

**THE ROLE OF FIRM SIZE AND PE RATIO IN EXPLAINING  
SHORT-TERM RETURN REVERSAL AND CONTINUATION FOR  
STOCKS QUOTED AT THE NAIROBI STOCK EXCHANGE**

**BY  
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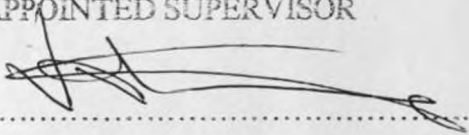
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## **DEDICATION**

This work is dedicated to my mother Grace for instilling in me the desire to learn and to my wife Irene and son Franklin for their inspiration.

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## ABSTRACT

The random walk theory (Samuelson, 1965) suggests that changes in prices of common stocks over time are randomly distributed. Past price movements are not related to future price movements. More recently, studies have shown negative autocorrelation between past and future returns after 3-5 years e.g. De Bondt and Thaler (1985) and positive autocorrelation for periods between 3 and 12 months e.g. Jegadeesh and Titman (1993).

This study sought to establish whether the nature of the past return effect at the NSE in the short term is dependent on firm size and price earnings (PE) ratio. We found no past return effect for the one year test period. When the test period was three months, we found that winners continue outperforming the market while at six months, losers continue underperformance.

We found evidence of continuation for the small winner and low PE winner portfolios 3 and 6 months after portfolio formation. There was no significant difference in returns of past losers and winners in big size stocks and high PE stocks. The returns of these stocks are essentially similar to market returns.

The findings of this study support the proposition of underreaction (Jegadeesh and Titman, 1993) among small size and low PE stocks. The source of this underreaction may be investor conservatism whereby investors adjust their beliefs about changing fundamentals gradually.

In the study, different portfolios were formed and their performances over the holding period evaluated. It used the excess returns over the market rather than the absolute returns so that the portfolio performance could be gauged against the market's performance as well. This has an intuitive appeal especially in markets without short selling opportunities like the NSE.

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background

Investors in the stock market desire to make returns. This comprises of dividends and capital gains. The returns obtained should be commensurate with the risk involved (Reilly and Brown, 2000). Consequently, many researchers have studied the behavior of stock prices. They attempt to find the factors that determine prices and which the investor can use to predict his expected return.

The study of market behavior is either fundamental analysis or technical analysis. In fundamental analysis, the analyst tries to determine the intrinsic value of a stock depending on its business performance. It requires probing the financial statements and interpreting any public information from the management. In technical analysis, the analyst tries to project the future price by studying past price patterns.

Fama (1970) says that in an efficient market, neither fundamental nor technical analysis will yield a superior return except by chance. In the weak form of market efficiency, the past price patterns are factored in the current price. In a market that is efficient in the semi-strong form, the current price has factored in all the information that is in the public domain. Thus, in such a market, investors should not be able to trade profitably on the basis of any publicly available information.

In the efficient market hypothesis (EMH), all market participants are assumed to behave rationally. They have unbounded rationality and there is no limit to arbitrage in the market.

They accurately maximize expected utility, and are able to process all available information. Thus financial prices efficiently incorporate all public information and prices can be regarded as optimal estimates of true investment value at all times (Shiller, 1998).

The EMH has come under scrutiny in recent years. Finance literature, has amassed a substantial number of observations of apparent anomalies (from the standpoint of the EMH) in financial markets. These include the weekend effect (French, 1980), turn of the month effect (Kunkel et al

2003) and holiday effects (e.g. Kim and Park, 1994) on stock returns. These anomalies suggest that the principles of rational behavior underlying EMH are not entirely correct (Shiller, 1998).

Financial academics and practitioners have recognized that average stock returns are related to past performance and cross-section of stock returns is thus predictable based on past returns. Under the null hypothesis of weak-form market efficiency, the performance of portfolios of stocks should be independent of past returns. However empirical research has shown that asset returns tend to exhibit some form of positive autocorrelation in the short to medium term; but mean-revert over longer horizons (Hon and Tonks, 2001) in the US market. However, studies in other markets show profitability of contrarian strategies even in the short term e.g. Li (1998) and Okoth (2005).

Jegadeesh and Titman (1993) document individual stock momentum. They use strategies that buy stocks that have performed relatively well in the past and sell stocks that have performed relatively poorly in the past to generate significant positive returns over the 3- to 12-month horizon in the US market. This is attributable to underreaction to information (Chan, Jagadeesh and Lakonishok, 1996) or gradual diffusion of private information (Hong and Stein, 1999).

A number of researchers report that past losers (negative or lowest return-stocks) outperform past winners (positive or highest return-stocks) or vice versa over the subsequent three to five years not only in US markets but also in other stock markets (Bildik and Gülay, 2000). This could be a result of overreaction. The first substantial statistical evidence for what might be called a general market overreaction can be found in the literature on excess volatility of speculative asset prices (Shiller (1981); LeRoy and Porter (1981)). The volatility is found to be excessive compared to the predictions of the efficient market models. Stock prices appear to overreact to some news, or to their own past values. When overreaction occurs, asset prices move away from their equilibrium prices. Afterwards investors come to their senses and correct the prices.

At the Istanbul Stock Exchange prior loser-stocks are found to outperform prior winner-stocks consistent with the predictions of the overreaction hypothesis (Bildik and Gülay, 2000).

DeBondt and Thaler (1985, 1987) report that long-term past losers (negative or lowest return-stocks) outperform long-term past winners (positive or highest return-stocks) over the subsequent three to five years. Poterba and Summers (1988) find that a long period of below average stock returns increases the probability of subsequent periods of above average returns (mean reversion effect)

Iihara et al. (2003) uncovered significant returns reversal dominating the Japanese markets especially over short periods such as one month. Fung, Leung and Patterson(1999) state that studies using both short-and long-term horizons generally suggest that U.S. stock returns contain important information that can be used to forecast future stock returns. Grinblatt and Moskowitz(2003) found that past returns contain information about expected returns. They observe that both short and long term returns are inversely related to future average returns while intermediate horizon past returns are positively related to future average returns.

Investors' behavioral tendencies may explain the apparent deviation from the EMH. Individuals who are faced with a liquidity demand, are more likely to sell past winners than past losers (Odean, 1998). This is consistent with the disposition effect. The result would be negative feedback whereby the past winners tend to be future losers.

Herding, a phenomenon in which investors trade in the same direction as their peers, could also cause mispricing due to a temporary imbalance between supply and demand. Lakonishok, Shleifer and Vishny (1994) and Wermers (1999) provided empirical evidence on herding. Thus, herd-like behavior can act as a source of overpricing or underpricing of securities. Herding by institutional investors is primarily responsible for large price movements of individual stocks and destabilizes stock prices. Lakonishok et al, (1994) however, argue that institutional investors' herding does not destabilize prices since they may be better informed. Their activities would move prices toward equilibrium values. On the other hand, this herding may not be related to information (Nofsinger and Sias, 1999). It may be a result of irrational psychological factors and therefore may cause temporary price bubbles (Friedman, 1984 and Dreman, 1979).

Regret theory or loss aversion may apparently help explain the fact that investors defer selling stocks that have gone down in value and accelerate the selling of stocks that have gone up in

value, Shefrin and Statman (1985). Regret theory may be interpreted as implying that investors avoid selling stocks that have gone down in order not to finalize the error they make and not to feel the regret. They sell stocks that have gone up in order that they cannot regret failing to do so before the stock later fell, should it do so. That such behavior exists has been documented using volume of trade data by Ferris, Haugen and Makhija (1988) and Odean (1996a, 1996b).

De Bondt and Thaler (1985) applied Tversky and Kahneman's (1992) representativeness to market pricing. They posit that investors overweight salient information such as recent news and underweight salient data about long term averages. They also overreact to both bad news and good news. They propose two hypotheses, each a violation of weak form market efficiency:

1. Extreme movements in stock prices will be followed by subsequent price movements in the opposite direction.
2. The more extreme the initial price movement, the greater will be the subsequent adjustment.

The arbitrage capacity of market agents is limited. Recent theoretical research suggests that arbitrage by rational traders need not eliminate mispricing (Daniel et al. 2001). One reason is that there are some psychological biases which virtually none escapes. A second reason is that when traders are risk averse, prices reflect a weighted average of beliefs. Just as rational investors trade to arbitrage away mispricing, irrational investors trade to arbitrage away rational pricing. . When arbitrage becomes ineffective, stock prices may diverge far from fundamental values (Shleifer and Vishny, 1997), causing mispricing.

Attention anomaly may also influence price moves. This arises where public interest moves in waves as most people cannot concentrate on a large number of different events at the same time. Shiller (1998) claims that the changeable nature of public attention may be a major contributing factor to the excessive volatility that exists in stock prices. Owen (2002) says that levels and areas of investment seem to be driven by waves of investor attention which change over time and as new information is released; it concentrates investor attention on some stocks.

Okoth (2005) found that future returns are negatively correlated to past returns both in the long term and short term at the NSE. According to her, the direction of returns reverses over the next

1, 6, 12, 24 and 36 months. Consequently, she concluded that a contrarian investment strategy would offer profitable opportunities at the NSE both in the short and long term. This is contrary to the EMH.

Atiti (2005), on the other hand found return continuation for stocks trading on the NSE for the period 1998-2003. A portfolio of past winners outperformed a portfolio of past losers for the entire period under study. Her findings are also inconsistent with EMH since it is possible to beat the market with momentum strategies.

The results of the studies done by Okoth (2005) and Atiti (2005) are conflicting though they covered roughly the same period. Okoth found return reversal whereas Atiti found return continuation in the short term (1 month to 1 year). The seemingly contradicting results may be due to the methodology used. However, none of the researchers tried to find possible explanation for their findings.

Their findings may not be explained by seasonal anomalies at the NSE. The studies done on various anomalies fail to detect them. Nyambogi (2005) found that the NSE 20 share index is not affected by the weather. Rasugu(2005) did not find evidence of the holiday effect and states that technical trading rules are not applicable at the NSE. Kimeu (1991) found the random walk in the NSE. Kingori (1995) did not detect seasonality for monthly or quarterly returns at the NSE. The absence of the anomalies does not necessarily mean that the NSE is efficient in the weak form. There may still be patterns to share prices.

In this study, we will investigate whether the reversal or continuation at the NSE is related to the size of the firm and the PE ratio. The period covered (2003-2007) while different from that covered by Okoth and Atiti is also interesting. During this period, the central depository system was introduced in 2004. In 2006, trading was automated through introduction of the Automated Trading System (ATS). Automation increased the volume of trading, volatility and liquidity (Mbugua, 2007). The ATS has led to faster matching of bids and offers and the number of investors has increased (Wainaina, 2007).

## **1.2 Statement of the Problem**

Okoth (2005) and Atiti (2005), covering almost the same study period, found profitability of both momentum and contrarian strategies. Whereas De Bondt and Thaler (1985) found return reversal over the long term, Okoth found the same both for short and long term. Atiti looked at periods of one month to one year and as in Jegadeesh and Titman (1993), observed return continuation.

The findings of Okoth and Atiti contradict the EMH in the weak form. According to the EMH (Fama, 1970), prices of securities fully reflect all available information. Prices are not predictable but random (Samuelson, 1965). Thus, no investor has any advantage in predicting return on stock price using past price movements.

However, EMH has been the subject of debate in recent times. The hypothesis that market valuations include large persistent errors is as consistent with the available empirical evidence as the hypothesis of market efficiency (Summers, 1986). Behavioral based theories suggest that past price movements may contain information about future price movements. This contradicts the EMH in the weak form. The questions then arise:

1. Is there information content about future stock returns in past stock returns at the NSE?
2. Does size of the firm, measured in market capitalization determine predictability of future price behavior from past price behavior dependent?
3. Does the PE ratio have any role in explaining momentum or contrarian profits?

This study attempts to answer these questions.

## **1.3 Objectives of the study**

1. To establish the nature (continuation or reversal) of future stock returns from past stock returns in the short-run.
2. To establish whether past stock returns and the firm size have joint predictive power on the nature of future stock returns in the short-run.
3. To establish whether past stock returns and the PE ratio have joint predictive power on the nature of future stock returns in the short-run.

## **1.4 Hypotheses**

1.  $H_0$ : Future stock returns are not related to past stock returns.



$H_1$ : Future stock returns are related to past stock returns.

2.  $H_0$ : Past stock returns and firm size do not have joint predictive power on future stock returns.

$H_1$ : Past stock returns and firm size have joint predictive power on future stock returns

3.  $H_0$ : Past stock returns and PE ratio do not have joint predictive power on future stock returns.

$H_1$ : Past stock returns and PE ratio have joint predictive power on future stock returns

The hypotheses shall be tested using the  $t$ -statistic at the 95% confidence level.

### **1.5 Importance of the Study**

The study will be important to various categories of stakeholders.

#### **Investors**

It will be an indicator to them whether there is need to study past returns of various securities in order to make investment decisions. This will help them in formulating their investment strategies.

#### **Stock brokers and Investment banks**

These institutions act as intermediaries for investors. The study will guide them on how to advise their clients for better returns.

#### **Regulatory Authorities**

They could incorporate the findings of the study in formulating regulations that are designed to make the market more efficient. They could also use the study for public investor education.

#### **Scholars**

The study would stimulate debate about the efficiency of financial markets especially in emerging markets.

The rest of this study is organized as follows: Chapter two is a review of relevant literature.

Chapter three describes the methodology used while chapter four reports the findings and analysis. Chapter five includes conclusions, limitations and suggestions for further research.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 Introduction

The price behavior of common stocks has been of considerable interest to individual investors, fund managers, finance scholars and other market players for a long time. Consequently, many studies have been done in many markets on the factors that determine their value at any given time. Classical finance advances the theory that markets are efficient and value assets in an unbiased manner. On the other hand, financial practitioners act as though they expect inefficiencies and thus spend time on fundamental and technical analyses in an effort to attain superior returns from their investments. More recently, researchers have questioned market efficiency leading to the increased interest in behavioral finance

#### 2.2 Valuation and Expected Returns of Common Stocks

The intrinsic value of common stock is the expected cash flows from the stock over the life time of the firm discounted at the investor's required rate of return (Reilly and Brown, 2000). This gives the present value of cash flows. The cash flows used may be dividends, free cash flow to equity or free cash flow to the firm.

The required rate of return depends on the risk associated with the firm's cash flows. This may be derived from the capital asset pricing model or CAPM (Sharpe, 1964; Lintner, 1965) whereby

$$R_i = R_f + (R_m - R_f)\beta_i$$

Where  $R_i$  = expected return on security  $i$

$R_f$  = Risk free rate

$R_m$  = Expected return of the aggregate market

$\beta_i$  = Beta risk of security  $i$  or its returns volatility relative to the market returns. This is the systematic risk measure attached to security  $i$ .

The above equation indicates that the return an investor expects from her investment is reward to risk. This is because a higher beta means higher risk. Since the term  $R_m - R_f$  is a constant, the expected return increases with an increase in beta.

It follows that valuation of common stocks requires the analyst to estimate the security's cash flows as well as its risk as determined by CAPM or any other asset pricing model (Pike and Neale, 1996). In an efficient market, overvaluation would be equally as likely as undervaluation. Thus, over time, no investor can get better risk-adjusted returns than the overall market.

An alternative approach to equity valuation is use of relative techniques (Reilly and Brown, 2000). The value of the firm is determined by comparing it to similar firms on the basis of several relative ratios that compare its stock price to relevant variables that affect value such as earnings, cash flow, book value and sales. The relative valuation ratios used include price/earnings, price/cash flow, price/book value and price/sales. This method requires estimating earnings, cash flow, book value and sales of the firms in question for the period being considered.

One of the main functions of a securities market is price discovery i.e. to cause prices to reflect currently available information (Sharpe et al., 1999). This means causing the price to adjust to the true investment value (obtained from an appropriate valuation technique) with respect to all the currently available information in the market. An efficient market will lead to achievement of quick and accurate price discovery.

### **2.3 The Efficient Market Hypothesis**

EMH is the hypothesis that financial prices efficiently incorporate all public information and that prices can be regarded as optimal estimates of true investment value at all times.

Thus, a securities market is informationally efficient when security prices adjust rapidly to the arrival of new information (Reilly and Brown, 2000). This requires three key assumptions:

- i) There is a large number of competing utility maximizing participants who analyze and value securities independent of each other.
- ii) New information regarding securities comes to the market in a random fashion. The timing of one announcement is generally independent of others.
- iii) The competing investors try to adjust prices rapidly to reflect the effect of the new information. The price adjustment is unbiased meaning that the market will overadjust and underadjust in an unpredictable manner.

Security prices in an efficient market should reflect all the information that is publicly available, including the risk involved in owning the security, at any given time. Thus, the expected returns implied in the security's current price should reflect its risk. Fama (1970) distinguished three forms of market efficiency depending on the information set involved.

### **2.3.1 Weak-form EMH**

The weak form of the Efficient Market Hypothesis suggests that all historical market information (past prices and past trading volumes) is fully taken into account in the current market price. An implication of the weak form hypothesis is that there is no scope for making profits from analysis of historical market prices and volumes except by chance (Sharpe et al., 1999). Therefore, technical analysis is expected to be of no value. Attempts to forecast stock prices using charts based on previous stock prices will fail since all the information available from past price data is already reflected in the stock price.

The weak form hypothesis is closely related to the random walk theory (Samuelson, 1965; Fama, 1965 and 1970). A random walk involves each day's price movement being independent of every previous day's price movement. Upward and downward movements are regarded as having equal likelihood on a day, irrespective of the previous direction of movement. Price movements reflect news coming into the market, and news is random both in timing and in nature (good and bad news have equal likelihood). However the weak form hypothesis deviates from a pure random walk since it allows for upward price movements to dominate downward movements so that over the long term share prices tend to move upwards (there are random fluctuations around a rising trend).

### **2.3.2 Semistrong-form EMH**

A semistrong-form efficient market is one in which security prices fully reflect all publicly available information (Reilly and Brown, 2000). In addition to market information on past prices and trading volumes publicly available information includes macroeconomic data (such as interest rates and inflation rates), company data (such as profits and sales), and non-economic events (such as political events, technological developments, and discoveries of natural

resources). The implication is that asset prices immediately move to reflect any new information so that no one can make profits by means of purchases or sales based on analysing the new information.

According to this form of EMH, neither technical analysis nor fundamental analysis would consistently yield superior performance (Sharpe et al., 1999). All the market information such as the current prices, past rates of return and trading volumes is already incorporated in the current price. Nonmarket information such as earnings, dividend announcements, price-earning ratios, size, stock splits, news on economy and political news is also incorporated in the price. Consequently, these have no bearing on the future rates of return.

### **2.3.3 Strong-form EMH**

This form asserts that stock prices fully reflect all information from public and private sources (Reilly and Brown, 2000). Thus, no group of investors has monopolistic access to information relevant to the formation of prices that will allow them to consistently experience above-average profits. This form encompasses both the weak form and the semistrong form.

The EMH implies that it would be futile to look for strategies aimed at outperforming the aggregate market. The market prices are already a fair reflection of the information available and rationally evaluate the degree of risk in shares. However, financial practitioners spend resources on fundamental and technical analyses in an attempt to obtain superior returns.

## **2.4 Fundamental Analysis**

The goals of fundamental analysis are to analyze and predict corporate earnings (Bauman, 1996) and to discover mispriced securities by a careful examination of key value-drivers, such as earnings, risk, and growth, mostly from financial statements (Lev and Thiagarajan, 1993; Kothari, 2001). Ou and Penman (1989a) extracted, from a large array of financial statement items, a summary value measure indicating the direction of one-year-ahead earnings change. These returns cannot be explained by popular firm risk characteristics. Ou and Penman's evidence suggests that financial statements capture fundamentals not reflected in security prices. They hypothesize that previous years' financial statements contain rich information that can be

used to predict subsequent year's earnings. As future earnings are associated with future stock prices, previous years' financial statement information can be used to predict future stock returns. Among the firm characteristics that have been studied in relation to returns are Book-to-Market Equity (Rosenberg, Reid and Lanstein 1985; Chan, Hamao and Lakonishok,1991), Leverage (Bhandari,1988), Price / Earnings (Basu 1977 and 1983; Jaffe, Keim and Westerfield, 1989) and Firm Size (Banz,1981; Basu, 1983). These studies uncovered some relationship between the given variables and stock returns

#### **2.4.1 PE Effect**

Price/Earnings ratio is used by many investors to look for undervalued stocks. Basu (1977) using a sample period that stretched from April 1957 to March 1971, showed that stocks with high earnings/price ratios (or low P/E ratios) earned significantly higher returns than stocks with low earnings/price ratios. His results indicated that differences in beta could not explain these return differences. In a follow-up study, Basu (1983) showed that this "P/E effect" is not just observed among small capitalization stocks. A later study by Jaffe, Keim and Westerfield (1989) confirmed this finding. Mwangi (1999) investigated this effect and confirms its existence at the NSE. The PE effect is a contradiction of market efficiency.

#### **2.4.2 Size Effect**

In a study of effect of firm size on returns, Banz (1981) showed that the stocks of firms with low market capitalizations had higher average risk-adjusted returns than large capitalization stocks in the US between 1936 and 1975. Other researchers (e.g., Basu, 1983) showed that the size effect is distinct from the P/E effect discussed above. Small firms tend to have higher returns, even after controlling for P/E. Fama and French (1992) also found a significant negative relationship between size and average return. Sehgal and Tripathi (2005) found a strong size premium in the Indian Stock market. Muturi (2007) detected the size effect at the NSE.

Scholars have advanced diverse sources of the size effect. Roll (1981) suggests that smaller firms are riskier and therefore deserve higher expected returns. Roll (1981) argues that the risk measures in Banz (1981) are biased downward due to autocorrelation in the returns of small firms which are infrequently traded. Barry and Brown (1984), on the other hand, provided

evidence that the size effect is at least partly associated with differential information about small and large firms and thus related to the perceived riskiness of small firm stocks. Dissanaïke (2002) argues that the small-firm effect is an indication of investor overreaction and provides evidence for the UK that small size firms are also those with relatively negative stock price performance over the past.

A number of scholars have related return reversal to the size effect. Zarowin (1990) suggests that return reversal is due to size discrepancies between winner and loser portfolios. He observes that when losers are compared with winners of equal size, there is little evidence of return discrepancies. However, in periods when winners are smaller than losers, winners outperform the losers. Liu et al. (1993) find that return reversal exists only for small firms in Taiwan.

## **2.5 Technical Analysis**

This is the study of the market itself and can be reduced to the volume of the stock exchange transactions and the level of share prices (Sharpe et al., 1999). It rests upon the assumption that history tends to repeat itself in the stock exchange. The repetitive nature of price movements is attributed to market psychology; in other words, market participants tend to provide a consistent reaction to similar market stimuli over time. According to technical analysis, at any given time, a stock's price reflects everything that has or could affect the company - including fundamental factors. Technical analysts believe that the company's fundamentals, along with broader economic factors and market psychology, are all priced into the stock, removing the need to actually consider these factors separately. This only leaves the analysis of price movement, which technical theory views as a product of the supply and demand for a particular stock in the market.

The prices for individual securities and the overall market tend to move in trends which persist for appreciable lengths of time. Thus, an analysis of past volume and price behavior may be used to identify times when certain specific stocks (or groups of stocks, or the market in general) are either overpriced or underpriced

Early studies (e.g. Alexander, 1961; Fama and Blume, 1966 and Fama, 1970) showed that

technical analysis is essentially useless in predictive ability. However, several recent studies have indicated that technical analysis could be useful to investors. Technical analysis in emerging stock markets in the Far East has been found to be effective. For example, Bessembinder and Chan (1995) examined the validity of technical trading rules in Hong Kong, Korea, Japan, Malaysia, Taiwan, and Thailand from 1975 to 1991. They found that technical trading rules possess strong forecast ability for the emerging markets of Malaysia, Taiwan, and Thailand. This view is confirmed by Lai et al. (2003) who examined daily stock prices for the Kuala Lumpur Stock Exchange (KLSE) Composite Index from January 1977 to December 1999 and found that prices behave in a non-random fashion. They found that technical trading rules generated significantly positive returns, even after considering transaction costs.

The effective technical strategies include moving average, trading range breakout, momentum, and contrarian strategies. We consider the momentum and contrarian strategies in this study. The effectiveness of these strategies would be in stark contrast to the doctrine of the efficient markets hypothesis since under the null hypothesis of weak-form market efficiency, the performance of portfolios of stocks should be independent of past returns.

### **2.5.1 Return Continuation**

In return continuation, stock prices move in the direction of the predominant trend. This leads to the employment of momentum strategies. A momentum trader assumes that stocks that have gained in the past will gain in the future and those that have lost will lose (Reilly and Brown, 1999). Therefore, such a trader would buy winning stocks and sell short losing stocks.

Fama and French (1988), Lo and MacKinlay (1988), Poterba and Summers (1988) and Jegadeesh (1990) documented evidence of positive serial correlation in short horizon stock returns. Jegadeesh (1990) found that stock returns tend to exhibit short-term momentum. Stocks that have done well over the previous 3-12 months continue to have high returns over the next 3-12 months. In contrast, stocks that have had low returns in recent months tend to continue the poor performance for the coming 12 months.

A study by Jegadeesh and Titman (1993) confirmed these results. They showed that a strategy that buys stocks that have performed well in the past and sells those that have performed poorly



generates significant positive returns over 3- to 12- months holding periods. Their study also indicated that the momentum is stronger for firms that have had poor recent performance. They also showed that the momentum profits are not related to the size effect.

Rouwenhorst (1998; 1999) explored whether Jegadeesh and Titman (1993) results are market specific. He found that, just like in the US, there is evidence of momentum effects in international mature and emerging stock markets and the momentum profits are of similar magnitude. Several other single country studies have produced consistent evidence since then.

Jegadeesh and Titman (2001) reexamined the momentum strategy for an extended period (1965-1997) excluding NASDAQ stocks. They found that momentum strategy (holding winners and selling losers) generated statistically abnormal returns and is robust to CAPM and Fama and French (1993) risk-adjusted returns.

Drew et al. (2006) documented a strong momentum effect for the Australian market during the period 1988 through 2002 and find that momentum plays an important role in providing information about stock returns. They also found that past trading volume predicts both the magnitude and persistence of price momentum. These findings are consistent with the U.S. evidence. Atiti (2005) and Wainaina (2007) showed profitability of momentum strategies at the NSE.

The ability of momentum strategies to generate excess returns contradicts the EMH. The weak form of EMH avers that past price changes have no correlation with future price movements. Risk-based explanations do not explain the success of momentum strategies (Gutierrez and Pirinsky, 2007). As a consequence, most theories of momentum rely on behavioral and cognitive biases of investors.

### **2.5.2 Return Reversal**

Return reversal (winner-loser effect) is the change in the direction of returns in a subsequent period leading to existence of contrarian profits. De Bondt and Thaler (1985) were among the first to propose the existence of contrarian profits. They argue that the psychological aspect of

individuals contributes to abnormal returns, suggesting naive investors tend to pay more attention to recent information and less attention to prior data. This causes stock prices to overreact and deviate from intrinsic values. Thus, De Bondt and Thaler (1985) hypothesize that extreme movements in stock prices will be followed by subsequent price movements in the opposite direction as stock prices return to intrinsic values and that the more extreme the initial price movement, the greater will be the subsequent adjustment. This effect may also be termed as the winner-loser effect.

De Bondt and Thaler (1985) examined the return characteristics of losing and winning stocks over subsequent periods. They identified losers as stocks that have had poor returns over the past three to five years. Winners are those stocks that had high returns over a similar period. The main result of their study is that losers have much higher average returns than winners over the next three to five years. Chopra, Lakonishok and Ritter (1992) showed that beta cannot account for this difference in average returns. This tendency of returns to reverse over long horizons (i.e., losers becoming winners) is a contradiction of market efficiency.

Campbell and Limmack (1997) studied the UK market for the period 1979-1990 and showed that in the 12 months following portfolio formation, losers persisted in generating positive abnormal returns, thus appearing to support the winner-loser effect. It was also found that the very smallest loser companies did experience a reversal in their abnormal returns over the following 12 months, but that no such reversal existed for the smallest winner companies.

Zamri and Simon (2001) investigated long-run overreaction and seasonal effects for the stocks in Kuala Lumpur Stock Exchange for the period 1986-1996. They found that stocks that exhibit extreme returns relative to the market over a 3-year period experience a reversal of fortunes during the following 3 years. There was also evidence that employing a contrarian trading strategy may yield excess returns.

