentum effects phenomenon.

The Key to Johnson model is stochastic expected growth rate. By their nature such growth rates affect returns in highly non-linear way, and the dynamics they imply, differ from those of familiar linear factors. Specifically the curvature with respect to growth rates of equity prices is extreme: their log is convex. This property means that growth rate risk rises with growth rates. Assuming that exposure to this carries a positive price, expected returns then rise with growth rates. Other things equal firms that have recently had large positive price moves are more likely to have had positive growth rate shocks than other firms with negative growth shocks one likely among poor performers. Thus a momentum sort will tend to sort according to growth rate levels, and hence by end of period expected returns.

When it comes to mimicking actual empirical results the basic model runs into some problems. Most notably to achieve large effects growth rate shocks must decay quite slowly. But this persistence implies risk premium and the associated risks will also be persistent. By contrast excess returns to portfolios formed according to momentum vanish for holding periods beyond one year. Moreover violating differences between high and low momentum portfolios are not large in part formation periods suggesting that Johnson addresses this and other short comings of the original model with a natural extension allowing shocks to growth rates to be episodic.

More precisely he envisioned a precise two-regime process in which persistent shocks occur only in the more infrequent short-lived stage. This introduced a characteristic time scale beyond which effects would be undetectable. The switching model can also explain the fact that either

short or long term portfolio formation periods capture changes in the subsequent expected returns.

While the enhanced model sacrifices the traceability of the original, its premise is not artificial. The intuition is simply that the persistent growth rate shocks represent major changes in a business condition like those associated with fundamental technological innovation. Such innovations do tend to be rare and episodic. Moreover technological shocks are likely to be common within sectors, which might account for industry component of momentum profits reported by Markowitz and Grinblatt (1999).

Recent work by Berk et al (1999) demonstrates that a rich variety of return patterns including momentum effects can result from the variation of exposures over the life cycle of firms endogenously chosen projects. Johnson (2002) complimented the above line of research by pointing out a more direct channel from cash flows to momentum of returns.

In conclusion Johnson implies that past performance is essentially acting as: first an instrument for persistent change in expected dividend. Secondly perhaps the most fundamental objective to risk based explanations of objectives is that risk is part of the story that seems absent. Momentum strategies do not appear officially dangerous. Johnson skirted the above issue by not identifying the state price density covariance with which of which is the relevant measure of dangerousness.

The empirical task in the above study is first to establish whether there is a systematic and persistent component of growth rate shocks at all. And secondly to establish whether exposure to those components is associated with positive expected returns independent of momentum.

2.5.2 Trade Volume Theory

Several theoretical papers conjecture that there is a relationship between trading volume and predictable patterns in short horizon security returns. Blueme et al (1994) showed that volume provides information that cannot be deduced from the price statistic and demonstrated that traders who use information contained in the volume statistic do better that those who do not.

Campbell et al (1993) argued that because the valuation in the aggregate demand of the liquidity also generate large levels of the trade, volume information can help fluctuating demand of liquidity traders and those that are due to change in expected returns. An implication of these models is that price changes accompanied by large trading volumes tend to be reversed.

Wang (1994) examines the link between the nature of heterogeneity among investors and the behavior of trading volume and its relation to the price dynamics. In the model uninformed investors trade against informed investors and will revise their positions when they realize their mistakes. When the returns are higher in the previous period it could be due to private information the high realized returns accompanied by high volume in the past will be followed by high future returns. If it is due to non-informational reasons the high-realized returns will be followed by low future returns.

Conrad et al (1994) provides empirical evidence on the relations. They report that high transaction securities experience price reversals, while the returns of low transactions securities are positively auto correlated, a result that seems to be consistent with Campbell et al (1993).

Rouwenhorst (1998) examined whether the volume information could result in momentum. He found profits and weekly returns to be higher for portfolios of countries with high lagged trading volume that portfolios of countries with low lagged trading volumes. This indicates that price continuation is stronger following an increase in trading volume.

Lee and Swaminathan (1999) in their study of price momentum and trading volume found that past trading volume predicts both the magnitude and the persistence of future price momentum. Specifically high (low) volume winners (losers) experience faster momentum reversals.

Chan et al (2000) also examined whether the volume information could affect the momentum profits of a sample of seventeen markets. They reported that the profits and weekly returns were higher for the portfolio of countries with high lagged trading volume than for the portfolios of countries with low lagged trading volume. This indicates that price continuation is stronger following an increase in trading volume. This result is inconsistent with the conjecture that momentum profits arise from under reaction to information due to insufficient trading. It also contradicts the prediction of Campbell et al (1993) and the empirical evidence in Conrad et al (1994).

Finally the evidence also suggests that price continuation cannot be explained by non-synchronous trading. According to non-synchronous hypothesis when trading volume is high at time t-1, so that there will be less return combination at time t. On further examination of non-synchronous trading hypothesis, Chan et al (2000) found out that not all momentum profit could be explained by the theory.

Although the theory holds that when there is non-synchronous trading, index returns are likely to be auto correlated so that momentum strategies that exploit return continuation seem to be profitable.

To mitigate the effect of non-synchronous trading, Tong et al (2000) implemented the strategy with a lag of one week: that buying winner countries and selling loser country stocks one week after evaluating their past performance. If all components of underlying stock indices trade at least one week, this procedure was adequate in eliminating any spurious momentum profits due to non-synchronous trading. Certainly if the stocks trade much more frequently and momentum builds up within a week, the above correction procedure will over adjust for the non-synchronous trading bias and then the momentum profits will be understated.

Besides the beta they also calculated the variance of high volume and low volume momentum portfolios. They found variance of high volume portfolios to be lower than that of low volume portfolios and therefore refuted the conjecture that the profits to high volume portfolio are due to higher total risks, the risk adjusted return.

2.5.3 Different Betas in the Up and Down Markets

Another explanation for the momentum profits is that the simple beta adjustment is not adequate in reflecting compensation for risk. As reported by Rouwenhorst (1998), the winners and losers could have different betas in up and down markets. To evaluate this possibility Chan et al (2000) regressed the excess US dollar returns (in excess of risk free rate) of their momentum portfolios on the excess of the Morgan Stanley Capital International world index but allowed for different betas in the up and down markets.

For the momentum effects to be consistent with market dependent betas, winners will have higher betas in up markets and lower betas than losers in a down market. Chan et al (2000) provided evidence that was partially consistent with the above explanation. Their evidence shows that winner countries have lower betas then loser countries in the down market. After the adjustment of the changing betas in the up and down market, the risk adjusted returns become smaller and statistically significant only for the two-week holding period.

Chan et al also performed similar risk adjustment for returns of momentum portfolios with low past trading volume. Their results showed that for momentum portfolios with low past trading volume, the risk adjusted returns are generally insignificant for short horizons. Therefore even though the returns for momentum strategies under low trading volume, they do not fully explain the results to momentum strategies when trading volume is high.

Beside the beta, Chan et al also calculated the variance of high volume and low volume momentum portfolios. They found variance of high volume portfolios to be lower than that of low volume portfolios and therefore refuted the conjecture that the profits to high volume portfolios are due to higher total risks, the risk adjusted return.

2.5.4 Size of Stock Theory

Lakonishok et al (1992) provides evidence of pension fund managers' tendency to by past winners and sell past losers in herds with slightly stronger evidence that they herd around small stocks. In addition Hong and Stein (2001) reported that short run continuation and long run reversals should be more pronounced in small stocks.

Jegadeesh and Titman (2001) found intriguing results relating to small versus large stocks and the long side versus short side of trading

strategy, given the conventional wisdom that leaving, profit opportunities will be sustained longer when there are higher costs of implementing the strategies.

The transaction costs explanation suggests that momentum profits will dissipate faster for stocks which are cheaper to trade and that because of the costs of short selling the profits from trading past winners should be eliminated more quickly than profits from trading past losers. On examining raw returns, Jegadeesh and Titman found reversals for the larger firms but for smaller firms they did find somewhat stronger evidence of post-holding period returns reversals.

Liquidation is more realistic than book value because it is based on current market value of the firm's assets, but it fails to consider the earnings power of those assets.

2.5.5 Overconfidence Theory

Many scholars would agree that their notion rationally should not be taken too literally. First this notion implicitly assumes that individuals have an unlimited ability to both observe and process information. In reality investors do much of their analysis based on feelings which can easily be influenced by behavioral biases.

Behavioral finance offers an alternative paradigm to the efficient market hypothesis, one in which individuals make systematic mistakes in the way they process information. The most prominent anomalies can be explained by 'investor overconfidence'. Overconfidence is one of the most strongly documented behavioral biases. In their summary of the micro-foundation of behavioral finances, DeBondt and Thaler (1998) stated the finding that people are overconfident as perhaps the most robust finding in the psychology of judgment. Moreover some evidence suggests that

experts tend to be more overconfident than relatively inexperienced individuals (Griffin & Tresky, 1992).

Experimental evidence also suggests that the degree to which individuals are overconfident depends on the situation. Overconfidence is generally stronger for more diffuse tasks for which feedback is low than for more mechanical tasks that provide immediate and conclusive outcome feedback such as solving arithmetic problems and weather forecasting (Einhom, 1980).

Evolutionary theories suggest that those individuals who appear to be the strongest and the smartest are more likely to attract mates and reproduce. The ability to at as though one is strong and smart, therefore provides comparative advantage in the evolutionary competition for survival.

For similar reasons appearing to be confident might enhance short-term economic survival. Even in the money management business, where results are easy to measure and reward. Kent and Titman (1999) suspected that portfolio managers who appear more confident would more successfully attract clients. An important ingredient in this theory is that individuals can better fool others about their ability if they can first fool themselves.

In other words, self-confident individuals will appear to be more competent than individuals who are insecure about their own inabilities. As a result individual who successfully filter information in ways that add to their self-confidence, might in theory be more successful than individuals who always interpret information rationally.

Overconfidence has both direct and indirect effect on how individuals process information. The direct effect discussed by Daniel et al (1998), is

simply that individuals place too much emphasis on information they collect themselves because they tend to over estimate the precision of such information.

2.5.5.1 Overreaction and Underreaction

The indirect effect of overconfidence arises because individuals filter information and bias their behaviour in ways that allow them to maintain their confidence (Daniel et al, 1998).

Psychologists have developed theories that describe this type of behavior. Among the theories developed are cognitive dissonance, attribution biases and conservatism. Daniel et al (1998) and Barberis and Vishny (1998) discusses how this kind of biases could explain momentum effects. Interestingly these models illustrate how overconfidence can generate both overreaction and underreaction and how both reactions can be consistent with momentum effects. Specifically Barberis & Vishny described a conservative bias that results in investors overweighing their prior beliefs and thereby under reacting to new information using representative agent models.

However, Hong and Stein (1999) argued that it is impossible to make predictions linking trading horizons to the temporal pattern of autocorrelations. Second neither the Barberis et al nor the Daniel et al models seem to be able to easily generate their prediction that both continuation and reversals are more pronounced in stocks with thinner analyst coverage. A further difference is that this model allows for a differential impose to public and private shocks.

In Daniel et al investors are found to estimate investment value together with the precision of their valuation. Because of attribution, the overweigh information that confirms their original valuation and under weigh information that was inconsistent with their views. As a result their

estimates of the precision of their valuations increased over time, which could produce momentum as a sort of delayed overreaction.

However, Lee and Swaminathan (1998) findings refute the common presumption that pure momentum is simply a market underreaction. Instead the evidence suggests that at least a portion of the initial momentum gain is better characterized as an overreaction.

2.5.5.2 News watchers and Momentum Traders

A later study by Hong and Stein (1999) developed a unified theory of how under reaction and over reaction explain momentum trading. In their study they modeled a market populated by two groups of agents each being able only to process some subset of the available public information. The two agents: news watchers and momentum traders are bounded rationally and reversals are ascribed to the interaction at the market place. Less of the action in their model comes from particular cognitive biases that they ascribed to individual traders and more of it came from the way these traders interact with one another.

The news watchers make forecasts based on signals that they privately observe about future fundamentals, their limitations is that they do not condition on current or past prices. Momentum traders in contrast do not condition on past prior change. However their limitation is that their forecasts must be simple functions of the history of past prices.

