

**TURN OF THE MONTH AND JANUARY EFFECTS ON  
STOCK PRICES AT NAIROBI STOCK EXCHANGE**

UNIVERSITY OF NAIROBI  
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**BY**

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## DECLARATION

This research project is my original work and has not been presented for a degree at the any other University

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

Signed: Winnie

Date: 7th November, 2003

Winnie Nyamute

## **DEDICATION**

This study is dedicated to my wife Mrs Jane M. Kamau, our daughters Hannah Wanjiru and Banice Warindi, my father Samuel Njoka and my late mother Hannah Wanjiru Njoka

**God bless you all**

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## ABSTRACT

This paper examined the turn-of-the-month and January effects at Nairobi Stock Exchange (NSE) during the period July 1995 through June 2003. Using the NSE daily closing prices, average daily returns were computed by applying the Holding Period Return method. Geometric average rate of return method was then applied to arrive at the required means of the two-week periods and monthly basis. Mean returns for the last and first weeks were compared with the second and third weeks of the month and no evidence was found in favour of the turn-of-the-month effect.

Likewise, the mean returns for the February to December compared with the mean returns for January of the following year, indicated absence of January effect at NSE. Since no capital gains tax exists in Kenya, these findings may support a tax-related interpretation of abnormal January returns on many stock markets.

# CHAPTER 1

## 1.0 INTRODUCTION

### 1.1 Background

Seasonal patterns or calendar effects in stock prices have been of great importance to financial scholars and practitioners. These effects or anomalies have been regarded as strong evidence against Efficient Market Hypothesis (EMH) in financial economics (Fama, 1970). The literature on seasonalities has presented voluminous evidence in support of such calendar anomalies as day of the week, month of the year, turn of the month, holiday, and intraday effects (Ercan and Meliha 1996).

Capital markets have evolved as highly 'liquid institutions' wherein individual investors can transact at will. Given that transactions occur in an uncertain environment, it is legitimate to hypothesize an element of speculation in trading. It is evident that many investors do not buy stocks for "keeps" but rather to resell them in the very near future in the hope of making a gain (Russel, P.S. 1995). While one cannot conclude that the market consists merely of speculators, it is plausible that they may form a substantial group, even with the enormous growth of institutional investors.

In 1970, Fama published an influential and classic survey entitled "Efficient Capital Markets". The article focused on the theory and empirical evidence of efficient capital markets. He concluded that: the very idea that interactions



among market participants and the frictionless dissemination of information prevent individuals from making assured gains in competitive capital markets. Twenty-one years later, in 1991, Fama published a follow-up to his article entitled "The Behavior of Stock Market Prices" in which he presented compelling statistical evidence based on the random walk model of price behavior ratifying the Efficient Market Hypothesis. His work was followed by an immense literature on the validity of the Efficient Market hypothesis and the root causes of its potential failure resulting to studies on seasonal anomalies of the stock market returns.

One of the seasonal anomalies is the turn of the month effect. Turn of the month effect, was first reported by Ariel (1987). He found that there was concentration of positive stock returns in the last trading week and the first trading week of each month. He suggested that one possible explanation is systematic purchasing by pension funds at the turn of the months. Ogden (1990) attributed the turn-of-the-month effect to the temporal pattern of cash received by investors, while Jacobs and Levy (1988) attributed it to the psychological desire of investors to postpone decisions until the beginnings of periods. Hensel and Ziemba (1996) presented the theory that this effect results from cash flows at the end of the month such as salaries and interest payments. Lakonishok and Smidt (1988) showed that the US market had a turn-of-the-month effect and that this effect existed even when the December/January data were excluded. Cadsby (1989) obtained similar results for Canada.

January or turn-of-the-year effect is another anomaly, described as whereby stocks boast higher rate of returns during January compared to any other month (Riepe, 2001). A considerable literature that have addressed the January effect, has found that stock returns are significantly higher in January than the rest of the year. In their early paper, Rozeff and Kinney (1976) reported higher returns for New York Stock Exchange (NYSE) stocks in January from 1904 to 1974. Gultekin and Gultekin (1983) showed that stock returns in several other countries also exhibit higher January returns. Keim (1983) found that the higher returns on smaller stocks were concentrated in the first few days of January and referred the anomaly to as the turn-of-the-year (TOY) effect.

The most popular explanation for higher January returns is the tax-loss selling hypothesis: investors experiencing losses sell stock in December to qualify for the tax-loss and then buy in January. Thus stocks experiencing capital losses should have their prices driven down in December and driven up in January, Dyl (1977), Givoly and Ovadia (1983), Brown et al. (1983), Jacobs and Levy (1988), Ogden (1990) and Griffiths and White (1993), Grinblatt and Moskowitz (1999). The rationality of this explanation was challenged by Roll (1983), who argued that arbitrage should eliminate any price effect. Roll did, however, report some empirical support for tax-loss selling.

Other proposed explanations include the "window-dressing" by institutional investors (Lakonishok, Shleifer et al (1991). The window-dressing hypothesis contends that institutional investors want to sell losers and buy glamorous winners to prepare for their year-end reporting. Such buying and selling create positive price pressure on winners and downward pressure on losers in the period before the turn of the year. As the selling by institutions stops at year-end, prices for the beatdown stocks rebound in January, producing large positive returns for last year's losers. Roll (1983), and Rozeff and Kinney (1976) in their studies found that small capitalization stocks tend to outperform large capitalization stocks by a wide margin in January. This effect can be more pronounced for small stocks because of their low liquidity and high market-impact costs.

As a capital market institution, the Stock Nairobi Exchange plays an important role in the process of economic development. It helps mobilise domestic savings thereby bringing about the reallocation of financial resources from dormant to active agents. The NSE currently has 54 companies with equity listings in the Main and Alternative Investment Market Segments (MIMS and AIMS). There is also a third segment for trading of government & corporate bonds and other fixed-income securities - the FIMS. Tax incentives such as the exemption of stamp duty and VAT on capital markets transactions and legislation to allow foreign investor participation.

## **1.2 Statement of the Problem**

One of the salient facts in finance is the documented seasonality in stock returns. The movement of the stock market prices is an important determinant of the returns. Investors are not guaranteed "good" returns simply because the firms earning power has grown. Rather, the time (day, week or month) will determine the investor returns (Chen, 2001). Knowledge of the market seasonality signals the right time to buy or sell stock. In a market that exhibits strong seasonality, the strategy of buying low and selling high will work well. An investor can exploit such market behaviours to earn abnormal returns assuming that the market is not perfect. Dickinson and Muragu (1994) found the Nairobi stock market to be efficient in the weak form. Under perfect condition there is then availability of information, homogeneous investor expectations and zero transaction costs and therefore no investor can out-perform the other and arbitrary profits are eliminated under perfect conditions. In the real world stock markets are not perfect, which provide a fertile brewing ground for stock return seasonalities caused by market imperfections. It is important for the investors to understand the stock market seasonalities to be able to take advantage of them. This study aims at answering the question: "Are Stock market returns at NSE affected by January and Turn of the month effects?"

To analyze the problem, the study will test the following two hypotheses:

H<sub>0</sub>: There is no difference between the average mean returns of the last and first week of the month and the second and third week of the month.

H<sub>A</sub>: There is significant difference between the average mean returns of the last and first week of the month and the second and third week of the month.

H<sub>0</sub>: The mean returns in the month of January and the means of the other months are equal.

H<sub>A</sub>: The mean returns in the month of January and the means of the other months are significantly different.

### **1.3 Objective of the Study**

1. To determine whether stock returns at NSE are affected by the turn of the month effect; and
2. To establish the existence or non-existence of the January effect for the stock returns at NSE.

#### 1.4 Importance of Study

The findings would be of interest to:

*Investors:* Both local and foreign investors whom the government is trying to attract in large numbers in order to foster development and growth of the industry in making purchase and sale decisions.

*Government:* Making some policies affecting the companies, then it must put into consideration of the effect of seasonality since it has a direct influence on the earnings of a company.

*Management:* Management is responsible for the day to day running of the company. The actions of the management may be affected either positively or negatively by the seasonality of the company stock.