Short-term contrarian effect has been documented in a number of studies. Jegadeesh (1990), Lehmann (1990) and Lo and MacKinlay (1990) provided evidence of short term reversal. These papers showed that contrarian strategies that selected stocks based on their returns in the previous week or month generated significant abnormal returns in the subsequent week or

month. Other studies that found short term contrarian profits include Jegadeesh and Titman (1995) in the New York and American stock exchanges, Hameed and Ting (2000) in the Malaysian market and Chang et al. (1995) in the Japanese market. In Kenya, Okoth (2005) found contrarian profits at the NSE using extreme winners and losers for periods of up to three years.

Contrarian profits have been attributed to various factors. Keim (1983) argues that the winner-loser effect is another instance of the well-known size effect. Zarowin (1990) found higher contrarian profits from smaller sized portfolios than from larger sized portfolios. Lo and MacKinlay (1990) postulated that the source of short-term contrarian profits is the result of a lead-lag effect on stock prices. However, overreaction is given prominence as source of contrarian profits both in the short and in the long term (De Bondt and Thaler, 1985; Jegadeesh and Titman, 1995; Ni et al., 2002)

## **2.6 Perspectives from Behavioural Finance**

Shefrin (2000) defines behavioural finance as the study of how psychology affects financial decision making and financial markets. Theories of human behavior from psychology, sociology, and anthropology have helped motivate much recent empirical research on the behavior of financial markets. These theories have implications for the efficient markets hypothesis in finance which is based on the notion that people behave rationally, or accurately maximize expected utility, and are able to process all available information (Shiller, 1981). Behavioral finance argues that some financial phenomena can plausibly be understood using models in which some agents are not fully rational.

The anomalies observed in financial markets suggest that the underlying principles of rational behavior underlying the efficient markets hypothesis are not entirely correct. Anomalies are empirical irregularities that are not predicted by any of the traditional asset pricing models. They include the January effect (e.g. Rozeff and Kinney, 1976), the weekend effect (e.g. French, 1980), turn of the month effect (e.g. Ariel, 1987), equity premium puzzle (Shiller, 1982), volatility puzzle (Schwert, 1989; Shiller, 1989) and returns predictability. Limits to arbitrage and behavioural principles such as prospect theory, regret and cognitive dissonance, conservatism,

overconfidence, self-serving bias and biased self-attribution, availability heuristic and attention anomalies, representativeness heuristic, anchoring, , herding and over- and underreaction, may help explain these anomalies.

### **2.6.1 Limits to Arbitrage**

In the traditional framework where agents are rational and there are no frictions, a security's price equals its fundamental value consistent with EMH (Barberis and Thaler, 2001). Behavioral finance argues that some features of asset prices are most plausibly interpreted as deviations from fundamental value, and that these deviations are brought about by the presence of traders who are not fully rational. This view is objected to on the grounds that rational traders (arbitrageurs) will quickly arbitrage any mispricing caused by irrational (noise) traders. However, when an asset is wildly mispriced, strategies designed to correct the mispricing can be both risky and costly, rendering them unattractive. As a result, the mispricing can remain unchallenged.

The arbitrageur faces two types of risk: fundamental risk and noise trader risk. The first is the risk that price change is driven by yet undisclosed fundamental news. The noise trader risk (De Long et al. 1990 and Shleifer and Vishny, 1997) is the risk that the mispricing being exploited by the arbitrageur worsens in the short run. This may force the arbitrageur to liquidate his position prematurely. In the presence of per-period transaction costs, arbitrageurs may also hesitate to exploit the mispricing because they don't know how many other arbitrageurs have heard about the opportunity and therefore how long they will have to wait before prices revert to correct values.

Arbitrageurs may prefer to trade in the same direction as the noise traders for particular types of noise trading, thereby exacerbating the mispricing, rather than against them. De Long et al. (1990b) consider an economy with positive feedback traders, who buy more of an asset this period if it performed well last period. If these noise traders push an asset's price above fundamental value, arbitrageurs do not sell or short the asset. Rather, they buy it, knowing that the earlier price rise will attract more feedback traders next period, leading to still higher prices, at which point the arbitrageurs can exit at a profit.

### **2.6.2 Prospect Theory**

Prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992), a mathematically-formulated alternative to the theory of expected utility maximization, has had a great impact on economic research. An important piece of prospect theory is the finding that people's decision weights do not correspond to objective probabilities. According to prospect theory, a decision process consists of two stages. The first is the editing stage. In this stage, people frame prospects in terms of losses and gains relative to a benchmark. In doing so, they apply rules of thumb, or heuristics, that facilitate the interpretation of the various possibilities among which they have to choose. The second stage of the decision process is the evaluation stage. After the various prospects have been edited and framed as losses and gains, they are evaluated and the prospect with the highest value is chosen. The rules of thumb used when editing and evaluating are necessarily a simplification.

The weights are, according to Kahneman and Tversky (1979) determined by a function of true probabilities which gives zero weight to extremely low probabilities and a weight of one to extremely high probabilities. That is, people behave as if they regard extremely improbable events as impossible and extremely probable events as certain. However, events that are just very improbable (not extremely improbable) are given too much weight; people behave as if they exaggerate the probability. Events that are very probable (not extremely probable) are given too little weight; people behave as if they underestimate the probability.

### **2.6.3 Regret and Cognitive Dissonance**

This is the human tendency to feel the pain of regret at having made errors, even small errors, not putting such errors into a larger perspective. If one wishes to avoid the pain of regret, one may alter one's behavior in ways that would in some cases be irrational unless account is taken of the pain of regret. This may apparently help explain the disposition effect whereby investors defer selling stocks that have gone down in value and accelerate the selling of stocks that have gone up in value (Shefrin and Statman, 1985; Ferris et al., 1988; Odean, 1996b).

Cognitive dissonance is the mental conflict that people experience when they are presented with evidence that their beliefs or assumptions are wrong. Thus, it might be classified as a sort of pain

of regret, regret over mistaken beliefs. The theory of cognitive dissonance (Festinger, 1957) asserts that there is a tendency for people to take actions to reduce cognitive dissonance that would not normally be considered fully rational: the person may avoid the new information or develop contorted arguments to maintain the beliefs or assumptions.

The result of cognitive dissonance is that people filter information in a biased manner. Filtering information is easier when the individual is part of a group whose members hold similar opinions or have taken similar decisions. Therefore, herding may facilitate the reduction of cognitive dissonance and reinforce biased information filtering. Thus, this theory may explain hypes and panic in financial markets.

#### **2.6.4 Conservatism**

Conservatism is defined as the phenomenon that people only gradually adjust their beliefs to new information (Edwards, 1968). Experimental research indicates that it takes two to five observations to bring about a change of information or opinion where in the case of Bayesian learning one observation would have sufficed. The more useful the new information, the stronger is the conservatism. This is because new information that is at variance with existing knowledge is harder to accept. This may lead to underreaction to information causing momentum in stock returns (Barberis et al., 1998). Doukas and McKnight (2005) found evidence that that momentum is the result of gradual diffusion of private information and investors' psychological conservatism. Investors fail to adequately update their earnings expectation relative to their prior beliefs and undervalue the statistical weight of new information.

#### **2.6.5 Overconfidence**

Overconfidence implies that an individual overestimates his ability. The degree of overconfidence varies among professions. It is strongest in professions that can easily shift the blame for mistakes on others or unforeseen circumstances (Odean, 1998). An economist or financial market professional who in retrospect has failed to predict economic growth correctly may put this down to all sorts of unforeseeable political and economic events, or perhaps even to irrational behaviour of investors and consumers. There are also gender differences in overconfidence. Men have been found to be on average more overconfident than women (Barber

and Odean, 2001). Daniel et al., (1998) use overconfidence and self-attribution to explain the phenomenon of overreaction.

#### **2.6.6 Self-serving bias and biased self-attribution**

The individual is inclined to interpret information in a way that is most favourable to him even when he tries to be objective and impartial. People tend to discount the facts that contradict the conclusions they want to reach and embrace the facts that support their own viewpoints (Babcock and Loewenstein, 1997). This mechanism is called the self-serving bias.

People tend to blame failures on others and attribute successes to their own ability. This phenomenon is referred to as biased self-attribution (Zuckerman, 1979). The self-serving bias and biased self-attribution contribute to the dynamics of overconfidence.

#### **2.6.7 Availability heuristic and Attention Anomalies**

The availability heuristic is the tendency of people to estimate the frequency or probability of an event by the ease with which it can be brought to mind (Shiller, 1998). Thus, more recent events will have a greater impact on people's actions.

Attention it is affected by the salience of the object i.e. whether it is easily discerned or not or by the vividness of the presentation i.e. whether the presentation has colorful details (Taylor and Thompson, 1982). Judgments may be affected, according to the "availability heuristic," by the "ease with which instances or associations come to mind" (Tversky and Kahneman, 1974).

Investment fashions and fads, and the resulting volatility of speculative asset prices, appear to be related to the attention of public attention (Shiller, 1984). Investor attention to categories of investments seems to be affected by alternating waves of public attention or inattention. Investor attention to the market at all seems to vary through time, and major crashes in financial markets appear to be phenomena of attention, in which an inordinate amount of public attention is suddenly focused on the markets.

#### **2.6.8 Representativeness heuristic**

The representativeness heuristic is defined as the phenomenon that people look for a pattern in a

series of random events (Tversky and Kahneman, 1974). The representativeness heuristic leads to stereotyping and serves to make the world look more organized than it really is. It may cause people to draw far-reaching conclusions on the basis of merely a few indications. The mechanism is also known as the law of small numbers. People tend to generalize and draw conclusions on the basis of too little statistical information. Barberis et al., (1998) use representative heuristic to explain over- and under- reaction in financial markets.

### **2.6.9 Anchoring**

When people are asked to make quantitative assessments, their assessments are influenced by suggestions. The tendency to be influenced by such suggestions is called anchoring by psychologists. While anchoring undoubtedly has an information-response component in many circumstances, it has also been shown that anchoring behavior persists even when information is absent (Tversky and Kahneman, 1974). Anchoring affects valuations, even by experts (Northcraft and Neale, 1987)

### **2.6.10 Herding**

Herding in financial markets has been typically described as a behavioral tendency for an investor to follow the actions of others. Practitioners are interested in whether herding exists, because the reliance on collective information rather than private information may cause prices to deviate from fundamental value and present profitable trading opportunities. Herding has also attracted the attention of academic researchers, because the associated behavioral effects on stock price movements may affect their risk and return characteristics and thus have implications for asset pricing models.

Theoretical models of herding behavior have been developed by Bikhchandani, Hirshleifer and Welch (1992). Empirical studies have mainly focused on detecting the existence of herding behavior among mutual fund managers (e.g. Lakonishok, Shleifer, and Vishny, 1994; Wermers, 1999) or financial analysts (e.g. Trueman, 1994; Hong, Kubik, and Solomon, 2000; Gleason and Lee, 2003; Clement and Tse, 2005).



### 2.6.11 Underreaction

Jegadeesh and Titman (1993) were the first to refer the pattern of underreaction in returns. They show that a strategy that buy stocks with the highest positive return in J months (winners), and sell those with the lowest returns in that same period (losers), yielded significant abnormal returns during the following K months (K =3, 6, 9 or 12). They show that this excess return could not be explained in terms of CAPM risk – since the post-ranking beta of the “winner minus loser” portfolio was negative - or by time varying risk, size, serial covariance or lead-lag effects.

Cutler, Poterba and Summers (1991) studied various financial markets in the period 1960-88. They find autocorrelation of returns over a horizon varying from four months to one year. Bernard (1992), showed that average returns around the quarter earnings announcements are positively significant following positive earnings surprises (“standardized unexpected earnings”) in the previous quarter. Bernard (1992) and Jegadeesh and Titman (1993) claimed this evidence supports the hypothesis of “underreaction”. The findings of Chan, Jegadeesh and Lakonishok (1996) also supported underreaction by investors. They observed momentum and a continuation trend in earnings surprises around the announcement dates. Behavioural finance argues that this behaviour could be led by conservatism as suggested in Edwards (1968), that is, conservative investors underweight and slowly process the new information that is therefore gradually incorporated into prices.

### 2.6.12 Overreaction

The overreaction hypothesis claims that stocks which have performed poorly over a certain period of time will perform well over the subsequent and similar time interval. In other words, winning stocks in period t tend to become losers in period t+1, and vice versa. The concept of overreaction is originally derived from experimental psychologists, Kahneman and Tversky (1982), who found people are in the habit of overreacting to unexpected and dramatic events. Because of this finding, De Bondt and Thaler (1985) provided evidence that large abnormal returns can be earned in the U.S. equity market by applying contrarian strategies to over the past half century of data. This strategy yielded an abnormal market adjusted return of 24.6% for the arbitrage portfolio (“losers” minus “winners”).

These results of negative serial correlation for 36 months are inconsistent with the weak form of

the Efficient Markets Hypothesis of Fama (1970) and could be driven by excessive optimism and pessimism. Excessive optimism drives prices above their fair values setting the stage for future negative abnormal returns. Excessive pessimism discounts prices below fair value leading to future positive abnormal returns.

Jegadeesh and Titman (1995) found that observed short-term contrarian profits are predominantly the result of an overreaction to firm specific information. Bowman and Iverson (1998) examined the behavior of stock prices in New Zealand after a large weekly change in price and their findings suggest that the stock market does overreact, especially in the case of price declines. Their results are robust to risk, size, seasonals and bid-ask bounce. Otchere and Chan (2003) documented evidence of short run overreaction in Hong Kong. They also explored the possibility that the results are affected by factors such as the bid-ask bounce, the size effect, and the day-of-the-week effect and find them to be robust to these factors.

## **2.7 The Kenyan Experience**

### **2.7.1 Fundamental Studies**

Mwangi (1999) found predictive ability of PE ratio on returns of common stocks at the NSE. The current study attempts to establish if the PE ratio can be used together with past stock return patterns to determine the direction of future returns.

Oliech (2002) examined whether the book to market ratio and the firm size have any effect on returns at the NSE. He regressed the return against the size and book to market ratio and concluded that returns at the NSE are not related to size and the book to market equity ratio. Oliech however did not examine whether there was any return difference between portfolios of different sizes.

Muturi (2007) investigated the explanatory power of five fundamental accounting variables: market value of equity, book to market value of equity, debt to equity ratio, dividend yield and cash flow from operations to size. He found significant explanatory power of the first four variables with dividend yield possessing the highest power.

### **2.7.2 Seasonal Anomalies**

Kingori (1995) did not detect seasonality for monthly or quarterly returns at the NSE.

Nyambogi (2005) studied the effect of the weather on the NSE 20 share. He found no correlation between index returns and the weather. Rasugu (2005) concluded that there is no holiday effect and stated that technical trading rules are not applicable at the NSE. Thus, if continuation and reversal patterns exist at the NSE, they are not effects of these seasonal anomalies. This would agree with Heston and Sadka (2006) who found that the profitability pattern based on past returns is not an artifact of the January effect in the American market. In contrast, Bildik and Gulay (2002) found that contrarian profits in January are significantly higher than those in non-January months particularly for the strategies which are based on relatively shorter holding periods such as one and three months at the Istanbul Stock Exchange.

### **2.7.3 Momentum and Contrarian Studies**

Atiti (2005) followed the method of Jegadeesh and Titman (1993) to test for the momentum effect at the NSE. She found that significant profits can be earned using a momentum strategy six to twelve months after portfolio formation. Wainaina (2007) similarly found profit opportunities using the 52-week high momentum strategy.

Okoth (2005) implemented a strategy that buys losers and sells winners using the five extreme stocks on the basis of past cumulative returns. She found that the direction of returns reverses 1, 6, 12, 24 and 36 months after portfolio formation. She concluded that the contrarian strategy is profitable at the NSE especially in the short run.

In the current study, we test the predominant effect using symmetrically constructed portfolios as in De Bondt and Thaler (1985) and a buy and hold strategy. Additionally, we investigate whether the effect is related to firm size (as suggested by Okoth (2005)) and PE at the time of portfolio formation.

## **2.8 Summary of Literature review**

The findings of studies on response of prices to past returns are mixed. In some markets, researchers find no relationship between past returns and future returns. For study periods

beyond two years, De Bondt and Thaler (1985, 1987), found returns reversals in the American market. Jegadeesh (1990) found return reversal one month after portfolio and return continuation for periods between three and 12 month after portfolio formation. Jegadeesh and Titman (1993) also found continuation 3-12 months after portfolio formation.

There are diverse explanations to return predictability based on past returns. Zarowin (1990) found that return reversal is due to size discrepancies between winner and loser firms. Liu et al. (1993) found that return reversal exists only for small firms in Taiwan. Since smaller firms have lower analyst following than big ones (Doukas and McKnight (2005)), any new information could lead to temporary mispricing which the market later corrects to the fair value.

Firms with low PE have been observed to have higher returns in a number of markets including Kenya (Mwangi, 1999). The current study tests whether past returns and PE may be used together to predict future price movements.

The field of behavioral finance has been used to explain return reversal and continuation. Jegadeesh and Titman (1995) attribute short term (1 month) reversal to overreaction and continuation to underreaction to firm specific information. The psychological characteristics of investors such as conservatism and overconfidence may also explain the two phenomena of reversal and continuation.

In the next chapter, we shall look at the methodology used in the study. The study gives attention to liquidity to reduce bias that may be caused by illiquid issues which trade only occasionally. We also consider the stock's excess return rather than its absolute return. This way, we know how the various portfolios performed relative to the whole market and to each other.

## CHAPTER THREE

### 3.0 RESEARCH METHODOLOGY

#### 3.1 Research Design

This is a descriptive study that sought to determine whether firm size and PE influence the relationship between past and future stock returns. It used secondary data from the Nairobi stock exchange. The hypotheses were tested using the *t*-statistic at the 95% confidence level.

#### 3.2 Population

The population was all stocks quoted at the NSE between January 1<sup>st</sup> 2002 and December 31<sup>st</sup> 2007.

#### 3.3 Sampling

The stocks included in the sample were selected on the following bases:

1. The stock must have been listed during the entire study period. Thus, all stocks listed after January 1<sup>st</sup> 2002 were excluded.

These are Kengen, Scangroup, Equity bank, Eveready East Africa, AccessKenya Group, Kenya Re and Safaricom.

2. The stock must have traded continuously during the entire period. Any stock that was suspended at any time during the period was excluded.

Hutchings Biemer, TPS Eastern Africa, Uchumi Supermarket, B.O.C Kenya and Carbacid Investments were excluded on this basis.

3. The stock must have traded at least 50% of the trading days during the study period.

The number of stocks that satisfied the three criteria is 30 (Appendix 1)

#### 3.4 Data Collection

The list of daily prices for all NSE stocks traded during the study period was obtained from the NSE. These were used to select the stocks that met the liquidity criteria and to extract the month end prices which were used in calculating the monthly returns.

The list of earnings, dividend payments, stock splits, bonus issues and rights issue

announcements was also obtained from NSE.

### 3.5 Variables and Variable Measurement

#### 1. Monthly Stock returns

The study started by calculating the monthly returns of all stocks in the full sample. The monthly return for stock  $j$  in month  $i$  ( $R_{ji}$ ) was obtained as

$$R_{ji} = (P_{ji} - P_{j(i-1)} + \text{DIV}_{ji}) / P_{j(i-1)} \dots\dots\dots(1),$$

where  $\text{DIV}_{ji}$  = Dividend paid by firm  $j$  during the month i.e. the stock going ex-dividend

$P_{j(i-1)}$  = Closing price of stock  $j$  at the end of the previous month (taken to be the opening price of the current month)

$P_{ji}$  = Closing price of stock  $j$  at the end of the current month adjusted for bonus issues, stock splits and rights issue if any. The adjustment was done as follows:

#### Bonus issue

If the firm issued bonus shares in the ratio  $x:y$  ( i.e. shareholders get  $x$  new shares for every  $y$  shares held, ex bonus closing price was obtained as

$$P_{ji} = P \cdot (x + y) / y, \text{ where } P \text{ was the current price}$$

#### Share split

If split was in the ratio of  $x:1$  (i.e. each share is split  $x$  times), ex split closing price was

$$P_{ji} = x \cdot P, \text{ where } P \text{ was the current price}$$

#### Rights offering

If the company offered existing shareholders rights in the ratio  $x:y$  (i.e. the shareholder can buy  $x$  new shares for every  $y$  shares held) at price  $P_r$ , the ex rights closing price was obtained as

$$P_{ji} = (P \cdot (x + y) - P_r) / y, P \text{ was the current price.}$$

The data was arranged in the following format for purposes of calculating monthly returns of each stock:

Month	Price	Adjusting factor	Dividend	Return
1	P1			
2	P2	a	D	R
3	P3			
n	Pn			

Here, 'a' is a factor to adjust for splits, bonuses or rights issues as set out above while d is the dividend paid out during the month. Price  $P_i$  is the month end price for month i which we take as the starting price for the following month.

If  $a = 0$ ,  $R = (P2 + d - P1)/P1$ , else

$$R = (a * P2 + d - P1) / P1$$

## 2. Cumulative excess return (CAR)

At the beginning of each rank period, we found the cumulative excess returns of each stock in the sample.

We defined excess return for stock j for month i as

$AR_{ji} = R_{ji} - R_{mi}$  where  $R_{mi}$  is the monthly return of a suitable market index. Since our market is small, we used the average return of an equally weighted portfolio of all the stocks in the sample.

$$\text{Thus } R_{mi} = \frac{\sum_{j=1}^N R_{ji}}{N} \dots\dots\dots(2),$$

N = the number of stocks in the sample

To find excess return for each stock over n months ( $CAR_{jn}$ ), we combined the monthly returns for each stock multiplicatively,  $[(1+R_{j1})(1+R_{j2})\dots(1+R_{jn})]$  and subtracted the compounded market return,  $[(1+R_{m1})(1+R_{m2})\dots(1+R_{mn})]$  where  $n = 3, 6$  or  $12$ .

Thus,

$$CAR_{jn} = [(1+R_{j1})(1+R_{j2})\dots(1+R_{jn})] - [(1+R_{m1})(1+R_{m2})\dots(1+R_{mn})] \dots\dots\dots(3)$$

This is equivalent to a buy-and-hold return strategy which was used for this study. This assumes that portfolio rebalancing is done at the end of the holding period rather than monthly.

### 3. Size

The study used market capitalization as a proxy for firm size. This was obtained as

$$M_{jt} = P_{jt} * S_{jt} \dots\dots\dots(4),$$

where

$M_{jt}$  = market capitalization of firm j at the time of portfolio formation

$P_{jt}$  = price of stock j at the time of portfolio formation

$S_{jt}$  = Number of shares outstanding for stock j at the time of portfolio formation

### 4. Price Earnings Ratio

The PE of stock j was obtained as

$$PE_{jt} = P_{jt} / E_{jt} \dots\dots\dots 5,$$

where

$PE_{jt}$  = PE of stock j at the time of portfolio formation

$P_{jt}$  = price of stock j at the time of portfolio formation

$E_{jt}$  = latest reported annual earnings per share for stock j at the time of portfolio formation

### 3.6 Portfolio Formation

This study used symmetrically constructed (same sort period and test period) portfolios as in De Bondt and Thaler (1985). Portfolios were formed every n months where n = 3, 6 or 12 and performance evaluated over next t + n months where t is ranking time.

- i) At the beginning of each rank period, all eligible stocks were ranked in ascending order on the basis of t-n past returns. They were then assigned to one of four portfolios so that the top quartile is the loser portfolio and the bottom is the winner portfolio.
- ii) Step (i) was repeated this time ranking the stocks on the basis of market capitalization at the time of ranking. The top quartile here consisted of small size stocks and the bottom of big size stocks.



iii) Step (i) was repeated for the PE sorted stocks at the time of ranking. To take care of negative earnings, we used the ratio  $1/PE$  or EP such that top quartile here consisted of high  $1/PE$  (low PE) stocks and the bottom consisted of low EP (high PE) stocks. This ranks stocks with negative earnings as having the lowest EP while using PE would not show them as having the highest PE (Allan et al., 1998). Another advantage is that this ratio does not 'blow up' as earnings approach zero which might happen if PE were used.

### **3.7 Data Analysis**

#### **3.7.1 Return Continuation/Reversal**

The holding period cumulative excess returns (CAR) for stocks in the winner and loser portfolios were calculated and the average for each portfolio determined. A positive (negative) value of CAR in the winner (loser) would indicate continuation. A negative (positive) value of CAR in the winner (loser) would indicate reversal.

#### **3.7.2 Zero Cost Arbitrage Portfolio**

The zero cost arbitrage strategy assumes buying the past winner (loser) portfolio and selling the past loser (winner) portfolio. Therefore we obtained it by subtracting cumulative holding period excess return of the loser portfolio from that of the winner portfolio for the different holding periods. A positive value would indicate continuation and a negative value reversal.

#### **3.7.3 Size Effect**

The holding period CAR of the small and big portfolios were calculated. A significantly positive or negative CAR would indicate existence of the size effect. We also tested whether there was a difference between CAR of the two portfolios. A significant difference between the two would also indicate the presence of the size effect.

#### **3.7.4 PE Effect**

We examined the existence of the PE effect by calculating the holding period CAR of the high EP (low PE) and low EP (high PE) portfolios. A significantly positive or negative CAR would indicate existence of the PE effect. We also tested whether there was a difference between CAR

of the two portfolios. A significant difference between the two would also indicate the presence of the PE effect.

### **3.7.5 Past Return Effect and Size**

- i) For each rank period, we examined the size characteristics of the winner and loser portfolios
- ii) We used Pearson correlation coefficient to test if there was any correlation between the returns formed on the basis of past returns and size using the extreme portfolios for both past return and size portfolios.
- iii) To see if past returns effect is related to size, we split the shares into two depending on size. Then, for each of the two size portfolios, we formed winner and loser portfolios using the extreme 33% past returns. This approach is similar to Dissanaik (2002) who, however, used 10 portfolios for both size and past return. We tested the predominant effect using 3.7.1 and 3.7.2 within the various size-past return portfolios.

### **3.7.6 Past Return Effect and PE**

- i) For each rank period, we examined the PE characteristics of the winner and loser portfolios
- ii) We used Pearson correlation coefficient to test the existence of any correlation between the returns formed on the basis of past returns and PE using the extreme portfolios for both past return and PE portfolios.
- iii) To see if past returns effect is related to PE, we split the shares into two depending on PE. Then, for each of the two PE portfolios, we formed winner and loser portfolios using the extreme 33% past returns. We tested the predominant effect using 3.7.1 and 3.7.2 within the various EP-past return portfolios.

## CHAPTER 4

### 4.0 DATA ANALYSIS AND RESULTS

#### 4.1 Introduction

In this chapter, we present the findings of this study. Appendix 2 shows the monthly stock returns for the sample stocks as obtained from equation 1 in the methodology. Similarly, appendices 3 and 4 show the size and EP as obtained from equations 4 and 5 respectively.

The complete set of results is presented as tables 12-18 in appendix 5. The date column in these tables indicates the date of portfolio formation. All cumulative excess returns (CAR) shown are obtained n months after portfolio formation date.

In table 12, panel A contains CAR of the loser stocks. L1 (loser 1) is the holding period CAR of the stock that had lowest CAR in the previous period. Panel B contains CAR of winner stocks with W1 (winner 1) being the CAR of the stock that had the highest CAR in the previous period. In table 13, S1 (small 1) is the holding period CAR of the smallest stock while B1 (big 1) is the CAR of the biggest stock in market capitalization at portfolio formation time. Similarly, in table 14, H1 is the CAR of the stock with the highest EP (lowest PE) while LEP1 is the CAR of the stock with the lowest EP (highest or negative PE) at the time of portfolio formation.

Tables 15 and 17 describe the size and EP (PE) characteristics of losers and winners. The figures corresponding to L1 show the market capitalization and EP of loser 1 respectively. The figures corresponding to W1 show the market capitalization and EP of winner 1 respectively.

In table 16, stocks are sorted as per 3.7.5 (iii) in the methodology. Panels A and B show the CAR of small losers and winners respectively. Panels C and D contain the CAR of big losers and winners respectively.

Table 18 shows the CAR of EP-past return sorted stocks as per 3.7.6 (iii). Panels A and B show the CAR of high EP losers and winners respectively. Panels C and D contain the CAR of low EP losers and winners respectively.