In addition to Hong and Stein imposing the above constraints on the information processing abilities of their traders in their model, they make a further assumption, which was more orthodox in nature. They assumed that private information diffuses gradually across the news watchers population.

Hong and Stein showed that when only news watchers are active, prices adjust slowly to new information thus leading to under reaction but never overreaction. When momentum traders are added it is tempting to conjecture that since they condition on past prices, they arbitrate away any underreaction left behind by the news watchers. With sufficient risk tolerance, one might expect that they may force the market to become approximately efficient.

However it turned out that this intuition is incomplete if momentum traders are limited to simple strategies. For example suppose that a momentum trader at time t must base his trade only on the price change over some prior interval, say from t-2 to t-1. They showed that momentum traders attempt to profit from underreaction caused by news watchers lead to perverse income.

The initial action of price in the direction of fundamentals is indeed accelerated, but this comes at the expense of creating and eventual overreaction to any news. This is true even when momentum traders are risk neutral.

The key to the above result is the assumption that momentum traders use simple strategies that is they do not condition on all public information. Continuing with the example if momentum trader order at time t is restricted to being a function of just the price change from time t-2 to t-1, it is clear that it must be an increasing function on the average the simple trend chasing strategy makes money. But if one could condition more information, it would become apparent that the strategy does better in some circumstances than in others.

In particular the strategy earns the bulk of its profits in the momentum cycle (shortly after substantial news has arrived to the news watchers) and loses money late in the cycle, by which time prices have already

overshot long-run equilibrium values. To illustrate the above point suppose there is a single dose of good news at time t and no change in fundamentals after that. The news watchers cause prices to jump at time t, but far enough so that they are still below their long run values. At time t+1 there is a round of momentum purchases and those momentum buyers who get in at this time make money. But this round of momentum trading creates further price increase, which sets off more momentum buying and so on. Later momentum buyers (i.e. those buying at time t+i for some i) lose money, because they get in at price above the long run equilibrium.

Thus the crucial insight is that early momentum buyers impose a negative externality on late momentum buyers. Ideally one uses a momentum strategy because a price increase signals that there is good news about fundamentals out there that is not fully incorporated into the prices. But sometimes a price increase is the result not of news but of previous rounds of momentum trade. Because momentum traders cannot directly condition on whether or not news has recently arrived, they do not know whether they are early or late in the cycle. Hence they must live with the externality and accept the fact that sometimes they buy when earlier rounds of momentum trading have pushed prices past long-term equilibrium values.

2.5.5.3 Criticism of Hong and Stein

Although Hong and Stein (1999) make two distinct bound-rationality assumptions, their model can be said to nullify underreaction and overreaction in the following sense. They began by modeling a tendency by one group of traders to under react to private information. They then showed that when a second group of traders tries to exploit this under reaction with a simple arbitrage strategy, they only partially eliminate it and in so doing, create an excessive momentum in prices that inevitably

culminates in overreaction. Thus the very existence of underreaction sows seeds for overreaction, by making it profitable for momentum traders to enter the market. Or said differently the unity lays in the fact that Hong and Stein model gets both underreaction and overreaction out of just one primitive type of shock, gradually diffusing news about fundamentals. There are no exogenous shocks and no liquidity motivated traders.

2.5.6 Analyst Delay in Adjusting Forecast Theory

Klein (1990) found that analysts remain overly optimistic in their forecast for companies that have experienced poor stock price performance. One conjecture is that it may not be in an analyst best interest to be the first messenger of with bad news (a negative forecast) because doing so might antagonize corporate managers. Analyst may prefer to remain optimistic and wait of additional confirmatory evidence of poor earnings before slowly modifying their estimates.

Chan et al (1999) investigated the returns of momentum strategy around earnings announcements and future analysts' revisions for the portfolio formed on the standardized unexpected earnings and past analysts revisions. Their findings were similar to the findings for the prices momentum portfolios. The market has pleasantly surprised around earnings announcement for the winners up to two quarters after portfolio formation and vice versa for the loser.

Meanwhile analysts gradually revised downwards their earnings forecasts for all companies. The downward revision was more pronounced for past losers. All in all the association between prior returns and prior earnings news as well as sluggishness in the markets response to the past earnings surprise provides further evidence that the market is slow in fully responding to new information.

Another of evidence compatible with the sluggish response for market participants are the long time it takes for analysts to adjust their forecasts. According to Hong and Stein (1999) both short and long term continuation reversals should be more pronounced in those small, low-analyst coverage stocks where information diffuses more slowly.

This inertia is revising forecasts may not be helping the market to assimilate new information in a timely manner. Analysts are especially slow in revising their estimates in firms with the worst performance. This may be due to the analysts need to maintain good relations with corporate managers. (Givoly et al, 1979)

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter constitutes the blueprint for the collection, measurement and analysis of data. This blue print includes the population, sample, method of data collection and analysis.

3.2 Research Design

The research confined itself to the population from Nairobi Stock Exchange, years 1999– 2006 (8 years) and was drawn from the equity securities counters from the Main Investment Market Segment (MIMS) and the Alternative Investment Market Segment (AIMS) which constitutes 52 counters. It did not include the Fixed Income Securities Market Segment (FISMS) or the Bond Market.

3.3 Data Collection

The requisite data on the share prices which is the average monthly prices across 51 counters, dividends payout by the various companies during the period of study, 52-week lows and highs which is published by the NSE and constitutes secondary data was obtained from the NSE data base which is available at the NSE library. The data was obtained by exploring the data base and interviewing the relevant staff at the NSE.

Once the data was collected it was manipulated as follows:-

- The ranking of each counter was determined based on the nearness of the price at time *t-1* to the preceding 12 month high
- The total number of counters was divided into three different groups
- The groups will then be ranked into winners (top group) and losers (bottom group)

- The returns of each counter was determined based on the compound return i.e. Capital gains plus the dividend at time *t* divided by the price at time *t-1.*

3.4 Strategy Formulation and Evaluation

3.4.1 Trading Strategies

Using the 52-week high trading strategy at the end of each month, all stocks with a return history of at least 12 months were ranked in ascending order based on their nearness to the 52-week high in ascending order and assigned to one of 3 portfolios based on their j-month ratios. The ratio was determined by dividing the average holding price at month j with the highest price in the preceding 52-weeks. The top 30% were assigned to a portfolio referred to as a winner portfolio and the bottom 30% to a loser portfolio. The middle 40% was excluded. The holding period was varied as determined in step two below.

3.4.2 Analysis of the strategies

Step one: Computation of j-month price

The j-month (j=3, 6, 9 & 12) price for each stock was computed by averaging its monthly price for j months and dividing by j as shown below:

$$P_s(j) = \frac{\Sigma P_s(t)}{j}$$

s – stock number (1 to n)

t – time (1 to m) months

j - 3, 6, 9, 12

Step Two: Ranking of stocks and portfolio formation

The stocks were ranked in ascending order based on their nearness to the 52-week high and assigned to one of 3 portfolios based on their j-month ratios

$$\frac{P_s(j)}{high_s(j)}$$

where P_s (j) was the price of stock *s* at the end of month *j* and $high_s$ (j) was the highest price of stock *s* during the 12-month period that ended on the last day of month *j* and (j=3, 6, 9, 12). The holding period was (k= 3, 6, 9, 12).

Step Three: Computation of portfolio returns

The portfolios were held for k-months (k=3, 6, 9, 12) after which their returns were computed. To compute this return, the monthly return for each stock in the portfolio for k months was summed and divided by the number of stocks in the portfolio(x).

$$R_w(j/k) = \sum_{s=1}^{x} \{\sum_{t=1}^{k} R_s(t)\}/j$$

$$R_L(j/k) = \sum_{s=1}^{x} \{\sum_{t=1}^{k} R_s(t)\}/j$$

Where

$$\sum_{t=1}^{k} R_s(t) = \frac{(P_t - P_{t-1}) + D}{P_{t-1}}$$

and

$\mathbf{R_w(j/k)}$ was the average monthly return on winner portfolio held under j-month/k-month strategy and $\mathbf{R_L(j/k)}$ was the loser portfolio

Step Four: Computation of zero-cost portfolio returns

The returns on the zero-cost portfolio were computed by subtracting the average monthly return on the loser portfolio from that of the winner portfolio.

$$R_{(W-L)}(j/k) = R_W(j/k) - R_L(j/k)$$

Step 5: testing for significance of the portfolios average returns

Statistical tool used to test significance of the returns was the t-test. The maximum allowed error using this tool was 0.05

3.5 Hypothesis

Null hypothesis Ho: 52-week high momentum strategy is equal to zero

Alternate hypothesis HA: 52-week high momentum strategy is not equal to zero

4.0 DATA ANALYSIS

4.1 Detection of Momentum

The requisite data on the daily share prices drawn from the equity securities counters from the Main Investment Market Segment (MIMS) and the Alternative Investment Market Segment (AIMS) across 52 counters from 1999 to 2006 was obtained from the NSE data base. All corporate actions in terms of dividend payouts for the same period were also obtained.

Out of the 52 counters that were listed as at the end of the year 2006, 7 did not qualify for inclusion due to the following reasons: - Equity, Eveready, Hutchings Biemer, KenGen, Mumias and ScanGroup were not listed for the entire period from 1999 to 2006 and Uchumi Supermarkets was suspended from trading when it went into receivership in 2006. Therefore the analysis was confined to the remaining 45 counters.

Next the average monthly price for the 96 months was computed for each counter. The monthly price was then used to obtain the 52-week high for each counter over the 8 year period. The counters were then divided into 4 different worksheet representing the average price for j = 3, 6, 9, and 12 months.

The j-month ratios were then determined by dividing the j-month average price by the 52 week high and the stocks were then ranked in ascending order based on their nearness to the 52 week high.

The monthly returns for each counter was then calculated based on the capital gains and the dividend paid out as indicated in *List I* in the appendices.

4.2 Analysis of Momentum Strategies

Based on their rankings determined on their nearness to the 52-week high, the j-month average return was computed based on k-month holding strategies for 3, 6, 9 and 12 months. The top 30 percent were represented by 14 counters and were the winner portfolio and the loser portfolio was also represented by 14 counters.

The returns on the zero-cost portfolio were computed by subtracting the average monthly return on the loser portfolio from that of the winner portfolio the results of which are summarised in Table I below. The t-statistics are indicated in parenthesis.

Table I: Returns of relative strength portfolios

month (j)	period (k)	3	6	9	12
3	winner	2.38%	2.21%	2.34%	2.43%
	t-statistic	(2.71)	(2.89)	(3.18)	(2.74)
	loser	2.23%	2.16%	2.01%	1.98%
	t-statistic	(2.85)	(3.13)	(3.19)	(2.59)
	winner - loser	0.15%	0.05%	0.33%	0.45%
	t-statistic	(0.28)	(0.10)	(0.85)	(0.84)
6	winner	2.88%	2.62%	2.54%	2.80%
	t-statistic	(1.97)	(2.25)	(2.30)	(2.82)
	loser	1.89%	2.48%	2.05%	2.20%
	t-statistic	(1.67)	(2.50)	(2.29)	(2.70)
	winner - loser	0.99%	0.14%	0.49%	0.60%
	t-statistic	(1.17)	(0.20)	(0.93)	(1.11)
9	winner	3.20%	2.67%	2.72%	2.86%
	t-statistic	(1.50)	(1.55)	(1.66)	(2.01)
	loser	2.21%	2.43%	1.62%	1.73%
	t-statistic	(2.50)	(1.90)	(1.51)	(1.86)
	winner - loser	0.99%	0.24%	1.10%	1.13%
	t-statistic	(0.60)	(0.23)	(1.01)	(1.30)
12	winner	2.66%	2.40%	2.93%	3.08%
	t-statistic	(1.53)	(1.23)	(1.58)	(2.07)
	loser	2.58%	2.30%	2.18%	2.49%
	t-statistic	(1.92)	(1.75)	(1.61)	(2.02)
	winner - loser	0.08%	0.10%	0.75%	0.59%
	t-statistic	(0.15)	(0.09)	(0.75)	(0.59)

4.2.1 Trading Strategy (3, 3)

This is the trading strategy where the formation of the portfolio is over a 3 month period and is held for 3 months. The return on the winner portfolio yields a return of 2.38% which is 0.15% more than the loser portfolio which has a return of 2.23%. Zero-cost portfolio yields an annual return of 1.84% and a significance test of 0.28.