*Academicians:* Scholars can also use the study to assist them to do further research on other stock market conditions, in particular studies on the level of market efficiency.

## CHAPTER 2

### 2.0 LITERATURE REVIEW

Capital market efficiency has been a popular topic for teaching and empirical research since Fama (1970 and 1991) described the theoretical analysis of market efficiency (Efficient Market Hypothesis). Subsequent to the Fama studies a great deal of research was devoted to investigating the randomness of stock price movements for the purpose of demonstrating the efficiency of capital markets. More recently, however researchers have demonstrated market inefficiency by identifying systematic variations in stock returns.

The existence of calendar or time anomalies is a contradiction to the weak form of the Efficient Market Hypothesis (EMH). The weak form of the EMH states that the market is efficient in past price and volume information and stock movements cannot be predicted using this historic information. This form infers that stock returns are time invariant, that is, there is no identifiable short-term time based pattern. The existence of seasonality or monthly effects in domestic and international markets suggests market inefficiency, in that investors should be able to earn abnormal rates of return incommensurate with the degree of risk.

The EMH became controversial especially after the detection of certain anomalies in the capital markets. Some of the main anomalies that have been identified are as follows:

**The January Effect:** Rozeff and Kinney (1976) were the first to document evidence of higher mean returns in January as compared to other months. Using New York Stock Exchange (NYSE) stocks for the period 1904-1974, they found that the average return for the month of January was 3.48 percent as compared to only 0.42 percent for the other months.

Keim (1983) found that the excess returns to small firms in January were temporally concentrated. He concluded that 50% of the returns seen in the small-caps occurred during the first five trading sessions of the month. Reinganum (1983) found that excess returns were larger for small cap stocks which experienced negative returns the year before, and that no excess returns were measured during the first five trading sessions of January for small caps stocks that rose in value the previous year, meaning that no mean reversion took place for small cap winners, but did for small cap losers. Reinganum's study sought to find out if the excess returns seen in January could be due to investor "tax-loss selling." Tax-loss selling occurs when an investor, who holds loser stock in his or her portfolio, believes that the share prices of the stock will continue to decline because other investors, who also hold loser stock, will sell off the stock throughout the final months of the year to realize capital losses, which can be deducted from capital gains in April. To counter this notion, Roll (1983) said that the decline in loser share prices caused by tax-loss selling could be offset due to buying at the end of year "in anticipation of the excess returns in January." Still, even Roll concluded that mean reversion occurs for loser stocks of the previous year during January, and that the loser excess returns are higher than those of other stocks.



Dyl (1977) examined the influence of capital gains on investor's market behaviour. The study used a random sample of 100 common stocks selective from Center for Research in Security Prices (CRSP) tape and monthly volume data was collective from January 1959 to February 1970. The results indicated that there was significant trading volume in December in common stocks that depreciated during the year and, abnormally low volume trading for those stocks that appreciate during the year. Corhay et al (1987) examined a sample of 1591 stocks traded on the NYSE, London Stock exchange (LSE), Paris Stock exchange (PSE) and Brussoi stock exchange (BSE) from January 1970 to December 1983. The research used dummy variable regression tests and found that these is a January seasonal effect in stock market returns were different from returns in the other months of the year. Wachtel (1942) found that the average rate of return on stocks in January is higher than in other months. Moreover, Gultekin and Gultekin (1983) verified the presence of monthly effects in stock market in 17 countries, finding evidence of the January effect during a 10-year sample period from 1970 – 1979. Taken together, their results support a tax-loss selling explanation of the effect.

Tinic and West (1984) used the CAPM to assess seasonal stock price relationships. They found that stocks with larger beta values, which are judged to be relatively risky by the CAPM, experience higher excess returns only during the month of January. Another possible explanation to the January effect is that

firms, which pay high dividends to their investors, see their share price rise in response to the increased investor tax burden of receiving larger dividends. What probably happens is that as firms increase dividend yield per share, incentives increase for investors to purchase those shares putting upward pressure on the share price, but excess returns are offset somewhat by capital gains tax once the dividend yields are realized by investors. Firms that do not pay dividends (zero-dividend stocks) see their share price percentages increase more than firms that pay high dividends according to Keim.

**Turn of the Month Effect:** Most empirical studies have found that stocks earn a positive average return in the beginning and during the first half of calendar months and zero average returns during the second half. A weak monthly effect was also observed in foreign countries (Jaffe and Westerfield 1989). Australia, United Kingdom and Canada had patterns consistent with Ariel's findings in the United States. Japan, however, had an inverse effect.

Turn of the month effect has been well documented over time and across countries. Lakonishok and Smidt (1988) showed that US stock returns are significantly higher at the turn of the month, defined as the last and first three trading days of the month. Ariel (1987) showed that returns tend to be higher on the last day of the month. In a study of the stock indices of 10 countries over different time periods until the late 1980s, Cadsby and Ratner(1992) obtained results showing a turn-of-the-month effect in US, Canada, Switzerland, West

Germany, United Kingdom and Australia but no such effect in Japan, Hong Kong, Italy and France. Ziemba (1991) found evidence of a turn of month effect for Japan when turn of month is defined as the last five and first two trading days of the month. Hensel and Ziemba (1996) and Kunkel and Compton (1998) showed how abnormal returns can be earned by exploiting this anomaly.

**The Weekend Effect (or Monday Effect):** French (1980) analyzed daily returns of stocks for the period 1953-1977 and found that there is a tendency for returns to be negative on Mondays whereas they are positive on the other days of the week. He noted that these negative returns are "caused only by the weekend effect and not by a general closed-market effect". A trading strategy, which would be profitable in this case, would be to buy stocks on Monday and sell them on Friday. Kamara (1997) showed that the S&P 500 has no significant Monday effect after April 1982, yet he found the Monday effect undiminished from 1962-1993 for a portfolio of smaller U.S. stocks. Internationally, Agrawal and Tandon (1994) found significantly negative returns on Monday in nine countries and on Tuesday in eight countries, yet large and positive returns on Friday in 17 of the 18 countries studied. However their data did not extend beyond 1987. Steeley (2001) found that the weekend effect in the United Kingdom had disappeared in the 1990s.

**Holiday Effect:** Lakonishok and Smidt (1988), Ariel (1990), and Cadsby and Ratner (1992) all provided evidence to show that returns are, on average, higher

the day before a holiday, than on other trading days. Brockman and Michayluk (1998) described the pre-holiday effect as one of the oldest and most consistent of all seasonal regularities.

**Time of the Day (Hourly) Effect:** Wood, McInish and Ord (1985) did a study on the stock return using minute-by-minute return series stock used on NYSE. The research examined two periods:

- i) Six months from September 1971 to February 1972 and,
- ii) Calendar year 1982.

The index comprised of 946 and 1138 common stocks, respectively for the two periods. In computing the minute returns, prices were adjusted for dividends and changes in capitalisation. The study found that the mean return is higher during the first few minutes of trading for 1971-72 period. In both sample periods, all positive returns were earned during the first 30 minutes of trading and the close of the market. Hence the minute-by-minute trading had a u-shape. In a discussion on the study, Tauchan (1985) explained the u-shape as follows: -

The high activity at the opening of trading is a result of the trader's interpretation and reaction to the accumulative overnight news. This is then followed by a quiet phase through the midday. The trading day ends with another burst of activity.

In another study Lockwood and Linn (1990) examined the variance of the hourly market return in U.S.A. and reported similar findings. The researchers computed returns from opening, closing and in trading hourly values of the Dow Jones

industrial average from January 1964 to February 1989. Days immediately following were excluded in the analysis. Also days when NYSE closes early or trading was halted were excluded from the analysis. The results showed that the hourly variances followed a u-shape, falling from the opening hour until the afternoon and rising thereafter.

**Weekly Seasonality:** Muragu (1994) examined the weekly price movement at NSE. His focus was on the level of market efficiency in the stock market. The study found that the random walk holds for NSE, which implies that there is no symmetric pattern in weekly price movements and prices in one week are independent on prices in a preceding week.