The following abbreviations are used throughout the analysis:

L = loser portfolio

W = winner portfolio

S = small size portfolio

B = big size portfolio

LPE = low PE (high EP) portfolio

HPE = high PE (low EP) portfolio

SD = Standard deviation

CAR = cumulative excess returns

The t-values in brackets indicate the critical values at 95 % confidence level.

#### 4.2 Returns to past returns

Tables 12a, 12b and 12c in appendix 5 show the cumulative excess returns of portfolios formed on the bases of past returns for n = 3, 6 and 12 months respectively. These are summarized in table 1 below

		L	W	W-L
3 months	Average	-0.0367	0.0547	0.0914
	t (2.025)	-1.6561	2.0151	2.6083
6 months	Average	-0.0889	0.0266	0.1260
	t (2.101)	-2.2779	0.4464	1.7671
12 months	Average	-0.0847	0.1309	0.2156
	t (2.306)	-0.3482	0.7556	0.5192

Table 1: Summary of CAR of past returns portfolios

The t values in brackets indicate the critical values at 95% confidence level.

#### 3 Months

The loser portfolio underperforms the market by 3.67% three months after portfolio formation. However, the underperformance is not significant since the t value is -1.6561 compared with a critical value of 2.025. The winner outperforms the market by 5.47 %. The t value is 2.0151. This is close to the critical value of 2.025. The winner outperforms the loser significantly with a t value of 2.6083 compared to a critical value on 2.025. This indicates continuation in the winner

while the loser tracks the market.

### 6 months

The winner outperforms the loser by 12.6%. However, this is not significant at 95% level of confidence as the  $t$  value of 1.7671 is lower than the 2.101 critical value. Thus, there is no difference between the performance of the winner and the market. The loser continues to underperform the market significantly ( $t = 2.2779$  compared to 2.101 critical value). Therefore, there is continuation in the loser 6 months after portfolio formation.

### 12 months

The winner portfolio outperforms the market by 13.09% with a  $t$  value of 0.7556. The loser underperforms the market by 8.47% ( $t = -0.3482$ ). The winner outperforms the loser by 21.56% ( $t = 0.5192$ ). The  $t$  values are well below the critical value of 2.306. Therefore, losers and winners perform as well as the market and as well as each other.

## 4.3 Returns to size

Tables 13a, 13b and 13c in appendix 5 show the CAR of portfolios formed on the bases of firm sizes for 3, 6 and 12 months respectively described in 3.7.3 . These are summarized in table 2.

		S	B	S - B
3 months	Average	0.0240	-0.0358	0.0598
	$t$ (2.025)	1.0423	-1.7950	2.0139
6 months	Average	0.0270	-0.0916	0.1185
	$t$ (2.101)	0.6259	-1.4158	1.5253
12 months	Average	0.0410	-0.2251	0.2662
	$t$ (2.306)	0.7404	-2.9704	2.8347

Table 2: CAR from size portfolios

The  $t$  values in brackets indicate the critical values at 95% confidence level

### 3 months

The small size stock portfolio performs better than the market while the big portfolio underperforms the market. The  $t$  values are below the critical values in both cases indicating that there is no significant difference between the portfolio returns and the market in both cases. The

small size portfolio outperforms the big size portfolio. The t value here is 2.0139 which is below but close to the critical value of 2.025. This provides weak evidence of the size effect whereby small capitalization stocks outperform the market and the big capitalization stocks.

### 6 months

The small size performs better than the market and the big size portfolio while the big size portfolio underperforms the market. The differences are not significant in the three cases since the test statistic is below the critical values in each case. Therefore, the size effect is absent.

### 12 months

The small size stock portfolio performs better than the market though not significantly since  $t = 0.7404$  compared to a critical value of 2.306. The big portfolio underperforms the market and the small size portfolio with t values of -2.9704 and -2.8347 respectively. These values are above the critical value of 2.306 and indicate existence of the size effect for the one year holding period.

## 4.4 Returns to PE

Tables 14a, 14b and 14c in appendix 5 show the cumulative excess returns of portfolios formed on the basis of PE for 3, 6 and 12 months respectively. These are summarized in table 3 below

		LPE	HPE	LPE-HPE
3 months	Average	0.0301	-0.0019	0.032
	$t(2.025)$	1.1893	-0.0886	0.96446
6 months	Average	0.038602	-0.03312	0.0055
	$t(2.101)$	1.2884	0.4924	0.0744
12 months	Average	0.157616	0.028465	0.12915
	$t(2.306)$	1.9142	0.1948	0.77

Table 3: CAR from PE portfolios

The t values in brackets indicate the critical values at 95% confidence level

### 3 months, 6 months and 12 months

The low PE portfolios outperform both the market and the high PE portfolios in the three evaluation intervals but the test statistic is well below the critical values in each case as shown in table 3 above. There is no difference between returns of high PE portfolios and average returns

with *t* values of -0.0886, 0.4924 and 0.1948 for 3, 6 and 12 months respectively.

These results indicate that the PE ratio cannot be used alone to predict performance for the three evaluation intervals. This could be due to the fact that this ratio is one of the most widely used by investors in selecting stocks (Mwangi, 1999).

#### 4.5 Size and past Returns

##### 4.5.1 Sizes of loser and winner portfolios

Tables 15a, 15b and 15c in appendix 5 show the average sizes of loser and winner portfolios for 3, 6 and 12 months respectively. These are summarized in table 4 below.

		L	w	M	W-L
3 months	Average	9154	12430	12731	3276
	<i>t</i> ( 2.025)	-1.7873	-0.1181		1.2202
6 months	Average	9477	12712	12385	3236
	<i>t</i> (2.101)	-0.8863	0.0991		0.8574
12 months	Average	9656.09	9431	11939	-224.6
	<i>t</i> (2.306)	-0.4232	-0.8600		-0.0539

Table 4 Size characteristics of loser and winner portfolios

The *t* values in brackets indicate the critical values at 95% confidence level

M = average size for the stocks in sample

The *t* statistics corresponding to columns L and W above test the difference in size between the portfolio and the market.

##### 3, 6 and 12 months

The average stock in the loser portfolio is smaller in size than the market average for 3, 6 and 12 months but the difference is not significant since the *t* values are below the critical values. There is no significant difference between the size of the winner portfolio and the market in any of the periods. We also find no difference in size between the winner and loser portfolio. Thus, both small size firms and big size firms are equally likely to be losers or winners.

#### 4.5.2 Correlation between returns to size and past returns

Using results in tables 12 and 13 in appendix 5, we examine whether there is any correlation between past return portfolio and size portfolio using the Spearman Rank Correlation Coefficient, R.

	3 Months		6 Months		12 Months	
	L	W	L	W	L	W
S	-0.2255	0.4685	0.3679	0.5156	0.7302	-0.1154
B	0.4577	-0.0694	0.1123	0.0512	-0.5730	0.0678

Table 5 correlation between returns to size and past returns

#### 3, 6 and 12 months

There is little correlation between returns formed on the basis of size and those formed on the basis of past returns for the 3 and 6 months evaluation intervals as evidenced by the low correlation coefficients. At 12 months, there is weak positive correlation between loser portfolios and small size portfolio at 0.7302 and weak negative correlation between loser portfolios and big size portfolio at -0.5730. The correlation between winner and either small size or big size portfolios is negligible.

These figures do not show a strong a relationship between the returns to past returns and returns to size. Therefore, returns to size and to past returns are independent of each other further supporting the random distribution of different sized firms among both loser and winner portfolios.

#### 4.5.3 Returns to size and past returns

Tables 15a, 15b and 15c in appendix 5, show cumulative excess returns based on past returns in small and big size firms for n = 3, 6 and 12. These are summarized in the table 6 and 7.

		SL	SW	BL	BW
3 Months	Average	-0.0060	0.0904	-0.0487	-0.0213
	<i>t</i> (2.025)	-0.2905	3.1222	-1.7650	-0.9791
6 Months	Average	-0.0216	0.1113	-0.1101	0.0029
	<i>t</i> (2.101)	-0.2222	1.4936	-1.7079	0.0403
12 Months	Average	0.1862	-0.1617	-0.1647	0.0371
	<i>t</i> (2.306)	1.0528	-0.7533	-0.9162	0.2055

Table 6: CAR to size and past returns

SL = small size loser; SW = small size winner; BL = big size loser; BW = big size winner

The t values in brackets indicate the critical values at 95% confidence level



### 3 months

The small loser, big loser and big winner portfolios underperform the market but the t values fall below the critical values in each case. The small winner portfolio outperforms the market by 9.04% three months after portfolio formation. This is significant since  $t = 3.1222$  compared to a critical value of 2.025. This is an indication of continuation by the small winner portfolio.

### 6 and 12 months

There is no significant difference between market performance and that of the four portfolios formed on basis of size and past returns as the test statistic values in table 6 above fall below the critical values.

Table 7 below shows the return differences between the various size-past return portfolios.

		SL-SW	SL-BL	SL-BW	SW-BL	SW-BW	BL-BW
3 Months	Average	-0.096	0.0427	0.0153	0.1391	0.1117	-0.0274
	<i>t (2.025)</i>	-2.7093	1.2375	0.5091	3.4782	3.0847	-0.78
6 Months	Average	-0.1329	0.0886	-0.0245	0.2215	0.1084	-0.1131
	<i>t (2.101)</i>	-1.0860	0.7602	-0.2016	2.2470	1.0377	-1.1595
12 Months	Average	0.1617	0.3509	0.1492	0.1892	-0.0125	-0.2017
	<i>t (2.306)</i>	0.7533	1.3915	0.5906	0.8720	-0.0575	-0.7924

Table 7 Return differences between size-past return portfolios

The t values in brackets indicate the critical values at 95% confidence level

### 3 months

There is significant return differences when we compare the small winner with small loser, big loser and big winner ( $t = 2.7093, 3.4782$  and  $3.087$  respectively). This result is due to the superior performance of the small winner portfolio as shown in table 6 above. There is no significant difference between the other portfolios. This confirms continuation in the small winner portfolio.

### 6 months

The small winner portfolio outperforms the other portfolios but we find significant difference only in the case of big loser portfolio ( $t = 2.247$ ). There is no significant difference between the

performances of the other portfolios. Therefore, we find continuation where we compare the small winner with the big loser.

**12 months**

There is no significant difference between performances of the various portfolios as all the *t* values in table 7 for *n* = 12 months fall below the critical value. This is in line with the results in table 6 above where we find no difference between returns of the portfolios and the market for the 12 month evaluation interval. The past return effect is absent 12 months after portfolio formation even after accounting for size.

**4.6 PE and past Returns**

In section, we will use 1/PE (EP) figures for analysis. In the analysis, high EP corresponds to low PE and low (including negative) EP to high (and negative) PE.

**4.6.1 EP (PE) characteristics of loser and winner portfolios**

Tables 16a, 16b and 16c in appendix 5 show the average EPs of loser and winner portfolios for 3, 6 and 12 months respectively. These are summarized in table 4 below.

		L	w	M	W-L
3 months	Average	-0.0100	0.0341	0.0288	0.0441
	<i>t</i> (2.025)	-1.4634	0.2347		1.4161
6 months	Average	-0.0523	0.0462	0.0213	0.0892
	<i>t</i> (2.101)	-1.7536	0.9433		2.1831
12 months	Average	-0.0763	0.0710	0.0111	0.1473
	<i>t</i> (2.306)	-1.2219	2.2473		2.0336

Table 8 EP characteristics of loser and winner portfolios  
The *t* values in brackets indicate the critical values at 95% confidence level

M = average EP for the stocks in sample

**3, 6 and 12 months**

The average EP of the loser portfolio is lower than the market average for all evaluation intervals

but the difference is not significant. The stocks in the winner portfolio have a higher EP (lower PE) than the market average but the difference is not significant. Thus, the PE characteristics of the losers and winners are not different from those of the market.

We also find no difference in EP (PE) between the winner and loser portfolio for 3 and 12 months portfolios. For the 6 month portfolios, the winner portfolios have a higher EP (lower PE) than the loser portfolios since  $t = 2.1831$  against a critical value of 2.101.

#### 4.6.2 Correlation between returns to PE (EP) and past returns

Using results in tables 12 and 13 in appendix 5 we examine whether there is any correlation between past return portfolio and PE portfolio using the Spearman Rank Correlation Coefficient. The coefficients between the two sets of returns are shown in table below:

	3 Months		6 Months		12 Months	
	L	W	L	W	L	W
LPE(HEP)	-0.0662	0.4482	-0.2313	-0.0307	0.1529	0.4421
HPE(LEP)	-0.5420	0.0368	0.23521	0.2620	0.4014	-0.1897

Table 9 correlation between returns to PE (EP) and past returns

There is little correlation between returns formed on the basis of PE (EP) and those formed on the basis of past returns in the three evaluation periods. Thus returns to PE and returns to past returns are independent of each other.

#### 4.6.3 Returns to PE and past returns

Tables 18a, 18b and 18c in appendix 5 contain cumulative excess returns based on past returns in high EP (low PE) and low EP (high PE) firms for  $n = 3, 6$  and 12 months. These are summarized in the tables 10 and 11.

		LPEL	LPEW	HPEL	HPEW
3 Months	Average	-0.0385	0.0795	-0.0333	0.0227
	$t (2.025)$	-1.3701	2.2503	-1.5297	0.8477
6 Months	Average	-0.1256	0.1002	0.0151	-0.0551
	$t (2.101)$	-1.7746	1.7752	0.1661	-0.9855
12 Months	Average	-0.1308	0.0779	0.0237	0.0406
	$t (2.306)$	-2.0434	0.2895	0.0960	0.384

Table 10: CAR to PE and past returns

The t values in brackets indicate the critical values at 95% confidence level  
 LPEL = low PE loser; LPEW = low PE winner; HPEL = high PE loser; HPEW = high PE winner

### 3 months

The low PE loser portfolio performs below the market but the t value is below the critical value. The low PE winner portfolio outperforms the market significantly as the t of 2.2503 is above the critical value of 2.025. This indicates continuation of the low PE winner. There is no significant difference between the market and either the high PE loser or high PE winner portfolio since the test values are less than the critical value of 2.025..

### 6 months 12 months

There is no significant difference between the various portfolios and the market for the 6 and 12 months evaluation interval. The t values are below the critical levels for all the portfolios.

Table 11 below shows the differences between the various PE (EP)-past return portfolios

		LPEL- LPEW	LPEL- HPEL	LPEL- HPEW	LPEW- HPEL	LPEW- HPEW	HPEL- HPEW
3 Months	Average	-0.1181	-0.0052	-0.0613	0.1129	0.0568	-0.0561
	t (2.025)	-2.6141	-0.1459	-1.5765	2.7183	1.2801	-1.622
6 Months	Average	-0.2258	-0.141	-0.0706	0.0851	0.1553	0.0702
	t (2.101)	-2.4942	-1.221	-0.7822	0.7951	1.9548	0.6575
12 Months	Average	-0.2087	-0.1545	-0.1714	0.0542	0.0373	-0.0169
	t (2.306)	-1.5024	-0.606	-1.3869	0.1485	0.1290	-0.0630

Table 11: Differences in returns between different PE and past return portfolios  
 The t values in brackets indicate the critical values at 95% confidence level

### 3 months

The low PE winner outperforms the low PE and high PE losers significantly with t values of 2.6141 and 2.7183 respectively. The return differences between the other portfolios are not significant. This confirms continuation in the low PE winner as observed in table 10 above.

### 6 months

The low PE winner outperforms the low PE loser significantly with a t value of 2.492 compared with a critical value of 2.101. This results from continued better performance by the low PE

winner and continued underperformance by the low PE loser. We do not find significant differences between the returns of the other portfolios.

#### **12 months**

There are no significant return differences between the various portfolios. The t values are low in all cases ranging in magnitude from 0.06 to 1.5 compared with a critical value of 2.306.

#### **4.7 Summary of hypotheses tests**

The hypotheses tested are restated here:

1.  $H_0$ : Future stock returns are not related to past stock returns.

$H_1$ : Future stock returns are related to past stock returns.

2.  $H_0$ : Past stock returns and firm size do not have joint predictive power on future stock returns.

$H_1$ : Past stock returns and firm size have joint predictive power on future stock returns

3.  $H_0$ : Past stock returns and PE ratio do not have joint predictive power on future stock returns.

$H_1$ : Past stock returns and PE ratio have joint predictive power on future stock returns

#### **n = 3 months**

In the first test, we fail to reject  $H_1$ . Specifically, we find continuation in returns with the winner significantly outperforming the loser.

In test 2, we fail to reject  $H_1$ . The small size winner continues to perform better than the market and the other portfolios while these others track market performance.

We also fail to reject  $H_1$  in test 3. We find continuation in the low PE stocks but not in the high PE ones.

#### **n = 6 months**

In test 1, we fail to reject  $H_1$ . We find continuation in the returns of the loser portfolio i.e. the loser continues to underperform the market six months later. The winner performs as well as the market.

In test 2, we fail to reject  $H_1$  as the small winner performs significantly better than the big loser.

In test 3 we fail reject  $H_1$ . As is in 3 months case, there is continuation in the low PE stocks but not in the high PE ones.

#### **n = 12 months**

We fail to reject  $H_0$  for all tests. We find no relationship between past and future returns regardless of size and PE. This may be a result of the limited amount of data available. This led to large standard deviations. This may have been the cause of the low value of the test statistic obtained.

## CHAPTER 5

### 5.0 CONCLUSIONS, LIMITATIONS AND SUGGESTIONS

#### 5.1 Introduction

This paper has tested the short-term profitability of strategies that use past returns. It has also tested whether the relationship between past returns and future returns depends on market capitalization and PE. This chapter summarizes the main findings of the study. It also includes the limitations encountered and suggestions for further study in the area.

#### 5.2 Summary and conclusions

The results show winners having higher average returns than the market for the three evaluation intervals while the losers have lower returns. However, we find significant differences in returns only in the 3 and 6 months test intervals. This provides evidence of continuation as reported by Jegadeesh and Titman (1993) and Atiti (2005) but contradicts Okoth (2005) who found return reversal. Okoth used a study duration of 3 years only i.e. 1997, 1998 and 1999 which may be a source of the difference in findings.

We find that there are no return differences between the loser, the winner and the market for the 12 month evaluation interval regardless of size or PE. Therefore, when the investment horizon is one year, it would not be useful to consider the returns performance over the past one year. This may be an indication that one year is enough for stocks at the NSE to adjust to fair values with regard past return patterns. However, the result for this interval may have been influenced by the small amount of data used. Only five averages were used in each test. One average value that has a big magnitude could have a disproportionate effect on the overall result.

The small size winner portfolio outperforms the market and the other size-past return portfolios significantly for the 3 month interval. The other portfolios do not perform differently from the market in any of the evaluation intervals. We also find significant difference between small size winners and big size losers for the six month interval. Thus, if the investment horizon is 3 or 6 months, small winners are the better choices.

The returns of the PE portfolios are not different from market returns or from each other. The average return of the low PE winner portfolio is higher than the market for the three intervals but this

is only significant at the three month interval. It outperforms the low PE loser significantly 3 and 6 months after portfolio formation. It also outperforms the high PE loser for the 3 months interval.

Summarising these observations, we find no relationship between past and future returns for the one year test period. Introducing size or PE does not change the situation. There is continuation in winners three months after portfolio formation and in losers six months after formation. The small winner portfolio offers the best returns for 3 and 6 month test periods when size and past returns are combined. The big loser performs the worst though the evidence for this is weak. Finally, the low PE (high EP) winner performs best for 3 and 6 month test periods when we combine PE (EP) and past returns while the low PE loser is worst performer. This could mean that the low PE stocks are more likely to be misvalued in the short term than the high PE stocks.

Price changes in the short term may be a reflection of changing fundamentals. The small size stocks have less analyst following (Doukas and McKnight, 2005) which would suggest that adjustment to improving fundamentals in them would take longer in such stocks. This could explain the superior performance of small winners for the 3 and 6 month test periods.

The findings contradict Liu et al. (1993) who found reversal among the small size stocks in the Taiwan market. The difference could be a result of differences in investor profiles with the NSE investors being more conservative in regard to small stocks. Small stocks may also have less institutional following which could lead slower adjustment of prices to fundamentals (Doukas and McKnight, 2005).

The PE is a commonly used valuation ratio. When low PE stocks 'win', this could signal future better performance for the high earnings yield stocks. The adjustment to this new reality is gradual owing to investor conservatism. On the other hand, investors may be reluctant to accept worsening fundamentals of low PE loser stocks which they may take to be already undervalued. Therefore, they continue to lose as the facts become more apparent.

### **5.3 Limitations**

Many stocks do not trade frequently which limited the sample size to only 30 stocks. Some of the stocks in the sample trade very few shares which many not give enough information on their valuation. Extreme performance by one stock could have disproportionate effect on results due to the small size of the sample. This could result in large standard deviations which could in turn distort the results obtained. Additionally, the small size of the market necessitated lumping the

stocks in different sectors together in the study.

The study used information from the NSE whose accuracy is not guaranteed. According to the disclaimer on the price lists supplied, the NSE does not warrant accuracy, adequacy or completeness of the information and expressly disclaims liability for errors or omissions in the information.

The study used accounting earnings which may not be reliable as a measure of performance. Items such as gains in fair value of biological assets for agricultural companies and profits from revaluation of assets could distort the real earnings.

#### **5.4 Suggestions for further study**

Many studies using long holding periods e.g. De Bondt and Thaler (1985) found a contrarian effect. Therefore, this study could be replicated for longer holding periods like 2-5 years. This would show whether the same return patterns persist in the long term

While we established that small winners and low PE winners have superior returns over 3 and 6 months, we did not attempt to look at the source of the differences. Therefore, a study on the risk adjusted returns could be carried out to establish whether they are riskier than the other portfolios.

We used market capitalization as a proxy for size. A different measure of size such as book equity and total assets could be used. These two are independent of market prices unlike market capitalization.

The study may be replicated to cover a longer duration such as 10 years. This would improve the accuracy of the results due to the larger amount of data used. It would also show whether the same results hold across different economic cycles.

The size and PE were used independently to explain past return effect (continuation or reversal) in this study. A study could be done to determine whether the two have a joint effect on the past return effect.



## REFERENCES

- Alexander, S.S. (1961), "Price Movements in Speculative Markets: Trends or Random Walks." *Industrial Management Review*, 2, 7-26.
- Allen, D. E., Lisnawati, H. and Clissold, M. (1998), " Predicting Earnings Growth Using
- Ariel, R. A. (1987), "A Monthly Effect in Stock Returns." *Journal of Financial Economics*, 18, 161-174
- Atiti, R. O. ( 2005), "An Empirical Analysis of Momentum in Prices at the NSE," *Unpublished MBA project*, University of Nairobi.
- Babcock, L., and Loewenstein, G. (1997), "Explaining bargaining impasse: the role of self-serving biases," *Journal of Economic Perspectives*, 11, 109-126.
- Banz, R. (1981), "The Relation Between Return and market Value of Common Stocks," *Journal of Financial Economics*, 9, 3-18
- Barber, B. M. and T. oDean (2001), "Boys Will Be Boys: Gender Overconfidence and Common Stocks Investment," *Quarterly Journal of Economics*, 116, 261-292
- Barberis, N., A. Shleifer and R. Vishny. (1998), "A Model of Investor Sentiment," *Journal of Financial Economics*, 49, 307-343
- Barberis, Nicholas, and Richard H. Thaler (2001), "A Survey of Behavioural Finance," *Handbook of the Economics of Finance*, Edited by G.M. Constantinides, M. Harris and R. Stulz, Elsevier Science B.V.
- Barry, B. and S. Brown (1984), "Differential Information and the Small Firm Effect," *Journal of Financial Economics*, 13, 283-294
- Basu, S. (1977), "Investment Performance of Common Stocks in Relation to Their Price-Earnings
- Basu, Sanjoy (1983), "The Relationship between Earnings Yield, Market Value and Return for NYSE Common Stocks: Further Evidence," *Journal of Financial Economics*, 12, 129-156.
- Bauman, W. Scott and R.E. Miller (1996), "Portfolio Performance Rankings in Stock Market Cycles." *Financial Analysts Journal*, 4, 25-40.
- Bernard, V. (1992), "Stock Price Reactions to Earnings Announcements," In R. Thaler (ed.), *Advances in Behavioral Finance*. New York: Russell Sage Foundation
- Bessembinder H. and K. Chan (1995), "The Profitability of Technical Trading Rules in the Asian Stock Markets," *Pacific Basin Finance Journal* 3, 257-284.

- Bhandari, L. C. (1988), "Debt/Equity Ratio and Expected Common Stock Returns: Empirical Evidence," *Journal of Finance*, 43, 507-528.
- Bikhchandani, S., D. Hirshleifer and I. Welch (1992), "A Theory of Fashion, Social Custom, and Cultural Change," *Journal of Political Economy*, 100, 992-1026.
- Bildik, R. and G. Gulay (2000), "Profitability of Contrarian vs Momentum Strategies: Evidence from the Istanbul Stock Exchange," Downloaded from [papers.ssrn.com/sol3/papers.cfm?abstract\\_id=315379](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=315379) –
- Bowman, R.G. and D. Iverson (1998), "Short-run overreaction in the New Zealand stock market," *Pacific-Basin Finance Journal*, 6, 475-491.
- Campbell K. and R. J. Limmack, 1997, "Long-term over-reaction in the UK stock market and size adjustments," *Applied Financial Economics*, 7, 537-548
- Chan, K. C., N. Jegadeesh and Josef Lakonishok (1996), "Momentum Strategies," *Journal of Finance*, 51, 1681-1713
- Chan, Louis K.C., Y. Hamao and J. Lakonishok (1991), "Fundamentals and Stock Returns in Japan." *Journal of Finance*, 46, 1739-1789.
- Chang, R.P., D.W. Mcleavey and S.G. Rhee (1995), "Short-term abnormal returns of the contrarian strategy in the Japanese stock market," *Journal of Business Finance and Accounting*, 22, 1035-1048.
- Chopra, N., J. Lakonishok and J. R. Ritter (1992), "Measuring Abnormal Performance," *Journal of Financial Economics*, 31, 235-268
- Clement, M. B. and S. Y. Tse (2005), "Financial analyst characteristics and herding behavior in forecasting," *Journal of Finance*, 60, 307-41.
- Cutler, D. M., J. M. Poterba, and L. H. Summers (1991), "Speculative Dynamics," *Review of Economic Studies*, 58, 529-546.
- Daniel, K., D. Hirshleifer, and A. Subrahmanyam (2001), "Overconfidence, arbitrage, and equilibrium asset pricing," *Journal of Finance*, 56, 921-965.
- Daniel, K., D. Hirshleifer, and A. Subrahmanyam (1998), "Investor psychology and security market under and overreactions," *Journal of Finance*, 53, 1839-1886.
- De Long, J. B., A. Shleifer, L. Summers, and R. J. Waldman (1990a), "Noise Trader Risk in Financial Markets," *Journal of Political Economy*, 98, 703-38.
- De Long, J. B., A. Shleifer, L. Summers, and R. J. Waldman (1990b), "Positive Feedback Investment Strategies and Destabilizing Rational Speculation," *Journal of Finance*, 45, 379-395.

- DeBondt, W. F.M., and R. H. Thaler (1985), "Does the market overreact?" *Journal of Finance*, 40, 793-805.
- DeBondt, W.F.M., and R. H. Thaler (1987), "Further evidence on investor overreaction and stock market seasonality," *Journal of Finance*, 42, 557-581.
- Dissanaike, G. (1997), "Do Stock Market Investors Overreact?" *Journal of Business Finance and Accounting*, 24, 27-49
- Dissanaike, G. (2002), "Does the Size Effect Explain the UK Winner-Loser Effect?" *Journal of Business Finance and Accounting*, 29, 139-154.
- Doukas, J. A and P. J. McKnight (2005), "European Momentum Strategies, Information Diffusion, and Investor Conservatism" *European Financial Management*, 11, 313-338
- Dreman, D. (1979), "Contrarian Investment Strategy," *Random House*, New York.
- Drew, M.E., A. Marsden and M. Veeraraghavan (2006), "Small Firm Effect, Liquidity and Security Returns Australian Evidence," *Journal of Emerging Market Finance*, 5, 135-149.  
E/P Ratios: Australian Evidence," *Australian Journal of Management*, 23, 115-128.
- Edwards, W. (1968), "Conservatism in Human Information Processing," In B. Kleinmütz (ed.), *Formal Representation of Human Judgment*, New York: John Wiley & Sons.
- Fama, E. F. (1970), "Efficient Capital Markets: A Review of Empirical Work," *Journal of Finance*, 25, 383-417.
- Fama, E. F., and K.R. French (1993), "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics*, 33, 3-56.
- Fama, E. F., and Kenneth R. French (1988), "Permanent and Temporary Components of Stock Prices," *Journal of Political Economy*, 96, 246-273
- Fama, E. F., and Kenneth R. French (1992), "The Cross-Section of Expected Stock Returns," *Journal of Finance*, 47, 427-465
- Fama, E. F., and M. E. Blume (1966), "Filter rules and stock market trading," *Journal of Business*, 39, 226-241
- Fama, E.F. (1965), "The behaviour of stock market prices," *Journal of Finance*, 38, 34-105
- Ferris, S. P., R. A. Haugen and A. K. Makhija (1988), "Predicting Contemporary Volume with Historic Volume at Differential Price Levels: Evidence Supporting the Disposition Effect," *Journal of Finance*, 43, 677-697.