This is consistent with the findings of Jegadeesh and Titman (1993) who used data from January 1965 to December of 1989. The winner portfolio had a return of 1.4% and the loser portfolio of 1.08% with zero-cost portfolio return of 0.32%.

4.2.2 Trading Strategy (3, 6)

This is the trading strategy where the formation of the portfolio is over a 3 month period and is held for 6 months. The return on the winner portfolio yields a return of 2.21% which is 0.05% more than the loser portfolio which has a return of 2.16%. The return on the zero-cost portfolio yields an annual return of 0.53% and a significance test of 0.10.

In Jegadeesh and Titman's (1993) findings the winner portfolio had a return of 1.49% and the loser portfolio of 0.91% with zero-cost portfolio return of 0.58%.

4.2.3 Trading Strategy (3, 9)

This is the trading strategy where the formation of the portfolio is over a 3 month period and is held for 9 months. The return on the winner portfolio yields a return of 2.34% and the loser portfolio has a return of 2.01%. The return on the zero-cost portfolio yields a return of 0.33% per

month translating into an annual return of 3.98% and a significance test of 0.85.

In Jegadeesh and Titman's (1993) findings the winner portfolio had a return of 1.52% and the loser portfolio of 0.92% with zero-cost portfolio return of 0.61%.

4.2.4 Trading Strategy (3, 12)

This is the last of the trading strategies where the formation of the portfolio is over a 3 month period and is held for 12 months. The return on the winner portfolio yields a return of 2.43% and the loser portfolio has a return of 1.98%. The return on the zero-cost portfolio yields a return of 0.45% per month translating into an annual return of 5.38% and a significance test of 0.84.

This compares with Jegadeesh and Titman's (1993) findings where the winner portfolio had a return of 1.56% and the loser portfolio of 0.87% with zero-cost portfolio return of 0.69%.

4.2.5 Trading Strategy (6, 3)

On the first of the trading strategies where the formation of the portfolio is over a 6 month period and is held for 3 months; the return on the winner portfolio yields a return of 2.88% and the loser portfolio has a return of 1.89%. The return on the zero-cost portfolio yields a return of 0.99% per month translating into an annual return of 11.89% and a significance test of 1.17.

With Jegadeesh and Titman's (1993) findings the winner portfolio had a return of 1.71% and the loser portfolio of 0.87% with zero-cost portfolio return of 0.84%.

4.2.6 Trading Strategy (6, 6)

This is the trading strategy where the formation of the portfolio is over a 6 month period and is held for 6 months. The return on the winner portfolio yields a return of 2.62% and the loser portfolio has a return of 2.48%. The return on the zero-cost portfolio yields a return of 0.14% per month translating into an annual return of 3.98% and a significance test of 0.20.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.74% and the loser portfolio of 0.79% with zero-cost portfolio return of 0.95%.

This is consistent with the findings of Moskowitz & Grinblatt (1999) who used data from July 1963 to July of 1995. The winner portfolio had a return of 1.61% and the loser portfolio of 1.18% with zero-cost portfolio return of 0.43%.

George and Hwang (2004) find that the winner portfolio returns are 1.3% while the loser portfolio returns are 0.07%. The zero portfolio returns are 1.23%. The data is from a period from July 1963 to December of 2001.

4.2.7 Trading Strategy (6, 9)

This is the trading strategy where the formation of the portfolio is over a 6 month period and is held for 9 months. The return on the winner

portfolio yields a return of 2.54% and the loser portfolio has a return of 2.05%. The return on the zero-cost portfolio yields a return of 0.49% per month translating into an annual return of 5.89% and a significance test of 0.93.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.74% and the loser portfolio of 0.72% with zero-cost portfolio return of 1.02%.

4.2.8 Trading Strategy (6, 12)

This is the trading strategy where the formation of the portfolio is over a 6 month period and is held for 12 months. The return on the winner portfolio yields a return of 2.80 % and the loser portfolio has a return of 2.20%. The return on the zero-cost portfolio yields a return of 0.60% per month translating into an annual return of 7.22% and a significance test of 1.11.

Moskowitz and Grinblatt (1999) find that the winner portfolio under this trading strategy has a return of 1.56% and the loser portfolio of 1.16% with zero-cost portfolio return of 0.40%.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.66% and the loser portfolio of 0.80% with zero-cost portfolio return of 0.86%.

4.2.9 Trading Strategy (9, 3)

This is the trading strategy where the formation of the portfolio is over a 9 month period and is held for 3 months. The return on the winner portfolio yields a return of 3.20% and the loser portfolio has a return of

2.21%. The return on the zero-cost portfolio yields a return of 0.99% per month translating into an annual return of 11.84% and a significance test of 0.60.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.86% and the loser portfolio of 0.77% with zero-cost portfolio return of 1.09%.

4.2.10 Trading Strategy (9, 6)

This is the trading strategy where the formation of the portfolio is over a 9 month period and is held for 6 months. The return on the winner portfolio yields a return of 2.67% and the loser portfolio has a return of 2.43%. The return on the zero-cost portfolio yields a return of 0.24% per month translating into an annual return of 2.92% and a significance test of 0.23.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.86% and the loser portfolio of 0.65% with zero-cost portfolio return of 1.21%.

4.2.11 Trading Strategy (9, 9)

This is the trading strategy where the formation of the portfolio is over a 9 month period and is held for 9 months. The return on the winner portfolio yields a return of 2.72% and the loser portfolio has a return of 1.62%.The return on the zero-cost portfolio yields a return of 1.11% per month translating into an annual return of 13.28% and a significance test of 1.01.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.76% and the loser portfolio of 0.71% with zero-cost portfolio return of 1.05%.

4.2.12 Trading Strategy (9, 12)

This is the trading strategy where the formation of the portfolio is over a 9 month period and is held for 12 months. The return on the winner portfolio yields a return of 2.86% and the loser portfolio has a return of 1.73%. The return on the zero-cost portfolio yields a return of 1.13 % per month translating into an annual return of 13.59% and a significance test of 1.30.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.64% and the loser portfolio of 0.82% with zero-cost portfolio return of 0.82%.

4.2.13 Trading Strategy (12, 3)

This is the trading strategy where the formation of the portfolio is over a 12 month period and is held for 3 months. The return on the winner portfolio yields a return of 2.66% and the loser portfolio has a return of 2.58%.The return on the zero-cost portfolio yields a return of 0.08% per month translating into an annual return of 1.0% and a significance test of 0.15.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.92% and the loser portfolio of 0.60% with zero-cost portfolio return of 1.31%.

4.2.14 Trading Strategy (12, 6)

This is the trading strategy where the formation of the portfolio is over a 12 month period and is held for 6 months. The return on the winner portfolio yields a return of 2.40% and the loser portfolio has a return of 2.30%. The return on the zero-cost portfolio yields a return of 0.1% per month translating into an annual return of 1.18% and a significance test of 0.09.

Under this trading strategy Moskowitz and Grinblatt (1999) find that the winner portfolio has a return of 1.64% and the loser portfolio of 1.11% with zero-cost portfolio return of 0.53%.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.79% and the loser portfolio of 0.65% with zero-cost portfolio return of 1.14%.

4.2.15 Trading Strategy (12, 9)

This is the trading strategy where the formation of the portfolio is over a 12 month period and is held for 9 months. The return on the winner portfolio yields a return of 2.93% and the loser portfolio has a return of 2.18%. The return on the zero-cost portfolio yields a return of 0.75% per month translating into an annual return of 8.96% and a significance test of 0.75.

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.68% and the loser portfolio of 0.75% with zero-cost portfolio return of 0.93%.

4.2.16 Trading Strategy (12, 12)

This is the trading strategy where the formation of the portfolio is over a 12 month period and is held for 12 months. The return on the winner portfolio yields a return of 3.08% and the loser portfolio has a return of 2.49%. The return on the zero-cost portfolio yields a return of 0.59% per month translating into an annual return of 7.08% and a significance test of 0.59

With Jegadeesh and Titman's (1993) findings the winner portfolio has a return of 1.55% and the loser portfolio of 0.87% with zero-cost portfolio return of 0.68%.

Under this trading strategy Moskowitz and Grinblatt (1999) find that the winner portfolio has a return of 1.43% and the loser portfolio of 1.16% with zero-cost portfolio return of 0.26%.

It will be noted that in the trading strategies above, most of the observations were compared with the findings of Jegadeesh and Titman (1993). The reason is that in their studies, they provided the most detailed analysis of each strategy compared to George and Hwang (2004), who only analysed the 6,6 strategy and Moskowitz and Grinblatt (1999) who only provided the 6,6; 6,12; 12,6 and 12,12 strategies which were relevant to this study.

Table II below summarises the statistical analysis of each strategy.

Table II: Annual Statistical Analysis of Momentum Strategies Returns

month (j) period (k)		Mean	Variance	Standard Deviation	Pearson Correlation	Annual Return
3,k	winner	2.34%	0.17%	4.11%	0.96	28.06%
	loser	2.09%	0.13%	3.62%	0.94	25.13%
6,k	winner	2.71%	0.19%	4.32%	0.96	32.56%
	loser	2.16%	0.12%	3.50%	0.95	25.89%
9,k	winner	2.86%	0.25%	4.95%	0.96	34.36%
	loser	2.00%	0.09%	2.98%	0.89	23.95%
12,k	winner	2.77%	0.17%	4.09%	0.97	33.21%
	loser	2.39%	0.09%	3.03%	0.95	28.66%

4.3 Conclusion

The returns of all the zero-cost portfolios are positive and range between 0.05% and 1.13% with the 3,6 strategy giving the least average monthly return and the 9,12 strategy yielding the highest average return. All the returns are statistically significant at 95% level of confidence except loser 6,3; winner 9,3; winner 9,6; 9,9; 12,6 & 12,6 portfolios whose t-test values were below their respective critical values. All portfolios are positive correlated and the 9,k strategy yield on average the highest annual return of 10.41%.

5.0 CONCLUSION

5.1 Summary

This paper set out to test the profitability of the 52-week high momentum strategy at the Nairobi Stock Exchange.

The test was conducted on 45 counters listed on the Main Investment Market Segment and the Alternate Investment Market Segment from the year 1999 to 2006. The monthly average return for each stock was calculated and the 52 week high over the 8 year period was derived from the data.

The various formation strategies for 3, 6, 9 and 12 months was developed and the ratios that determined their rankings was calculated. The stocks were then ranked in ascending order with the winner portfolio consisting of 14 counters whose ratios were the furthest from 1 and the loser portfolios drawn from the stocks whose ratio was nearest to 1.

Each of the winner and loser portfolios were held for periods of 3, 6, 9 and 12 months and their monthly average return was computed. All were statistically significant and the monthly range was from 0.04% to 1.13% translating to annual portfolio returns from 0.53% to 13.59%.

The 9, 3 holding period monthly return experience the highest volatility of all the portfolio strategies observed. The standard deviation of the winner portfolio is 0.0637. In general, it was observed that the winner portfolios in the strategies were on average more volatile than their comparative loser portfolio. The 12 month portfolio strategies had the least volatility in general.

5.2 Conclusion

From the study it is observed that stocks at the Nairobi Stock Exchange experience price continuation during the years 1999 – 2006.

In all strategies, the winner portfolios outperformed the loser portfolio and the null hypothesis which states 52-week high momentum strategy is equal to zero is rejected. The findings are therefore inconsistent with Efficient Market Hypothesis as postulated by Fama (1970).

These findings are consistent with those of George and Hwang and agree with those of previous studies on momentum. Jegadeesh and Titman (1993) concluded that trading strategies that buy past winner and sell past loser realise significant abnormal returns over the 1965 – 1989 period. The strategy examined in detail by JT selected stocks based on 6 month returns and held for 6 months. The strategy yielded a compounded excess return of 12.01% per annum on average. Additional evidence indicates that the profitability of the relative strengths strategies is not due to their systematic risk or lead-lag effects, resulting from delayed stock price reaction to common factors.