**Small Firm Effect:** Banz (1981) published one of the earliest articles on the 'small-firm effect', which is also known as the 'size-effect'. His analysis of the 1936-1975 period revealed that excess returns would have been earned by holding stocks of low capitalization companies. Supporting evidence provided by Reinganum (1983) who found that the risk adjusted annual return of small firms was greater than 20 percent. If the market were efficient, one would expect the prices of stocks of these companies to go up to a level where the risk adjusted returns to future investors would be normal. But this did not happen. One of the well-recognized anomalies is the size effect. Banz (1981) found that small capitalization companies have excess returns over their risks.

**Price Earning (P/E) Ratio Effect:** Basu Sanjoy (1977) showed that stocks of companies with low P/E ratios earned a premium for investors during the period 1957-1971. An investor who held the low P/E ratio portfolio earned higher returns than an investor who held the entire sample of stocks. These results also contradict the Efficient Market Hypothesis. Campbell and Shiller (1988) showed P/E ratios have reliable forecast power. Fama and French (1995) found that market and size factors in earnings help explain market and size factors in returns. Dechow, et al (2001) documented that short-sellers position themselves in stocks of firms with low earnings to price ratios since they are known to have lower future returns.

**Value-Line Enigma:** The Value-Line organization divides the firm into five groups and ranks them according to their estimated performance based on publicly available information. Over a five-year period starting from 1965, returns to investors correspond to the rankings given to firms. That is, higher-ranking firms earned higher returns. Stickel (1985) found positive risk-adjusted abnormal (above average) returns using value line rankings to form trading strategies, thus challenging the EMH.

**Over/Under Reaction of Stock Prices to Earnings Announcements:** There is substantial documented evidence on both over and under-reaction to earnings announcements. DeBondt and Thaler (1985, 1987) presented evidence that is consistent with stock prices overreacting to current changes in earnings. They

reported positive (negative) estimated abnormal stock returns for portfolios that previously generated inferior (superior) stock price and earning performance. This could be construed as the prior period stock price behavior overreacting to earnings developments (Bernard, 1993). Such interpretation was challenged by Zarowin (1989) but was supported by DeBondt and Thaler (1990). Bernard (1993) provided evidence that is consistent with the initial reaction being too small, and being completed over a period of at least six months. Bernard (1993) further notes that such anomalies are not due to research design flaws, inappropriate adjustment for risk, or transaction costs. Thus, the evidence suggests that information is not impounded in prices instantaneously as the EMH would predict.

**Standard & Poor's (S&P) Index Effect:** Harris and Gurel (1986) and Shleifer (1986) found a surprising increase in share prices (up to 3 percent) on the announcement of a stock's inclusion into the S&P 500 index. Since in an efficient market only information should change prices, the positive stock price reaction appears to be contrary to the EMH because there is no new information about the firm other than its inclusion in the index.

**Pricing of Closed-end Funds:** Unlike open-end funds, closed-end funds do not stand ready to sell or repurchase their securities at the net asset value per share. They float a fixed number of shares in an initial public offering and after that, investors wishing to buy or sell shares of closed-end funds must do so in the

secondary market. The prices in the secondary market are dictated by the market forces of demand and supply which may not be directly linked to the fund's fundamental or net asset value. Malkiel (1977) argued that the market valuation of closed-end investment company shares reflects mispricing. As he noted, "The pricing of closed-end funds does then seem to provide an illustration of market imperfection in capital-asset pricing." In general, the funds have shown to trade at a discount relative to their net asset values (Malkiel, 1977; Brickley and Schallheim, 1985; Lee, Shleifer and Thaler, 1991). Between 1970 and 1990, the average discount on closed-end funds ranged between 5 to 20 percent. The existence of discounts clearly contradicts the value additivity principle of efficient and frictionless capital markets. Reports from the popular press have also commented on mispricing in the closed-end fund market. As Laderman noted in Business Week (March 1, 1993), "America's financial markets are the most efficient in the world. But there's one corner where pockets of inefficiency still exist: closed-end funds".

**The Distressed Securities Market:** While the academic literature largely suggests that stocks in the distressed securities market are efficiently priced, Ma and Weed (1986), Weinstein (1987), Fridson and Cherry (1990), has conjectured that the stock pricing may be inefficient during the bankruptcy period. As Philip Schaeffer of Robert Fleming Inc. puts it: "Returns are attractive because of market's abundant inefficiencies. Investors who find themselves owners of distressed securities do not understand or want to participate in the market and



frequently sell at prices substantially below the investments' cost. Distressed investing requires skills involving bankruptcy law, experience and knowledge of the bankruptcy process, and personal contacts. Consequently, the relatively small number of experienced distressed security investors have a significant advantage over other investors who do not have such expertise, knowledge and experience". [Wall Street Journal, 1991]

**The Weather:** Few would argue that sunshine puts people in a good mood. People in good moods make more optimistic choices and judgments. Saunders (1993) showed that the New York Stock Exchange index tends to be negative when it is cloudy. More recently, Hirshleifer and Shumway (2001) analyzed data for 26 countries from 1982-1997 and found that stock market returns are positively correlated with sunshine in almost all of the countries studied. Interestingly, they find that snow and rain have no predictive power!

Evidence in emerging markets has been investigated widely in recent years. Researchers have focused on whether these markets are informationally efficient or whether anomalies exist. Campbell et al (1987) examined 20 emerging markets in Latin America, Asia, Middle East, Europe, and Africa. He found that returns in these emerging markets are more predictable than returns in developed markets and returns are influenced by local rather than global information. Dickinson and Muragu (1994) found the Nairobi stock market to be efficient in the weak form. From the above review, it can be concluded that

empirical tests have given mix results about efficiency in emerging markets. Kingori (1995) examined whether NSE exhibits monthly and quarterly seasonalities and found that the mean stock returns are equal over the months and quarters tested. She attributed the results mainly to the short period of five years covered in the study.

## CHAPTER 3

### 3.0 RESEARCH DESIGN

#### 3.1 Population

The population of the study consisted all equity quoted companies at the NSE currently standing at 54. The study covered the total population and therefore there was no sampling.

#### 3.2 Data Collection

The study used secondary data in form of daily bid closing stock prices and dividends covering a period of eight years (from July 1995 through June 2003) to calculate the weekly and monthly returns. Published data was obtained from the Nairobi Stock Exchange (NSE).

#### 3.3 Data Analysis Method

To calculate daily average return, the Holding Period Return formula was used:

Thus Holding Period Return =  $R = (V_2 - V_1 + D) / V_1$

Where:

R = rate of return for the company share

V1 = Day 1 share price

V2 = Day 2 share price

D = Dividend

Dividend previously declared was incorporated in computation of Holding Period Return of daily prices until another was declared.

Bi-weekly and monthly average rate of returns were transformed using Geometric rate of return method since it compounds cumulative returns over more than one period, unlike Arithmetic mean which does not reflect the realized change in stock price over multiple periods:

$$\text{Geometric average rate of return (GAR)} = ((1+R_1)(1+R_2)\dots(1+R_N))^{1/N} - 1$$

Where:

$R_1, R_2 \dots R_N$  = daily average rate of return for the company share in the first and last week of the month or second and last week of the month or for one full month.

The geometric mean for any time period is less than or equal to the arithmetic mean. The two means are equal only for a return series that is constant. For a non-constant series, the difference between the two is positively related to the variability or standard deviation of the returns. The difference between the arithmetic and geometric mean is much larger for risky large company stocks than it is for nearly riskless Treasury bills (Ibbotson, 1996). Siegel (1998) studied long-term historical data on value-weighted United States share indexes using the geometric average and concluded that it is a better indication of long-term future prospects since there was strong evidence that the stock market is mean-reverting, that is, periods of high returns tend to be followed by periods of lower

returns. This suggests that the arithmetic average return probably overstates expected future returns over long periods.

### **3.3.1 Test of Seasonality**

#### **Turn of the Month Effect:**

Turn of the month effect was tested by comparing the geometric average means of:

- (i) The first and last week of the month with
- (ii) The means of the second and third week of the month.