- Festinger, L. (1957), "A Theory of Cognitive Dissonance," Stanford, CA: Stanford University Press
- French, K. R. (1980), "Stock returns and the weekend effect," *Journal of Financial Economics*, 8, 55-69
- Friedman, Milton (1984), "Financial Futures Markets and Tabular Standards," *Journal of Political Economy*, 92, 165-67.
- Fung, H., W. K. Leung and G. A. Patterson (1999), "Do trading rules based upon winners and losers work across markets: Evidence from the Pacific Basin," *Multinational Finance Journal*, 3, 41-70.
- Gleason, K. C. and C. I. Lee (2003), "Herding Behavior in European Futures Markets," *Finance Letters*, 1, 2003
- Grinblatt, M., and T. Moskowitz (2003), "Predicting stock price movement from past returns: the role of consistency and tax-loss selling," *Journal of Financial Economics* 71, 541-579.
- Gutierrez, R. and C. A. Prinsky (2007), "Momentum, reversal, and the trading behaviors of institutions," *Journal of Financial Markets*, 10, 148-75.
- Hameed, A. and Ting, S. (2000), "Trading volume and short-horizon contrarian profits, evidence from Malaysian stock market," *Pacific-Basin Finance Journal*, 8, 67-84.
- Heston, S. L. and R. Sadka (2006), "Seasonality in the Cross-Section of Expected Stock Returns," Downloaded from <http://www.papers.ssrn.com/sol3/papers.cfm?>
- Hon. Mark T. and I. Tonks (2003), "Momentum in the UK stock market," *Journal of Multinational Financial Management*, Elsevier, 13, pages 43-70
- Hong, H. and J.C. Stein (1999), "A Unified Theory of Underreaction, Momentum Trading and Overreaction in Asset Markets," *Journal of Finance*, 53, 1935-1974
- Hong, H., J. D. Kubik and A. Solomon (2000), "Security analysts' career concerns and the herding of earnings forecasts," *RAND Journal of Economics*, 31, 121-144.
- Hong, H., T. Lim, and J.C. Stein. (2000), "Bad News Travels Slowly: Size, Analyst Coverage, and the Profitability of Momentum Strategies," *Journal of Finance*, 55, 265-295
- Iihara, Y., H.K. Kato and T. Tokunaga (2003), "The Winner-Loser Effect in Japanese Stock Returns," *Journal of Business Ethics*, 48, 317-333.
- Jaffe, J., D. Keim and R. Westerfield (1989), "Earnings Yields, Market Values, and Stock Returns," *Journal of Finance*, 44, 135-148.
- Jegadeesh N., and S. Titman (1993), "Returns to Buying Winners and Selling Losers: implications for Stock Market Efficiency," *Journal of Finance*, 48, 65-91

- Jegadeesh N., and Sheridan Titman (1995), "Overreaction, Delayed Reaction, and Contrarian Profits," *Review of Financial Studies*, 8, 973-993
- Jegadeesh, N. (1990), "Evidence of Predictable Behaviour of Security Returns," *Journal of Finance*, 45, 881-898
- Jegadeesh, Narasimhan, and Sheridan Titman (2001), Profitability of momentum strategies: An evaluation of alternative explanations," *Journal of Finance* 56, 699-720.
- Kahneman, D. and A. Tversky (1979), "Prospect Theory: An analysis of Decision under Risk," *Econometrica*, 47, 263-291.
- Kahneman. D., and A. Tversky (1982), "Intuitive Prediction: Biases and Corrective Procedures," *Cambridge University Press*, New York, NY.
- Keim, D.B. (1983), Size-related anomalies and stock return seasonality: Further evidence," *Journal of Financial Economics* 12, 13-32
- Kim, C. W. and J. Park (1994), "Holiday effect and stock returns: Further evidence," *Journal of Financial and Quantitative Analysis*, 29, 145-157.
- Kimeu, J. M. (1991), "The Behavior of Share Prices in the in the Nairobi Stock Exchange. An Empirical Investigation," *Unpublished MBA project*, University of Nairobi. Kingori, E. N., 1995, "Stock Market seasonality at the Nairobi Stock Exchange. An Empirical study," *Unpublished MBA project*, University of Nairobi
- Kothari, S. ( 2001), "Capital Markets Research in Accounting," *Journal of Accounting and Economics* 31, 105-231
- Kunkel R.A., W.S. Compton and S. Beyer, (2003),"The turn-of-the-month effect still lives: the international evidence," *International Review of Financial Analysis*,12,207-221
- Lai, Ming-Ming, K. G. Balachandher, and F. M. Nor (2003), "An Examination of the Random Walk Model and Technical Trading Rules in the Malaysian Stock Market," *Quarterly Journal of Business and Economics*, 41, 81-104.
- Lakonishok, J., A. Shleifer, and R. W. Vishny (1994), "Contrarian Investment, Extrapolation and Risk," *The Journal of Finance*. 49, 1541-1578.
- Lehmann. B. (1990), "Fads, martingales and market efficiency," *Quarterly Journal of Economics* 105, 1-28.
- LeRoy, S. F., and R. D. Porter (1981), "Stock Price Volatility: A Test Based on Implied Variance Bounds," *Econometrica*, 49, 97-113.
- Lev B. and S. R. Thiagarajan (1993), "Fundamental Information Analysis," *Journal of Accounting Research*, 31, 190-215.

- Li, Joanne (1998), "Controversial contrarian profits: A study on differential returns across months," Downloaded from [http://findarticles.com/p/articles/mi\\_qa5466/is\\_/ai\\_n21432090](http://findarticles.com/p/articles/mi_qa5466/is_/ai_n21432090)
- Lintner, J. (1965), "The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets," *Review Economics and Statistics*, 47, 13-37.
- Liu, Y. J., V. W. Liu, and J. N. Hsieh (1993), "An empirical evidence on stock overreaction in Taiwan stock market," *NTU Management Review*, 4, 105-146.
- Lo, A. W., and A. Craig MacKinlay (1988), "Stock Prices Do Not Follow Random Walks: Evidence From a Simple Specification Test," *Review of Financial Studies*, 41-66
- Lo, A. W., and A. Craig MacKinlay (1990), "When are Contrarian Profits Due to Stock Market Overreaction?" *Review of Financial Studies*, 3, 175-205
- Mbugua, P. K. (2007), "Impact of stock exchange automation on volume, volatility and liquidity on stocks at the Nairobi Stock Exchange," *Unpublished MBA project*, University of Nairobi.
- Muturi, M. P. (2007), "Fundamental accounting variables and stock return. Evidence from Nairobi Stock Exchange," *Unpublished MBA project*, University of Nairobi.
- Mwangi, P. N. (1999), "Testing whether Price Earnings Ratio is an Indicator of Investment Performance of Ordinary Shares on the Nairobi Stock Exchange," *Unpublished MBA project*, University of Nairobi.
- Ni, X., Lui, M-H. and Kang, J. (2002), "Contrarian and momentum strategies in the China stock markets: 1993-2001," *Pacific-Basin Finance Journal*, 10, 243-265.
- Nofsinger, J. and R. Sias (1999), "Herding and Feedback Trading by Institutional and Individual Investors," *Journal of Finance*, 54, 2263-2295.
- Northcraft, G. B. and M. A. Neale (1987), "Experts, Amateurs, and Real Estate: An Anchoring-and-Adjustment Perspective on Property Pricing Decisions," *Organizational Behavior and Human Decision Processes*, 39, 84-97.
- Nyambogi, I. M. (2005), "An empirical investigation of the correlation of stock returns and the weather at the Nairobi Stock Exchange," *Unpublished MBA project*, University of Nairobi.
- Odean, T. (1996a), "Are Investors Reluctant to Realize Their Losses?" *unpublished paper*, University of California, Berkeley.
- Odean, T. (1996b), "Why Do Investors Trade Too Much?" *unpublished paper*, University of California, Berkeley
- Odean, T. (1998), "Are Investors Reluctant to Realize their Losses?" *Journal of Finance*, 53, 1775- 1798

- Okoth, E. A. (2005), "Testing whether Contrarian Investment Strategy offers Profitable Opportunity at the Nairobi Stock Exchange." *Unpublished MBA project*, University of Nairobi.
- Oliech, J. O. (2002), "The Relationship between Size, Book to Market Value and returns of NSE Common Stocks," *Unpublished MBA project*, University of Nairobi.
- Otchere, I. and J. Chan (2003), "Short-Term Overreaction in the Hong Kong Stock Market: Can a Contrarian Trading Strategy Beat the Market?" *Journal of Behavioral Finance* 4 (3), 157-171.
- Ou, J. and S. Penman (1989a), "Financial statement analysis and the prediction of stock Returns," *Journal of Accounting and Economics* 11, 295-329.
- Owen, S. (2002), "Behavioral Finance and the Decision to Invest in High Tech Stocks," *Working Paper Number 119*. School of Finance and Economics, University of Technology, Sydney.
- Pike, R. and B. Neale (1996), "Corporate finance and investment," 2<sup>nd</sup> edition, Prentice Hall Europe, Hemel Hempstead, England.
- Poterba, J. M., and L. H. Summers (1988), "Mean Reversion in Stock Prices," *Journal of Financial Economics*, 27-59.
- Rasugu, C. N. (2005), "The existence of the Holiday Effect in the Nairobi Stock Exchange," *Unpublished MBA project*, University of Nairobi.
- Ratios: A Test of the Efficient Market Hypothesis," *Journal of Finance*, 3, 663-82.
- Reilly, F. K. and K. C. Brown (2000), "Investment Analysis and Portfolio Management," 6<sup>th</sup> ed., Thomson learning, Berkshire House, London, UK
- Roll, R. (1981), "A Possible Explanation of the Small Firm Effect," *Journal of Finance*, 36, 879-888
- Rosenberg, Barr, K. Reid, and R. Lanstein (1985), "Persuasive evidence of market inefficiency," *Journal of Portfolio Management* 11, 9-17
- Rouwenhorst, K. G. (1998), "International Momentum Strategies," *Journal of Finance*, 53, 267-284
- Rouwenhorst, K.G. (1999), "Local return factors and turnover in emerging stock markets," *Journal of Finance*, 54, 1439-64.
- Rozeff, M. & Kinney, W. (1976), "Capital market seasonality: The case of stock returns," *Journal of Finance*, 3, 379-402.
- Samuelson, P. (1965), "Proof that Properly Anticipated prices Fluctuate Randomly," *Industrial Management Review*, 6, 41-49.

Schwert, W. G. (1989), "Why Does Stock Market Volatility Change Over Time," *Journal of Finance*, 44, 1115-1153.

Sehgal, Sanjay and V. Tripathi (2005), "Size Effect in Indian Stock Market: Some Empirical Evidence," *Journal of Business Perspective*, 9, No. 4, 27-42,

Sharpe, W. F., G. J. Alexander and J. V. Bailey (1999), "Investments," 6<sup>th</sup> ed., *Prentice-Hall Inc.*, Upper SADDLE River, New Jersey.

Sharpe, William F. (1964), "Capital Asset Prices: A theory of market equilibrium under conditions of risk", *Journal of Finance*, 19, 425-442

Shefrin, H. and M. Statman (1985), "The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence," *Journal of Finance*, 40, 777-790

Shefrin, H. M. (2000), "Beyond Greed and Fear," *Harvard Business School Press*, Boston, Massachusetts.

Shiller R. J. (1998). "Human Behavior and the Efficiency of the Financial System," *NBER Working Papers 6375*, National Bureau of Economic Research, Inc.

Shiller, R. J. (1981), "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?" *American Economic Review*, 71, 421-436.

Shiller, R. J. (1982), "The Use of Volatility Measures in Assessing Market Efficiency," *Journal of Finance*, 36, 291-304.

Shiller, R. J. (1984), "Stock Prices and Social Dynamics," *Brookings Papers on Economic Activity*, II, 457-98.

Shiller, R. J. (1987), "Fashions, Fads and Bubbles in Financial Markets," In Jack Coffee (ed.) *Knights, Raiders and Targets: The Impact of the Hostile Takeover*. Oxford, England: Oxford University Press.

Shiller, R. J. (1989), "Market Volatility," Cambridge, MA: MIT Press.

Shleifer, A. and R. Vishny (1997), "The Limits of Arbitrage," *Journal of Finance*, 52, 35-55

Summers, L. H. (1986), "Does the Stock Market Rationally Reflect Fundamental Values?" *Journal of Finance*, 41, 591-601

Taylor, S. E. and S. C. Thompson (1982), "Stalking the Elusive Vividness Effect," *Psychological Review*, 89, 155-181

Tonks, I. and A. Thomas (2001), "Equity Performance of Segregated Pension Funds in the UK,"



*Journal of Asset Management*, 1, 321-343.

Trueman, B. (1994), "Analyst Forecasts and Herding Behavior," *Review of Financial Studies*, 7, 97-124.

Tversky, A. and D. Kahneman (1974), "Judgment Under Uncertainty: Heuristics and Biases," *Science*, 185 1124–1131.

Tversky, A. and D. Kahneman (1992), "Advances in Prospect Theory: Cumulative Representation of Uncertainty," *Journal of Risk and Uncertainty*, 5, 297-323.

Wainaina, G. (2007), "Momentum investing using the 52 week high method at the NSE," *Unpublished MBA project*, University of Nairobi.

Wermers, R. (1999), "Mutual fund herding and the impact on stock prices," *Journal of Finance*, 54, 581–622.

Zamri, A. and H. Simon (2001), "KLSE long run overreaction and the Chinese new year effect," *Journal of Business Finance & Accounting*, 22, 63-105.

Zarowin, P. (1990), "Size Seasonality, and Stock Market Overreaction," *Journal of Financial and Quantitative Analysis*, 25, 113

Zuckerman, M. (1979), "Attribution of Success and Failure Revisited or The Motivational Bias is Alive and Well in Attribution Theory," *Journal of Personality*, 47, 245-287.

## APPENDIX 1: SHARES INCLUDED IN THE SAMPLE

Kakuzi Ord.5.00  
Rea Vipingo Plantations Ltd Ord 5.00  
Sasini Ltd Ord 1.00  
CMC Holdings Ltd Ord 0.50  
Kenya Airways Ltd Ord 5.00  
Nation Media Group Ord. 2.50  
Standard Group Ltd Ord 5.00  
Barclays Bank Ltd Ord 2.00  
CFC Stanbic Holdings Ltd ord.5.00  
Diamond Trust Bank Kenya Ltd Ord 4.00  
Housing Finance Co Ltd Ord 5.00  
Centum Investment Company Ltd Ord 0.50  
Jubilee Holdings Ltd Ord 5.00  
Kenya Commercial Bank Ltd Ord 1.00  
National Bank of Kenya Ltd Ord 5.00  
NIC Bank Ltd Ord 5.00  
Standard Chartered Bank Ltd Ord 5.00  
Athi River Mining Ord 5.00  
Bamburi Cement Ltd Ord 5.00  
British American Tobacco Kenya Ltd Ord  
10.00  
Crown Berger Ltd Ord 5.00  
E.A.Cables Ltd Ord 0.50  
East African Breweries Ltd Ord 2.00  
Kenya Oil Co Ltd Ord 0.50  
Kenya Power & Lighting Ltd Ord 20.00  
Mumias Sugar Co. Ltd Ord 2.00  
Sameer Africa Ltd Ord 5.00  
Total Kenya Ltd Ord 5.00  
Unga Group Ltd Ord 5.00  
Express Ltd Ord 5.00

## Appendix 2 Monthly Returns

Month	Kakuzi	Rea	Sasini	CMC	KQ	NMG	SGL	BBK
Jan	0.000	0.017	-0.013	0.000	0.068	0.023	-0.100	0.176
Feb	0.000	0.017	-0.038	0.028	-0.064	0.057	0.000	-0.023
Mar	-0.167	-0.033	0.010	-0.059	-0.007	0.344	0.040	0.003
Apr	0.000	0.000	0.000	0.250	-0.007	-0.024	0.000	0.014
May	-0.033	-0.052	-0.117	0.500	0.028	0.010	-0.420	0.100
Jun	-0.034	0.091	0.170	-0.213	-0.027	0.000	0.053	0.030
Jul	-0.116	0.000	-0.100	-0.089	0.021	-0.025	0.263	0.047
Aug	-0.352	-0.133	0.019	0.135	-0.027	0.077	0.743	-0.022
Sep	-0.034	-0.019	-0.040	0.414	-0.061	0.071	0.068	-0.048
Oct	0.013	-0.059	-0.038	0.101	-0.032	0.172	-0.096	0.050
Nov	-0.059	0.063	0.059	0.224	-0.117	0.163	0.059	0.083
2002Dec	0.017	0.020	0.011	-0.097	0.292	0.388	0.122	0.110
Jan	0.065	1.115	0.287	0.143	-0.124	0.000	0.282	0.079
Feb	0.045	-0.264	-0.020	0.000	0.000	0.048	-0.309	0.101
Mar	-0.074	-0.136	-0.009	0.042	-0.042	-0.091	-0.145	0.150
Apr	0.341	0.014	0.000	0.160	0.000	0.206	1.196	0.133
May	0.173	0.591	0.338	0.466	0.130	0.049	0.339	0.066
Jun	-0.164	-0.114	-0.121	0.053	0.000	0.005	-0.136	-0.097
Jul	0.008	-0.054	0.000	-0.050	0.015	0.040	0.026	0.023
Aug	0.400	0.068	-0.063	0.388	0.091	0.510	0.341	0.015
Sep	-0.354	0.096	-0.077	0.153	0.358	0.051	0.056	0.444
Oct	0.547	0.029	0.387	0.088	-0.176	0.073	0.230	-0.010
Nov	-0.143	0.151	-0.167	0.007	0.140	0.080	0.338	0.405
2003Dec	0.000	-0.074	0.000	0.101	0.012	0.005	-0.145	0.060
Jan	0.000	0.416	-0.100	0.707	0.133	0.058	0.698	0.081
Feb	0.042	-0.075	-0.017	0.043	0.005	0.114	-0.089	0.013
Mar	-0.040	0.216	-0.011	-0.269	-0.025	-0.164	-0.138	-0.216
Apr	-0.042	0.056	-0.034	0.038	0.234	0.054	0.038	0.044
May	-0.022	-0.049	0.479	-0.064	0.101	-0.095	-0.082	-0.013
Jun	0.289	0.040	-0.180	-0.010	-0.004	0.028	-0.010	-0.149
Jul	0.009	0.000	-0.085	0.098	-0.019	-0.005	-0.090	0.050
Aug	-0.009	0.200	0.112	0.036	0.096	-0.043	0.093	-0.014
Sep	-0.026	-0.120	0.033	-0.052	0.030	-0.006	-0.126	0.000
Oct	0.177	0.053	0.146	-0.036	0.279	0.000	0.029	0.074
Nov	-0.015	-0.010	-0.064	0.104	-0.022	0.086	0.028	-0.023
2004Dec	0.221	0.010	0.193	0.026	-0.034	-0.105	-0.022	-0.065
Jan	0.081	0.500	0.143	-0.167	0.154	0.088	-0.067	0.075
Feb	0.133	-0.207	-0.058	-0.010	0.064	0.076	-0.071	0.023

CFC	DTK	HFCK	ICDC	JUB	KCB	NBK	NIC	SCBK
0.017	0.000	0.000	-0.104	0.065	0.070	0.052	0.050	0.191
-0.016	-0.078	-0.125	-0.072	-0.061	-0.029	0.033	0.035	-0.107
0.000	-0.072	-0.114	-0.336	-0.016	-0.112	-0.016	-0.077	0.010
-0.022	-0.026	-0.016	-0.047	-0.010	-0.073	-0.032	-0.123	0.016
0.082	0.147	0.066	-0.012	0.026	-0.250	-0.167	0.041	0.053
0.017	0.047	0.138	-0.050	0.174	-0.033	0.040	0.031	0.051
0.000	0.044	-0.081	0.000	-0.013	0.015	-0.038	0.118	0.038
0.000	0.000	0.088	-0.026	0.029	-0.029	-0.040	-0.010	-0.006
0.033	0.222	-0.189	0.297	-0.028	-0.080	-0.115	-0.076	0.068
0.032	0.000	0.167	0.063	0.003	0.326	0.130	0.015	0.064
0.006	-0.045	0.000	0.196	0.063	-0.016	0.288	0.188	-0.026
0.017	-0.048	0.486	0.018	-0.031	0.558	0.090	0.257	0.126
0.147	0.270	0.173	0.267	0.355	0.324	0.726	0.218	0.121
0.185	0.142	0.082	0.034	0.012	-0.071	0.008	0.000	0.029
-0.060	0.148	0.061	0.013	0.200	0.272	-0.142	-0.031	0.096
-0.064	0.351	0.236	0.039	0.108	0.692	0.064	0.394	0.221
0.834	0.638	0.133	0.088	0.204	0.020	1.164	-0.073	0.049
-0.026	-0.259	0.117	0.172	-0.081	-0.064	0.187	-0.096	-0.026
-0.097	-0.256	-0.078	0.029	0.000	-0.090	-0.087	0.212	-0.005
-0.061	0.375	-0.040	0.133	0.150	0.023	0.103	-0.056	0.103
0.506	0.273	0.237	0.092	0.812	0.193	-0.040	0.424	0.414
0.041	-0.107	0.013	0.015	-0.120	-0.067	-0.097	-0.084	0.063
0.129	0.200	0.070	0.094	0.037	0.204	0.088	0.281	0.225
0.158	-0.067	-0.073	0.086	-0.115	-0.085	-0.057	-0.071	0.044
0.773	0.732	0.568	0.026	0.400	0.546	1.079	0.462	0.052
0.111	-0.124	-0.048	0.154	-0.029	0.048	0.288	-0.188	0.144
-0.092	-0.188	-0.328	-0.228	-0.118	-0.257	-0.445	-0.167	-0.107
-0.085	-0.130	-0.021	-0.007	-0.067	-0.123	0.008	0.148	-0.126
0.148	0.023	-0.156	-0.014	-0.036	0.063	-0.028	0.060	0.006
-0.103	0.000	-0.010	-0.015	0.014	-0.056	-0.036	-0.071	-0.193
-0.038	0.008	0.066	-0.284	-0.019	0.245	-0.453	0.066	0.092
-0.045	-0.008	0.043	0.042	0.115	-0.091	0.712	-0.133	-0.028
0.077	-0.142	-0.164	0.020	-0.052	-0.008	-0.134	0.010	-0.020
0.088	0.097	-0.005	0.157	-0.005	0.008	0.184	0.017	0.045
0.117	-0.080	0.016	0.068	0.056	0.083	-0.006	0.087	-0.036
0.055	0.077	-0.086	0.000	0.018	-0.015	0.056	0.000	-0.090
-0.086	0.036	0.218	0.017	0.043	0.094	0.098	0.010	0.009
0.038	0.112	0.024	0.025	0.074	-0.064	-0.084	0.040	0.008

## Appendix 2 Monthly Returns

Month	Kakuzi	Rea	Sasini	CMC	KQ	NMG	SGL	BBK
Mar	-0.173	0.080	0.062	-0.010	0.157	0.156	-0.038	0.000
Apr	0.130	-0.095	0.083	-0.020	0.115	0.057	-0.060	0.033
May	0.027	0.229	0.031	0.021	0.486	0.134	0.050	0.106
Jun	0.239	0.470	0.022	0.063	0.472	-0.020	0.101	0.054
Jul	-0.044	-0.043	0.109	-0.025	0.128	-0.010	0.000	-0.008
Aug	0.009	0.114	-0.112	0.005	0.087	-0.081	0.055	-0.028
Sep	-0.164	-0.024	-0.037	-0.055	0.199	0.006	-0.064	0.008
Oct	0.071	0.073	-0.015	0.053	-0.006	0.028	0.019	0.033
Nov	-0.025	-0.045	0.008	0.005	-0.036	0.016	0.024	-0.016
2005Dec	0.005	-0.012	-0.171	0.080	0.012	0.005	-0.048	0.069
Jan	-0.016	-0.012	0.084	-0.028	0.116	0.042	0.013	0.046
Feb	-0.153	-0.049	-0.043	-0.019	0.022	0.010	0.012	-0.084
Mar	-0.031	-0.003	-0.063	0.030	0.123	-0.005	-0.152	0.036
Apr	-0.103	0.010	-0.029	0.058	0.038	-0.010	0.007	0.000
May	0.143	-0.013	0.119	0.018	0.138	0.041	0.086	0.036
Jun	-0.075	0.089	-0.035	0.261	-0.065	0.015	-0.053	0.042
Jul	-0.054	-0.017	0.064	0.093	-0.034	-0.005	-0.028	0.015
Aug	0.000	0.143	0.060	0.157	0.009	0.020	0.207	0.113
Sep	0.200	0.121	0.707	0.345	0.159	0.152	0.254	0.118
Oct	-0.012	-0.098	0.829	0.143	-0.061	0.132	0.264	0.358
Nov	-0.036	0.120	0.316	0.191	-0.041	0.256	-0.194	0.336
2006Dec	0.056	0.000	0.128	0.086	0.008	-0.063	0.231	-0.163
Jan	0.012	-0.165	-0.007	0.028	-0.092	0.003	0.023	0.026
Feb	-0.082	0.000	-0.036	-0.101	-0.056	-0.100	0.015	-0.171
Mar	-0.057	0.060	-0.187	-0.065	-0.069	-0.083	0.043	0.056
Apr	0.081	-0.102	0.044	-0.087	-0.116	-0.055	-0.078	0.007
May	-0.206	-0.035	-0.060	0.015	-0.065	0.050	-0.085	-0.022
Jun	0.331	0.037	0.042	0.007	-0.019	0.000	0.046	0.082
Jul	-0.160	0.152	-0.005	0.100	-0.026	0.048	-0.035	0.083
Aug	-0.014	-0.088	-0.011	-0.003	-0.037	0.008	0.009	0.000
Sep	0.000	-0.058	-0.049	0.000	0.000	0.093	0.000	-0.013
Oct	-0.157	0.003	-0.066	0.000	-0.142	0.011	-0.091	-0.078
Nov	0.085	0.046	0.064	0.042	0.099	0.070	0.060	0.077
2007Dec	0.133	0.085	0.006	0.150	-0.045	0.065	0.075	0.033