5.3 Limitations

Some of the limitations of the study stem from very few companies listed on the NSE Despite its long history and therefore the number of counters was limited for the period under study. A list of the companies that were included and excluded are listed in the appendices.

Some of the counters had issues associated with liquidity which led to long periods where the stock was not traded. These affected the study as these stocks consistently formed part of the loser portfolios.

The date of the dividend announcements for most stocks was available. However not all counters showed the date when the dividends were effected and therefore the announcement date was deemed to be the effective date.

The sample size was reduced as the formation periods grew from 3 to 12 months as no overlapping strategies were employed. And finally the monthly average pricing was derived from the weekly average price and not the daily weighted price which would have provided for a better sample.

5.4 Suggestions for further research

So far there have been two studies conducted on momentum at the NSE. In the first study by Atiti (2005) the basis of portfolio formation is determined by the returns of individual stocks while in this second study it is on the basis of the nearness to stock's price to its 52-week high. A study could compare which of the two methods is the more profitable one over a similar period.

6.0 APPENDICES

List I: Average Monthly Returns

Ordinary Shares	Average Returns Jan-99	Average Returns Feb-99	Average Returns Mar-99	Average Returns Apr-99	Average Returns May-99	Average Returns Jun-99	Average Returns Jul-99	Average Returns Aug-99	Average Returns Sep-99	Average Returns Oct-99	Average Returns Nov-99	Average Returns Dec-99
	1	2	3	4	5	6	7	8	9	10	11	12
Week	1999											
ORDINARY SHARES												
A. Baumann		0.01	0.00	-0.13	0.00	-0.05	0.10	0.00	-0.02	0.05	0.01	-0.02
Athi River Mining Ltd		-0.24	-0.02	-0.11	0.10	-0.02	0.02	-0.08	0.00	0.08	-0.04	0.05
Bamburi		-0.13	-0.02	-0.09	-0.13	0.06	0.11	0.07	-0.09	-0.06	0.00	0.01
Barclays Bank		0.04	-0.03	-0.10	0.01	0.01	0.07	-0.06	-0.05	0.01	-0.01	0.00
BOC (K)		-0.02	-0.05	0.01	0.02	0.01	0.00	0.02	-0.03	-0.01	0.00	-0.01
British American Tobacco		0.04	0.19	0.06	0.05	-0.01	-0.15	0.00	0.05	0.00	-0.06	-0.02
Car & Gen		0.02	0.02	0.02	-0.01	-0.16	-0.06	0.00	0.00	0.00	0.00	0.00
Carbacid		0.06	0.03	0.01	0.00	-0.01	0.06	-0.18	0.07	-0.01	0.06	0.02
CFC Bank		0.10	-0.08	-0.18	-0.06	0.04	0.05	-0.02	0.00	0.00	-0.05	-0.01
City Trust		0.10	0.00	-0.06	-0.10	0.00	0.11	0.00	-0.07	0.08	0.04	0.00
CMC		-0.13	0.00	-0.05	0.00	0.00	0.04	0.03	0.01	-0.01	0.00	0.01
Crown Berger		-0.22	-0.07	0.25	-0.04	0.00	0.15	0.35	0.15	0.09	-0.12	-0.18
Diamond Trust		0.10	0.01	-0.04	-0.05	0.01	-0.01	-0.02	-0.11	0.14	-0.02	0.10
E. A. Breweries		0.04	0.05	0.12	0.05	-0.01	0.04	0.04	0.07	-0.06	-0.10	-0.01
E. A. Cables		-0.02	-0.09	-0.08	-0.07	0.03	0.02	0.00	-0.05	-0.01	-0.24	-0.08
E. A. Portland		0.04	0.03	-0.27	-0.16	0.16	-0.01	-0.01	-0.05	-0.29	0.06	0.11
Eaagads		0.00	0.00	0.00	0.00	0.00	0.03	-0.33	-0.05	-0.04	0.00	0.00
Express		0.11	0.02	-0.16	-0.20	-0.03	-0.02	-0.04	-0.18	-0.07	0.00	0.02
HF		-0.07	-0.08	-0.05	-0.05	0.04	-0.05	-0.01	-0.18	-0.01	0.00	0.03

Ordinary Shares	Average Returns Jan-99	Average Returns Feb-99	Average Returns Mar-99	Average Returns Apr-99	Average Returns May-99	Average Returns Jun-99	Average Returns Jul-99	Average Returns Aug-99	Average Returns Sep-99	Average Returns Oct-99	Average Returns Nov-99	Average Returns Dec-99
	1	2	3	4	5	6	7	8	9	10	11	12
Week	1999											
ICDC		0.01	0.01	0.08	0.04	0.01	0.03	0.04	0.02	-0.02	0.00	0.01
Jubilee		-0.01	0.02	0.00	-0.01	-0.11	0.06	-0.01	-0.06	-0.08	-0.01	0.00
K. C. B		-0.03	-0.06	-0.21	-0.04	-0.02	0.08	-0.13	-0.11	-0.01	-0.10	-0.01
K. Orchards		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kakuzi		0.01	0.03	-0.16	-0.05	0.03	0.02	0.00	-0.13	-0.05	-0.02	-0.10
Kapchorua		0.24	0.00	0.11	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kenol		0.03	-0.05	0.06	0.28	-0.05	-0.10	0.00	-0.07	-0.04	0.08	0.11
Kenya Airways Ltd		-0.08	0.00	0.04	0.02	0.03	-0.13	-0.12	-0.04	0.07	0.11	0.08
KPLC		-0.04	0.02	-0.08	-0.04	0.00	-0.01	-0.02	-0.05	-0.08	-0.11	0.14
Limuru Tea		0.00	0.08	0.00	0.00	-0.10	-0.04	0.00	0.00	0.00	0.00	0.00
Marshalls		-0.07	-0.03	0.07	-0.02	0.00	0.00	0.03	0.00	0.00	-0.05	-0.02
Nation Media Group.		-0.02	0.02	-0.03	-0.04	0.00	-0.01	-0.12	-0.04	-0.01	-0.03	-0.03
National Bank		-0.13	-0.06	-0.17	-0.08	0.07	-0.07	-0.09	-0.01	-0.07	-0.01	0.05
National Industrial Credit		-0.07	-0.03	0.10	-0.02	-0.03	-0.15	-0.03	-0.01	0.04	-0.03	-0.05
Olympia Capital Holdings		-0.01	-0.06	-0.26	-0.06	-0.06	0.01	-0.03	-0.05	-0.02	-0.31	-0.01
Pan Africa Ins		0.00	0.02	0.01	0.31	0.19	-0.08	0.03	0.00	0.25	-0.29	-0.17
Rea Vipingo		-0.04	0.01	-0.10	0.05	0.06	-0.04	-0.11	-0.03	-0.08	0.04	0.02
Sameer Africa		0.00	-0.05	-0.06	0.01	-0.02	0.04	-0.05	-0.14	0.02	0.00	0.11
Sasini		-0.10	-0.07	-0.05	-0.05	-0.01	0.01	0.02	0.03	-0.05	-0.11	-0.06
Standard Chartered Bank		-0.03	0.05	-0.01	-0.03	0.08	0.09	0.07	-0.01	0.04	0.07	-0.06
Standard Newspapers		0.01	0.02	-0.20	-0.05	-0.16	-0.24	-0.01	-0.06	-0.07	-0.05	0.02
Total		-0.11	0.19	-0.18	0.02	0.01	0.05	0.04	-0.02	-0.07	0.02	0.00
Tourism Promotion Services		-0.12	-0.04	0.08	0.00	-0.02	0.04	0.03	0.09	0.04	0.02	-0.01
Unga		-0.06	-0.05	-0.20	-0.11	0.05	-0.08	-0.25	-0.10	-0.36	0.57	0.32
Unilever Tea		0.00	0.02	0.03	0.01	0.01	0.00	0.00	-0.32	0.01	0.02	0.01
Williamson Tea		-0.03	0.01	0.01	0.00	0.00	-0.02	0.00	-0.18	-0.02	-0.11	-0.07

Ordinary Shares	Average Returns Jan-00	Average Returns Feb-00	Average Returns Mar-00	Average Returns Apr-00	Average Returns May-00	Average Returns Jun-00	Average Returns Jul-00	Average Returns Aug-00	Average Returns Sep-00	Average Returns Oct-00	Average Returns Nov-00	Average Returns Dec-00
	13	14	15	16	17	18	19	20	21	22	23	24
Week						2000						
ORDINARY SHARES												
A. Baumann	0.00	0.00	-0.03	-0.02	0.00	-0.01	-0.06	-0.08	0.07	-0.19	0.00	0.00
Athi River Mining Ltd	-0.19	0.01	0.31	0.02	-0.06	-0.24	-0.01	0.02	-0.02	0.00	-0.03	-0.08
Bamburi	0.01	0.01	0.06	-0.04	0.08	0.03	0.10	-0.01	0.02	0.05	-0.02	0.02
Barclays Bank	-0.01	0.21	-0.22	0.00	-0.03	-0.01	-0.05	0.09	0.02	0.09	-0.17	-0.06
BOC (K)	-0.03	0.00	0.02	-0.03	-0.18	-0.02	-0.02	-0.15	0.05	0.08	0.01	0.06
British American Tobacco	-0.05	0.40	-0.32	-0.03	-0.02	-0.07	0.12	0.08	0.09	0.01	-0.02	-0.10
Car & Gen	0.00	0.00	0.00	0.00	0.03	-0.02	0.89	0.00	0.00	-0.47	0.00	0.00
Carbacid	0.01	0.04	0.02	-0.01	-0.18	-0.12	-0.02	-0.02	0.04	0.21	-0.21	-0.14
CFC Bank	-0.01	0.00	0.13	0.06	-0.15	-0.28	0.07	0.04	-0.08	0.00	-0.03	0.03
City Trust	-0.02	0.02	0.00	0.00	-0.09	0.00	0.00	0.00	0.00	0.26	0.00	0.00
CMC	0.00	0.00	-0.17	-0.21	-0.10	-0.06	0.00	-0.02	-0.02	0.00	-0.02	-0.03
Crown Berger	0.01	-0.04	0.08	0.14	0.08	0.05	-0.12	0.03	-0.07	-0.20	0.01	0.05
Diamond Trust	0.00	0.12	-0.03	-0.07	-0.14	-0.06	0.00	-0.10	-0.17	0.07	-0.09	-0.03
E. A. Breweries	-0.05	0.05	0.03	-0.01	-0.04	-0.02	0.04	0.12	0.11	0.01	0.01	-0.08
E. A. Cables	-0.02	0.28	-0.19	0.01	-0.01	-0.16	-0.25	0.15	0.41	0.00	-0.18	0.16
E. A. Portland	0.01	0.01	-0.13	0.15	-0.04	-0.28	-0.25	0.15	0.41	0.24	-0.02	0.00
Eaagads	0.00	-0.04	0.00	0.00	0.00	0.00	-0.02	0.00	0.00	-0.18	0.03	0.00
Express	0.02	0.01	0.02	0.00	-0.03	0.00	-0.08	-0.03	-0.01	0.07	-0.01	0.00
HF	1.46	-0.65	0.11	-0.18	0.03	-0.12	-0.01	-0.11	0.25	-0.10	-0.11	-0.11
ICDC	-0.01	-0.08	-0.10	0.14	0.02	0.05	-0.09	0.10	0.00	0.04	0.02	-0.09