#### **January Effect:**

Comparing the geometric means of the other months with the mean of January tested January effect.

Two-sample t test is used to determine if two population means are equal (Snedecor and Cochran, 1989). Therefore this study used two-sample t test for equal means to determine if computed geometric average means were equal and evaluate the stated hypothesis. A 95% confidence level was considered appropriate for this study.

Two-sample t test was defined as:

1.  $H_0: U_1$  is equal  $U_2$

$H_A: U_1$  is not equal  $U_2$

Where:

$U_1$  and  $U_2$  are the two means being compared

2. Test Statistic:

$$T = ((X_1 - X_2) - (U_1 - U_2)) / S_P (1/N_1 + 1/N_2)^{1/2}$$

Degree of freedom (df) =  $N_1 + N_2 - 2$

Where:

$X_1 - X_2$  = Sample means being compared

$U_1 - U_2$  = Hypothesized difference

$N_1$  and  $N_2$  = Sample sizes from the two population 1 and 2

$S_P$  = Pooled standard deviation

$$S_P = (((N_1 - 1)S_1^2 + (N_2 - 1)S_2^2) / (N_1 + N_2 - 2))^{1/2}$$

Where:

$S_1^2$  = Sample variance from population 1

$S_2^2$  = Sample variance from population 2

3. Obtaining the critical value and comparing it with the computed t statistic so that we can reject or fail to reject the null hypothesis.

The decision is that reject the null hypothesis if:

$$T < -t \text{ or } T > t$$

.. Where:

$t$  is the critical value of the t distribution with df, degree of freedom. This implies that if we fail to reject the null hypothesis, then there is no existence on seasonality exhibited in the Nairobi Stock Exchange market.

## CHAPTER 4

### 4.0 DATA ANALYSIS AND FINDINGS

#### 4.1 Data Analysis

A two-sample analysis for equality was used for the period July 1995 to June 2003. For turn of the month effect, biweekly (comparison of third and fourth week of the month and the first and second week of the following month) returns were computed from the daily stock prices. Average daily returns were arrived calculated using the holding period return formula. These were transformed using the geometric rate of return to get the average returns for the two-week period.

For January effect (comparing the mean returns of the February to December with that of January of the following year), average daily returns were transformed using the geometric rate of return to get the average returns on monthly basis.

To get the computed T-value and t-critical value, t-test for paired two sample means was carried out using data analysis tool available in Microsoft excel. Summary statistics for the tests throughout the different time periods are presented in Appendix 1 and 2.



## 4.2 Findings

### The Turn-Of-The-Month Effect

The turn-of-the-month effect was studied by comparing implied returns for the two weeks prior to the turn-of-the-month with the implied returns two weeks after the turn-of-the-month. The null hypothesis was that there is no difference in implied returns from prior to the month end versus after the month end, while the alternative hypothesis was that there is significant difference in implied returns from prior to the month end versus after the month end.

The results of the turn-of-the-month effect are presented in Appendix 1. In the period covered (July 1995 to June 2003), there was no turn-of-the-month effect. In almost all cases the t-statistics test returned failing to reject the null hypothesis. There exception rare cases representing five percent which returned rejection on the null hypothesis. Taking into consideration of the period of study, the rare cases can be attributed to chance and not the turn of the month effect. For example the December 2002 week 3&4 and January 2003 disparities may be attributed to the change of the Government administration by the end of December 2002.

## **January Effect**

The January effect was tested by comparing the mean returns of the February to December with that of January of the following year. The results of the January effect are presented in Appendix 2. For the period covered, the results produced failed to reject the null hypothesis with only the exception of the means of February to December 2002 compared with that of January 2003. Likewise this may be attributed to the change of the Government administration by the end of December 2002.

The findings are also consistent with those of Dickson and Muragu (1994) who provided evidence of market efficiency in Nairobi Stock Exchange. They concluded that small market such as Nairobi Stock Exchange provide empirical results consistent with weak form efficiency.

## CHAPTER 5

### 5.0 CONCLUSION AND SUGGESTION FOR FURTHER RESEARCH

#### 5.1 Conclusion

The results of the study show that the turn-of-the-month effect and January effect were not prevalent phenomenon in the period covered. This implies that the volatility of stock market returns do not significantly differ across periods. The empirical results of this study contribute to the previous research findings that such seasonal anomalies as monthly and quarterly effects are not present in the Nairobi Stock Exchange (Kingori, 1995).

The empirical results also imply that aggregate stock returns in NSE appear to be generated by different factors compared to those in the developed markets where these effects have been present in almost all the studies carried out. The investigation shows that there is no abnormal behaviour of stock returns in January and therefore supports the hypothesis that the January effect is to a large extent attributable to tax loss selling. In Kenya, the presence of fiscal incentive of no tax on capital gain may attribute the neutrality of returns at NSE, in that investors may not be under pressure to dispose off shares at the year-end.

## 5.2 Suggestions for Further Research

- Further research can be done to investigate whether reported daily and monthly anomalies are valid for individual shares.
- Another fruitful area of research can be done to test whether a trading strategy based on individual shares is profitable considering the transactions costs. For example, such an active portfolio strategy as buy an index-representative portfolio of stocks in the course of second and third week of the month and sell in course of first and last week of the month can be investigated whether it outperforms a passive strategy such as "buy-and-hold."
- Further research can be done to investigate day of the month effects, if any. It should be noted that the turn of the month effect could occur over a different sequence of days in the Nairobi stock market as pointed out by Ziemba (1989) for Japan.
- Finally, possible sources of calendar effects should also be investigated.