CFC	DTK	HFCK	ICDC	JUB	KCB	NBK	NIC	SCBK
0.000	0.054	-0.108	-0.040	-0.038	-0.061	-0.042	-0.048	-0.031
0.027	0.029	0.011	0.033	0.008	0.073	-0.085	-0.021	0.059
0.050	-0.016	-0.047	0.032	0.056	0.063	0.159	-0.005	0.032
0.145	0.074	0.396	0.039	0.086	0.022	0.062	0.106	0.008
-0.142	-0.009	0.098	0.030	-0.078	0.101	0.207	0.019	0.069
0.217	-0.026	-0.068	0.029	0.077	0.046	-0.020	-0.019	0.000
0.000	-0.036	-0.115	-0.007	0.025	0.050	0.237	-0.049	-0.005
0.093	0.037	0.052	0.021	0.028	0.161	-0.025	0.046	0.015
-0.020	0.027	0.074	0.042	0.158	0.118	-0.034	-0.020	0.007
0.000	0.122	0.073	0.014	-0.018	0.037	0.018	0.020	0.000
0.000	0.225	0.215	0.028	0.145	0.018	0.165	0.039	0.029
-0.093	0.165	0.050	0.013	0.042	0.017	-0.015	-0.019	-0.028
-0.015	-0.065	-0.140	0.007	-0.096	0.009	-0.015	-0.038	0.007
-0.045	0.041	0.520	-0.007	0.101	0.025	-0.008	0.036	0.018
0.281	0.055	0.280	0.060	0.147	0.368	0.310	0.400	0.022
-0.177	0.118	-0.067	0.244	0.135	0.031	0.118	0.014	0.056
0.030	0.048	0.081	0.578	0.168	0.024	-0.106	0.056	0.027
0.151	0.211	0.317	0.064	0.075	0.047	0.154	0.160	0.013
0.106	0.197	0.405	0.766	0.153	0.090	0.385	0.147	0.085
0.017	-0.076	-0.207	0.373	0.111	0.088	-0.089	0.010	0.228
-0.061	0.022	-0.080	-0.111	0.775	0.024	-0.049	-0.010	0.020
0.059	0.007	0.185	-0.097	-0.090	0.121	-0.009	0.030	-0.009
0.472	0.055	-0.203	-0.065	-0.099	-0.037	-0.034	0.127	0.059
-0.137	-0.092	-0.222	-0.175	-0.065	-0.108	-0.161	-0.161	-0.171
-0.009	0.058	-0.193	-0.040	-0.206	0.077	-0.043	-0.027	0.083
0.054	0.000	0.156	0.032	0.269	0.148	-0.089	-0.005	-0.056
-0.023	0.020	-0.054	0.000	-0.091	-0.070	0.183	0.038	-0.006
0.009	0.088	0.467	0.092	0.067	0.011	-0.021	0.095	0.067
0.209	0.155	-0.097	0.065	0.110	0.202	0.005	0.442	-0.021
-0.043	0.059	-0.050	0.105	0.047	-0.044	-0.031	0.067	0.021
0.038	0.005	-0.129	-0.151	-0.123	-0.056	-0.157	0.163	0.003
-0.058	-0.104	0.017	-0.047	-0.066	0.000	-0.006	-0.004	-0.026
-0.077	0.100	0.214	0.057	-0.035	0.069	0.058	0.108	0.130
0.075	0.011	0.289	0.123	0.109	0.046	0.140	0.019	0.002

## Appendix 2 Monthly Returns

Month	ARM	BAMBR	BAT	C/BERG	EACabl	EABL	KENOL	KPLC
Jan	0.000	-0.015	0.010	0.000	0.087	0.027	0.149	-0.108
Feb	-0.150	0.000	0.030	-0.042	-0.100	0.026	-0.012	-0.059
Mar	0.044	0.000	-0.052	0.043	-0.100	0.006	-0.024	-0.375
Apr	0.014	-0.013	0.005	-0.175	0.000	0.013	-0.043	-0.100
May	0.111	0.130	-0.005	0.010	0.021	0.045	0.014	-0.044
Jun	0.000	0.015	0.027	0.000	0.000	0.025	0.014	0.006
Jul	0.216	0.391	0.126	0.100	0.196	-0.030	0.048	-0.133
Aug	0.111	-0.063	0.009	0.400	0.094	0.075	0.039	-0.133
Sep	-0.060	0.023	0.000	-0.114	-0.091	0.076	0.019	0.038
Oct	-0.128	0.182	0.080	-0.032	0.000	0.081	0.049	0.356
Nov	0.159	0.317	0.065	0.233	0.024	0.110	0.082	-0.016
2002Dec	-0.011	0.277	-0.017	-0.054	0.057	0.255	0.163	0.928
Jan	0.085	0.074	0.130	0.257	0.185	0.055	0.215	0.787
Feb	0.382	0.033	0.082	-0.148	-0.170	0.148	0.000	-0.210
Mar	0.560	0.161	0.136	0.200	0.000	0.174	0.042	0.102
Apr	0.200	0.241	0.133	0.111	0.171	0.225	0.032	0.139
May	0.114	-0.007	0.159	0.800	0.406	-0.045	0.546	0.130
Jun	0.190	0.212	-0.005	0.108	-0.155	0.076	0.020	-0.079
Jul	-0.056	0.050	0.184	-0.133	0.017	0.164	-0.050	0.070
Aug	0.066	0.262	0.470	0.719	-0.098	0.137	0.005	-0.066
Sep	0.441	-0.028	0.114	0.127	0.091	0.130	0.424	0.367
Oct	-0.102	0.029	0.032	-0.024	0.042	0.166	0.118	-0.177
Nov	-0.068	0.000	0.361	0.174	0.124	0.204	0.082	0.431
2003Dec	0.037	0.200	0.075	0.000	-0.028	-0.039	0.155	0.087
Jan	0.129	0.000	0.098	0.275	0.212	0.129	0.000	0.875
Feb	-0.073	-0.119	0.023	-0.028	0.375	-0.008	-0.039	0.133
Mar	-0.103	-0.104	-0.261	-0.119	-0.077	-0.061	-0.026	-0.181
Apr	-0.035	-0.070	0.002	-0.071	0.825	0.041	-0.071	0.000
May	0.085	-0.116	-0.111	0.000	-0.096	-0.135	0.089	-0.031
Jun	-0.053	-0.006	0.050	0.042	-0.030	0.072	0.192	-0.032
Jul	-0.090	0.006	-0.048	-0.137	0.109	0.049	0.197	-0.005
Aug	-0.043	0.027	-0.073	0.018	-0.127	0.092	-0.163	0.033
Sep	-0.121	0.056	0.099	-0.130	0.000	0.035	0.195	-0.059
Oct	0.110	0.146	0.025	0.060	0.149	0.143	-0.030	-0.141
Nov	-0.031	0.031	0.020	0.028	0.086	0.181	0.255	0.118
2004Dec	-0.038	-0.010	-0.020	0.028	0.377	-0.138	0.024	0.112
Jan	0.130	0.026	0.120	0.107	0.108	0.080	-0.008	-0.095
Feb	0.091	0.036	0.058	-0.040	0.053	-0.032	0.008	0.023

MSC	SAMFER	TOTAL	UNGA	EXPRSS	Market
-0.046	0.043	-0.113	0.015	0.000	0.019
-0.159	0.075	0.009	-0.059	0.000	-0.029
-0.078	-0.101	-0.147	-0.398	0.000	-0.059
-0.205	-0.007	-0.059	-0.221	0.000	-0.030
-0.242	0.145	-0.348	0.333	0.000	0.006
0.000	0.087	0.163	0.025	0.000	0.028
0.060	0.043	0.469	0.061	0.000	0.054
-0.057	-0.029	-0.013	0.172	0.000	0.038
-0.080	-0.084	0.067	0.118	0.000	0.013
0.087	0.056	-0.063	-0.035	0.000	0.049
0.320	0.133	0.223	0.055	0.000	0.094
0.250	0.024	0.240	-0.138	-0.029	0.143
0.013	0.178	0.099	0.600	0.044	0.239
0.160	-0.024	0.130	-0.125	0.000	0.009
-0.160	0.000	0.027	0.029	0.014	0.051
-0.203	-0.050	0.136	0.688	0.097	0.200
0.127	0.528	0.176	-0.095	0.000	0.268
-0.042	-0.058	-0.027	0.095	0.000	-0.010
0.059	0.085	-0.014	0.037	0.070	0.004
0.153	-0.267	-0.014	0.000	0.095	0.131
0.036	0.136	0.094	0.412	0.000	0.199
0.000	-0.060	-0.007	-0.011	0.000	0.028
0.081	0.091	-0.007	0.074	0.038	0.124
-0.032	-0.008	0.060	-0.069	-0.063	0.005
0.422	0.189	0.421	0.676	0.000	0.335
1.055	-0.152	0.027	-0.369	-0.028	0.040
-0.297	-0.063	-0.228	-0.133	0.371	-0.129
0.040	-0.036	-0.006	0.091	-0.125	0.019
0.121	0.000	0.036	-0.146	-0.143	-0.005
-0.113	-0.052	-0.098	-0.027	0.000	-0.017
0.249	0.239	0.108	-0.152	0.000	0.006
0.031	-0.088	-0.080	0.061	0.000	0.026
-0.073	0.018	-0.025	-0.100	-0.006	-0.027
0.014	0.090	-0.032	-0.021	-0.028	0.060
0.041	0.066	0.007	-0.043	-0.080	0.036
0.000	-0.027	-0.013	-0.036	-0.025	0.016
0.116	0.060	0.067	0.052	0.276	0.076
0.046	0.053	0.000	0.336	-0.015	0.025



## Appendix 2 Monthly Returns

Month	ARM	BAMBR	BAT	C/BERG	EACabl	EABL	KENOL	KPLC
Mar	-0.105	-0.022	-0.114	-0.059	-0.038	0.068	0.056	-0.006
Apr	-0.009	-0.005	-0.002	-0.009	0.387	0.036	0.054	-0.046
May	0.098	0.088	0.068	0.009	0.117	0.175	0.324	0.078
Jun	0.333	0.143	0.009	0.036	0.686	0.112	0.222	0.240
Jul	0.167	0.108	-0.009	-0.078	-0.131	0.027	-0.027	0.018
Aug	0.071	0.023	-0.030	0.121	0.091	-0.020	0.065	0.204
Sep	0.058	0.026	0.010	0.075	0.015	-0.027	0.105	0.022
Oct	0.165	0.000	0.010	0.155	0.080	-0.027	-0.048	0.043
Nov	0.068	0.000	-0.009	-0.081	-0.020	-0.007	0.017	0.003
2005Dec	0.000	0.029	-0.029	0.022	-0.062	-0.022	0.107	-0.042
Jan	0.146	0.000	0.000	0.086	0.146	0.000	0.007	-0.014
Feb	0.011	0.000	-0.020	-0.072	0.013	-0.024	-0.051	-0.074
Mar	-0.016	0.014	0.033	0.078	0.135	0.023	0.039	0.087
Apr	0.072	0.000	0.000	0.000	0.147	-0.015	-0.021	-0.044
May	0.321	0.064	-0.025	-0.020	0.212	0.069	0.016	0.206
Jun	0.063	-0.020	-0.036	-0.007	0.098	-0.007	-0.038	0.070
Jul	0.045	0.027	0.016	-0.056	0.230	-0.036	-0.048	-0.107
Aug	0.229	0.160	0.028	0.022	0.798	0.075	-0.008	0.344
Sep	0.070	0.069	0.026	0.065	0.277	0.021	-0.134	0.094
Oct	-0.054	0.087	-0.030	-0.007	-0.263	-0.019	0.058	0.225
Nov	-0.046	0.040	0.010	0.048	-0.219	0.000	-0.018	-0.017
2006Dec	0.000	0.034	0.010	0.136	0.097	-0.007	0.009	0.015
Jan	-0.054	-0.028	0.142	0.246	-0.005	0.065	-0.093	0.022
Feb	-0.045	0.029	-0.111	-0.083	-0.168	-0.020	0.020	-0.464
Mar	-0.033	-0.060	0.033	-0.240	0.019	-0.020	0.000	0.328
Apr	-0.034	-0.005	-0.045	0.039	0.031	0.036	0.013	0.077
May	0.021	-0.045	-0.053	0.076	0.067	-0.007	0.005	-0.005
Jun	0.050	0.000	0.022	0.047	0.080	0.069	-0.005	-0.005
Jul	0.291	-0.005	-0.054	0.093	-0.021	-0.006	0.010	0.086
Aug	-0.021	0.058	-0.055	-0.016	0.043	0.085	0.040	0.057
Sep	-0.021	0.013	-0.100	-0.058	-0.088	0.030	-0.063	-0.079
Oct	-0.005	-0.045	-0.042	-0.044	-0.096	0.042	0.123	-0.045
Nov	0.000	0.011	-0.014	0.064	0.100	0.140	0.074	0.014
2007Dec	0.022	0.021	0.037	0.104	-0.045	0.031	-0.009	0.025

MSC	SAMEER	TOTAL	UNGA	EXPRSS	Market
-0.017	-0.176	0.000	-0.228	-0.005	-0.024
0.064	0.136	0.000	0.083	-0.026	0.035
0.426	0.372	0.087	0.048	-0.053	0.108
0.355	0.050	0.098	0.487	0.761	0.196
0.186	0.153	-0.151	-0.175	-0.265	0.008
0.035	0.012	0.026	0.063	0.120	0.036
0.118	-0.048	0.038	0.056	0.023	0.015
-0.030	-0.038	0.056	-0.045	0.019	0.034
0.028	0.091	-0.035	0.131	0.022	0.016
0.085	0.024	-0.006	-0.021	-0.007	0.010
0.179	0.023	0.043	0.158	0.159	0.068
0.000	-0.091	0.006	-0.093	0.013	-0.018
0.062	-0.025	-0.035	-0.048	0.049	-0.001
0.151	-0.062	-0.036	-0.039	0.324	0.038
0.202	0.115	0.050	0.260	0.300	0.142
0.042	-0.118	-0.101	-0.220	-0.051	0.011
-0.008	-0.111	-0.013	-0.109	-0.168	0.020
-0.049	-0.035	0.013	0.131	0.095	0.124
-0.060	0.197	-0.020	-0.058	0.000	0.165
-0.027	0.281	-0.054	0.044	0.174	0.081
0.028	0.185	-0.057	0.042	-0.065	0.047
0.000	-0.110	0.053	-0.030	-0.040	0.022
-0.218	-0.082	-0.050	0.008	0.103	0.005
-0.266	-0.270	-0.121	-0.080	-0.037	-0.115
0.008	-0.111	0.103	-0.042	-0.165	-0.026
-0.122	-0.066	0.055	-0.034	0.116	0.009
-0.019	-0.030	-0.044	-0.071	-0.052	-0.019
0.094	-0.008	-0.017	0.021	-0.055	0.056
0.103	0.069	0.068	0.027	0.100	0.066
0.234	-0.040	-0.040	-0.090	0.065	0.012
-0.063	-0.157	-0.025	-0.015	-0.040	-0.037
0.169	-0.013	-0.043	-0.081	-0.053	-0.032
0.039	-0.041	0.063	0.032	0.133	0.059
0.010	0.136	0.134	0.207	-0.039	0.065

**Appendix 3 Sizes (Market Capitalization in Ksh Millions)**

Month	Kakuzi	Rea	Sasini	CMC	KQ	NMG	SGL	BBK	CFC
2002Dec	287	156	517	510	3162	4492	658	18685	1104
2003Mar	296	210	646	607	2654	4278	498	24446	1410
2003Jun	389	279	760	1087	3001	5348	1267	26687	2280
2003Sep	355	309	658	1651	4201	8824	1840	39114	2910
2003Dec	470	339	760	1991	3993	10214	2589	57041	3966
2004Mar	470	540	665	2574	4432	10054	3452	46447	7080
2004Jun	568	540	741	2477	6001	9947	3257	40743	6588
2004Sep	554	570	779	2671	6463	9359	2833	41558	6516
2004Dec	784	600	998	2914	7801	9091	2931	40743	8352
2005Mar	794	723	1140	2379	11079	12300	2443	42577	7920
2005Jun	1117	1182	1302	2477	27005	14190	2654	51337	9648
2005Sep	902	1230	1235	2294	39007	12906	2622	49299	10080
2005Dec	946	1245	1017	2622	37852	13548	2605	53577	11700
2006Mar	764	1167	988	2501	48470	14190	2263	50929	10452
2006Jun	725	1215	1036	3399	53547	14475	2345	55003	10530
2006Sep	823	1530	1995	5779	60472	16757	3452	68856	13806
2006Dec	828	1545	5359	8546	54932	22319	4331	104575	13884
2007Mar	725	1320	4173	7284	43853	18183	4690	92352	17472
2007Jun	828	1185	4265	6798	35544	17684	4140	98463	17940
2007Sep	686	1173	3991	7454	32544	20179	4030	104575	21528

Month	ARM	BAMB	BAT	Cberger	EACable	EABL	KENOL	KPLC	MSC
2002Dec	437	15879	5400	151	186	13956	1079	1373	2040
2003Mar	1023	19600	7500	194	183	19844	1270	2136	2015
2003Jun	1572	29037	9800	398	243	24641	2016	2532	1734
2003Sep	2279	37022	18500	669	243	36852	2742	3462	2193
2003Dec	1976	45733	27600	766	276	48191	3830	4431	2295
2004Mar	1855	36115	22900	636	405	50263	3528	7715	4463
2004Jun	1762	28855	21000	777	648	48519	4254	7240	4616
2004Sep	1349	31033	19900	593	613	57558	5090	7003	5508
2004Dec	1396	34481	20000	664	1033	65898	6350	7478	5508
2005Mar	1539	35207	21000	654	1124	72488	6501	6884	6018
2005Jun	2232	43555	22100	688	2936	98188	11063	8783	12368
2005Sep	2953	49363	21000	765	2795	96211	12700	10999	16958
2005Dec	3674	50814	20400	830	2774	88962	13607	10920	17850
2006Mar	4185	50814	20200	902	3584	87644	13507	10841	21930
2006Jun	6231	52992	19000	854	5468	91598	12700	13373	31620
2006Sep	8556	66785	19900	878	15390	96870	10382	17566	29050
2006Dec	7719	78036	19700	1038	9720	91598	10866	21365	27540
2007Mar	6743	72592	19900	902	8201	92257	10080	15509	15683
2007Jun	6882	68962	18400	1020	9619	101483	9979	16538	14790
2007Sep	8510	72229	14400	1068	8961	112685	9828	17487	18670

DTK	HFCK	ICDC	JUB	KCB	NBK	NIC	SCBK
795	598	1594	558	2798	730	1624	15329
1324	805	2117	918	4376	1090	1916	18420
2137	1259	2804	1080	7069	2980	2143	22994
2783	1380	3574	2250	7854	2880	3441	35109
2783	1386	4178	1800	8078	2670	3750	47224
3428	1392	3821	2160	9724	3970	3709	45246
2981	1139	3684	1908	10579	3750	4059	35356
2559	1058	2804	1980	11876	3040	3729	36172
2783	978	3299	2088	12774	3780	4121	33180
3379	1087	3299	2250	12275	3640	4121	32092
3602	1461	3656	2538	13872	4100	4286	35356
3354	1323	3849	2556	16766	6000	4018	36988
4006	1604	3986	2988	22555	5750	4203	37804
5341	1760	4178	3222	23553	6500	4121	38075
6459	3191	5471	4500	32934	9450	5851	40795
9813	6383	16219	6480	38523	13500	8159	45419
10132	5520	17869	11628	48104	11600	8406	55753
10271	2760	13058	7776	44511	9000	7582	53034
11250	4428	14707	9450	46906	9500	8571	51946
13835	3306	14707	9585	50898	7800	15329	51402

SAMEER TOTAL	UNGA	Express	Market	
2422	3547	265	33	3345
2783	4522	454	35	4252
3605	5936	760	38	5529
3257	6309	1114	44	7794
3312	6600	1101	43	9979
3062	7742	1009	386	9648
2797	6791	915	290	8759
3076	6748	741	288	9134
3479	6488	669	251	9697
3062	6921	726	314	10198
5010	7742	1224	510	13207
5567	7007	1132	430	14077
5984	7094	1199	444	14419
5428	7180	1199	547	14881
4871	6531	1132	893	16606
4996	6401	1076	740	19852
6750	6012	1136	780	22254
4022	5536	1009	692	19706
3618	5061	924	692	20052
3131	5061	852	764	21229

Appendix 4 EP of sample stocks

Month	Kakuzi	Rea	Sasini	CMC	KQ	NMG	SGL	BBK	CFC	DTK	HFCK	ICDC	JUB	KCB	NBK	NIC	SCBK
2002Dec	-0.158	0.027	-0.013	0.170	0.274	0.057	-0.093	0.158	0.128	0.051	-0.312	0.154	0.217	0.070	0.408	0.108	0.146
2003Ma	0.026	0.117	-0.011	0.252	0.327	0.094	-0.123	0.073	0.123	0.057	0.070	0.116	0.179	-0.686	0.182	0.120	0.120
2003Jur	0.020	0.088	-0.009	0.141	0.134	0.076	-0.048	0.067	0.076	0.035	0.045	0.088	0.152	-0.425	0.066	0.107	0.096
2003Sep	0.022	0.080	-0.010	0.093	0.096	0.046	-0.033	0.045	0.060	0.027	0.041	0.069	0.073	-0.382	0.069	0.067	0.063
2003Dec	0.016	0.073	-0.089	0.077	0.101	0.040	-0.019	0.031	0.044	0.027	0.041	0.038	0.091	-0.371	0.074	0.061	0.047
2004Ma	-0.025	0.006	-0.101	0.069	0.091	0.060	-0.014	0.072	0.042	0.041	0.037	0.042	0.099	0.050	0.102	0.065	0.056
2004Jur	-0.021	0.006	-0.091	0.071	0.217	0.061	-0.015	0.083	0.045	0.047	0.045	0.043	0.112	0.061	0.108	0.060	0.079
2004Sep	-0.021	0.005	-0.086	0.066	0.201	0.064	-0.017	0.081	0.046	0.054	0.049	0.057	0.107	0.055	0.133	0.065	0.077
2004Dec	-0.015	0.005	0.773	0.061	0.167	0.066	0.026	0.083	0.036	0.050	0.053	0.073	0.102	0.051	0.107	0.059	0.084
2005Ma	0.105	0.178	0.676	0.111	0.118	0.052	0.032	0.087	0.055	0.049	0.055	0.073	0.123	0.064	0.105	0.063	0.057
2005Jur	0.075	0.109	0.592	0.106	0.144	0.045	0.029	0.072	0.045	0.046	0.041	0.066	0.109	0.057	0.093	0.061	0.052
2005Sep	0.093	0.104	0.624	0.115	0.099	0.050	0.030	0.075	0.043	0.049	0.045	0.063	0.108	0.047	0.064	0.065	0.050
2005Dec	0.088	0.103	-0.380	0.100	0.102	0.047	0.045	0.069	0.040	0.041	0.037	0.074	0.093	0.035	0.066	0.062	0.048
2006Ma	-0.096	0.106	-0.391	0.136	0.080	0.050	0.052	0.073	0.044	0.053	0.033	0.071	0.108	0.056	0.092	0.067	0.064
2006Jur	-0.102	0.102	-0.373	0.100	0.090	0.049	0.050	0.068	0.044	0.044	0.018	0.054	0.077	0.040	0.063	0.047	0.060
2006Sep	-0.090	0.081	-0.194	0.059	0.080	0.043	0.034	0.054	0.034	0.029	0.009	0.018	0.054	0.034	0.044	0.034	0.054
2006Dec	-0.089	0.080	0.044	0.040	0.088	0.032	0.039	0.036	0.033	0.032	0.011	0.035	0.030	0.028	0.052	0.033	0.044
2007Ma	0.184	0.085	0.057	0.596	0.110	0.043	0.036	0.049	0.045	0.052	0.037	0.476	0.054	0.052	0.066	0.060	0.047
2007Jur	0.161	0.095	0.056	0.639	0.108	0.044	0.041	0.046	0.044	0.047	0.023	0.422	0.045	0.050	0.066	0.053	0.047
2007Sep	0.194	0.096	0.059	0.582	0.118	0.039	0.042	0.043	0.037	0.038	0.031	0.422	0.044	0.046	0.080	0.030	0.048

Month	ARM	BAMB	BAT	Cberger	EACable	EABL	KENOL	KPLC	MSC	SAMEE	TOTAL	UNGA	Express	Market
2002Dec	0.085	0.046	0.112	0.154	0.086	0.166	0.348	-1.369	0.033	0.138	-0.098	-0.214	-0.963	-0.003
2003Ma	0.056	0.063	0.110	0.120	-0.032	0.117	0.348	-0.880	0.033	0.083	0.080	-0.149	-1.621	-0.021
2003Jur	0.037	0.042	0.084	0.139	-0.024	0.094	0.219	-0.742	0.038	0.064	0.065	-0.089	-1.477	-0.028
2003Sep	0.025	0.033	0.044	0.083	-0.024	0.041	0.161	-0.881	-0.098	0.071	0.061	-0.024	-1.262	-0.045
2003Dec	0.029	0.027	0.030	0.072	-0.021	0.031	0.115	-0.689	-0.093	0.070	0.058	-0.025	-1.297	-0.047
2004Ma	0.052	0.030	0.050	0.066	0.023	0.030	0.133	-0.395	-0.048	0.051	0.069	-0.027	-1.183	-0.015
2004Jur	0.055	0.037	0.054	0.076	0.014	0.031	0.110	-0.421	-0.046	0.056	0.079	-0.030	-1.578	-0.022
2004Sep	0.072	0.034	0.057	0.100	0.015	0.066	0.092	0.065	0.144	0.051	0.079	-0.138	-1.587	0.000
2004Dec	0.069	0.031	0.057	0.089	0.009	0.058	0.074	0.061	0.144	0.045	0.083	-0.153	-1.821	0.018
2005Ma	0.076	0.049	0.058	0.089	0.110	0.053	0.129	0.067	0.131	0.090	0.084	-0.141	0.014	0.094
2005Jur	0.053	0.039	0.055	0.074	0.042	0.039	0.076	0.052	0.064	0.055	0.075	-0.084	0.009	0.076
2005Sep	0.040	0.035	0.058	0.067	0.044	0.050	0.066	0.115	0.076	0.050	0.082	0.064	0.010	0.083
2005Dec	0.032	0.034	0.059	0.061	0.045	0.054	0.062	0.116	0.072	0.046	0.081	0.061	0.010	0.047
2006Ma	0.048	0.039	0.068	0.057	0.059	0.054	0.066	0.117	0.059	0.038	0.073	0.061	0.089	0.048
2006Jur	0.032	0.038	0.073	0.040	0.039	0.052	0.070	0.095	0.041	0.042	0.081	0.064	0.055	0.038
2006Sep	0.023	0.030	0.069	0.039	0.014	0.049	0.085	0.094	0.054	0.041	0.082	0.034	0.060	0.035
2006Dec	0.026	0.026	0.070	0.033	0.022	0.059	0.081	0.077	0.055	0.031	0.087	0.032	0.057	0.041
2007Ma	0.038	0.036	0.060	0.038	0.035	0.058	0.082	0.106	0.097	-0.006	0.087	0.036	0.087	0.093
2007Jur	0.037	0.038	0.065	0.070	0.029	0.053	0.083	0.099	0.103	-0.006	0.095	0.040	0.087	0.093
2007Sep	0.030	0.036	0.083	0.067	0.032	0.054	0.084	0.098	0.074	-0.007	0.095	0.097	0.079	0.092