Ordinary Shares	Average Returns Jan-00	Average Returns Feb-00	Average Returns Mar-00	Average Returns Apr-00	Average Returns May-00	Average Returns Jun-00	Average Returns Jul-00	Average Returns Aug-00	Average Returns Sep-00	Average Returns Oct-00	Average Returns Nov-00	Average Returns Dec-00
	13	14	15	16	17	18	19	20	21	22	23	24
Week						2000						
Jubilee	0.00	0.04	-0.01	0.01	-0.17	0.04	0.00	-0.08	-0.09	0.06	0.00	-0.03
K. C. B	0.08	-0.10	-0.21	0.06	0.04	0.02	-0.15	0.05	0.08	0.00	0.04	-0.09
K. Orchards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kakuzi	0.11	-0.21	-0.08	-0.04	0.00	-0.02	-0.04	0.01	-0.16	-0.04	0.08	0.00
Kapchorua	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kenol	0.02	0.24	-0.04	0.11	-0.09	0.07	-0.02	-0.03	0.04	-0.02	-0.01	-0.06
Kenya Airways Ltd	0.02	-0.05	0.06	0.02	0.16	-0.01	-0.13	0.17	0.06	0.03	-0.03	0.03
KPLC	0.01	-0.02	-0.04	-0.09	-0.36	0.03	-0.02	-0.08	-0.05	-0.07	0.09	-0.11
Limuru Tea	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
Marshalls	0.00	0.00	0.00	0.00	0.00	-0.18	0.00	0.00	0.00	-0.04	0.00	0.00
Nation Media Group.	-0.08	-0.03	-0.03	-0.13	-0.01	0.01	0.00	-0.07	-0.01	0.02	-0.01	0.00
National Bank	0.00	-0.20	-0.11	0.15	-0.04	-0.09	0.11	0.01	0.01	0.22	-0.21	-0.20
National Industrial Credit	-0.04	0.02	0.08	0.00	0.03	-0.24	0.19	0.07	-0.06	-0.06	-0.13	-0.11
Olympia Capital Holdings	0.06	-0.12	-0.06	-0.03	0.09	-0.12	0.00	0.05	0.00	-0.07	-0.09	0.00
Pan Africa Ins	-0.05	-0.18	0.00	0.04	-0.03	-0.05	-0.03	-0.02	-0.07	0.00	-0.10	-0.31
Rea Vipingo	-0.04	-0.11	-0.04	-0.01	0.01	-0.05	-0.06	0.03	0.00	0.01	0.00	-0.17
Sameer Africa	0.02	-0.16	-0.02	-0.01	-0.08	0.13	-0.03	-0.08	0.09	0.04	-0.04	-0.04
Sasini	0.01	-0.20	-0.01	-0.11	0.15	-0.04	-0.03	0.00	0.02	-0.02	0.03	0.03
Standard Chartered Bank	0.03	0.41	-0.30	-0.09	-0.02	0.02	0.11	0.06	0.02	0.00	-0.06	0.00
Standard Newspapers	0.05	-0.02	-0.04	-0.20	0.09	-0.30	0.03	-0.01	0.18	-0.03	0.04	-0.05
Total	0.02	0.33	-0.25	0.01	0.00	0.04	0.08	0.03	0.00	-0.01	0.02	-0.04
Tourism Promotion Services	0.00	0.00	0.17	-0.05	-0.05	-0.02	0.00	0.07	-0.04	0.01	0.01	-0.05
Unga	-0.28	0.00	0.33	0.22	-0.08	-0.45	-0.06	-0.07	0.11	-0.01	-0.02	-0.04
Unilever Tea	0.00	0.04	-0.15	-0.11	-0.03	-0.03	0.00	-0.01	0.12	0.12	0.05	0.00
Williamson Tea	0.00	-0.06	0.00	0.03	-0.12	-0.03	-0.05	-0.17	0.20	0.28	-0.01	0.07

Ordinary Shares	Average Returns Jan-01	Average Returns Feb-01	Average Returns Mar-01	Average Returns Apr-01	Average Returns May-01	Average Returns Jun-01	Average Returns Jul-01	Average Returns Aug-01	Average Returns Sep-01	Average Returns Oct-01	Average Returns Nov-01	Average Returns Dec-01
Week	25	26	27	28	29	30	31	32	33	34	35	36
						2001						
ORDINARY SHARES												
A. Baumann	-0.08	-0.11	-0.11	-0.01	0.23	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.04
Athi River Mining Ltd	0.00	0.00	0.13	0.04	-0.11	0.13	-0.11	0.00	-0.15	0.19	-0.02	0.01
Bamburi	0.04	-0.09	-0.10	0.00	0.00	0.04	-0.03	-0.12	-0.07	0.00	-0.23	-0.06
Barclays Bank	-0.05	0.20	0.01	-0.11	0.02	0.13	-0.01	-0.03	-0.07	0.04	0.02	-0.04
BOC (K)	-0.01	-0.02	-0.09	-0.05	-0.21	0.02	-0.03	0.02	-0.02	-0.07	0.16	0.00
British American Tobacco	0.07	-0.03	-0.06	-0.03	-0.02	0.05	0.01	-0.14	-0.01	0.04	0.09	-0.04
Car & Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carbacid	0.14	-0.12	0.04	-0.10	0.02	0.24	0.00	-0.24	0.00	0.00	0.13	-0.09
CFC Bank	-0.10	0.06	0.08	0.01	-0.12	-0.01	0.01	0.00	-0.05	0.06	0.03	0.03
City Trust	-0.18	0.00	-0.02	-0.10	-0.05	0.00	0.01	0.00	-0.07	0.40	0.01	0.00
CMC	-0.05	0.00	-0.14	-0.15	-0.12	0.00	0.06	0.07	-0.19	0.03	0.12	-0.04
Crown Berger	0.06	0.01	-0.13	-0.04	0.04	-0.22	0.09	-0.07	-0.06	0.17	-0.02	-0.08
Diamond Trust	-0.06	0.06	-0.03	0.00	-0.10	-0.02	-0.04	0.00	-0.05	-0.14	0.00	0.00
E. A. Breweries	0.03	0.03	0.05	-0.04	-0.03	0.05	0.03	-0.02	0.12	-0.01	-0.06	-0.04
E. A. Cables	0.18	0.17	-0.14	0.04	-0.07	0.05	0.01	0.01	-0.54	1.06	-0.02	-0.04
E. A. Portland	0.00	-0.01	0.06	0.00	-0.06	-0.04	-0.09	-0.10	-0.19	0.23	0.70	-0.07
Eaagads	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03	-0.05
Express	-0.22	-0.07	0.00	0.00	-0.04	0.00	-0.10	-0.40	0.00	-0.03	0.00	0.08
HF	0.06	0.04	-0.06	0.03	-0.09	0.00	0.00	-0.20	0.00	0.04	-0.16	0.14
ICDC	0.12	-0.01	0.04	-0.10	-0.01	-0.01	-0.12	0.01	0.01	-0.01	-0.05	0.01
Jubilee	0.00	-0.05	-0.03	0.02	-0.06	0.00	-0.01	0.01	0.00	0.02	0.02	0.01

Ordinary Shares	Average Returns Jan-01	Average Returns Feb-01	Average Returns Mar-01	Average Returns Apr-01	Average Returns May-01	Average Returns Jun-01	Average Returns Jul-01	Average Returns Aug-01	Average Returns Sep-01	Average Returns Oct-01	Average Returns Nov-01	Average Returns Dec-01
	25	26	27	28	29	30	31	32	33	34	35	36
Week						2001						
K. C. B	-0.19	0.20	0.02	0.02	-0.27	0.00	0.09	-0.20	-0.09	0.29	-0.22	0.07
K. Orchards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00
Kakuzi	-0.05	-0.08	-0.06	-0.11	0.02	-0.02	-0.10	-0.06	0.00	0.09	0.00	-0.03
Kapchorua	0.00	0.00	-0.07	0.00	0.02	0.00	0.04	-0.01	-0.02	0.00	-0.02	0.00
Kenol	0.21	0.10	0.03	-0.31	0.20	-0.05	-0.05	0.00	-0.02	0.05	0.01	0.12
Kenya Airways Ltd	0.01	0.06	-0.17	0.02	0.19	0.05	0.01	-0.11	-0.16	0.05	0.09	-0.04
KPLC	0.01	0.30	-0.22	-0.12	-0.23	0.04	-0.08	-0.19	0.10	-0.13	-0.05	-0.05
Limuru Tea	0.00	0.05	0.00	0.00	0.00	-0.02	0.00	0.00	-0.38	0.00	0.00	-0.02
Marshalls	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nation Media Group.	0.01	0.01	-0.15	-0.03	-0.21	0.07	0.04	-0.02	-0.15	0.23	-0.17	0.03
National Bank	0.19	-0.12	0.06	-0.14	-0.12	0.13	0.02	-0.08	-0.09	0.39	-0.10	-0.09
National Industrial Credit	0.14	-0.10	-0.10	-0.02	-0.07	0.09	0.05	-0.10	-0.18	0.39	-0.02	-0.02
Olympia Capital Holdings	-0.10	-0.13	0.00	0.08	0.12	-0.11	0.06	-0.06	-0.05	0.11	-0.05	0.00
Pan Africa Ins	0.09	0.00	-0.10	-0.02	0.12	0.06	0.08	0.00	0.01	-0.02	-0.02	0.00
Rea Vipingo	0.29	-0.31	0.20	0.00	-0.23	0.06	0.11	-0.05	0.02	0.05	0.02	-0.06
Sameer Africa	-0.13	-0.17	-0.04	-0.11	-0.01	0.07	0.04	-0.02	-0.10	0.17	-0.07	0.00
Sasini	-0.04	0.06	-0.03	-0.09	-0.01	-0.08	0.00	-0.07	-0.22	-0.03	-0.07	-0.09
Standard Chartered Bank	-0.03	0.35	-0.20	0.10	0.02	0.10	-0.04	-0.12	0.02	0.05	0.08	-0.09
Standard Newspapers	-0.01	-0.01	0.00	0.00	0.55	-0.53	0.51	0.01	-0.29	0.33	-0.04	0.00
Total	-0.11	-0.18	0.08	-0.27	-0.12	-0.04	-0.09	-0.07	-0.24	0.18	-0.02	-0.05
Tourism Promotion Services	0.01	0.10	0.03	0.00	0.01	-0.03	0.00	-0.03	-0.08	0.09	0.03	0.03
Unga	-0.16	-0.27	0.14	-0.08	-0.11	-0.03	-0.10	-0.15	-0.26	0.95	-0.19	-0.03
Unilever Tea	0.01	0.12	0.00	-0.07	0.02	0.02	0.00	-0.03	-0.09	0.03	-0.02	-0.20
Williamson Tea	0.01	0.01	0.02	0.00	0.11	-0.01	-0.03	-0.02	-0.05	0.01	-0.20	-0.14

Ordinary Shares	Average Returns Jan-02	Average Returns Feb-02	Average Returns Mar-02	Average Returns Apr-02	Average Returns May-02	Average Returns Jun-02	Average Returns Jul-02	Average Returns Aug-02	Average Returns Sep-02	Average Returns Oct-02	Average Returns Nov-02	Average Returns Dec-02
	37	38	39	40	41	42	43	44	45	46	47	48
Week						2002						
ORDINARY SHARES												
A. Baumann	0.01	0.23	0.00	-0.01	0.00	-0.04	-0.03	-0.40	-0.01	0.00	0.00	0.06
Athi River Mining Ltd	0.00	-0.15	0.04	0.10	0.03	0.00	0.22	0.11	-0.06	-0.13	0.16	-0.01
Bamburi	-0.04	0.05	0.00	-0.06	0.13	0.01	0.39	-0.06	0.02	0.18	0.39	0.28
Barclays Bank	0.20	-0.02	-0.13	0.01	0.10	0.03	0.05	-0.02	-0.05	0.05	0.08	0.11
BOC (K)	0.00	0.38	-0.05	-0.02	0.04	-0.04	-0.06	-0.04	0.09	0.24	0.21	0.00
British American Tobacco	0.02	0.06	-0.09	0.01	-0.01	0.03	0.21	-0.07	0.00	0.08	0.11	-0.06
Car & Gen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.11	0.00	0.00
Carbacid	0.03	0.01	0.04	-0.01	0.01	-0.01	-0.01	0.01	-0.03	1.29	-0.44	0.14
CFC Bank	0.02	0.06	0.00	-0.02	0.01	0.02	0.00	0.00	0.03	-0.03	0.01	0.02
City Trust	-0.01	0.00	0.02	-0.01	0.00	-0.05	-0.04	-0.03	0.03	0.11	0.03	0.00
CMC	0.08	-0.06	-0.06	0.25	0.50	-0.21	-0.09	0.13	0.41	0.10	0.22	-0.10
Crown Berger	0.00	-0.04	0.04	-0.09	0.01	0.00	0.00	0.40	-0.11	-0.03	0.23	-0.05
Diamond Trust	0.00	-0.03	-0.07	-0.03	0.15	0.05	0.00	0.00	0.22	0.00	-0.05	-0.05
E. A. Breweries	0.03	0.03	0.04	-0.02	0.05	0.02	-0.03	0.08	0.18	0.08	0.02	0.25
E. A. Cables	0.09	0.01	-0.22	0.00	0.02	0.00	0.20	0.09	-0.09	0.00	0.02	0.06
E. A. Portland	0.01	0.00	-0.15	-0.05	0.20	0.00	0.09	0.00	-0.02	0.05	-0.03	0.00
Eaagads	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	-0.08	0.01	-0.02
Express	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
HF	0.00	-0.13	-0.11	-0.02	0.07	0.14	-0.08	0.09	-0.19	0.17	0.00	0.49
ICDC	-0.10	-0.07	-0.34	-0.05	-0.01	-0.05	0.00	-0.03	0.41	0.06	0.12	0.02
Jubilee	0.06	-0.06	-0.02	0.15	0.03	0.01	-0.01	0.06	-0.03	-0.03	0.06	-0.03
K. C. B	0.07	-0.03	-0.11	-0.07	-0.25	-0.03	0.01	-0.03	-0.08	0.33	-0.02	0.56
K. Orchards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kakuzi	0.00	0.00	-0.17	0.00	-0.03	-0.03	-0.12	-0.35	-0.03	-0.01	-0.06	0.02