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Month Week	July-95		August-95		September-95		October-95		November-95		December-95
	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2
Ordinary Shares											
A. Baumann	0.0000	(0.0526)	(0.2500)	0.0000	0.0000	0.0000	0.0000	0.0600	(0.0532)	0.0000	(0.0337)
A.T. Hotels	0.0000	(0.0681)	(0.1488)	0.0000	0.0000	0.0000	0.0000	(0.0294)	(0.0862)	(0.1275)	(0.0164)
B Bond	0.0000	0.0101	(0.0686)	0.0000	0.0000	0.0000	0.0000	0.0355	0.0000	0.0000	0.0000
Bambun	0.0000	(0.1667)	(0.0588)	(0.1044)	0.1597	0.0000	(0.0417)	(0.0143)	0.0000	0.0214	0.0000
Barclays Bank	(0.0244)	0.0704	0.0411	0.0000	0.0000	0.0000	(0.2276)	(0.1439)	(0.0079)	0.0000	0.0323
BAT	(0.0417)	0.0364	0.0847	0.0411	(0.0355)	0.0000	0.0000	0.1509	0.0000	(0.1044)	(0.0256)
BOC (K)(formely E.A.O)	0.0000	(0.0569)	0.1000	0.0000	(0.2500)	0.0000	(0.0588)	(0.3538)	0.0000	0.0000	(0.0513)
Car & Gen	0.0000	(0.0215)	0.0000	0.0000	0.0000	(0.1275)	0.0000	0.1368	(0.2276)	0.0000	0.0000
Carbacid	0.0000	(0.0870)	0.0833	0.0671	(0.0244)	0.0847	(0.4413)	(0.0743)	0.0000	0.0411	0.0000
CFC Bank	(0.0862)	0.0252	0.0068	0.0000	0.0000	0.0000	(0.1488)	0.0259	0.0000	0.0000	(0.1044)
City Trust	(0.0532)	0.0000	0.0671	0.0000	(0.2847)	0.0000	(0.2500)	0.0000	0.1000	(0.4413)	0.0214
CMC	0.0000	0.1011	0.0000	0.0000	0.0000	0.0000	0.0000	(0.3750)	(0.2500)	0.0086	0.0000
Crown Berger	(0.4413)	(0.0513)	0.0000	0.0068	(0.0532)	0.0833	0.0000	(0.0732)	0.0000	0.0671	(0.0588)
Diamond Trust	(0.2276)	0.0476	0.0000	0.0000	(0.0142)	0.0000	0.0000	0.1417	(0.0071)	(0.0256)	0.0411
Dunlop	0.0000	(0.0200)	0.0000	0.0000	(0.0862)	0.0000	(0.0256)	0.0078	(0.0857)	0.0068	0.0847
E.A. Cables	(0.0256)	(0.1091)	0.0000	0.0000	(0.2276)	(0.0161)	0.0000	(0.1803)	(0.0216)	0.0000	0.0833
E.A. Packaging	(0.0588)	0.0426	0.0000	0.0000	(0.1488)	(0.0580)	0.0847	0.1611	(0.0417)	0.0000	(0.0200)
E.A. Portland	0.0847	0.1053	(0.0071)	(0.0161)	(0.0513)	0.0000	0.0833	(0.0294)	0.0000	(0.0161)	(0.1091)
Eaagads	0.0000	0.0000	(0.1593)	0.0000	0.0000	0.0000	(0.0161)	0.4000	0.0000	0.0000	0.0000
Express	0.0000	(0.0123)	0.0000	0.0000	0.0000	0.0086	0.0000	(0.0976)	(0.1488)	0.0000	(0.0161)
Firestone E.A. (1969)	0.0833	0.0100	0.2062	0.0000	(0.0200)	(0.0106)	0.0000	(0.0101)	(0.4413)	0.0000	(0.0569)
G. Williamson	(0.1275)	0.2624	0.0000	0.0000	(0.1275)	(0.2847)	0.0000	(0.1544)	0.0000	0.0000	0.0000
HFCK	(0.2500)	0.0686	(0.0857)	0.0000	0.0000	0.0000	0.0000	(0.1053)	0.2062	0.0000	0.0671
Hutchings Biemer	0.0000	0.0000	0.0000	(0.1275)	(0.0161)	0.0000	(0.0686)	0.0000	0.0000	(0.0938)	0.0000
ICDC	(0.1488)	(0.1102)	(0.0216)	0.0000	0.0476	(0.1275)	0.0000	0.0780	0.0323	(0.0588)	0.0068
Jubilee	0.0000	(0.0884)	0.0000	0.0000	(0.0513)	0.0000	0.0000	0.0457	0.0214	0.0847	0.0000
K Breweries	0.0000	0.0647	0.0323	(0.0560)	(0.1091)	0.0000	0.0000	0.1231	0.0000	(0.0560)	0.0426
K.C. Bank	0.0000	(0.0145)	(0.0417)	0.1000	0.0000	0.0086	0.0000	(0.2143)	(0.1044)	0.0833	(0.0857)
K.Orchads	0.0000	(1.2727)	0.0411	0.0000	0.1053	0.0000	0.0000	(0.3760)	(0.0588)	0.0000	0.0647
K.Pow & L.	(0.0142)	(0.0656)	0.0671	(0.0079)	0.0100	0.0000	0.0000	(0.3462)	0.0847	(0.0079)	(0.2678)
Kakuzi	0.0000	0.0300	0.1597	(0.2847)	0.0000	0.0000	(0.0580)	0.0309	(0.0686)	(0.2847)	0.0000
Kapchorua	0.0086	0.0517	(0.0355)	0.0000	0.0086	(0.0142)	0.0000	(0.0545)	(0.1593)	0.0000	(0.1275)
Ken. Nat. Mills	0.0000	(0.2678)	0.0214	0.0000	(0.0569)	(0.0079)	0.0000	0.1121	(0.0256)	0.0000	0.1053
Kenol	(0.2847)	(0.0169)	(0.1044)	(0.0106)	0.0426	0.0000	0.0000	(0.0083)	0.0000	(0.0106)	0.0100
Kenya Finance Trust	0.0000	0.1265	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0411	0.1000	(0.0216)
Limuru Tea	0.0000	0.0048	(0.0244)	(0.0142)	0.0000	0.0000	(0.0106)	(0.0450)	0.0000	(0.0142)	0.0000
Marshalls	0.0000	0.0370	0.1000	0.0000	0.0000	(0.0938)	(0.1593)	(0.0331)	0.0000	(0.0337)	(0.0560)
Motor Mart	0.0000	(0.0123)	0.0000	0.0086	(0.0560)	(0.0337)	0.0000	(0.3415)	(0.0161)	(0.0164)	0.0000
Nation Media Group.	(0.0686)	0.1941	(0.0071)	0.0000	0.0000	0.0000	0.1597	(0.4234)	0.0000	0.0000	(0.0106)
National Bank	0.0000	0.0521	(0.4413)	(0.0071)	0.0000	(0.0938)	0.0000	0.0110	0.0671	0.0000	0.0000
National Industrial Credit	0.0000	(0.0465)	0.0000	0.2062	(0.0686)	(0.0337)	(0.0857)	(0.0722)	0.0068	(0.0071)	(0.0417)
Ol Pejeta	(0.0938)	(0.0375)	(0.0532)	0.0000	(0.0938)	0.0476	0.0000	(0.2048)	0.1597	0.0000	0.0086
Pan Africa Ins	(0.0857)	0.0476	(0.0256)	0.0323	(0.1593)	(0.0164)	(0.0216)	(0.2000)	0.0000	0.2062	0.0000
Pearl Dry Cleaners	(0.1593)	0.0000	0.2062	(0.0938)	(0.0106)	(0.0142)	(0.0355)	(0.0221)	(0.0560)	(0.0857)	0.0000
Philips International	0.0000	0.0917	0.0323	(0.0337)	0.0000	0.0000	(0.0244)	0.0826	0.0000	(0.0216)	(0.0079)
Sasini	(0.0337)	0.0214	(0.0862)	0.0476	(0.0337)	(0.0513)	(0.0079)	0.0949	(0.0355)	0.0476	0.0000
Standard Chartered Bank	(0.0216)	0.0273	0.0000	0.0214	0.0000	0.0000	0.0000	0.0187	0.0000	0.0323	(0.4413)
Standard Newspapers	(0.0355)	0.1700	(0.1044)	0.0000	0.0000	(0.0513)	(0.0862)	(0.0442)	0.0000	(0.0417)	0.2062
Theta	(0.0164)	0.0000	(0.2276)	(0.0513)	(0.0164)	0.0000	0.0000	0.0000	(0.0244)	(0.0513)	(0.0938)
Total	0.0000	0.0000	0.0068	0.0000	0.0647	0.0000	0.0000	(0.2761)	0.0833	0.0000	(0.0169)
Uchumi Supermarkets	0.1597	0.0167	0.0214	(0.0164)	(0.0079)	0.0476	(0.0532)	0.0960	(0.0106)	0.0000	(0.0071)
Unga	0.0476	(0.0870)	0.0000	0.0000	(0.2678)	0.0000	0.0000	(0.1200)	0.0000	0.0000	0.0000
Mean	(0.1831)	(0.0130)	(0.0056)	(0.0352)	(0.0145)	(0.0287)	(0.0483)	(0.0217)	(0.0154)	(0.0172)	
Variance	1.4456	0.0110	0.0036	0.0071	0.0030	0.0076	0.0269	0.0094	0.0078	0.0080	
Hypothesized Mean Difference	0.0000				0.0000		0.0000		0.0000		
t Stat	(1.0131)		1.9188		0.9270		(0.9936)		0.1013		
t Critical two-tail	2.0076		2.0076		2.0076		2.0076		2.0076		
Reject HO if T<-t or T>t	ACCEPT		ACCEPT		ACCEPT		ACCEPT		ACCEPT		