## Appendix 5 Data Analysis

Table 12 CAR of Past Return Portfolios

12(a) n = 3 months									
	PANEL A - LOSERS								
Date	L1	L2	L3	L4	L5	L6	L7	L8	Average
2002Dec	1.0257	-0.0256	0.0742	0.0516	-0.0280	-0.0375	-0.1242	0.3503	0.1607
2003Mar	1.0359	-0.3761	-0.2348	-0.1150	-0.6458	-0.1920	-0.4094	-0.1396	-0.1346
2003Jun	-0.0976	0.1364	-0.1914	0.1422	0.2666	-0.4973	0.0049	0.7211	0.0606
2003Sep	-0.0051	-0.1441	0.1648	-0.2341	-0.0237	-0.1152	-0.1570	-0.0641	-0.0723
2003Dec	-0.0091	-0.2703	-0.2248	-0.0993	0.1242	-0.2922	0.0230	-0.2049	-0.1192
2004Mar	-0.1799	-0.0615	-0.1197	0.1745	-0.0329	-0.0906	0.2088	-0.0233	-0.0156
2004Jun	0.0369	-0.0086	0.0873	-0.0738	0.0319	0.1196	-0.1447	-0.1927	-0.0180
2004Sep	0.1206	0.0053	-0.0802	-0.2126	0.1287	-0.0273	-0.0802	-0.1908	-0.0421
2004Dec	0.1742	0.0091	-0.0914	0.0359	-0.0092	0.2771	0.0242	-0.0258	0.0492
2005Mar	-0.3086	-0.2844	0.2653	-0.0952	-0.1354	-0.2057	-0.2447	-0.2694	-0.1598
2005Jun	0.0533	-0.1323	-0.0879	-0.1078	-0.0710	-0.1277	0.0047	-0.0061	-0.0593
2005Sep	-0.0121	-0.0273	-0.0487	0.1520	-0.0113	-0.0026	0.0818	0.1334	0.0331
2005Dec	-0.0757	-0.0493	0.0827	0.2328	-0.0355	0.2898	-0.1790	-0.0550	0.0239
2006Mar	-0.2492	-0.1620	-0.1905	-0.2753	-0.1126	-0.1489	0.2732	0.1613	-0.0881
2006Jun	-0.3545	-0.3089	-0.2630	-0.3848	-0.1995	-0.5172	-0.3069	-0.0235	-0.2948
2006Sep	-0.1076	-0.1561	-0.1018	-0.1004	-0.2169	0.1949	0.0263	-0.1825	-0.0805
2006Dec	-0.0232	-0.0911	-0.3870	0.0065	-0.0686	0.0539	0.1468	0.1557	-0.0234
2007Mar	0.5587	-0.1024	-0.1458	0.1848	0.0209	0.0808	0.0101	-0.0236	0.0729
2007Jun	-0.1008	-0.0656	-0.0492	-0.1737	-0.1178	-0.2345	0.0574	0.2368	-0.0559
2007Sep	0.4987	-0.1135	0.1061	-0.0569	-0.0171	0.0518	-0.1435	-0.0926	0.0291
average	0.0990	-0.1114	-0.0708	-0.0474	-0.0577	-0.0721	-0.0464	0.0132	-0.0367
SD	0.3902	0.1244	0.1596	0.1682	0.1778	0.2185	0.1702	0.2320	0.0991
t	1.1351	-4.0068	-1.9830	-1.2806	-1.4510	-1.4757	-1.2197	0.2549	-1.6561
12(b) n = 6 months									
	PANEL A - LOSERS								
Date	L1	L2	L3	L4	L5	L6	L7	L8	Average
2002Dec	-0.5200	-0.0106	-0.3410	-0.6819	0.0354	0.1251	-0.7903	-0.2380	-0.3027
2003Jun	-0.2584	-0.1518	-0.4427	0.3390	-0.3728	-0.4444	0.1933	-0.5819	-0.2150
2003Dec	0.1992	-0.3416	-0.1803	-0.3838	-0.1591	1.2562	-0.2053	0.1464	0.0048
2004Jun	0.1585	-0.1034	-0.1841	-0.1220	-0.2595	-0.3871	0.1830	-0.1778	-0.1094
2004Dec	0.3551	0.1249	-0.4393	0.0181	0.5570	-0.5695	0.1146	-0.1536	0.0010
2005Jun	-0.0645	-0.1418	0.0835	-0.1285	-0.0364	0.2791	0.0126	0.5025	0.0633
2005Dec	-0.2364	-0.4883	0.7558	-0.3344	0.2116	-0.3030	0.7547	-0.1600	-0.0279
2006Jun	0.4011	-0.1573	0.3042	-0.1217	-0.5225	-0.3402	-0.5858	-0.1248	-0.2436
2006Dec	0.0936	-0.3606	0.0061	-0.0198	-0.0925	-0.2593	0.2185	0.0628	-0.0439
2007Jun	-0.2046	0.4305	0.2902	0.0856	-0.0088	-0.1995	0.0530	0.1789	-0.0158
Average	-0.0881	-0.1200	-0.0708	-0.1520	-0.1071	-0.0843	-0.0052	-0.0838	-0.0889
SD	0.2831	0.2626	0.3756	0.2713	0.2899	0.5361	0.4364	0.2851	0.1234
t	-0.9835	-1.4447	-0.5962	-1.7721	-1.1682	-0.4970	0.0376	-0.9298	-2.2779
12(c) n = 12 months									
	PANEL A - LOSERS								
Date	L1	L2	L3	L4	L5	L6	L7	L8	Average
2002Dec	-1.4950	-2.0082	0.3567	-0.4302	-0.7955	-1.6627	0.0944	-1.8097	-0.9688
2003Dec	1.3304	-0.4811	0.8060	-0.2239	0.0321	2.7514	0.3189	-0.3482	0.4982
2004Dec	0.1354	-0.0159	0.9763	-0.4782	-0.2555	-0.5921	-0.1174	-0.3980	-0.0932
2005Dec	-0.2741	1.4204	3.3899	-0.9265	0.1521	-0.0890	-0.3883	-1.0609	0.1530
2006Dec	0.0751	0.0238	-0.1711	-0.1707	-0.2655	0.5007	-0.5301	0.4363	-0.0127
Average	-0.0457	-0.2122	1.0316	-0.4459	-0.2285	-0.0183	-0.1245	-0.6361	-0.0847
SD	1.0116	1.2306	1.3827	0.2989	0.3662	1.7407	0.3459	0.8437	0.5439
t	-0.1009	-0.3856	1.6682	-3.3364	-1.3828	-0.2305	-0.8046	-1.6859	-0.3482

PANEL B - WINNERS

W8	W7	W6	W5	W4	W3	W2	W1	Average	W L
-0.3623	0.0315	-0.1853	-0.0647	-0.0510	-0.5573	-0.0400	0.1253	-0.1355	-0.2962
-0.2479	0.1870	1.2274	-0.3214	0.1088	-0.2811	0.1343	0.0839	0.1089	0.2434
-0.0023	-0.0600	-0.0860	0.1025	0.1573	0.3179	0.0902	-0.3958	0.0155	-0.0451
-0.2107	0.0447	0.1994	-0.0714	0.0029	-0.0181	0.3496	-0.3539	-0.0069	0.0854
-0.2091	-0.1576	0.1337	0.5788	-0.2738	0.1242	-0.3662	-0.3794	-0.1021	0.0171
-0.2469	-0.0535	-0.0523	0.6031	0.0471	-0.0584	-0.0536	0.0374	0.0278	0.0434
0.1903	0.0525	-0.0701	0.0482	0.1936	-0.0289	0.0738	-0.0343	0.0531	0.0712
0.0924	-0.0238	0.0543	-0.0391	0.0165	0.0491	-0.0591	0.1328	0.0279	0.0700
0.3443	-0.0758	-0.1129	-0.0193	0.0670	-0.1276	-0.0633	0.0467	0.0074	-0.0419
1.2415	0.0869	0.6840	-0.2828	0.2546	0.2638	-0.1961	1.0664	0.3873	0.5470
-0.2185	-0.0181	0.0524	-0.1335	0.0867	0.3124	0.4113	-0.0965	0.0498	0.1091
0.0104	-0.0316	0.2842	-0.0579	0.1830	0.0210	-0.1027	-0.0908	0.0270	-0.0062
0.0380	-0.0553	-0.0654	0.0306	0.2856	0.0491	0.0915	-0.0035	0.0463	0.0225
0.6158	0.2559	0.3087	1.4344	0.2439	-0.0932	0.3275	0.0296	0.2653	0.3534
-0.4476	-0.1650	0.0939	0.0710	0.0385	1.4896	-0.4229	0.6654	0.1654	0.4602
0.6383	0.0986	-0.2051	0.3229	1.5579	-0.2912	-0.5245	-0.0544	0.1928	0.2733
0.1557	0.2157	-0.0391	-0.2711	-0.0025	0.0317	-0.1982	-0.0882	-0.0245	-0.0011
-0.0330	-0.0955	-0.0437	0.0646	0.0545	-0.1209	-0.1627	-0.0074	-0.0430	-0.1159
0.1907	-0.0391	0.7494	-0.2107	0.0074	-0.1075	-0.0200	-0.2923	0.0347	0.0906
0.1321	-0.0611	0.0593	-0.1579	-0.0964	-0.0762	0.1347	0.0324	-0.0041	-0.0333
0.0837	0.0048	0.1370	0.0313	0.1441	0.0450	-0.0298	0.0212	0.0547	0.0914
0.3987	0.1131	0.3640	0.2669	0.3577	0.3976	0.2465	0.3370	0.1213	0.1108
<b>0.9384</b>	<b>0.1908</b>	<b>1.8829</b>	<b>0.5248</b>	<b>1.8016</b>	<b>0.5064</b>	<b>-0.5413</b>	<b>0.2809</b>	<b>2.0151</b>	<b>2.8083</b>

PANEL B - WINNERS

W8	W7	W6	W5	W4	W3	W2	W1	Average	W-L
-0.1910	0.1503	0.5460	-0.1363	-0.7693	-0.3238	-0.0550	-0.0564	-0.1044	0.1633
0.2505	0.1549	-0.1338	-0.4390	-0.2796	0.3422	-0.3245	-0.6859	-0.1384	-0.0265
-0.0774	-0.2315	-0.1483	-0.1904	0.0525	-0.4414	-0.4660	-0.4293	-0.2415	0.0701
-0.2181	-0.1101	0.1819	-0.0853	-0.0070	0.1496	0.1415	0.5472	0.0749	0.5419
-0.1885	1.9865	0.0304	-0.1703	-0.0191	0.0366	0.3269	1.4577	0.4325	0.0808
0.5225	0.1039	-0.1440	-0.2527	-0.0701	0.3602	0.1681	0.3032	0.0819	0.0966
-0.1981	-0.3055	-0.0305	0.3884	0.1595	0.5491	0.2550	0.4613	0.1599	-0.0312
1.0554	-0.0982	-0.3155	-0.3042	-0.6559	0.1867	0.2408	-0.5817	-0.0591	0.2094
-0.1043	0.0952	0.0494	0.0518	-0.0995	-0.0836	-0.0723	-0.1106	-0.0343	0.1396
0.0774	-0.2774	-0.2511	0.0391	0.8767	0.2248	0.0898	-0.0136	0.0957	0.0158
0.0928	0.1468	-0.0215	-0.1099	-0.0812	0.1000	-0.0032	0.0892	0.0266	0.1260
0.4143	0.6702	0.2481	0.2296	0.4529	0.3098	0.2618	0.6376	0.1887	0.1594
<b>0.7085</b>	<b>0.6927</b>	<b>-0.2745</b>	<b>-1.5135</b>	<b>-0.5667</b>	<b>1.0209</b>	<b>-0.0385</b>	<b>0.4424</b>	<b>0.4464</b>	<b>1.7671</b>

PANEL B - WINNERS

W8	W7	W6	W5	W4	W3	W2	W1	Average	W-L
-0.6846	0.1947	0.7814	0.1617	0.4769	0.7715	-0.0728	-0.8063	0.1028	1.0716
0.0680	0.7903	0.1258	0.3362	-0.2157	-0.6242	-0.5751	-0.4440	-0.0673	-0.5655
-0.4246	0.5544	-0.1815	0.5557	3.2811	0.3454	1.8407	1.1445	0.8031	0.8963
-0.7770	0.2691	-1.1226	-0.4300	0.1897	1.6483	-0.3361	-0.4854	-0.1571	-0.3101
0.1819	0.3497	0.0314	0.0759	-0.1434	-0.1906	-0.0857	-0.2844	-0.0271	-0.0145
-0.3273	0.4316	-0.0731	0.0669	0.7177	0.2519	0.1542	-0.1751	0.1309	0.2156
0.4344	0.2414	0.6881	0.4596	1.4595	0.9408	0.9651	0.7616	0.3873	0.6564
<b>-1.6844</b>	<b>3.9989</b>	<b>-0.2376</b>	<b>0.3258</b>	<b>1.0996</b>	<b>0.5988</b>	<b>0.3573</b>	<b>-0.5141</b>	<b>0.7556</b>	<b>0.5192</b>

Appendix 5 Data Analysis

Table 13 CAR of size portfolios

13(a) n = 3 months

Date	PANEL A - SMALL SIZE								Av
	S1	S2	S3	S4	S5	S6	S7	S8	
2002Dec	-0.26	-0.03	0.03	-0.33	0.13	-0.28	1.03	-0.08	0.0272
2003Mar	-0.41	0.71	-0.11	-0.08	0.28	0.17	0.08	1.04	0.2098
2003Jun	-0.19	-0.36	-0.25	-0.45	0.32	-0.50	0.10	0.18	-0.1473
2003Sep	-0.19	-0.02	-0.06	0.16	-0.01	-0.02	-0.17	0.04	-0.0325
2003Dec	0.12	0.33	0.38	-0.21	-0.33	-0.12	-0.29	-0.01	-0.0156
2004Mar	-0.25	0.60	0.21	0.05	0.17	-0.03	-0.09	-0.02	0.0809
2004Jun	-0.01	0.05	-0.03	-0.03	0.05	-0.24	-0.19	-0.24	-0.0802
2004Sep	-0.24	0.30	-0.06	0.01	0.60	-0.21	0.17	-0.08	0.0598
2004Dec	0.17	0.21	-0.08	0.01	-0.06	0.04	0.07	0.03	0.0479
2005Mar	0.25	-0.34	0.26	0.32	0.07	-0.03	1.24	0.08	2.3234
2005Jun	-0.22	0.05	-0.25	-0.02	-0.13	-0.11	-0.15	-0.13	-0.1202
2005Sep	-0.03	0.02	-0.01	0.00	-0.05	-0.24	0.15	0.11	-0.0056
2005Dec	0.18	0.04	-0.24	-0.08	-0.05	-0.11	0.05	-0.07	-0.0334
2006Mar	0.43	-0.25	-0.22	-0.15	-0.11	-0.25	0.62	0.18	0.0278
2006Jun	-0.20	-0.31	-0.42	0.59	-0.38	-0.08	0.14	0.37	-0.0368
2006Sep	-0.10	-0.15	0.03	-0.10	-0.15	1.56	0.10	0.32	0.1884
2006Dec	0.02	0.01	0.00	0.02	0.02	0.22	-0.09	0.05	0.0315
2007Mar	-0.05	0.10	0.13	-0.13	-0.15	0.56	-0.10	-0.16	0.0241
2007Jun	0.08	-0.21	-0.12	0.01	-0.05	0.24	-0.07	-0.29	-0.0508
2007Sep	0.06	-0.06	0.05	0.03	0.05	0.13	0.50	-0.06	0.0732
Average	-0.0458	0.0349	-0.0387	-0.0193	0.0106	0.0349	0.1540	0.0616	0.0240
SD	0.2087	0.2880	0.1931	0.2167	0.2229	0.4268	0.4011	0.2823	0.1005
t	-0.9560	0.5282	-0.8726	-0.3880	0.2066	0.3560	1.6737	0.9510	1.0423

13(b) n = 6 months

Date	PANEL A - SMALL SIZE								Average
	S1	S2	S3	S4	S5	S6	S7	S8	
2002DEC	-0.8189	0.8693	-0.0567	-0.6118	0.4293	-0.6257	0.1503	0.1503	-0.0643
2003Jun	-0.4427	-0.4444	-0.3668	-0.3728	0.3422	-0.5819	0.1001	0.1001	-0.2083
2003Dec	-0.2053	1.2562	0.4576	0.0030	-0.1803	-0.1483	-0.3838	-0.3838	0.0519
2004Jun	-0.2515	-0.0070	0.2612	0.5472	0.2280	-0.2632	-0.2595	-0.2595	-0.0005
2004Dec	0.5570	0.6257	-0.4393	0.3551	-0.0191	0.0191	1.4577	-0.3905	0.2707
2005Jun	-0.2527	0.0835	-0.2769	-0.0701	-0.1440	-0.3423	0.5225	1.4577	0.1222
2005Dec	0.7558	-0.1981	-0.4883	-0.2364	-0.3104	-0.2378	-0.3551	0.5225	-0.0685
2006Jun	-0.4011	-0.3277	-0.5817	3.6858	-0.5402	-0.2714	0.1867	-0.3551	0.1744
2006Dec	-0.0198	0.0936	0.1108	-0.0925	-0.1115	0.0494	-0.1043	0.1867	0.0141
2007Jun	0.0238	-0.2774	-0.0807	0.0391	-0.0088	0.4305	-0.1995	-0.1043	-0.0222
Average	-0.1055	0.1674	-0.1461	0.3247	-0.0315	-0.1972	0.1115	0.0924	0.0270
SD	0.4676	0.5659	0.3444	1.2268	0.2977	0.3106	0.5510	0.5661	0.1362
t	-0.7138	0.9353	-1.3417	0.8370	-0.3342	-2.0073	0.6399	0.5162	0.6259

13(c) n = 12 months

Date	PANEL A - SMALL SIZE								Average
	S1	S2	S3	S4	S5	S6	S7	S8	
2002Dec	-1.8097	2.3505	-0.7955	-1.5761	0.3567	-1.4950	1.5472	0.7715	-0.0813
2003Dec	-0.4811	2.7514	0.5000	0.3189	0.0321	-0.4440	-0.7403	-0.6423	0.1618
2004Dec	0.1122	0.5557	-0.4070	0.1354	-0.4246	-0.0159	-0.6380	1.1445	0.0578
2005Dec	-0.0036	-0.6521	-1.0609	3.3899	-0.9892	-0.6430	1.5043	-0.2741	0.1589
2006Dec	-0.0014	-0.1711	0.1655	-0.1707	-0.1336	-0.0648	-0.2844	-0.0759	-0.0920
Average	-0.4367	0.9669	-0.3196	0.4195	-0.2317	-0.5325	0.2778	0.1847	0.0410
SD	0.8009	1.5153	0.6502	1.8197	0.5090	0.5984	1.1518	0.7463	0.1239
t	-1.2193	1.4268	-1.0992	0.5155	-1.0178	-1.9900	0.5392	0.5535	0.7404



PANEL B - BIG SIZE

B0	B7	B6	B5	B4	B3	B2	B1	AV	S-L
-0.0400	-0.3623	0.0742	0.1072	-0.0510	-0.0258	0.0510	0.2495	0.0005	0.0288
-0.2068	-0.3781	-0.1999	-0.0139	-0.2479	-0.2583	-0.4149	0.1088	-0.2011	0.4109
0.2877	-0.2993	0.5767	0.1883	0.1333	0.1364	-0.0748	-0.2512	0.0871	-0.2344
-0.1152	0.0029	0.3496	0.1994	0.1878	0.0741	0.3127	-0.1328	0.1098	-0.1424
-0.0833	-0.2248	-0.3794	-0.4194	-0.1337	-0.1576	-0.3882	-0.0054	-0.2212	0.2057
-0.0676	-0.0075	-0.0615	-0.1799	-0.2865	-0.1197	-0.0318	-0.1172	0.1089	0.1898
-0.0359	-0.0569	0.1196	-0.0319	0.0873	0.0369	0.0319	0.1834	0.0418	-0.1220
-0.0469	-0.1433	-0.0391	-0.0896	0.0543	-0.1974	-0.1343	0.0491	-0.0684	0.1282
-0.1276	0.2771	-0.1149	-0.0258	-0.0914	-0.0358	0.0242	0.0402	-0.0068	0.0547
1.0664	-0.2057	-0.1961	-0.2956	-0.2694	0.1340	-0.1653	-0.0165	-0.0270	0.2594
0.1499	-0.1441	-0.0879	0.4113	0.0047	0.1038	-0.0864	-0.0789	0.0340	-0.1543
0.2842	-0.0579	-0.0896	-0.0390	-0.0906	0.0257	-0.0316	-0.1164	-0.0144	0.0088
-0.0550	-0.0355	-0.0035	-0.0405	0.2328	-0.0334	-0.0553	-0.0493	-0.0050	-0.0285
-0.2573	0.0358	0.2482	-0.0995	-0.0932	-0.1551	-0.1179	-0.1528	-0.0740	0.1018
-0.2630	-0.0210	-0.1650	-0.2066	-0.0607	-0.2053	-0.0717	-0.2771	-0.1588	0.1220
-0.1661	0.0670	0.0928	0.0846	-0.2477	0.0124	0.3626	-0.1825	0.0029	0.1855
-0.0391	-0.1388	0.0584	-0.0686	0.0843	0.0726	0.1557	0.0317	0.0195	0.0120
-0.2349	-0.1209	-0.2349	0.0336	-0.0437	-0.0955	0.0545	0.0207	-0.0776	0.1017
0.1153	0.1609	-0.2345	-0.1008	-0.0365	0.0267	0.0298	0.0713	0.0040	-0.0549
-0.0999	0.0593	-0.1579	-0.1919	0.0105	-0.1077	-0.0667	0.1321	-0.0528	0.1260
0.0033	-0.0796	-0.0223	-0.0389	-0.0429	-0.0518	-0.0297	-0.0247	-0.0358	0.0598
0.2954	0.1661	0.2244	0.1845	0.1484	0.1129	0.1831	0.1403	0.0870	0.0940
<b>0.0480</b>	<b>-2.0882</b>	<b>-0.4322</b>	<b>-0.9199</b>	<b>-1.2595</b>	<b>-2.0020</b>	<b>-0.7065</b>	<b>-0.7659</b>	<b>-1.7950</b>	<b>2.0139</b>

PANEL B - BIG SIZE

B8	B7	B6	B5	B4	B3	B2	B1	Average	S-B
-1.0318	-0.3238	-0.7693	-0.1659	-0.1910	-0.4032	-0.0564	-0.4891	-0.4288	0.3645
0.3390	-0.4700	-0.4390	1.3475	0.5277	0.4353	0.6271	0.0085	0.2970	-0.5053
-0.1591	-0.1464	-0.2315	-0.4293	-0.5602	-0.4414	-0.1904	-0.4660	-0.3280	0.3799
0.3748	-0.1990	0.0894	-0.1226	0.1565	-0.1641	-0.1034	0.2628	0.0368	-0.0374
-0.3033	0.1146	-0.3552	-0.3458	0.3905	-0.1885	0.1487	0.0366	-0.1976	0.4683
0.5025	-0.1633	-0.1803	0.3032	-0.0364	0.0733	-0.0667	-0.1978	0.0293	0.0929
-0.0305	-0.3030	0.2550	-0.1488	0.1596	-0.1973	-0.1833	-0.2116	-0.0825	0.0140
-0.4821	0.0637	-0.0824	-0.1435	-0.0544	-0.5171	0.3751	-0.5133	-0.1692	0.3437
-0.0850	-0.1299	0.0921	-0.2593	0.0465	-0.0138	0.2185	0.0518	-0.0099	0.0239
-0.0136	-0.3475	-0.2902	0.0774	-0.0293	-0.0856	-0.0387	0.2246	-0.0629	0.0407
-0.0889	-0.1905	-0.1911	0.0113	-0.0371	-0.1502	0.0433	-0.1294	-0.0916	0.1185
0.4536	0.1817	0.2989	0.5130	0.3027	0.2795	0.2738	0.2906	0.2046	0.1738
<b>-0.6199</b>	<b>-3.3141</b>	<b>-2.0223</b>	<b>0.0697</b>	<b>-0.3881</b>	<b>-1.7002</b>	<b>0.5003</b>	<b>-1.4076</b>	<b>-1.4158</b>	<b>1.5253</b>

PANEL B - BIG SIZE

B8	B7	B6	B5	B4	B3	B2	B1	Average	S-B
-1.7762	-1.2909	-0.8063	2.1830	0.4769	0.1947	-0.0728	0.1617	-0.1162	0.0349
-0.3482	-0.0690	-0.4526	-0.5751	-0.5254	-0.6189	0.0539	-0.5975	-0.3916	0.5534
-0.3454	-0.1309	0.1638	-0.5921	-0.4782	-0.1174	-0.2555	-0.2578	-0.2517	0.3095
-0.3381	-0.9265	0.2691	-0.3863	-0.4854	-0.3820	0.1192	-0.8822	-0.3715	0.5304
0.0632	-0.1745	0.1819	-0.4822	0.0249	-0.0921	0.5007	0.0217	0.0055	-0.0975
-0.5485	-0.5184	-0.1288	0.0291	-0.1974	-0.1992	0.0691	-0.3068	-0.2251	0.2662
0.7085	0.5554	0.4755	1.2068	0.4397	0.3066	0.2804	0.4251	0.1695	0.1485
<b>-1.7312</b>	<b>-2.0870</b>	<b>-0.6059</b>	<b>0.0539</b>	<b>-1.0039</b>	<b>-1.4525</b>	<b>0.5511</b>	<b>-1.6140</b>	<b>-2.9704</b>	<b>2.8347</b>

Appendix 5 Data Analysis

Table 14 CAR of EP portfolios

14(a) n = 3 months									
	PANEL A-HIGH EP (LOW PE)								
Date	H1	H2	H3	H4	H5	H6	H7	H8	Average
2002Dec	0.1785	-0.0483	-0.4753	0.3305	-0.1242	0.1072	0.0516	0.0129	0.0041
2003Mar	0.1204	-0.3761	0.2834	1.2274	-0.2811	0.1660	0.7101	-0.2583	0.1990
2003Jun	-0.0023	0.7211	0.1573	0.3179	0.1422	0.2666	0.1883	0.1333	0.2405
2003Sep	0.2358	-0.2107	0.0447	-0.0181	-0.0641	-0.3539	-0.1441	0.0448	-0.0579
2003Dec	-0.2738	-0.0993	-0.0091	0.0925	0.2778	0.3838	-0.1175	-0.2637	-0.0011
2004Mar	0.2088	-0.0523	-0.0844	0.3573	-0.1197	-0.0676	-0.0346	-0.0285	0.0224
2004Jun	0.0738	0.0347	0.1936	-0.1924	0.0319	-0.0094	0.0369	-0.2397	-0.0088
2004Sep	0.0924	-0.0591	0.1287	-0.0455	0.0053	0.1328	-0.1343	-0.1532	-0.0041
2004Dec	0.0670	0.3443	0.0714	-0.1129	0.0017	-0.0758	-0.0914	-0.0002	1.0244
2005Mar	-0.2294	0.2638	0.6840	0.3344	-0.2151	1.0664	0.3086	1.2415	0.3546
2005Jun	-0.1098	0.4113	-0.0410	-0.0181	-0.1323	0.4047	0.0867	-0.2517	0.3437
2005Sep	-0.2380	-0.0579	0.0818	0.1080	-0.0489	-0.0906	-0.0121	-0.0487	-0.0383
2005Dec	-0.0550	-0.1104	0.2328	-0.0654	0.0306	-0.2394	-0.0355	0.0006	-0.0302
2006Mar	0.1613	0.0356	0.2350	-0.1128	0.2559	0.4344	-0.0932	-0.2883	0.0785
2006Jun	-0.0754	0.3654	-0.0210	-0.2053	-0.3545	0.1134	-0.2630	-0.5172	-0.1197
2006Sep	0.0870	-0.1076	-0.2169	-0.1463	-0.2477	-0.1661	-0.1018	0.3229	-0.0746
2006Dec	-0.0686	0.0539	0.0590	0.0185	-0.1388	0.1813	0.1557	0.0198	0.0351
2007Mar	-0.1121	0.0808	0.0964	-0.2349	0.0209	-0.1024	-0.0455	-0.0546	-0.0439
2007Jun	0.0574	-0.0391	-0.2107	-0.1008	0.2368	0.0183	-0.0492	0.0391	-0.0158
2007Sep	0.1061	0.0384	-0.0569	-0.1919	-0.0999	0.0518	0.0455	0.0612	-0.0057
Average	0.0102	0.0594	0.0576	0.0672	-0.0412	0.1111	-0.0078	-0.0158	0.0301
SD	0.1503	0.2499	0.2324	0.3342	0.1751	0.3083	0.2087	0.3482	0.1132
t	0.3040	1.0635	1.1090	0.8994	-1.0509	1.6110	-0.1672	-0.2025	1.1893

14(b) n = 6 months									
	PANEL A-HIGH EP (LOW PE)								
Date	H1	H2	H3	H4	H5	H6	H7	H8	Average
2002DEC	2.1015	0.0796	-1.0318	0.0354	0.1503	-0.1910	-0.4891	-0.2221	0.0541
2003Jun	0.3181	0.1001	0.2505	0.3422	-0.1518	0.1933	0.5277	0.4353	0.2519
2003Dec	-0.0774	0.2975	-0.1103	0.0471	0.1992	0.4576	-0.1483	-0.3416	0.0405
2004Jun	0.1819	-0.0086	0.3748	-0.1101	-0.1034	-0.1627	-0.1034	0.3748	0.0554
2004Dec	-0.1703	1.9865	0.8826	-0.3904	-0.2294	-0.4393	-0.3905	-0.2022	0.1309
2005Jun	-0.3423	0.3032	0.0664	-0.0701	-0.0645	0.2791	0.1039	-0.2769	-0.0002
2005Dec	-0.0305	-0.2378	0.1595	0.0801	0.2901	-0.4883	-0.3344	0.1173	-0.0555
2006Jun	-0.2714	0.9713	0.0637	-0.5171	-0.8225	1.0554	-0.4821	-0.6858	-0.0811
2006Dec	-0.2593	0.0061	0.0311	-0.1115	-0.1299	0.0628	0.2185	-0.0198	-0.0252
2007Jun	0.1789	-0.0043	-0.2774	-0.2902	0.4305	-0.0856	-0.0088	0.0185	-0.0048
Average	0.1629	0.3494	0.0409	-0.0985	-0.0232	0.0681	-0.1106	-0.0802	0.0386
SD	0.7158	0.6802	0.4892	0.2502	0.3021	0.4592	0.3305	0.3389	0.0947
t	0.7198	1.6735	0.2644	-1.2441	-0.2424	0.4691	-1.0585	-0.7487	1.2884