Ordinary Shares	Average Returns Jan-02	Average Returns Feb-02	Average Returns Mar-02	Average Returns Apr-02	Average Returns May-02	Average Returns Jun-02	Average Returns Jul-02	Average Returns Aug-02	Average Returns Sep-02	Average Returns Oct-02	Average Returns Nov-02	Average Returns Dec-02
	37	38	39	40	41	42	43	44	45	46	47	48
Week						2002						
Kapchorua	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kenol	0.15	-0.01	-0.02	-0.13	0.01	0.01	0.05	0.04	0.02	0.05	0.08	0.27
Kenya Airways Ltd	0.08	-0.06	-0.01	-0.01	0.11	-0.03	0.02	-0.11	-0.06	-0.03	-0.12	0.29
KPLC	-0.11	-0.06	-0.38	-0.10	-0.04	0.01	-0.13	-0.13	0.04	0.36	-0.02	0.93
Limuru Tea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Marshalls	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.73	0.02	0.00	0.00	0.00
Nation Media Group.	0.02	0.06	0.38	-0.02	-0.34	0.00	-0.03	0.10	0.07	0.16	0.16	0.39
National Bank	0.05	0.03	-0.02	-0.03	-0.17	0.04	-0.04	0.04	-0.12	0.13	0.29	0.09
National Industrial Credit	0.05	0.10	-0.08	-0.19	0.04	0.03	0.12	0.03	-0.08	0.01	0.19	0.22
Olympia Capital Holdings	0.04	0.01	0.00	-0.10	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pan Africa Ins	-0.01	0.00	-0.31	-0.19	0.00	0.00	0.00	0.03	0.00	-0.07	0.00	0.00
Rea Vipingo	0.02	0.02	-0.03	0.00	-0.05	0.09	0.00	-0.13	-0.02	-0.06	0.06	0.02
Sameer Africa	0.05	0.14	-0.10	-0.08	0.15	0.09	0.04	-0.03	-0.08	0.06	0.13	0.02
Sasini	-0.01	-0.05	0.01	0.00	-0.08	0.13	-0.10	0.02	-0.04	-0.04	0.06	0.01
Standard Chartered Bank	0.19	-0.03	-0.08	0.02	0.05	0.05	0.04	-0.01	0.07	0.06	0.01	0.09
Standard Newspapers	-0.10	0.00	0.04	0.00	-0.42	0.05	0.26	0.74	0.07	-0.10	0.06	0.12
Total	-0.11	0.01	-0.15	-0.06	-0.35	0.16	0.47	-0.01	0.07	-0.06	0.23	0.23
Tourism Promotion Services	0.03	0.05	-0.01	0.01	-0.03	-0.04	0.01	0.03	-0.03	0.02	0.17	0.00
Unga	0.00	-0.06	-0.39	-0.23	0.33	0.02	0.06	0.17	0.12	-0.04	0.01	-0.10
Unilever Tea	-0.14	0.04	0.00	-0.09	-0.01	0.00	-0.03	-0.02	-0.14	-0.08	0.02	0.23
Williamson Tea	0.00	-0.23	-0.06	-0.09	-0.02	-0.02	-0.13	-0.10	-0.26	0.15	0.56	0.02

Ordinary Shares	Average Returns Jan-03	Average Returns Feb-03	Average Returns Mar-03	Average Returns Apr-03	Average Returns May-03	Average Returns Jun-03	Average Returns Jul-03	Average Returns Aug-03	Average Returns Sep-03	Average Returns Oct-03	Average Returns Nov-03	Average Returns Dec-03
	49	50	51	52	53	54	55	56	57	58	59	60
Week						2003						
ORDINARY SHARES												
A. Baumann	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.25	0.05
Athi River Mining Ltd	0.09	0.38	0.63	0.29	0.00	0.19	-0.06	0.07	0.15	0.13	-0.07	0.04
Bamburi	0.03	0.04	0.16	0.24	-0.01	0.21	0.06	0.26	-0.04	0.03	0.00	0.20
Barclays Bank	0.08	0.16	0.00	0.13	0.07	-0.10	0.02	0.01	0.44	-0.01	0.41	0.06
BOC (K)	0.19	0.00	0.09	0.03	0.30	0.16	0.03	0.00	0.10	0.42	0.22	0.01
British American Tobacco	0.13	0.08	0.14	0.13	0.15	0.00	0.23	0.43	0.11	0.03	0.38	0.06
Car & Gen	-0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.10	0.00	0.01
Carbacid	0.24	0.01	0.06	0.12	0.13	0.04	-0.02	0.02	0.52	-0.03	0.12	0.04
CFC Bank	0.15	0.25	-0.06	-0.06	0.77	-0.03	-0.10	-0.06	0.51	0.04	0.13	0.16
City Trust	0.00	0.00	0.00	0.00	0.13	0.00	0.04	0.00	0.11	0.04	0.38	0.02
CMC	0.14	0.00	0.04	0.16	0.47	0.05	-0.05	0.39	0.15	0.09	0.01	0.10
Crown Berger	0.26	-0.15	0.20	0.11	0.95	0.03	-0.13	0.72	0.13	-0.02	0.17	0.00
Diamond Trust	0.27	0.19	0.15	0.35	0.27	-0.25	-0.26	0.38	0.27	-0.11	0.20	-0.07
E. A. Breweries	0.05	0.17	0.17	0.21	-0.05	0.08	0.16	0.14	0.17	0.13	0.20	-0.04
E. A. Cables	0.18	-0.17	0.17	0.12	0.41	-0.15	0.02	-0.10	0.09	0.04	0.12	-0.03
E. A. Portland	0.15	0.08	0.85	0.10	0.17	0.20	0.10	0.47	-0.07	-0.03	-0.03	-0.09
Eaagads	-0.08	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Express	0.04	0.00	0.01	0.10	0.00	0.00	0.07	0.09	0.00	0.00	0.04	-0.06
HF	0.16	0.09	0.06	0.24	0.13	0.02	0.02	-0.04	0.24	0.01	0.07	-0.07
ICDC	0.26	0.04	0.01	0.04	0.09	0.10	0.09	0.13	0.09	0.05	0.06	0.09
Jubilee	0.35	0.01	0.20	0.16	0.20	-0.12	0.00	0.17	0.81	-0.13	0.04	-0.12
K. C. B	0.32	-0.07	0.27	0.69	0.11	-0.14	-0.09	0.02	0.19	-0.07	0.20	-0.08

Ordinary Shares	Average Returns Jan-03	Average Returns Feb-03	Average Returns Mar-03	Average Returns Apr-03	Average Returns May-03	Average Returns Jun-03	Average Returns Jul-03	Average Returns Aug-03	Average Returns Sep-03	Average Returns Oct-03	Average Returns Nov-03	Average Returns Dec-03
	49	50	51	52	53	54	55	56	57	58	59	60
Week						2003						
K. Orchards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kakuzi	0.06	0.04	-0.07	0.34	0.17	-0.16	0.01	0.40	0.00	0.00	-0.14	0.00
Kapchorua	0.00	0.00	0.00	0.00	0.00	-0.21	0.00	0.00	0.00	0.00	0.00	0.00
Kenol	0.21	0.00	-0.03	0.03	0.58	0.00	-0.05	0.01	0.42	0.12	0.08	0.17
Kenya Airways Ltd	-0.12	0.00	-0.04	0.00	0.22	0.00	0.02	0.02	0.36	-0.18	0.14	0.01
KPLC	0.79	-0.21	0.10	0.14	0.13	-0.08	0.07	-0.07	0.37	-0.18	0.43	0.09
Limuru Tea	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.59	0.00
Marshalls	0.00	0.08	0.10	0.00	-0.01	0.08	0.23	0.10	0.00	0.00	0.00	0.00
Nation Media Group.	0.00	0.07	-0.09	0.21	0.03	0.01	0.05	0.51	0.05	0.07	0.08	0.01
National Bank	0.73	0.01	-0.14	0.06	1.16	0.19	-0.09	0.10	-0.04	-0.10	0.09	-0.06
National Industrial Credit	0.22	0.06	-0.03	0.33	-0.07	-0.10	0.21	-0.04	0.40	-0.08	0.28	-0.07
Olympia Capital Holdings	0.00	0.00	0.00	0.00	0.10	0.07	0.14	0.04	0.19	0.09	0.44	0.33
Pan Africa Ins	0.43	0.33	0.02	0.03	0.14	0.00	0.00	0.15	0.04	0.10	0.18	-0.05
Rea Vipingo	1.21	-0.26	-0.14	-0.06	0.59	-0.11	-0.05	0.07	0.10	0.03	0.16	-0.08
Sameer Africa	0.18	0.02	0.00	-0.10	0.53	-0.06	0.08	-0.27	0.14	-0.06	0.09	-0.01
Sasini	0.29	-0.02	-0.01	0.00	0.34	-0.12	0.00	-0.06	-0.08	0.39	-0.17	0.00
Standard Chartered Bank	0.12	0.08	0.04	0.22	0.05	-0.03	-0.01	0.13	0.39	0.06	0.24	0.00
Standard Newspapers	0.28	-0.31	-0.15	1.20	0.34	-0.14	0.03	0.34	0.06	0.23	0.34	-0.15
Total	0.10	0.13	0.03	0.08	0.18	-0.03	-0.01	-0.01	0.09	-0.01	-0.01	0.06
Tourism Promotion Services	0.18	0.34	-0.15	0.14	0.01	-0.28	0.32	-0.20	0.35	0.01	0.13	-0.17
Unga	0.60	-0.13	0.03	0.69	-0.09	0.10	0.04	0.00	0.41	-0.01	0.07	-0.07
Unilever Tea	0.30	0.04	-0.07	-0.05	0.18	0.06	-0.03	-0.03	-0.04	0.03	-0.05	-0.04
Williamson Tea	0.53	-0.09	0.15	0.16	0.33	-0.03	-0.07	-0.04	-0.02	-0.02	0.00	-0.03