Month Week	July-95		August-95		September-95		October-95		November-95		December-95	
	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	
Ordinary Shares												
A Baumann	0.0000	(0.0526)	(0.2500)	0.0000	0.0000	0.0000	0.0000	0.0600	(0.0532)	0.0000	(0.0337)	
A T Hotels	0.0000	(0.0681)	(0.1488)	0.0000	0.0000	0.0000	0.0000	(0.0294)	(0.0862)	(0.1275)	(0.0164)	
B Bond	0.0000	0.0101	(0.0686)	0.0000	0.0000	0.0000	0.0000	0.0355	0.0000	0.0000	0.0000	
Bamburi	0.0000	(0.1667)	(0.0588)	(0.1044)	0.1597	0.0000	(0.0417)	(0.0143)	0.0000	0.0214	0.0000	
Barclays Bank	(0.0244)	0.0704	0.0411	0.0000	0.0000	0.0000	(0.2276)	(0.1439)	(0.0079)	0.0000	0.0323	
BAT	(0.0417)	0.0364	0.0847	0.0411	(0.0355)	0.0000	0.0000	0.1509	0.0000	(0.1044)	(0.0256)	
BOC (K)(formely E.A.O)	0.0000	(0.0569)	0.1000	0.0000	(0.2500)	0.0000	(0.0588)	(0.3538)	0.0000	0.0000	(0.0513)	
Car & Gen	0.0000	(0.0215)	0.0000	0.0000	0.0000	(0.1275)	0.0000	0.1368	(0.2276)	0.0000	0.0000	
Carbacid	0.0000	(0.0870)	0.0833	0.0671	(0.0244)	0.0847	(0.4413)	(0.0743)	0.0000	0.0411	0.0000	
CFC Bank	(0.0862)	0.0252	0.0068	0.0000	0.0000	0.0000	(0.1488)	0.0259	0.0000	0.0000	(0.1044)	
City Trust	(0.0532)	0.0000	0.0671	0.0000	(0.2847)	0.0000	(0.2500)	0.0000	0.1000	(0.4413)	0.0214	
CMC	0.0000	0.1011	0.0000	0.0000	0.0000	0.0000	0.0000	(0.3750)	(0.2500)	0.0086	0.0000	
Crown Berger	(0.4413)	(0.0513)	0.0000	0.0068	(0.0532)	0.0833	0.0000	(0.0732)	0.0000	0.0671	(0.0588)	
Diamond Trust	(0.2276)	0.0476	0.0000	0.0000	(0.0142)	0.0000	0.0000	0.1417	(0.0071)	(0.0256)	0.0411	
Dunlop	0.0000	(0.0200)	0.0000	0.0000	(0.0862)	0.0000	(0.0256)	0.0078	(0.0857)	0.0068	0.0847	
E.A.Cables	(0.0256)	(0.1091)	0.0000	0.0000	(0.2276)	(0.0161)	0.0000	(0.1803)	(0.0216)	0.0000	0.0833	
E.A.Packaging	(0.0588)	0.0426	0.0000	0.0000	(0.1488)	(0.0560)	0.0847	0.1611	(0.0417)	0.0000	(0.0200)	
E.A.Portland	0.0847	0.1053	(0.0071)	(0.0161)	(0.0513)	0.0000	0.0833	(0.0294)	0.0000	(0.0161)	(0.1091)	
Eaagads	0.0000	0.0000	(0.1593)	0.0000	0.0000	0.0000	(0.0161)	0.4000	0.0000	0.0000	0.0000	
Express	0.0000	(0.0123)	0.0000	0.0000	0.0000	0.0086	0.0000	(0.0976)	(0.1488)	0.0000	(0.0161)	
Firestone E.A.(1969)	0.0833	0.0100	0.2062	0.0000	(0.0200)	(0.0106)	0.0000	(0.0101)	(0.4413)	0.0000	(0.0569)	
G.Williamson	(0.1275)	0.2624	0.0000	0.0000	(0.1275)	(0.2847)	0.0000	(0.1544)	0.0000	0.0000	0.0000	
HFCK	(0.2500)	0.0686	(0.0857)	0.0000	0.0000	0.0000	0.0000	(0.1053)	0.2062	0.0000	0.0671	
Hutchings Biemer	0.0000	0.0000	0.0000	(0.1275)	(0.0161)	0.0000	(0.0686)	0.0000	0.0000	(0.0938)	0.0000	
ICDC	(0.1488)	(0.1102)	(0.0218)	0.0000	0.0476	(0.1275)	0.0000	0.0780	0.0323	(0.0588)	0.0068	
Jubilee	0.0000	(0.0884)	0.0000	0.0000	(0.0513)	0.0000	0.0000	0.0457	0.0214	0.0847	0.0000	
K.Brewanes	0.0000	0.0647	0.0323	(0.0560)	(0.1091)	0.0000	0.0000	0.1231	0.0000	(0.0560)	0.0426	
K.C.Bank	0.0000	(0.0145)	(0.0417)	0.1000	0.0000	0.0086	0.0000	(0.2143)	(0.1044)	0.0833	(0.0857)	
K.Orchads	0.0000	(1.2727)	0.0411	0.0000	0.1053	0.0000	0.0000	(0.3760)	(0.0588)	0.0000	0.0647	
K.Pow.&L.	(0.0142)	(0.0656)	0.0671	(0.0079)	0.0100	0.0000	0.0000	(0.3462)	0.0847	(0.0079)	(0.2678)	
Kalkuzi	0.0000	0.0300	0.1597	(0.2847)	0.0000	0.0000	(0.0560)	0.0309	(0.0686)	(0.2847)	0.0000	
Kapchorua	0.0086	0.0517	(0.0355)	0.0000	0.0086	(0.0142)	0.0000	(0.0545)	(0.1593)	0.0000	(0.1275)	
Ken. Nat Mills	0.0000	(0.2678)	0.0214	0.0000	(0.0569)	(0.0079)	0.0000	0.1121	(0.0256)	0.0000	0.1053	
Kenol	(0.2847)	(0.0169)	(0.1044)	(0.0106)	0.0426	0.0000	0.0000	(0.0083)	0.0000	(0.0106)	0.0100	
Kenya Finance Trust	0.0000	0.1265	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.0411	0.1000	(0.0216)	
Limuru Tea	0.0000	0.0048	(0.0244)	(0.0142)	0.0000	0.0000	(0.0106)	(0.0450)	0.0000	(0.0142)	0.0000	
Marshalls	0.0000	0.0370	0.1000	0.0000	0.0000	(0.0938)	(0.1593)	(0.0331)	0.0000	(0.0337)	(0.0560)	
Motor Mart	0.0000	(0.0123)	0.0000	0.0086	(0.0560)	(0.0337)	0.0000	(0.3415)	(0.0161)	(0.0164)	0.0000	
Nation Media Group.	(0.0686)	0.1941	(0.0071)	0.0000	0.0000	0.0000	0.1597	(0.4234)	0.0000	0.0000	(0.0106)	
National Bank	0.0000	0.0521	(0.4413)	(0.0071)	0.0000	(0.0938)	0.0000	0.0110	0.0671	0.0000	0.0000	
National Industrial Credit	0.0000	(0.0465)	0.0000	0.2062	(0.0686)	(0.0337)	(0.0857)	(0.0722)	0.0068	(0.0071)	(0.0417)	
Ol Pejeta	(0.0938)	(0.0375)	(0.0532)	0.0000	(0.0938)	0.0476	0.0000	(0.2048)	0.1597	0.0000	0.0086	
Pan Africa Ins	(0.0857)	0.0476	(0.0256)	0.0323	(0.1593)	(0.0164)	(0.0216)	(0.2000)	0.0000	0.2062	0.0000	
Pearl Dry Cleaners	(0.1593)	0.0000	0.2062	(0.0938)	(0.0106)	(0.0142)	(0.0355)	(0.0221)	(0.0560)	(0.0857)	0.0000	
Philips International	0.0000	0.0917	0.0323	(0.0337)	0.0000	0.0000	(0.0244)	0.0826	0.0000	(0.0216)	(0.0079)	
Sasini	(0.0337)	0.0214	(0.0862)	0.0476	(0.0337)	(0.0513)	(0.0079)	0.0949	(0.0355)	0.0476	0.0000	
Standard Chartered Bank	(0.0216)	0.0273	0.0000	0.0214	0.0000	0.0000	0.0000	0.0187	0.0000	0.0323	(0.4413)	
Standard Newspapers	(0.0355)	0.1700	(0.1044)	0.0000	0.0000	(0.0513)	(0.0862)	(0.0442)	0.0000	(0.0417)	0.2062	
Theta	(0.0164)	0.0000	(0.2276)	(0.0513)	(0.0164)	0.0000	0.0000	0.0000	(0.0244)	(0.0513)	(0.0938)	
Total	0.0000	0.0000	0.0088	0.0000	0.0647	0.0000	0.0000	(0.2761)	0.0833	0.0000	(0.0169)	
Uchumi Supermarkets	0.1597	0.0167	0.0214	(0.0164)	(0.0079)	0.0476	(0.0532)	0.0960	(0.0106)	0.0000	(0.0071)	
Unga	0.0476	(0.0870)	0.0000	0.0000	(0.2678)	0.0000	0.0000	(0.1200)	0.0000	0.0000	0.0000	
Mean	Variable 1 (0.1631)	Variable 2 (0.0130)	Variable 1 (0.0056)	Variable 2 (0.0352)	Variable 1 (0.0145)	Variable 2 (0.0287)	Variable 1 (0.0483)	Variable 2 (0.0217)	Variable 1 (0.0154)	Variable 2 (0.0172)		
Variance	1.4456	0.0110	0.0036	0.0071	0.0030	0.0076	0.0269	0.0094	0.0078	0.0080		
Hypothesized Mean Difference	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
t Stat	(1.0131)		1.9188		0.9270		(0.9936)		0.1013			
t Critical two-tail	2.0076		2.0076		2.0076		2.0076		2.0076			
Reject HO if T<-t or T>t	ACCEPT		ACCEPT		ACCEPT		ACCEPT		ACCEPT			