14(c) n = 12 months									
	PANEL A-HIGH EP (LOW PE)								
Date	H1	H2	H3	H4	H5	H6	H7	H8	Average
2003Dec	0.0742	0.1153	0.1006	0.0912	0.0767	0.0311	0.0312	0.0380	0.06978
2004Dec	0.0738	0.1669	0.1019	0.0608	0.1069	0.0050	0.0889	0.0448	0.08112
2005Dec	-0.6380	3.2811	1.8407	-0.1359	-0.1750	-0.4070	-0.4782	-0.4908	0.3496
2006Dec	0.0310	-0.6430	-0.4854	1.4204	2.0783	-1.0609	-1.0890	2.5462	0.3497
2007Dec	-0.4822	0.0238	0.0751	-0.1336	-0.2140	-0.2655	0.5007	-0.0014	-0.0621
Average	-0.1883	0.5888	0.3266	0.2606	0.3746	-0.3395	-0.1893	0.4274	0.1576
SD	0.3443	1.5401	0.8827	0.6570	0.9633	0.4434	0.6114	1.2056	0.1841
t	-1.2225	0.8549	0.8273	0.8870	0.8695	-1.7117	-0.6923	0.7926	1.9142

PANEL B - LOW EP (HIGH PE)

LEP8	LEP7	LEP6	LEP5	LEP4	LEP3	LEP2	LEP1	Average	H-LEP
-0.0647	-0.5573	-0.0400	-0.2840	0.1253	0.0315	-0.2559	0.2415	-0.1004	0.1045
-0.1920	-0.3301	-0.1150	1.0359	0.1670	0.1088	-0.3214	-0.4094	-0.0070	0.2080
-0.4504	-0.4973	-0.3623	0.0902	0.1025	-0.2512	0.0049	-0.1914	-0.1944	0.4349
-0.0051	-0.0237	-0.1725	0.2459	-0.1147	-0.1326	0.1188	-0.1882	-0.0340	-0.0239
0.1242	0.3294	-0.2922	-0.3341	0.8465	-0.0054	0.5320	0.1242	0.1656	-0.1667
0.0471	-0.0535	0.2114	-0.0906	0.0374	0.1745	-0.0584	-0.2469	0.0026	0.0198
0.0525	-0.1331	-0.0289	-0.1927	0.1903	0.0482	-0.0359	-0.0086	-0.0135	0.0047
0.0543	0.6043	-0.0621	-0.0802	0.3012	0.1858	-0.2126	-0.2432	0.0659	-0.0700
-0.1276	-0.0358	-0.2425	0.0467	0.2092	-0.0533	0.0091	0.1742	-0.0038	0.0282
-0.1354	-0.0165	-0.1961	-0.1340	-0.2828	-0.2344	0.2546	0.3159	-0.0598	0.4145
-0.0140	-0.0985	-0.1532	0.1038	-0.0789	-0.0710	-0.2165	-0.1335	-0.0825	0.1282
0.2842	0.1520	-0.0683	0.0104	0.1830	-0.0316	-0.0673	-0.0273	0.0544	-0.0927
0.2856	-0.1544	0.0491	-0.0035	-0.0334	0.0915	0.1842	-0.0757	0.0429	-0.0731
-0.1523	0.3087	-0.1905	-0.1551	-0.2753	0.6158	-0.2492	-0.1499	-0.0310	0.1095
-0.3069	-0.1650	1.4896	-0.0607	0.0385	0.6654	-0.1995	0.5920	0.2567	-0.3764
0.0124	-0.2051	-0.2539	-0.0544	-0.5245	-0.2912	-0.1501	1.5579	0.0114	-0.0859
-0.2883	-0.1982	0.0584	0.0065	0.0728	-0.0232	-0.3670	0.0088	-0.0913	0.1264
0.1256	-0.0103	0.5587	-0.1299	-0.0955	-0.1627	0.1416	-0.1458	0.0352	-0.0791
0.1609	-0.0656	-0.1176	0.0267	0.1974	-0.1075	-0.2923	-0.1737	-0.0465	0.0307
-0.0964	-0.1579	-0.1077	-0.1435	0.4987	-0.0762	0.0324	-0.0171	-0.0085	0.0027
-0.0343	-0.0653	-0.0018	-0.0048	0.0782	0.0201	-0.0574	0.0502	-0.0019	0.0320
0.1909	0.2683	0.4039	0.2796	0.2910	0.2509	0.2254	0.4224	0.0960	0.1049
-0.8039	-1.0885	-0.0197	-0.0772	1.2022	0.3574	-1.1393	0.5314	-0.0886	0.9645

PANEL B - LOW EP (HIGH PE)

L8	L7	L6	L5	L4	L3	L2	L1	Average	H-L
-0.5101	-0.0550	-0.3238	-0.6257	0.4293	0.1251	-0.8189	-0.1363	-0.2394	0.2935
-0.3728	-0.5819	-0.4444	0.4618	-0.1338	-0.4390	0.1681	0.4427	-0.2231	0.4750
0.0525	1.2562	-0.3744	-0.1803	0.9207	-0.1464	0.4288	-0.2053	0.2189	-0.1785
-0.0070	-0.2181	0.2612	-0.3871	0.1415	0.2280	-0.0853	-0.2515	-0.0398	0.0952
-0.3033	-0.1885	-0.5695	1.4577	0.8257	-0.0191	0.3551	0.5570	0.2394	-0.1085
0.0040	-0.1681	-0.0249	0.0734	-0.1978	0.1418	-0.2527	-0.1443	-0.1075	0.1073
0.3816	-0.3551	0.7342	0.2550	-0.1973	0.4613	0.7558	-0.2364	0.2249	-0.2803
-0.3277	-0.0824	0.2408	-0.0544	-0.3042	0.1667	-0.4011	3.6858	0.3679	-0.4290
-0.3703	-0.0836	0.0921	-0.0022	-0.0138	0.0952	-0.1043	0.0936	-0.0367	0.0114
-0.0136	-0.1265	-0.0807	-0.0856	0.1214	-0.2511	0.0530	-0.2046	-0.0735	0.0687
-0.1475	-0.0603	-0.0490	0.0913	0.1392	0.0099	0.0098	0.2716	0.0331	0.0055
0.2722	0.4888	0.3977	0.5686	0.4018	0.2627	0.4503	1.2295	0.2127	0.1647
-1.7133	-0.3901	-0.3892	0.5075	1.0953	0.1191	0.0690	0.6985	0.4924	0.0744

PANEL B - LOW EP (HIGH PE)

L8	L7	L6	L5	L4	L3	L2	L1	Average	H-L
-0.0885	-0.0191	0.0581	0.0163	-0.0246	0.0407	-1.2967	-0.6886	-0.2503	0.3201
0.0264	0.0090	-0.1528	0.7730	0.1435	0.0508	0.0613	-1.8205	-0.1137	0.1948
-0.3454	-0.1174	-0.7681	1.1445	0.5557	-0.4246	0.1354	0.1122	0.03655	0.3131
0.4281	-0.7433	1.5043	0.2691	-0.3620	0.1897	-0.0036	3.3899	0.58402	-0.2343
-0.5301	-0.1906	0.1819	0.1073	-0.0921	-0.1434	-0.0759	-0.1711	-0.1143	0.0521
-0.1019	-0.2123	0.1647	0.4620	0.0441	-0.0574	-0.2359	0.1644	0.0285	0.1292
0.3675	0.3073	0.8332	0.4807	0.3391	0.2370	0.5981	1.9485	0.3267	0.2652
-0.6200	-1.5447	0.4419	2.1493	0.2908	-0.5414	-0.8819	0.1887	0.1948	0.7700



PANEL B - WINNERS

W8	W7	W6	W5	W4	W3	W2	W1	Average	W-M	W-L	Market
4492	158	2422	517	15329	858	3547	265	3423	78	-1947	3345
19844	454	1090	2138	4378	918	1324	1023	3896	-357	2303	4252
2016	2137	2280	760	1087	398	1267	2980	1616	-3914	-3131	5529
4201	1651	35109	3441	8824	669	18500	2250	9330	1537	7407	7794
470	48191	47224	3960	3830	2589	57041	27600	23863	13884	21894	9979
386	3452	3970	405	540	7715	7080	4463	3501	-6147	-11041	9648
4616	540	4059	741	4254	568	6001	648	2678	-6081	-12429	8759
6463	2671	31033	11876	3076	57568	5508	5090	15411	6276	13538	9134
7801	3299	3780	6350	998	8352	784	1033	4050	-5647	-9875	9697
1124	1140	6018	3379	314	723	12300	11079	4510	-5689	-4327	10198
510	1182	5010	1224	11088	12368	27005	2936	7665	-5542	-1687	13207
12700	49363	16766	10999	2953	16958	6000	39007	19343	5268	15675	14077
444	53577	2622	20400	4006	1604	5984	88962	22200	7781	915	14419
1760	6500	4185	547	21930	48470	3584	5341	11540	-3342	8079	14881
31820	32934	9450	5851	6231	5468	893	3191	11955	-4652	4912	16606
6460	3452	9813	5779	1995	6383	15390	16219	8189	-11663	-10485	19852
48104	433	22319	6750	8546	104575	11628	5359	26451	4198	1797	22254
10080	72592	53034	10271	92257	19900	4690	17472	35037	15331	26039	19706
11250	14707	8571	828	1020	9619	9450	4428	7484	-12568	-3191	20052
112685	764	20179	21528	13835	8510	18870	15329	26463	5234	21072	21229
14352	15155	14447	5887	10324	15700	10842	12734	12430	-301	3276	12731
26045	22619	15651	6304	20122	26039	12944	20569	9846	8078	8489	5795
									-0.1177	1.2202	

PANEL B - WINNERS

W8	W7	W6	W5	W4	W3	W2	W1	Average	W-M	W-L	Market
13956	510	2798	1373	4492	3547	858	15879	5402	2056	4372	3345
1087	2280	760	7069	2137	398	1572	2980	2285	-3244	578	5529
3830	10214	766	48191	2589	47224	57041	27600	24682	14703	21791	9979
3257	3750	6001	7240	540	6588	4616	648	4080	-4679	-12731	8759
34481	7801	3479	998	784	66908	6350	1033	15103	5406	12758	9697
2237	11088	1224	510	1182	12388	2936	27005	7318	-5889	-1068	13207
830	13607	10920	5750	37852	17850	22555	3674	14130	-289	-2768	14419
4500	6459	9450	6231	31620	3191	5468	893	8477	-8130	1247	16606
5520	9720	4331	104575	8546	11628	17869	5359	20944	-1310	-5630	22254
46906	828	9619	1020	8571	101483	11250	17940	24702	4650	13806	20052
11660	6626	4935	18296	9831	27017	13031	10301	12712	327	3236	12385
16011	4603	3872	33482	13525	33739	17040	10839	8474	7378	8438	6089
									0.0992	0.8574	

PANEL B - WINNERS

W8	W7	W6	W5	W4	W3	W2	W1	Average	W-M	W-L	Market
1624	15329	1079	18685	13956	510	15879	4492	8944	5599	8161	3345
2670	3960	1991	3830	2589	1976	27600	766	5673	-4307	3454	9979
784	6350	7478	600	7801	8352	5508	1033	4738	-4959	-12105	9697
5984	22555	13607	1245	3674	2774	17850	37852	13193	-1228	3606	14419
48104	10132	8546	5520	9720	11628	17869	5359	14610	-7644	-4240	22254
11833	11665	6540	5976	7548	5048	16941	9900	9432	-2507	-225	11939
20372	7449	5133	7376	4622	4728	7860	15758	4398	6527	6591	6987
									-0.6791	-0.0539	

Appendix 5 Data Analysis

Table 16 CAR of size and Past Returns portfolios

16(a) n = 3 months

PANEL A SMALL LOSERS

Date	SL1	SL2	SL3	SL4	SL5	Average
2002Dec	0.1253	0.3503	-0.2840	-0.2559	1.0257	0.1923
2003Mar	1.0359	-0.1150	-0.1920	-0.4094	-0.1398	0.0360
2003Jun	-0.1914	-0.4973	0.0049	0.7211	-0.4504	-0.0826
2003Sep	-0.0051	0.2358	0.1648	-0.0237	-0.1570	0.0429
2003Dec	-0.0091	-0.2703	0.2778	0.1242	-0.2922	-0.0339
2004Mar	0.1745	-0.0908	-0.0233	-0.0833	0.2114	0.0378
2004Jun	-0.0086	-0.0738	-0.1447	-0.1927	0.0347	-0.0770
2004Sep	0.1208	0.0053	-0.0802	-0.2128	0.1287	-0.0076
2004Dec	0.1742	0.0091	0.0359	0.0275	-0.2425	0.0008
2005Mar	-0.3086	-0.2844	-0.2627	-0.3354	0.0669	-0.2248
2005Jun	0.0533	-0.1323	-0.0710	-0.1277	-0.0061	-0.0567
2005Sep	-0.0121	-0.0273	0.1520	-0.0028	0.0818	0.0383
2005Dec	-0.0757	0.2698	-0.1790	-0.1104	0.1842	0.0178
2006Mar	-0.2492	-0.1620	-0.1126	-0.1499	0.2732	-0.0801
2006Jun	-0.3848	-0.1995	-0.3069	0.1376	0.5920	-0.0323
2006Sep	-0.1561	-0.1018	-0.1004	-0.2169	0.0263	-0.1098
2006Dec	-0.0232	-0.3870	0.0065	0.0539	0.1468	-0.0366
2007Mar	0.5537	-0.1024	0.1848	-0.0236	0.1416	0.1518
2007Jun	-0.0656	-0.0492	-0.1176	0.0574	0.2368	0.0123
2007Sep	0.4987	0.1061	-0.0569	0.0518	-0.1435	0.0912
Average	0.0626	-0.0748	-0.0552	-0.0485	0.0859	-0.0060
SD	0.3266	0.2078	0.1602	0.2352	0.3201	0.0925
t	0.8568	-1.6098	-1.5420	-0.9228	1.2005	-0.2905

PANEL B SMALL WINNERS

SW5	SW4	SW3	SW2	SW1	Average	SL	SW
-0.0290	-0.1242	-0.1853	0.1785	0.0315	-0.0217	0.2140	
0.1670	1.2274	-0.2811	0.1343	0.0839	0.2663	-0.2303	
-0.0800	0.1025	0.1573	0.3179	0.0902	0.1218	-0.2042	
0.2459	-0.1725	0.0447	-0.0181	-0.3539	-0.0504	0.0933	
-0.3341	0.0925	0.5320	-0.2081	0.1242	0.0411	-0.0750	
-0.2469	-0.0535	0.6031	0.0471	0.0374	0.0774	-0.0397	
0.1903	0.0525	0.0482	-0.0289	-0.0343	0.0455	-0.1226	
0.3012	-0.0455	0.1658	-0.0621	-0.0238	0.0671	-0.0748	
-0.0758	-0.0758	0.0670	-0.0633	0.0467	-0.0203	0.0211	
-0.2294	0.6840	-0.2828	0.2548	0.2638	0.1380	-0.3629	
0.2842	-0.2165	-0.0181	-0.1335	-0.0965	-0.0401	-0.0167	
0.1080	-0.0489	0.0181	0.0242	0.1830	0.0569	-0.0185	
-0.0654	0.0306	0.2856	0.0491	0.0915	0.0783	-0.0605	
0.6158	0.3087	0.4344	0.3275	0.0296	0.3432	-0.4233	
0.0710	0.0385	1.4896	-0.4229	0.6654	0.3683	-0.4006	
0.0986	-0.2051	0.3229	1.5579	-0.2912	0.2966	-0.4064	
0.0219	0.0016	0.2157	-0.0025	-0.0882	0.0297	-0.0663	
-0.0455	-0.1299	0.0850	-0.0546	-0.1627	-0.0615	0.2133	
0.7494	-0.2107	0.0074	-0.0200	-0.2923	0.0468	-0.0344	
0.0250	0.1061	-0.0611	-0.0762	0.1347	0.0257	0.0655	
0.0886	0.0681	0.1834	0.0901	0.0219	0.0904	-0.0964	
0.2654	0.3419	0.3889	0.3874	0.2224	0.1295	0.1126	
1.4933	0.8906	2.1096	1.0399	0.4413	3.1222	-2.7093	

16(a) n = 3 months

PANEL C BIG LOSERS

Date	BL1	BL2	BL3	BL4	BL5	Average
2002Dec	-0.0375	-0.4753	0.0742	-0.0510	0.0516	-0.0876
2003Mar	-0.3761	-0.2346	-0.6458	-0.3378	-0.2583	-0.3705
2003Jun	-0.0976	0.1364	0.1422	0.2666	0.1883	0.1272
2003Sep	-0.2341	-0.1152	-0.1326	-0.1147	0.0448	-0.1104
2003Dec	0.0993	-0.2637	-0.0054	-0.0833	0.8465	0.0790
2004Mar	-0.1799	-0.0615	-0.1197	-0.0329	0.2088	-0.0370
2004Jun	0.0369	0.0873	0.0319	0.1196	0.1471	0.0846
2004Sep	-0.0097	-0.1433	-0.0469	-0.0896	0.1671	-0.0245
2004Dec	-0.0914	-0.0092	0.2771	0.0242	-0.0258	0.0350
2005Mar	0.2653	-0.0852	-0.1354	-0.2057	-0.2447	-0.0831
2005Jun	-0.0879	-0.1078	0.0047	0.1499	-0.1441	-0.0370
2005Sep	-0.0487	-0.0113	-0.0896	0.0257	-0.1164	-0.0481
2005Dec	-0.0493	0.0827	0.2328	-0.0355	-0.0550	0.0352
2006Mar	-0.1905	-0.2753	-0.1179	-0.2412	0.0356	-0.1579
2006Jun	-0.3545	-0.3089	-0.2630	-0.5172	-0.0235	-0.2934
2006Sep	-0.1076	0.1949	-0.1825	-0.1661	0.0846	-0.0353
2006Dec	-0.0911	-0.0688	0.1557	0.1813	0.3915	0.1137
2007Mar	-0.1458	0.0209	0.0808	0.0101	-0.2349	-0.0538
2007Jun	-0.1008	-0.1737	-0.2345	0.0267	0.1153	-0.0734
2007Sep	-0.1135	-0.0171	-0.1919	0.1032	0.0384	-0.0362
Average	-0.1057	-0.0919	-0.0583	-0.0484	0.0608	-0.0487
SD	0.1348	0.1651	0.2060	0.1849	0.2484	0.1234
t	-3.5063	-2.4901	-1.2654	-1.1706	1.0952	-1.7650

PANEL D BIG WINNERS

BW5	BW4	BW3	BW2	BW1	Average	BL-BW
-0.3272	-0.3623	-0.0256	0.2495	0.2415	-0.0448	-0.0428
-0.4149	-0.1999	-0.2479	-0.3214	0.1088	-0.2151	-0.1555
-0.0748	-0.2512	-0.0023	-0.0880	-0.3958	-0.1620	0.2892
-0.2107	0.1994	-0.0714	0.0029	0.3496	0.0540	0.1643
-0.1337	0.5788	-0.2736	-0.3662	-0.3794	0.1148	0.1938
-0.0676	-0.1172	-0.0523	-0.0584	-0.0538	-0.0698	0.0328
0.1834	-0.0569	-0.0701	0.1936	-0.0319	0.0436	0.0409
-0.0391	0.0165	0.0491	-0.0591	0.1328	0.0201	-0.0445
-0.0358	0.3443	-0.1129	-0.0193	-0.1276	0.0097	0.0252
-0.1777	-0.1653	-0.0165	-0.1961	1.0664	0.1021	-0.1853
-0.0789	0.0524	0.0867	0.3124	0.4113	0.1568	-0.1938
0.2842	-0.0579	0.0210	-0.1027	-0.0906	0.0108	-0.0589
-0.1544	-0.1407	0.2036	-0.0553	-0.0035	-0.0301	0.0652
0.2482	-0.1523	0.2559	0.2439	-0.0932	0.1005	-0.2584
-0.2053	0.1846	-0.0210	-0.1650	0.0939	-0.0226	-0.2709
-0.1448	0.0670	-0.2968	-0.5245	-0.0544	-0.1907	0.1554
0.0584	-0.0391	-0.2711	0.0317	-0.1982	-0.0837	0.1974
-0.0437	0.0646	0.0545	-0.1209	-0.0074	-0.0106	-0.0432
0.0183	0.0713	0.1907	-0.0391	-0.1075	0.0268	-0.1001
0.1321	0.0593	-0.1579	-0.0964	0.0324	-0.0061	-0.0301
-0.0592	0.0048	-0.0379	-0.0588	0.0447	-0.0213	-0.0274
0.1789	0.2144	0.1586	0.2078	0.3144	0.0972	0.1111
-1.4798	0.0993	-1.0688	-1.2657	0.6356	-0.9791	-0.7799

Appendix 5 Data Analysis

Table 16 Contd

16(b) n = 6 months PANEL A SMALL LOSERS							PANEL B SMALL WINNERS						
Date	SL1	SL2	SL3	SL4	SL5	AV	SW5	SW4	SW3	SW2	SW1	Av	SL-SW
2002Dec	-0.8257	-0.0587	-0.5101	-0.8188	0.03843	-0.3952	2.1015	0.12507	0.8893	0.1903	-0.0550	0.6382	1.0335
2003Jun	-0.4427	-0.3728	-0.4444	0.5819	-0.663	-0.5009	0.25051	-0.1338	0.2786	0.3422	0.3245	-0.0290	-0.4719
2003Dec	0.19915	-0.1803	-0.3838	1.25019	-0.2053	0.13718	-0.1103	0.42858	0.0471	-0.1483	0.0525	0.0539	0.0833
2004Jun	-0.2595	-0.3871	-0.1778	-0.3286	-0.2515	-0.2805	0.05834	-0.2181	-0.0070	0.1415	0.5472	0.1044	-0.3849
2004Dec	0.35513	0.12494	-0.4393	0.01906	0.55699	0.12335	-0.8074	0.88258	-0.1703	-0.0191	1.4577	0.3087	-0.1854
2005Jun	-0.0645	-0.1418	0.08353	0.27907	0.0126	0.03378	0.52246	-0.144	-0.2527	-0.0701	-0.1681	-0.0225	0.0563
2005Dec	-0.2384	-0.4883	0.75577	0.75488	-0.3104	0.09509	0.38158	0.11732	0.2901	-0.1981	0.4613	0.2104	-0.1153
2006Jun	-0.4011	0.30424	-0.5402	-0.2714	3.68579	0.55547	-0.3042	-0.6559	0.1867	0.2408	-0.5817	-0.2229	0.7783
2006Dec	-0.3606	0.00808	-0.0198	-0.0925	0.09362	-0.0746	-0.1043	0.09519	0.0494	-0.0895	-0.1106	-0.0340	-0.0407
2007Jun	0.43053	-0.0088	-0.1995	0.05297	0.17895	0.09084	0.01851	-0.1265	-0.2774	0.0391	0.8767	0.1061	-0.0152
<b>Average</b>	<b>-0.1406</b>	<b>-0.1201</b>	<b>-0.1876</b>	<b>0.02707</b>	<b>0.31332</b>	<b>-0.0216</b>	<b>0.22067</b>	<b>0.03705</b>	<b>0.0456</b>	<b>0.0379</b>	<b>0.2155</b>	<b>0.1113</b>	<b>-0.1329</b>
<b>SD</b>	<b>0.35891</b>	<b>0.24658</b>	<b>0.39271</b>	<b>0.61639</b>	<b>1.22914</b>	<b>0.30691</b>	<b>0.73778</b>	<b>0.41093</b>	<b>0.3507</b>	<b>0.1768</b>	<b>0.8174</b>	<b>0.2357</b>	<b>0.2737</b>
<b>t</b>	<b>-1.2386</b>	<b>-1.5396</b>	<b>-1.5103</b>	<b>0.13887</b>	<b>0.80611</b>	<b>-0.2222</b>	<b>0.94585</b>	<b>0.28511</b>	<b>0.4110</b>	<b>0.6774</b>	<b>1.1039</b>	<b>1.4936</b>	<b>-1.0860</b>

16(b) n = 6 months PANEL C BIG LOSERS							PANEL D BIG WINNERS						
Date	BL1	BL2	BL3	BL4	BL5	Average	BW5	BW4	BW3	BW2	BW1	AV	BL-BW
2002Dec	0.1555	-1.0318	-0.4891	-0.1659	-0.4032	-0.3869	0.5460	-0.1363	-0.7693	-0.3238	-0.0564	-0.1479	-0.2390
2003Jun	-0.2584	-0.1518	0.3390	0.1933	0.6271	0.1498	0.0085	0.3181	0.1549	-0.4390	-0.6859	-0.1287	0.2785
2003Dec	-0.3416	-0.1591	-0.1464	0.9207	0.2975	0.1142	-0.2315	-0.1904	-0.4414	-0.4660	-0.4293	-0.3517	0.4659
2004Jun	0.1565	-0.1034	-0.1641	-0.1226	0.1830	-0.0101	0.3748	-0.1101	0.1819	-0.0853	0.1496	0.1022	-0.1123
2004Dec	0.1148	-0.3905	-0.2022	-0.3458	-0.3904	-0.2429	-0.1885	1.9865	0.0304	0.0366	0.3269	0.4384	-0.6813
2005Jun	-0.1285	-0.0364	0.5025	-0.1803	-0.0040	0.0307	-0.1978	-0.1633	0.1039	0.3602	0.3032	0.0812	-0.0506
2005Dec	-0.3344	-0.2116	-0.3030	-0.1600	-0.1833	-0.2384	-0.0305	0.3884	0.1595	0.5491	0.2550	0.2643	-0.5028
2006Jun	-0.1573	-0.2171	-0.6225	-0.6858	-0.4821	-0.4329	0.0637	-0.5171	-0.0824	-0.0982	-0.3155	-0.1899	-0.2430
2006Dec	0.0311	-0.2593	0.2185	0.0628	-0.0874	-0.0069	0.0850	-0.1299	0.0518	-0.0836	-0.0723	-0.0638	0.0570
2007Jun	-0.2046	-0.2902	-0.0856	0.1944	-0.0043	-0.0780	0.0774	-0.2511	0.2246	0.0898	-0.0136	0.0254	-0.1035
<b>Average</b>	<b>-0.0967</b>	<b>-0.2851</b>	<b>-0.0953</b>	<b>-0.0289</b>	<b>-0.0447</b>	<b>-0.1101</b>	<b>0.0337</b>	<b>0.1195</b>	<b>-0.0386</b>	<b>-0.0460</b>	<b>-0.0538</b>	<b>0.0029</b>	<b>-0.1131</b>
<b>SD</b>	<b>0.1965</b>	<b>0.2804</b>	<b>0.3558</b>	<b>0.4228</b>	<b>0.3471</b>	<b>0.2039</b>	<b>0.2525</b>	<b>0.7068</b>	<b>0.3207</b>	<b>0.3263</b>	<b>0.3367</b>	<b>0.2314</b>	<b>0.2181</b>
<b>t</b>	<b>-1.5360</b>	<b>-3.2151</b>	<b>-0.8468</b>	<b>-0.2163</b>	<b>-0.4073</b>	<b>-1.7079</b>	<b>0.4223</b>	<b>0.5345</b>	<b>-0.3806</b>	<b>-0.4459</b>	<b>-0.5056</b>	<b>0.0403</b>	<b>-1.1595</b>