	Returns	Returns	Returns	Returns	Returns	Returns	Returns	Returns	Returns	Returns	Returns	Returns
	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
	61	62	63	64	65	66	67	68	69	70	71	72
Week						2004						
ORDINARY SHARES												
A. Baumann	0.01	0.00	0.02	-0.03	0.01	-0.01	0.00	0.03	0.04	-0.06	-0.02	0.01
Athi River Mining Ltd	0.13	-0.07	-0.08	0.12	-0.10	-0.05	-0.09	-0.04	-0.12	0.11	-0.03	-0.04
Bamburi	0.00	-0.10	-0.10	-0.07	-0.14	-0.01	0.02	0.01	0.06	0.20	-0.02	-0.01
Barclays Bank	0.06	0.04	-0.24	0.04	-0.01	-0.15	0.05	-0.01	0.00	0.07	-0.02	-0.07
BOC (K)	-0.01	0.06	-0.03	-0.06	-0.01	0.01	-0.01	-0.01	-0.08	-0.02	0.01	-0.04
British American Tobacco	0.10	0.02	-0.25	-0.02	-0.11	0.05	-0.03	-0.10	0.12	0.01	0.02	-0.02
Car & Gen	0.16	0.00	0.13	0.05	0.10	0.00	0.01	0.08	0.00	0.00	0.00	0.00
Carbacid	0.19	0.08	-0.07	0.10	-0.18	0.03	-0.01	0.12	-0.08	0.03	0.04	-0.12
CFC Bank	0.77	0.13	-0.09	-0.08	-0.06	-0.10	-0.04	-0.05	0.08	0.09	0.12	0.05
City Trust	0.16	0.76	-0.10	-0.06	-0.54	0.25	0.00	0.00	0.00	1.11	-0.07	-0.06
CMC	0.72	-0.48	-0.27	0.04	-0.06	-0.01	0.10	0.04	-0.05	-0.04	0.10	0.03
Crown Berger	0.27	-0.03	-0.12	-0.03	0.00	-0.09	-0.14	0.02	-0.13	0.06	0.03	0.03
Diamond Trust	0.73	-0.11	-0.19	-0.13	0.00	0.00	0.01	-0.01	-0.14	0.10	-0.07	0.07
E. A. Breweries	0.13	0.00	-0.07	0.04	-0.14	0.07	0.05	0.12	0.04	-0.07	0.18	-0.14
E. A. Cables	0.21	0.37	-0.08	0.83	-0.10	-0.03	0.13	-0.15	0.00	0.15	0.09	0.38
E. A. Portland	0.20	-0.06	-0.22	0.07	-0.01	-0.12	-0.03	0.00	0.03	-0.01	0.02	0.00
Eaagads	0.00	0.00	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Express	0.00	-0.03	0.37	-0.13	-0.14	0.00	0.00	0.00	-0.01	-0.03	-0.08	-0.03
HF	0.57	-0.05	-0.33	-0.02	-0.16	-0.01	0.07	0.04	-0.16	-0.01	0.02	-0.09
ICDC	0.03	0.15	-0.23	-0.01	-0.01	-0.01	-0.28	0.04	0.02	0.22	0.02	0.00
Jubilee	0.40	-0.03	-0.12	-0.04	-0.04	-0.02	-0.02	0.13	-0.05	-0.02	0.06	0.02
K. C. B	0.55	0.06	-0.26	-0.14	0.06	-0.11	0.25	-0.09	-0.01	0.01	0.08	-0.02
K. Orchards	0.00	0.00	0.00	-0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Returns Jan-04	Returns Feb-04	Returns Mar-04	Returns Apr-04	Returns May-04	Returns Jun-04	Returns Jul-04	Returns Aug-04	Returns Sep-04	Returns Oct-04	Returns Nov-04	Returns Dec-04
	61	62	63	64	65	66	67	68	69	70	71	72
Week						2004						
Kakuzi	0.00	0.04	-0.04	-0.04	-0.02	0.29	0.01	-0.01	-0.03	0.18	-0.02	0.22
Kapchorua	0.00	0.00	-0.05	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Kenol	0.00	-0.04	-0.04	-0.07	0.09	0.19	0.20	-0.16	0.20	-0.03	0.26	0.03
Kenya Airways Ltd	0.13	-0.05	0.03	0.23	0.10	0.01	-0.03	0.10	0.00	0.28	-0.05	-0.01
KPLC	0.88	0.13	-0.18	0.00	-0.03	-0.03	-0.01	0.03	-0.06	-0.14	0.12	0.11
Limuru Tea	0.00	0.07	0.06	0.23	0.10	0.00	0.02	0.02	0.53	-0.01	0.00	0.00
Marshalls	0.02	0.10	0.77	-0.03	0.00	-0.02	0.00	-0.01	-0.07	0.00	-0.02	0.00
Nation Media Group.	0.06	0.10	-0.16	0.06	-0.10	0.03	0.00	-0.05	-0.01	0.00	0.09	-0.11
National Bank	1.08	0.29	-0.44	0.01	-0.03	-0.04	-0.08	0.02	-0.13	0.18	-0.01	0.06
National Industrial Credit	0.46	-0.16	-0.17	0.11	0.06	-0.07	0.07	-0.12	-0.01	0.02	0.09	0.00
Olympia Capital Holdings	1.28	-0.17	-0.40	-0.13	0.03	-0.04	0.00	-0.10	-0.02	0.13	-0.01	-0.06
Pan Africa Ins	0.07	0.13	0.18	-0.02	-0.11	-0.03	-0.04	-0.31	0.06	-0.01	-0.02	0.10
Rea Vipingo	0.49	-0.08	0.22	0.01	-0.10	0.10	0.00	0.20	-0.12	0.05	-0.01	0.01
Sameer Africa	0.19	-0.13	-0.08	-0.04	0.00	-0.05	0.29	-0.13	0.02	0.09	0.07	-0.03
Sasini	-0.10	-0.02	-0.01	-0.03	0.54	-0.22	-0.08	0.11	0.03	0.15	-0.06	0.19
Standard Chartered Bank	0.09	0.24	-0.25	-0.13	0.01	-0.19	0.09	-0.01	-0.04	0.05	-0.04	-0.09
Standard Newspapers	0.70	-0.09	-0.14	0.04	-0.08	-0.01	-0.15	0.15	-0.11	0.03	0.02	-0.02
Total	0.42	0.03	-0.23	-0.06	0.04	-0.10	0.11	-0.08	-0.03	-0.03	0.01	-0.01
Tourism Promotion Services	0.08	0.18	-0.15	-0.06	-0.02	0.13	0.23	0.00	-0.03	0.08	0.04	0.17
Unga	0.68	-0.37	-0.13	0.09	-0.15	-0.03	-0.15	0.06	-0.10	-0.02	-0.04	-0.04
Unilever Tea	-0.14	0.19	0.13	-0.01	-0.11	0.14	0.04	0.12	0.03	0.13	-0.01	-0.02
Williamson Tea	-0.01	-0.01	-0.02	0.03	0.05	0.09	-0.01	-0.01	-0.01	0.05	0.08	0.00

Ordinary Shares	Average Returns Jan-05	Average Returns Feb-05	Average Returns Mar-05	Average Returns Apr-05	Average Returns May-05	Average Returns Jun-05	Average Returns Jul-05	Average Returns Aug-05	Average Returns Sep-05	Average Returns Oct-05	Average Returns Nov-05	Average Returns Dec-05
	73	74	75	76	77	78	79	80	81	82	83	84
Week	2005											
ORDINARY SHARES												
A. Baumann	0.00	0.00	0.02	0.05	0.10	0.04	0.24	0.15	-0.03	0.01	0.00	-0.01
Athi River Mining Ltd	0.09	0.10	-0.05	-0.03	0.02	0.24	0.43	-0.03	0.03	0.21	0.05	0.03
Bamburi	0.02	0.04	0.00	-0.02	0.05	0.13	0.18	0.03	-0.02	0.05	0.01	0.00
Barclays Bank	0.07	0.12	-0.09	0.01	0.08	0.06	0.06	-0.02	-0.04	0.05	0.01	0.02
BOC (K)	0.00	0.04	0.12	0.02	0.01	0.03	0.02	0.00	0.01	0.03	0.03	0.07
British American Tobacco	0.09	0.08	0.01	-0.11	0.06	-0.01	0.05	-0.04	-0.01	0.01	0.01	-0.04
Car & Gen	0.05	-0.12	0.14	0.05	0.14	0.68	-0.06	0.13	-0.10	-0.01	-0.04	-0.13
Carbacid	-0.04	-0.02	0.05	0.21	-0.03	0.02	0.00	0.00	0.02	0.05	0.00	0.00
CFC Bank	-0.05	-0.01	0.04	-0.02	0.03	0.09	0.00	0.09	0.03	0.02	0.03	0.03
City Trust	-0.05	-0.14	0.01	0.07	0.15	0.10	0.01	-0.02	-0.02	0.00	0.09	0.02
CMC	-0.11	-0.05	-0.01	-0.04	0.02	0.09	-0.02	-0.03	-0.03	0.01	0.03	0.02
Crown Berger	0.07	0.01	-0.06	-0.01	-0.03	0.01	0.08	0.00	0.06	0.19	-0.05	-0.01
Diamond Trust	0.10	0.00	0.15	0.00	0.01	-0.20	0.02	-0.03	0.01	-0.02	0.00	0.15
E. A. Breweries	0.07	0.00	0.00	0.04	0.14	0.14	0.05	0.02	-0.06	-0.05	0.00	-0.02
E. A. Cables	0.07	0.14	-0.06	0.17	0.18	0.35	0.26	-0.01	0.03	0.06	0.03	-0.06
E. A. Portland	0.08	0.09	0.01	0.01	0.01	0.08	0.71	-0.04	0.01	0.10	0.03	-0.02
Eaagads	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.06	0.00	0.00	0.00	0.00
Express	0.06	0.20	-0.02	-0.03	-0.06	0.37	0.17	-0.06	-0.03	0.03	0.01	0.00
HF	0.18	0.11	-0.15	0.02	-0.03	0.20	0.18	-0.03	-0.07	0.03	0.09	0.00
ICDC	0.01	0.02	-0.01	0.01	0.04	-0.01	0.07	0.01	0.01	0.05	0.01	0.01
Jubilee	0.04	0.03	0.05	-0.01	0.04	0.01	0.03	0.02	0.04	0.02	0.05	0.10

Ordinary Shares	Average Returns Jan-05	Average Returns Feb-05	Average Returns Mar-05	Average Returns Apr-05	Average Returns May-05	Average Returns Jun-05	Average Returns Jul-05	Average Returns Aug-05	Average Returns Sep-05	Average Returns Oct-05	Average Returns Nov-05	Average Returns Dec-05
	73	74	75	76	77	78	79	80	81	82	83	84
Week	2005											
K. C. B	0.07	0.03	-0.08	-0.01	0.07	0.03	0.10	0.07	0.00	0.14	0.08	0.14
K. Orchards	0.00	0.09	0.00	0.04	0.06	0.00	0.04	0.06	0.00	0.00	0.00	0.00
Kakuzi	0.03	0.17	-0.05	-0.02	0.06	0.13	0.22	-0.17	-0.07	-0.04	0.01	0.02
Kapchorua	0.00	0.00	0.00	0.04	0.20	0.39	0.10	0.00	-0.15	-0.01	0.00	-0.01
Kenol	-0.03	0.01	0.03	0.03	0.14	0.33	0.11	0.01	0.05	0.03	0.01	0.06
Kenya Airways Ltd	0.12	0.06	0.12	0.10	0.18	0.59	0.51	0.06	0.05	0.13	-0.06	0.00
KPLC	-0.10	0.04	-0.04	-0.01	0.00	0.16	0.17	0.18	-0.02	0.17	-0.07	-0.04
Limuru Tea	0.00	0.00	0.03	0.01	0.01	0.01	0.00	0.00	-0.03	-0.02	-0.01	0.00
Marshalls	0.00	0.04	-0.03	0.00	0.00	0.14	0.72	0.02	-0.10	-0.09	0.00	0.00
Nation Media Group.	0.12	0.02	0.17	0.05	-0.06	-0.08	-0.01	-0.02	-0.06	0.01	0.02	0.01
National Bank	0.01	0.04	-0.04	-0.10	0.03	0.13	0.20	0.02	0.06	0.11	-0.01	0.01
National Industrial Credit	0.01	0.07	-0.04	-0.02	-0.03	0.03	0.11	0.00	-0.03	0.00	-0.02	0.01
Olympia Capital Holdings	-0.01	-0.02	0.08	-0.04	0.00	0.10	0.41	0.01	0.00	-0.23	-0.25	0.11
Pan Africa Ins	0.04	0.10	0.05	0.11	0.03	0.03	0.29	0.05	0.02	0.00	0.03	-0.01
Rea Vipingo	0.22	0.14	-0.09	-0.07	0.06	0.31	0.38	-0.05	0.01	0.04	-0.04	0.02
Sameer Africa	0.03	0.10	-0.08	-0.06	0.13	0.34	0.10	0.04	0.00	-0.05	-0.02	0.13
Sasini	0.05	0.14	-0.06	0.08	0.11	-0.09	0.20	-0.04	-0.12	-0.04	0.03	-0.09
Standard Chartered Bank	0.04	0.03	-0.06	-0.02	0.07	0.01	0.06	0.04	-0.03	0.01	0.01	-0.01
Standard Newspapers	-0.04	-0.09	-0.04	-0.05	0.02	0.03	0.25	-0.08	-0.09	0.05	-0.03	0.07
Total	0.16	-0.04	0.02	-0.03	0.01	0.04	0.06	-0.09	0.01	0.09	-0.06	0.01
Tourism Promotion Services	-0.02	0.00	0.08	0.04	0.00	0.38	0.17	-0.08	0.01	0.04	0.05	-0.04
Unga	0.05	0.15	-0.04	0.00	0.01	0.25	0.15	-0.03	-0.01	0.01	-0.01	0.09
Unilever Tea	0.03	0.11	0.16	-0.08	0.06	0.08	-0.04	-0.05	-0.15	0.03	0.01	-0.07
Williamson Tea	0.06	0.08	0.06	-0.04	0.01	0.21	-0.03	-0.08	-0.05	-0.11	0.00	0.02