## 1999 Biweekly Returns

Month	December-98		January-99		February-99		March-99		April-99		May-99		June-99		July-99		August-99		September-99		October-99		November-99		December-99	
Week	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	3&4	1&2	
Ordinary Shares																										
A. Baumann	0.0086	0.0208	0.0000	0.0000	0.0000	0.0000	(0.1254)	0.0000	0.0000	0.0000	(0.0200)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A. T. Hotels	0.0000	0.0000	0.0000	1.5000	0.0000	0.0000	(0.0667)	0.0179	0.0000	0.0000	0.0089	0.0000	0.0000	0.0351	0.0000	0.0000	0.0083	0.0000	(0.0164)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Athi River Mining Ltd	0.0000	0.0976	(0.3278)	0.0000	(0.0551)	0.0000	(0.1667)	(0.0600)	0.0714	0.0833	0.0909	0.0000	0.0161	0.0435	0.0083	0.3043	0.0091	(0.0545)	0.0189	0.0000	(0.1500)	0.0000	0.0087	0.0000	0.0000	0.0000
B. Bond	(0.0976)	(0.0139)	(0.0070)	0.0000	0.0000	0.0000	0.0141	0.0069	0.0000	(0.0068)	0.0068	0.0000	(0.0588)	0.0000	0.0068	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(0.0095)	0.0000	0.0000	0.0000
Bamburi	0.0000	(0.0625)	(0.0541)	0.0000	0.0333	0.0134	(0.0323)	0.0000	(0.1491)	0.0309	0.0521	0.0000	0.0539	0.0000	0.0541	0.0333	0.0000	(0.1043)	0.0096	0.0000	0.0000	0.0000	0.0000	0.0196	0.0000	0.0000
Barclays Bank	(0.3750)	(0.0687)	0.0500	0.0000	0.0000	0.0000	(0.0756)	(0.0364)	0.0000	0.0283	0.0093	0.0185	0.0000	0.0000	0.0085	(0.0090)	(0.0741)	0.0200	0.0101	0.0097	(0.0288)	0.0000	0.0190	0.0000	0.0000	0.0000
BAT	0.0000	0.0064	(0.1447)	0.0000	0.1373	0.0217	(0.0287)	0.1243	(0.0053)	0.0265	(0.0052)	(0.0104)	0.0000	(0.0357)	(0.0500)	(0.0063)	0.0191	0.0500	(0.0058)	(0.0235)	(0.0833)	0.0000	0.0000	0.0000	0.0000	0.0066
BOC (K)(formerly E.A.O)	(0.0938)	0.0000	0.0067	0.0000	0.0000	0.0000	0.0365	(0.0423)	0.0219	0.0143	0.0000	0.0000	0.0000	0.0000	(0.0141)	(0.0141)	(0.1139)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0229	(0.0222)	0.0000
Car & Gen	(0.0331)	0.0286	(0.1429)	(0.6033)	0.0000	0.0000	0.0160	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Carbacid	0.0000	0.0000	0.0615	0.0000	0.0219	0.0227	0.0286	(0.0278)	0.0000	(0.0071)	0.0000	(0.0210)	(0.0164)	0.0000	0.0141	0.0000	1.0165	0.0000	0.0000	(0.0167)	0.0156	0.0000	0.0000	0.0000	0.0000	(0.0441)
CFC Bank	0.0000	0.1481	(0.0123)	0.0000	(0.1073)	0.0000	(0.1475)	(0.0224)	(0.0507)	0.0000	0.0036	0.0241	0.0000	0.0600	(0.0291)	0.0000	0.0000	0.0000	0.0000	0.0187	(0.0492)	0.0000	(0.0244)	0.0000	0.0000	0.0000
City Trust	(0.0337)	0.0000	0.1630	0.0000	0.0000	0.0101	(0.0467)	0.0000	0.0306	(0.1188)	0.0000	(0.0217)	0.0000	0.0444	0.0000	(0.0213)	0.0000	(0.0556)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CMC	(0.3415)	0.3000	0.0000	0.0000	0.0390	0.0333	(0.1750)	0.0000	0.0000	(0.1471)	0.0515	(0.0459)	(0.0109)	0.0400	(0.0385)	0.0000	(0.1100)	(0.1857)	0.0191	0.0000	0.0000	0.0000	0.0000	0.0217	0.0133	0.0000
Crown Berger	0.0000	0.1702	(0.1364)	0.0000	0.0214	(0.1048)	0.3007	0.0269	(0.0467)	0.0303	0.0058	0.0000	0.0000	0.0000	0.0000	0.0000	(0.0038)	(0.1231)	0.1867	(0.0071)	(0.0074)	0.0000	(0.2687)	(0.0300)	0.0000	
Diamond Trust	(0.4234)	0.0222	0.0100	0.0000	0.0000	0.0000	(0.0385)	0.0000	0.0000	(0.0300)	0.0435	(0.0103)	0.0000	0.0435	0.0104	0.0417	(0.0345)	0.0375	0.1220	(0.0108)	(0.0213)	0.0000	0.0000	0.0000	(0.0099)	0.0000
Dunlop	(0.0221)	(0.0455)	(0.0654)	0.0000	(0.0600)	0.0000	(0.2340)	(0.0558)	0.0206	(0.0202)	(0.0567)	(0.0132)	0.0204	0.0000	0.0000	0.0206	0.0000	0.0000	0.0111	0.0219	(0.0327)	(0.0226)	(0.0099)	(0.2000)	0.0383	0.0000
E.A. Cables	0.0826	0.2653	0.0000	0.0000	0.0000	0.0000	(0.0562)	0.0000	0.0000	0.0000	0.0000	0.0311	(0.0039)	0.0000	0.0000	0.0000	0.0000	(0.0184)	0.0000	0.0000	0.0000	0.0093	(0.0647)	0.0000	0.0000	
E.A. Packaging	0.0960	0.0932	0.1324	0.0000	0.0000	0.0000	(0.0107)	0.0000	0.0000	0.0000	0.0000	(0.0215)	0.0352	0.0000	0.0000	0.0474	0.0000	(0.2857)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E.A. Portland	0.0476	0.0732	(0.0123)	0.0000	0.0125	0.0482	(0.0123)	0.0000	0.1111	0.0000	0.1508	(0.0203)	0.0811	0.0000	(0.0210)	0.0000	0.0000	(0.0036)	(0.0265)	(0.2227)	0.0000	0.0000	0.2941	0.0045	0.0000	
Eaagads	(0.0164)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(0.4353)	0.0000	0.0000	0.0000	0.0000	0.0000	(0.0031)	0.0000	0.0000	0.0000	0.0000
Express	(0.0442)	0.0000	0.0000	0.0000	0.0000	0.0625	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Firestone E.A. (1969)	(0.0513)	(0.1124)	(0.0476)	2.2000	0.0077	(0.0163)	0.0840	0.0141	0.0479	(0.0065)	0.0000	0.0132	0.0000	0.0127	(0.0062)	0.0562	0.0121	0.0121	(0.0060)	(0.0250)	(0.0769)	0.0189	(0.0210)	0.0000	0.0000	0.0000
G. Williamson	0.0000	0.0286	(0.0420)	0.0000	0.0145	(0.0391)	0.0071	0.0000	(0.0139)	0.0070	0.0070	0.0000	0.0802	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(0.1143)	0.0000	0.0000
HFCK	(0.0161)	(0.0585)	(0.0828)	0.3520	0.0178	0.0000	0.0462	0.0166	0.0000	0.0054	0.0052	0.0052	0.0000	0.0204	0.0100	0.0196	(0.0097)	(0.0247)	(0.0196)	0.0000	(0.0099)	0.0180	(0.0099)	0.0400	0.0000	0.0000
Hutchings Biemar	0.0000	0.0000	0.0400	(0.7000)	0.0133	0.0000	0.0197	0.0194	0.0000	0.0000	0.0494	(0.0353)	0.0000	0.0000	(0.0357)	(0.0308)	0.0325	0.0098	0.0417	(0.0870)	0.0154	0.0000	0.1143	0.0000	0.0000	0.0000
ICDC	(0.0857)	(0.0118)	0.0241	(0.8387)	(0.1026)	0.0000	0.0071	(0.0071)	(0.0467)	(0.0163)	0.0952	(0.0188)	0.0000	0.0080	0.0400	0.0000	(0.0535)	(0.1349)	(0.0155)	(0.0050)	0.0000	0.0000	0.0000	0.0000	0.0050	0.0000
Jubilee	(0.1439)	0.2333	(0.0296)	0.0000	0.0000	(0.1341)	0.0000	0.0152	0.0000	0.0000	(0.0909)	(0.0583)	0.0180	0.0000	0.0000	0.0083	(0.0333)	0.0526	0.0000	0.0000	0.0100	0.0652	0.0500	0.0100	0.0000	0.0000
K Breweries	(0.0216)	0.0833	0.0000	(0.6875)	(0.0842)	(0.0278)	(0.0501)	(0.0029)	(0.0294)	0.0303	0.0118	(0.0353)	0.0252	0.0000	(0.0294)	(0.0294)	(0.1329)	(0.0036)	0.0038	0.0320	(0.0244)	0.0000	0.0071	0.0000	0.0000	0.0000
K.C. Bank	0.0000	(0.0870)	0.0158	0.0000	(0.0565)	0.0000	(0.1624)	(0.0408)	0.0000	(0.0222)	(0.0114)	0.0115	0.0000	(0.0300)	0.0056	(0.1264)	(0.0188)	(0.0844)	0.1000	(0.0068)	(0.0355)	0.0400	0.1667	(0.0682)	0.0000	0.0000
K. Orchads	0.0259	0.0000	0.0000	2.9500	(0.1328)	0.0000	(0.1908)	(0.0714)	0.0038	0.0000	0.0370	0.0036	(0.1667)	0.0000	0.0000	0.0000	0.0067	0.2188	0.0000	0.0809	0.0435	0.0000	0.2235	0.0000	0.0000	0.0000
K. Pow. & L.	0.0000	(0.0417)	(0.0153)	(0.5349)	(0.0820)	(0.0244)	0.0714	0.0000	(0.0333)	0.3103	0.0000	0.0000	0.0057	(0.0698)	0.0294	0.0000	0.0000	(0.1154)	0.0000	0.0000	0.0000	0.0000	0.1570	0.0000	0.0000	0.0000
Kakuzi	0.0000	0.0000	0.0142	0.0000	0.0211	0.0000	(0.1310)	0.0000	(0.0085)	0.0000	(0.0169)	(0.0083)	0.0345	0.0000	(0.0242)	0.0000	0.0000	(0.1738)	0.0000	0.0101	0.0000	0.0000	(0.0950)	0.0000	0.0000	0.0000
Kapchorua	0.1417	0.0000	0.1468	0.0000	0.0000	(0.0476)	0.0000	0.1520	0.0000	0.0417	0.0000	0.0000	0.0396	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0097	0.0000	0.0000	0.0000	0.0000
Ken. Nat. Mills	(0.1053)	(0.1297)	0.0025	(0.7468)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0528	0.0000	0.0000	0.0000	0.0000
Kenol	(0.0580)	0.0000	0.0526	1.1500	0.0000	0.0000	(0.0781)	0.0000	(0.0084)	(0.0254)	0.0088	0.0000	0.0169	0.0000	(0.0090)	(0.0179)	0.0000	(0.0396)	(0.0052)	(0.0306)	(0.0805)	0.0000	0.0938	0.0109	0.0000	0.0000
Kenya Airways Ltd	0.0000	0.0000	(0.2040)	0.3065	0.0000	0.0000	0.0000	(0.0673)	0.0000	0.0000	0.0000	0.0000	(0.0218)	0.0000	0.0000	0.0101	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Limuru Tea	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lonrho Motors (EA) Ltd	0.0000	(0.0530)	0.0000	0.0000	0.0072	0.0000	(0.0357)	0.0000	0.0000	0.0074	0.0233	0.0400	(0.1081)	(0.0455)	(0.0769)	0.0000	(0.0095)	0.0000	0.0000	0.0094	0.0000	0.0000	(0.0286)	0.0000	0.0000	0.0000
Marshalls	0.0000	(0.0387)	(0.0438)	1.5513	0.1529	(0.0058)	(0.2761)	(0.0150)	0.0000	0.0000	0.0235	0.0176	(0.0173)	0.0000	(0.1176)	0.0000	0.0000	0.0000								