16(c) n = 12 months PANEL A SMALL LOSERS							PANEL B SMALL WINNERS						
Date	SL1	SL2	SL3	SL4	SL5	AV	SW5	SW4	SW3	SW2	SW1	Av	SW-SL
2002Dec	-1.8097	2.3505	-0.7955	-1.5761	0.3587	-0.2948	-0.8159	0.8024	0.5243	0.4247	-1.0894	-0.1508	0.1440
2003Dec	-0.4811	0.0321	2.7514	0.3189	-0.6423	0.3958	0.0680	0.1258	-0.2157	-0.6242	-0.4440	-0.2180	-0.8138
2004Dec	0.1354	-0.0159	0.9763	-0.3980	0.1122	0.1620	-0.7383	-0.4246	0.5557	1.8407	1.1445	0.4756	0.3136
2005Dec	-0.2741	1.4204	3.3899	0.1521	-1.0609	0.7255	-0.0036	-0.9892	-0.8430	0.1897	1.6483	0.0404	-0.6850
2006Dec	0.0238	-0.1711	-0.1707	0.1655	-0.1336	-0.0572	0.3497	0.0314	-0.0759	-0.1434	-0.2844	-0.0245	0.0327
<b>Av</b>	<b>-0.4811</b>	<b>0.7232</b>	<b>1.2303</b>	<b>-0.2675</b>	<b>-0.2736</b>	<b>0.1863</b>	<b>-0.2280</b>	<b>-0.0908</b>	<b>0.0291</b>	<b>0.3375</b>	<b>0.0750</b>	<b>0.0245</b>	<b>-0.1617</b>
<b>SD</b>	<b>0.7815</b>	<b>1.1133</b>	<b>1.8103</b>	<b>0.7805</b>	<b>0.5748</b>	<b>0.3956</b>	<b>0.5191</b>	<b>0.6667</b>	<b>0.5112</b>	<b>0.9281</b>	<b>1.3352</b>	<b>0.2719</b>	<b>0.3394</b>
<b>t</b>	<b>-1.3766</b>	<b>1.4526</b>	<b>1.5196</b>	<b>-0.7663</b>	<b>-1.0642</b>	<b>1.0528</b>	<b>-0.9823</b>	<b>-0.3047</b>	<b>0.1273</b>	<b>0.8131</b>	<b>0.1256</b>	<b>0.2018</b>	<b>-0.7533</b>

16(c) n = 12 months PANEL C BIG LOSERS							PANEL D BIG WINNERS						
Date	BL1	BL2	BL3	BL4	BL5	Average	BW5	BW4	BW3	BW2	BW1	AV	BW-BL
2002Dec	0.5769	0.7814	-0.4302	-0.6846	0.0944	0.0676	0.4769	0.1947	-0.0728	0.1617	-0.2456	0.1030	0.0354
2003Dec	1.3304	0.6060	-0.2239	-0.3482	-0.4526	0.1823	-0.6189	0.0539	0.7903	0.3362	-0.5751	-0.0027	-0.1851
2004Dec	-0.4782	-0.2555	-0.5921	-0.1174	-0.1309	-0.3148	-0.1359	0.5544	-0.1815	3.2811	-0.3454	0.6345	0.9494
2005Dec	-0.9265	-1.0890	-0.3883	-0.7433	-0.8622	-0.8018	-0.7770	0.2691	-1.1226	-0.3361	-0.4854	-0.4904	0.3114
2006Dec	0.0751	-0.2655	0.5007	-0.5301	0.4383	0.0433	-0.2230	0.0217	0.1819	-0.1906	-0.0857	-0.0591	-0.1025
<b>Av</b>	<b>0.1155</b>	<b>-0.0445</b>	<b>-0.2268</b>	<b>-0.4847</b>	<b>-0.1830</b>	<b>-0.1847</b>	<b>-0.2556</b>	<b>0.2188</b>	<b>-0.0809</b>	<b>0.6505</b>	<b>-0.3474</b>	<b>0.0371</b>	<b>0.2017</b>
<b>SD</b>	<b>0.8844</b>	<b>0.7566</b>	<b>0.4273</b>	<b>0.2581</b>	<b>0.4993</b>	<b>0.4019</b>	<b>0.4888</b>	<b>0.2132</b>	<b>0.6934</b>	<b>1.4949</b>	<b>0.1935</b>	<b>0.4032</b>	<b>0.4026</b>
<b>t</b>	<b>0.2921</b>	<b>-0.1316</b>	<b>-1.1867</b>	<b>-4.2313</b>	<b>-0.8196</b>	<b>-0.9162</b>	<b>-1.1891</b>	<b>2.2944</b>	<b>-0.2810</b>	<b>0.9730</b>	<b>-4.0152</b>	<b>0.2055</b>	<b>0.7924</b>





PANEL B - WINNERS

W8	W7	W6	W5	W4	W3	W2	W1	Average	W-L	W-L	Market
0.1078	0.4082	-0.3115	0.0325	0.0571	0.0459	0.0701	-1.3689	-0.1199	0.1172	0.0122	0.0027
0.1169	-0.1486	0.1817	-0.8798	-0.8858	0.1788	0.0571	0.0564	-0.1404	0.1102	0.0112	0.0212
0.0942	0.0353	0.0763	-0.0886	0.1406	0.1393	-0.0483	0.0864	0.0519	0.0799	0.2682	-0.0281
0.0958	0.0925	0.0628	0.0666	0.0458	0.0829	0.0445	0.0730	0.0705	0.1154	0.0320	-0.0449
0.0183	0.0311	0.0487	0.0439	0.1153	-0.0191	0.0312	0.0296	0.0369	0.0839	0.1567	-0.0470
-1.1833	-0.0143	0.1018	0.0230	0.0056	-0.3955	0.0422	-0.0480	-0.1836	-0.1682	-0.2149	-0.0153
-0.0484	0.0058	0.0597	-0.0908	0.1102	-0.0207	0.2169	0.0144	0.0311	0.0529	0.1881	-0.0218
0.2014	0.0663	0.0344	0.0546	0.0507	0.0664	0.1435	0.0921	0.0887	0.0891	0.0501	-0.0004
0.1669	0.0732	0.1069	0.0738	0.7730	0.0358	-0.0150	0.0090	0.1529	0.1354	0.3464	0.0175
0.1101	0.8763	0.1314	0.0485	0.0144	0.1776	0.0521	0.1175	0.1660	0.0723	0.0935	0.0937
0.0088	0.1086	0.0550	-0.0835	0.0756	0.0639	0.1436	0.0421	0.0518	-0.0246	-0.0093	0.0763
0.0660	0.0348	0.0469	0.1155	0.0397	0.0761	0.0637	0.0994	0.0678	-0.0149	0.0042	0.0827
0.0614	0.0888	0.1004	0.0925	0.0409	0.0373	0.0319	0.0349	0.0585	0.0117	0.0451	0.0468
0.0333	0.0920	0.0478	0.0894	0.0588	0.0800	0.0594	0.0535	0.0643	0.0167	0.0698	0.0476
0.0408	0.0402	0.0633	0.0470	0.0321	0.0390	0.0548	0.0184	0.0419	0.0035	0.0055	0.0385
0.0537	0.0340	0.0291	0.0588	-0.1937	0.0092	0.0138	0.0182	0.0029	-0.0322	-0.0528	0.0351
0.0276	0.0389	0.0321	0.0305	0.0398	0.0356	0.0299	0.0442	0.0348	-0.0059	-0.0122	0.0408
0.0819	0.0360	0.0465	0.0516	0.0584	0.0604	0.0360	0.0450	0.0520	-0.0415	-0.0590	0.0935
0.0471	0.4224	0.0535	0.1607	0.0705	0.0295	0.0447	0.0229	0.1064	0.0137	-0.0291	0.0927
0.0544	0.0787	0.0388	0.0365	0.0383	0.0302	0.0738	0.0299	0.0476	-0.0448	-0.0235	0.0924
0.0077	0.1090	0.0502	-0.0059	0.0444	0.0376	0.0573	-0.0275	0.0341	0.0053	0.0441	0.0288
0.2858	0.1843	0.0933	0.2154	0.2454	0.1153	0.0572	0.3178	0.0881	0.0804	0.1228	0.0492
									0.2347	1.4161	

PANEL B - WINNERS

W8	W7	W6	W5	W4	W3	W2	W1	Average	W-L	W-L	Market
0.1076	0.4082	-0.3115	0.0325	0.0571	0.0459	0.0701	-1.3689	-0.1199	-0.1172	0.0122	-0.0027
0.2190	0.0353	0.0763	-0.0888	0.1406	0.1393	-0.0483	0.0664	0.0675	0.0955	0.2838	-0.0281
0.0163	0.0311	0.0467	0.0439	0.1153	-0.0191	0.0312	0.0298	0.0369	0.0839	0.1567	-0.0470
-0.0464	0.0056	0.0597	-0.0908	0.1102	-0.0207	0.2169	0.0144	0.0311	0.0529	0.1881	-0.0218
0.1689	0.0732	0.1069	0.0738	0.7730	0.0358	-0.0150	0.0090	0.1529	0.1354	0.3464	0.0175
0.0088	0.1086	0.0550	-0.0835	0.0756	0.0639	0.1436	0.0421	0.0518	-0.0246	-0.0093	0.0763
0.0614	0.0688	0.1004	0.0925	0.0409	0.0373	0.0319	0.0349	0.0585	0.0117	0.0451	0.0468
0.0408	0.0402	0.0633	0.0470	0.0321	0.0390	0.0548	0.0184	0.0419	0.0035	0.0029	0.0385
0.0276	0.0389	0.0321	0.0305	0.0398	0.0356	0.0299	0.0442	0.0348	-0.0059	-0.0122	0.0408
0.0471	0.4224	0.0535	0.1607	0.0705	0.0295	0.0447	0.0229	0.1064	0.0137	-0.1218	0.0927
0.0649	0.1232	0.0282	0.0218	0.1455	0.0386	0.0560	-0.1087	0.0462	0.0249	0.0892	0.0213
0.0790	0.1565	0.1216	0.0845	0.2234	0.0445	0.0758	0.4431	0.0697	0.0590	0.1009	0.0459
									0.9433	2.1831	

PANEL B - WINNERS

W8	W7	W6	W5	W4	W3	W2	W1	Average	W-L	W-L	Market
0.1078	0.1463	0.3478	0.1584	0.1883	0.1705	0.0459	0.0571	0.1500	0.1527	0.4629	-0.0027
0.0742	0.0439	0.0787	0.1153	-0.0191	0.0292	0.0298	0.0724	0.0528	0.0998	0.2097	-0.0470
-0.0150	0.0738	0.0613	0.0050	0.1669	0.0358	0.1435	0.0090	0.0600	0.0425	0.0229	0.0175
0.0460	0.0349	0.0616	0.1031	0.0319	0.0446	0.0723	0.1024	0.0621	0.0153	0.0490	0.0468
0.0276	0.0317	0.0398	0.0106	0.0219	0.0299	0.0348	0.0442	0.0301	-0.0107	-0.0081	0.0408
0.0481	0.0661	0.1174	0.0785	0.0736	0.0620	0.0653	0.0570	0.0710	0.0599	0.1473	0.0111
0.0464	0.0478	0.1294	0.0677	0.0870	0.0610	0.0467	0.0345	0.0460	0.0422	0.1145	0.0380
									2.2473	2.0336	

Appendix 5 Data Analysis

Table 18 CAR of EP and Past Return Portfolios

18(a) n = 3 months PANEL A HIGH EP (LOW PE) SMALL LOSERS							PANEL B HIGH EP (LOW PE) SMALL WINNERS						
Date	HL1	HL2	HL3	HL4	HL5	Average	HW5	HW4	HW3	HW2	HW1	Average	HW-HL
2002Dec	-0.0375	0.3305	-0.3310	-0.4753	-0.0290	-0.1085	0.0129	-0.0483	0.1072	-0.1345	0.1785	0.0231	0.1316
2003Mar	0.3781	-0.2346	-0.1398	-0.3378	0.2834	-0.1609	-0.0774	-0.1909	-0.2470	1.2274	-0.2811	0.0842	0.2452
2003Jun	0.1384	0.1422	0.2686	0.7211	0.1883	0.2909	-0.0023	-0.0860	0.1573	0.3179	-0.3958	-0.0018	-0.2927
2003Sep	-0.1441	-0.2341	-0.1152	-0.0641	0.0448	-0.1026	0.1994	-0.0714	0.0029	-0.0161	-0.3539	-0.0478	0.0547
2003Dec	-0.0091	0.2778	-0.0993	-0.2049	-0.2637	-0.0598	0.0925	-0.2946	-0.1337	0.5788	-0.2736	-0.0061	0.0537
2004Mar	0.0615	-0.1197	0.2088	-0.0233	-0.0833	-0.0158	-0.0676	-0.0844	-0.1172	-0.0346	-0.0523	-0.0712	-0.0554
2004Jun	0.0369	0.0319	0.1196	0.0347	0.1471	0.0740	-0.2379	-0.0569	-0.0701	0.1936	0.0738	-0.0195	-0.0935
2004Sep	0.0053	-0.0802	0.1287	-0.0097	-0.1433	-0.0198	0.0924	-0.0238	0.0491	0.0591	0.1328	0.0383	0.0581
2004Dec	-0.0914	-0.0092	0.2771	0.0242	0.0275	0.0456	0.3443	-0.0758	-0.1129	-0.0193	0.0670	0.0407	0.0050
2005Mar	-0.3086	0.2653	-0.2447	-0.3354	0.0669	-0.1113	1.2415	-0.2294	0.6840	0.2638	1.0664	0.6053	0.7166
2005Jun	0.0533	-0.1323	-0.1078	-0.0081	0.4047	0.0424	-0.2517	-0.0181	0.0867	0.3124	0.4113	0.1081	0.0657
2005Sep	-0.0121	-0.0487	-0.0026	0.0818	-0.2380	-0.0439	0.0104	-0.0579	0.0210	-0.1027	-0.0906	-0.0440	-0.0001
2005Dec	0.0827	0.2328	-0.0550	-0.1104	-0.0355	0.0229	0.2038	0.0380	-0.0553	-0.0854	0.0306	0.0303	0.0074
2006Mar	-0.2532	-0.0995	-0.2412	0.2732	-0.2573	-0.1156	0.2559	-0.1126	0.2350	0.0358	0.1613	0.1150	0.2307
2006Jun	-0.3545	-0.2830	-0.3848	-0.5172	-0.2771	-0.3593	1.6302	0.3654	0.1134	0.0939	-0.4229	0.3560	0.7153
2006Sep	-0.1076	-0.1561	-0.1018	-0.2169	-0.1825	-0.1530	0.3626	0.0670	-0.2988	0.8383	0.3229	0.2188	0.3718
2006Dec	-0.0911	-0.0686	0.0539	0.1557	0.1813	0.0462	0.0843	0.2157	-0.0025	0.0317	-0.0882	0.0482	0.0020
2007Mar	-0.1024	0.0209	0.0808	0.0101	-0.0236	-0.0028	0.0850	-0.0546	-0.0330	0.0545	-0.1209	-0.0138	-0.0109
2007Jun	-0.1008	-0.0492	-0.2345	0.0574	0.2368	-0.0181	0.0183	-0.0391	0.7494	-0.2107	0.0074	0.1051	0.1231
2007Sep	-0.1135	0.1061	-0.0569	0.0518	-0.0926	-0.0210	0.0296	-0.0999	0.1061	-0.0611	0.1347	0.0219	0.0429
average	-0.0924	-0.0044	-0.0489	-0.0446	-0.0023	-0.0385	0.2013	-0.0433	0.0621	0.1522	0.0254	0.0795	0.1181
SD	0.1402	0.1784	0.1899	0.2733	0.1971	0.1257	0.4559	0.1433	0.2597	0.3396	0.3364	0.1581	0.1428
t	-2.9497	-0.1102	-1.1523	-0.7291	-0.0513	-1.3701	1.9748	-1.3524	1.0701	2.0045	0.3373	2.2503	2.6141

18(a) n = 3 months PANEL C LOW EP (HIGH PE) LOSERS							PANEL D LOW EP (HIGH PE) WINNERS						
Date	LEPL1	LEPL2	LEPL3	LEPL4	LEPL5	Average	LEPW5	LEPW4	LEPW3	LEPW2	LEPW1	Average	LEPW-LEPL
2002Dec	0.1253	0.3503	-0.2840	-0.2559	1.0257	0.1923	-0.3272	-0.3623	-0.0256	0.2495	0.2415	-0.0448	-0.2371
2003Mar	1.0359	-0.1150	-0.6458	-0.1920	-0.4094	-0.0652	0.1670	-0.3214	0.1088	0.1343	0.0839	0.0345	0.0998
2003Jun	-0.0976	-0.1914	0.4973	0.0049	-0.2993	-0.2161	0.0874	-0.2512	-0.0800	0.1025	0.0902	-0.0062	0.2099
2003Sep	-0.0051	0.1648	-0.0237	-0.1570	-0.1326	-0.0308	-0.2939	0.2459	-0.1725	0.1876	0.3496	0.0633	0.0941
2003Dec	-0.2703	0.1242	-0.2922	0.0230	-0.0054	-0.0841	-0.2091	-0.1576	0.1242	-0.3662	-0.3794	-0.1976	-0.1135
2004Mar	-0.1799	0.1745	-0.0329	-0.0906	0.2114	0.0165	0.6031	0.0471	-0.0584	-0.0536	0.0374	0.1151	0.0986
2004Jun	-0.0086	0.0873	-0.0738	-0.1447	-0.1927	-0.0665	0.1903	0.0525	0.0482	-0.0289	-0.0343	0.0455	0.1121
2004Sep	0.1206	-0.2126	-0.0273	-0.0802	-0.1908	-0.0781	0.1658	-0.0621	0.0543	-0.0391	0.0165	0.0271	0.1052
2004Dec	0.1742	0.0091	0.0359	-0.0258	-0.2425	-0.0098	0.0402	-0.0358	-0.1276	-0.0633	0.0467	-0.0280	-0.0181
2005Mar	-0.2844	-0.0952	-0.1354	-0.2057	-0.2694	-0.1980	-0.0272	-0.0165	-0.2828	0.2548	-0.1961	-0.0536	0.1444
2005Jun	-0.0879	0.0710	-0.1277	0.0047	-0.1441	-0.0852	0.2642	-0.2165	0.0524	-0.1335	-0.0965	-0.0260	0.0592
2005Sep	-0.0273	0.1520	-0.0113	0.1334	-0.0683	0.0357	-0.0390	0.0139	-0.0316	0.2842	0.1830	0.0821	0.0464
2005Dec	-0.0757	-0.0493	-0.0355	0.2698	-0.1790	-0.0139	-0.1407	0.2856	0.0491	0.0915	-0.0035	0.0564	0.0703
2006Mar	-0.1499	-0.2492	0.6158	-0.2753	-0.1551	-0.0427	-0.1528	0.2482	-0.2244	0.2439	0.3275	0.0885	0.1312
2006Jun	-0.3089	-0.1995	-0.3069	-0.0235	0.1376	-0.1403	-0.1650	0.0710	0.0385	1.4896	0.6654	0.4199	0.5602
2006Sep	-0.1004	0.1949	0.0263	-0.1501	0.0926	0.0127	-0.2051	1.5579	-0.2912	-0.5245	-0.0544	0.0965	0.0839
2006Dec	-0.0232	-0.3670	0.0065	0.1468	0.0088	-0.0456	0.0016	0.0584	-0.0391	-0.2711	-0.1982	-0.0897	-0.0441
2007Mar	0.5587	-0.1458	0.1848	-0.0533	0.1416	0.1372	-0.0955	-0.0437	0.0646	-0.1627	-0.0074	-0.0489	-0.1881
2007Jun	-0.0656	-0.1737	-0.1176	0.0267	0.1153	-0.0430	0.0713	0.1907	-0.1075	-0.0200	-0.2923	-0.0316	0.0114
2007Sep	0.4987	-0.0171	-0.1435	-0.0583	0.0105	0.0585	0.0593	-0.1579	-0.0964	-0.0762	0.0324	-0.0478	-0.1062
average	0.0414	-0.0315	-0.0943	-0.0551	-0.0273	-0.0333	-0.0003	0.0573	-0.0489	0.0649	0.0406	0.0227	0.0561
SD	0.3247	0.1842	0.2555	0.1383	0.2995	0.0974	0.2181	0.3985	0.1231	0.3985	0.2375	0.1200	0.1093
t	0.5704	-0.7644	-1.6499	-1.7808	-0.4070	-1.5297	-0.0053	0.6432	-1.7751	0.7286	0.7643	0.8477	1.6224

Appendix 5 Data Analysis

Table 18 Contd.

18(b) n = 6 months

Date	HL1	HL2	HL3	HL4	HL5	Average
2003Jun	0.0354	0.1535	-1.0318	-0.4095	-0.4891	-0.3479
2003Dec	-0.1518	0.3390	0.1933	0.6271	0.5277	0.3070
2004Jun	0.1992	-0.3416	-0.3838	-0.1591	0.4576	-0.0456
2004Dec	-0.1034	-0.1641	-0.1226	0.1830	-0.3266	-0.1067
2005Jun	0.1249	-0.4393	0.1146	-0.3667	-0.3905	-0.1914
2005Dec	-0.0645	0.0835	-0.1285	0.2791	0.0128	0.0364
2006Jun	-0.4883	-0.3344	-0.3104	0.1872	-0.2378	-0.2367
2006Dec	-0.6225	-0.5402	-0.6858	-0.4821	-0.2714	-0.5204
2007Jun	0.0311	0.3608	0.0081	-0.0198	-0.2593	-0.1205
2007Dec	0.4305	-0.2902	-0.0856	-0.0088	-0.1995	-0.0307
average	-0.0609	-0.1893	-0.2435	-0.0170	-0.1176	-0.1256
SD	0.3108	0.2872	0.3764	0.3492	0.3473	0.2239
t	-0.6199	-2.0837	-2.0492	-0.1537	-1.0712	-1.7746

HW5	HW4	HW3	HW2	HW1	Average	HW-HL
0.8693	-0.6013	-0.2221	-0.1910	0.1503	0.0010	0.3489
0.3181	0.2505	0.1549	0.3422	-0.6859	0.0760	-0.2311
0.0471	-0.0774	-0.2315	-0.1483	-0.4414	-0.1703	-0.1247
-0.0872	0.3748	0.0583	-0.1101	0.1819	0.0835	0.1903
-0.8074	0.8826	1.9865	-0.1703	0.3269	0.4837	0.6751
-0.2769	0.1039	-0.0701	0.3802	0.3032	0.0841	0.0476
-0.3055	-0.0305	0.3884	0.1595	0.5491	0.1522	0.3889
1.7233	-0.5171	1.0554	-0.3155	-0.5817	0.2729	0.7933
-0.1299	0.0494	0.0518	-0.0995	-0.1106	-0.0478	0.0727
0.0424	-0.3475	-0.2774	0.0391	0.8767	0.0667	0.0974
0.1593	0.0087	0.2894	-0.0134	0.0568	0.1002	0.2258
0.6783	0.4411	0.7140	0.2312	0.5064	0.1785	0.2025
0.7429	0.0627	1.2819	-0.1828	0.3549	1.7752	2.4942

18(b) n = 6 months

Date	LEPL1	LEPL2	LEPL3	LEPL4	LEPL5	Average
2003Jun	-0.6257	-0.0567	-0.5101	-0.8189	0.7513	-0.2520
2003Dec	-0.2584	-0.4427	-0.3728	-0.4444	-0.5819	-0.4200
2004Jun	-0.1803	1.2562	-0.2053	-0.1464	0.0030	0.1454
2004Dec	0.1565	-0.2595	-0.3871	-0.1778	-0.2515	-0.1839
2005Jun	0.3551	0.0191	0.5570	-0.5695	-0.1536	0.0416
2005Dec	-0.1418	-0.0364	-0.1803	-0.0040	0.1328	-0.0459
2006Jun	-0.2364	0.7558	-0.2116	-0.3030	0.7547	0.1519
2006Dec	-0.4011	-0.1573	0.3042	-0.2171	3.6858	0.6429
2007Jun	-0.0925	0.0936	0.1108	-0.0022	0.3999	0.1019
2007Dec	-0.2046	0.0530	-0.0807	0.1944	-0.1163	-0.0308
average	-0.1629	0.1225	-0.0976	-0.2489	0.4624	0.0151
SD	0.2715	0.5059	0.3325	0.2987	1.2109	0.2876
t	-1.8977	0.7656	-0.9284	-2.6352	1.2076	0.1661

LEPW5	LEPW4	LEPW3	LEPW2	LEPW1	Average	LEPW-LEPL
-0.1363	-0.7693	-0.3238	-0.0550	-0.0564	-0.2681	-0.0161
-0.4814	-0.1338	-0.4390	-0.2796	-0.3245	-0.3317	0.0884
0.4286	-0.1904	0.0525	-0.4660	-0.4293	-0.1209	-0.2663
-0.0853	-0.0070	0.1496	0.1415	0.5472	0.1492	0.3331
-0.1885	0.0304	-0.0191	0.0366	1.4577	0.2634	0.2218
-0.1633	0.5225	-0.1440	-0.2527	-0.1681	-0.0411	0.0048
-0.3551	-0.4183	-0.1973	0.2550	0.4613	-0.0509	-0.2028
-0.0982	-0.3042	-0.6559	0.1867	0.2408	-0.1261	-0.7691
-0.0850	-0.1043	0.0952	-0.0836	-0.0723	-0.0500	-0.1519
0.0774	-0.2511	0.2246	0.0898	-0.0136	0.0254	0.0563
-0.1087	-0.1625	-0.1257	-0.0427	0.1643	-0.0551	-0.0702
0.2436	0.3328	0.2817	0.2310	0.5529	0.1768	0.2387
-1.4109	-1.5443	-1.4111	-0.5846	0.9395	-0.9855	-0.6575

18(c) n = 12 months

Date	HL1	HL2	HL3	HL4	HL5	Average
2002Dec	-1.5761	0.6846	2.1626	0.5795	-1.6894	-0.238
2003Dec	0.60602	-0.2239	-0.3482	-0.6423	-0.4526	-0.2122
2004Dec	0.97829	-0.4782	-0.2555	-0.2368	-0.1309	-0.0256
2005Dec	1.42044	0.15215	-1.089	-1.0809	-0.8521	-0.2459
2006Dec	0.07509	0.02378	0.1265	0.50073	-0.1336	0.0879
Average	0.39035	-0.2422	0.07274	-0.1731	-0.8117	-0.1308
SD	1.15839	0.3457	1.23788	0.71231	0.64193	0.14311
t	0.57927	-1.5664	0.13141	-0.5433	-2.1388	-2.6434

HW5	HW4	HW3	HW2	HW1	Average	HW-HL
0.77151	0.25779	-1.7762	0.78139	0.52428	0.11175	0.34979
0.068	0.79031	0.12577	0.33621	-0.444	0.17526	0.38747
-0.7383	0.55442	-0.1815	3.28108	1.8407	0.95128	0.87691
-0.9892	-1.1226	-0.643	-0.3361	-0.4854	-0.7153	-0.4694
-0.214	-0.223	0.02172	0.03138	-0.2844	-0.1337	-0.2016
-0.2284	0.05137	-0.4906	0.8188	0.23025	0.07787	0.20865
0.69397	0.75751	0.77686	1.43621	0.98869	0.60151	0.21959
-0.7191	0.15164	-1.4123	1.27481	0.52063	0.28949	1.50239

18(c) n = 12 months

Date	LEPL1	LEPL2	LEPL3	LEPL4	LEPL5	Average
2002Dec	0.0944	-1.8097	0.8159	0.3567	-1.4850	-0.7339
2003Dec	1.3304	-0.4811	0.0321	2.7514	0.3189	0.7983
2004Dec	0.1354	-0.0159	-0.5921	-0.1174	0.1122	-0.0955
2005Dec	-0.2741	3.3899	-0.9265	-0.3883	-0.7433	0.2116
2006Dec	-0.1711	-0.1707	-0.5301	0.4363	0.1655	-0.0540
Average	0.2230	0.1825	-0.5665	0.6078	-0.3283	0.0237
SD	0.6428	1.9275	0.3715	1.2466	0.7730	0.5516
t	0.7757	0.2117	-3.4097	1.0911	-0.9498	0.0960

LEPW5	LEPW4	LEPW3	LEPW2	LEPW1	Average	LEPW-LEPL
-0.0728	0.4247	-0.6083	-0.2456	1.5472	0.1695	0.9034
-0.3244	0.0539	-0.2157	-0.6242	-0.5751	-0.3371	-1.1274
-0.2578	-0.4246	0.5557	0.3454	1.1445	0.1345	0.2300
-0.0036	-0.7770	0.2691	0.1897	1.6483	0.2653	0.0537
0.3497	-0.0759	-0.1434	-0.1908	-0.0857	-0.0292	0.0248
-0.0618	-0.1598	-0.0681	-0.2432	0.7359	0.0406	0.0169
0.2647	0.4597	0.5185	0.2940	1.0064	0.2363	0.4244
-0.5219	-0.7772	-0.2938	-1.8498	1.6349	0.3840	0.0630