Ordinary Shares	Average Returns Jan-06	Average Returns Feb-06	Average Returns Mar-06	Average Returns Apr-06	Average Returns May-06	Average Returns Jun-06	Average Returns Jul-06	Average Returns Aug-06	Average Returns Sep-06	Average Returns Oct-06	Average Returns Nov-06	Average Returns Dec-06
	85	86	87	88	89	90	91	92	93	94	95	96
Week	2006											
ORDINARY SHARES												
A. Baumann	-0.02	0.00	0.00	0.00	-0.01	-0.03	0.00	0.00	-0.01	-0.07	-0.10	0.97
Athi River Mining Ltd	0.12	0.04	-0.01	0.03	0.36	0.05	0.07	0.15	0.12	-0.05	0.02	-0.07
Bamburi	0.01	0.01	0.00	0.00	0.03	0.01	0.02	0.08	0.17	0.01	0.17	-0.04
Barclays Bank	0.11	0.02	-0.09	-0.01	0.01	0.05	0.03	0.08	0.09	0.19	0.43	-0.29
BOC (K)	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.00
British American Tobacco	0.00	0.01	-0.02	0.01	0.00	-0.11	0.11	0.00	-0.02	0.02	0.01	0.00
Car & Gen	0.06	0.16	0.03	-0.01	0.04	0.06	0.07	0.02	0.07	0.44	0.06	-0.14
Carbacid	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
CFC Bank	0.01	-0.05	-0.09	-0.01	0.22	-0.09	0.02	0.13	0.01	0.00	0.04	0.00
City Trust	-0.03	0.01	-0.01	-0.01	0.00	0.01	0.04	0.00	0.08	0.11	3.72	-0.54
CMC	0.05	-0.04	-0.01	0.04	0.07	0.13	0.16	0.15	0.31	0.09	0.24	0.07
Crown Berger	0.09	-0.02	-0.03	0.04	-0.02	-0.04	0.04	-0.02	0.01	0.00	0.17	-0.03
Diamond Trust	0.22	0.09	0.01	0.03	0.09	0.03	0.09	0.29	0.08	-0.01	0.05	-0.07
E. A. Breweries	-0.01	-0.03	0.00	0.00	0.07	-0.02	-0.02	0.02	0.04	0.05	-0.04	-0.03
E. A. Cables	0.08	0.09	0.01	0.12	0.30	0.11	0.24	0.54	2.72	-0.66	-0.21	-0.11
E. A. Portland	0.04	0.10	-0.01	-0.01	0.04	0.02	0.04	-0.01	0.03	-0.02	0.01	-0.01
Eaagads	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.00	-0.01	0.01	0.58	0.59
Express	0.15	0.01	0.00	0.20	0.41	-0.05	-0.06	0.02	-0.05	0.02	0.20	-0.13
HF	0.18	0.00	0.01	0.19	0.34	0.04	0.08	0.26	0.31	-0.03	-0.03	-0.08
ICDC	0.02	0.03	0.01	0.00	0.05	0.10	0.50	0.09	0.60	0.80	-0.05	-0.12
Jubilee	0.06	0.11	-0.02	0.02	0.15	0.09	0.18	0.15	0.06	0.10	0.48	0.13

Ordinary Shares	Average Returns Jan-06	Average Returns Feb-06	Average Returns Mar-06	Average Returns Apr-06	Average Returns May-06	Average Returns Jun-06	Average Returns Jul-06	Average Returns Aug-06	Average Returns Sep-06	Average Returns Oct-06	Average Returns Nov-06	Average Returns Dec-06
	85	86	87	88	89	90	91	92	93	94	95	96
Week						2006						
K. C. B	0.03	0.02	0.00	-0.02	0.35	0.04	0.03	0.06	0.06	0.06	0.10	0.01
K. Orchards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kakuzi	-0.04	-0.05	-0.12	-0.09	0.06	0.02	-0.12	0.03	0.05	0.09	0.02	-0.01
Kapchorua	-0.01	-0.01	-0.01	-0.01	0.00	-0.20	-0.26	-0.01	-0.03	-0.05	0.03	0.17
Kenol	0.13	-0.09	-0.03	-0.02	0.03	-0.02	-0.04	0.00	-0.07	-0.03	-0.03	0.01
Kenya Airways Ltd	0.10	0.05	0.03	0.10	0.18	-0.07	-0.03	0.02	0.06	0.05	-0.06	-0.02
KPLC	0.00	-0.06	-0.02	0.02	0.20	0.05	-0.05	0.09	0.35	0.12	0.09	-0.06
Limuru Tea	0.00	0.00	0.02	0.01	-0.01	-0.01	0.01	0.01	0.00	0.00	0.00	0.00
Marshalls	0.04	0.03	0.00	-0.02	0.04	0.17	0.00	0.06	0.19	0.19	-0.09	-0.02
Nation Media Group.	0.03	0.01	0.02	0.00	0.02	0.00	0.01	0.00	0.07	0.09	0.41	-0.04
National Bank	0.13	-0.04	0.03	-0.03	0.37	0.05	-0.02	0.15	0.16	0.05	-0.02	-0.05
National Industrial Credit	0.03	0.04	-0.03	-0.03	0.25	0.11	0.06	0.28	0.03	0.05	0.03	-0.04
Olympia Capital Holdings	0.01	0.00	0.00	0.01	0.04	-0.02	0.00	-0.11	0.02	0.72	0.08	0.06
Pan Africa Ins	-0.02	-0.03	0.06	0.01	0.04	0.01	0.08	0.42	0.33	-0.02	0.03	0.03
Rea Vipingo	0.02	-0.01	-0.07	-0.01	0.22	-0.11	-0.01	0.02	0.17	0.00	0.11	-0.06
Sameer Africa	0.02	-0.06	-0.06	-0.04	0.10	-0.09	-0.07	-0.10	0.06	0.02	0.70	-0.11
Sasini	-0.06	0.04	-0.07	-0.04	0.09	0.02	-0.01	0.06	0.47	0.43	0.98	0.10
Standard Chartered Bank	0.02	-0.01	0.03	-0.01	0.02	0.02	0.06	0.02	0.06	0.12	0.16	-0.02
Standard Newspapers	-0.06	-0.01	-0.04	-0.07	0.08	-0.04	-0.04	0.15	0.22	0.04	0.15	-0.02
Total	0.04	-0.01	-0.03	-0.03	0.10	-0.09	-0.05	0.00	-0.01	-0.03	-0.05	-0.01
Tourism Promotion Services	0.00	0.00	0.10	0.15	0.08	0.05	-0.01	-0.13	-0.10	-0.01	-0.03	0.01
Unga	0.09	0.01	-0.09	-0.05	0.18	-0.11	-0.10	-0.03	0.07	-0.07	0.18	-0.09
Unilever Tea	-0.01	0.01	0.02	-0.01	-0.05	-0.04	-0.01	0.08	-0.06	-0.01	0.04	-0.03
Williamson Tea	-0.04	-0.01	-0.05	-0.02	-0.06	-0.09	0.02	0.01	-0.02	-0.04	0.35	0.12

List II: Included stocks

1	A. Baumann
2	Athi River Mining Ltd
3	Bamburi
4	Barclays Bank
5	BOC (K)
6	British American Tobacco
7	Car & Gen
8	Carbacid
9	CFC Bank
10	City Trust
11	CMC
12	Crown Berger
13	Diamond Trust
14	E. A. Breweries
15	E. A. Cables
16	E. A. Portland
17	Eaagads
18	Express
19	HF
20	ICDC
21	Jubilee
22	K. C. B
23	K. Orchards
24	Kakuzi
25	Kapchorua
26	Kenol
27	Kenya Airways Ltd
28	KPLC
29	Limuru Tea
30	Marshalls
31	Nation Media Group.
32	National Bank
33	National Industrial Credit
34	Olympia Capital Holdings
35	Pan Africa Ins
36	Rea Vipingo
37	Sameer Africa
38	Sasini
39	Standard Chartered Bank
40	Standard Newspapers
41	Total
42	Tourism Promotion Services
43	Unga
44	Unilever Tea
45	Williamson Tea

List II: Excluded stocks

1 Equity Bank
2 Eveready
3 Hutchings Biemer
4 KenGen
5 Mumias
6 ScanGroup
7 Uchumi Supermarkets

7.0 REFERENCES

Atiti, R. O, 2005, An empirical analysis of momentum in prices at the Nairobi Stock Exchange *(University of Nairobi, Nairobi).*

Chan, Jegadeesh, and Josef Lakonishok, 1996, Momentum Strategies, *Journal of Finance* 51, 1681-1713.

Conrad J and G Kaul, 1998, An anatomy of trading strategies, *Review of Financial Studies* 11, 489 – 519

Daniel, Hirshleifer D. & Avanidhar Subrahmanyan, 1998, Investor Psychology and Security Market Under- and Overreactions, *Journal of Finance* 53, 1839 – 1885.

DeBondt, Werner F. M., and Richard H. Thaler, 1985, Does the stock market overreact?, *Journal of Finance* 40, 793-805.

DeBondt, Werner F. M., and Richard H. Thaler, 1987, Further evidence on investor overreaction and stock market seasonality, *Journal of Finance* 42, 557-581.

Fama, Eugene, 1970, Efficient Capital Markets: A Review of Theory and Empirical Work, *Journal of Finance* 25, 383 - 417.

Foster, George, Chris Olsen, and Terry Shevlin, 1984, Earnings releases, anomalies, and the behaviour of security returns, *The Accounting Review* 59, 574-603.

George and Chuan-Yang Hwang, 2004, The 52-Week High and Momentum Investing, *Journal of Finance* 59, 2145-2176.

Ginsburgh, Victor, and Jan van Ours, 2003, Expert opinion and compensation: Evidence from a musical competition, *American Economic Review* 93, 289–296.

Grinblatt and Matti Keloharju, 2001, What makes investors trade? *Journal of Finance* 56, 589-616.

Jegadeesh, Narasimhan, 1990, Evidence of predictable behaviour of security returns, *Journal of Finance* 45, 881-898.

Jegadeesh, Narasimhan, and Sheridan Titman, 1993, Returns to buying winners and selling losers: Implications for market efficiency, *Journal of Finance* 48, 65–91.

Jegadeesh, Narasimhan, and Sheridan Titman, 2001, Profitability of momentum strategies; an evaluation of alternative explanations, *Journal of Finance* 56 No. 2, 699 - 720.

Johnson Timothy C. 2002, Rational Momentum Effects, Journal of Finance 57, 585 – 608.

Kahneman, Daniel, Paul Slovic, and Amos Tversky, 1982, Judgment under Uncertainty: Heuristics and Biases (*Cambridge University Press, New York)*.

Moskowitz, Tobias, and Mark Grinblatt, 1999, Do industries explain momentum? *Journal of Finance 54,* 1249–1290.