# Appendix 1

Month Week Ordinary Shares	December-02		January-03		February-03	
	3&4	1&2	3&4	1&2	3&4	1&2
Athi River Mining Ltd	0.0000	0.4149	(0.1207)	0.0635	0.0071	
B Bond	0.0909	0.0000	0.2963	(0.0286)	0.0448	
Bamburi	0.0903	0.1538	0.0000	0.0000	0.0333	
Barclays Bank	0.0816	0.0472	0.0686	0.0545	0.0909	
BOC (K)(formely E.A.O)	0.0000	0.0000	0.0732	0.0112	(0.0204)	
British American Tobacco	0.0000	0.1852	(0.0317)	0.0154	0.0154	
Car & Gen	0.0000	0.0000	(0.0279)	0.0000	0.0000	
Carbacid	0.0000	0.2013	(0.0054)	0.0109	0.0000	
CFC Bank	0.0222	(0.0109)	0.1593	0.1364	0.0000	
CMC	0.0000	0.0000	0.0000	0.0000	(0.0204)	
Crown Berger	0.0000	0.2857	(0.0222)	(0.0739)	0.0000	
Diamond Trust	(0.0196)	0.2250	0.0000	(0.0231)	0.1600	
Dunlop	0.0000	0.0000	0.0000	0.0000	0.0000	
E. A. Breweries	0.0924	0.1154	0.0385	0.0222	0.1071	
E.A Cables	0.0000	0.0924	0.0332	0.0000	0.0000	
E.A.Portland	0.0000	0.0000	0.1538	0.0000	0.0000	
Firestone E.A.(1969)	0.0115	0.1932	(0.1087)	(0.0553)	(0.0050)	
HFCK	0.0097	0.2692	(0.1597)	(0.1286)	(0.0294)	
Hutchings Biemer	0.0000	0.0000	0.0000	0.0000	0.0000	
ICDC	0.0000	0.2241	0.0355	0.0133	0.0000	
Jubilee	0.0000	0.1516	0.0244	0.0000	0.0119	
K.C.Bank	0.2059	0.4390	0.0532	(0.0943)	(0.0417)	
K.Pow.& L	0.0981	0.4841	0.1071	(0.1324)	0.0208	
Kakuzi	0.0000	0.1229	(0.0400)	0.0185	0.0000	
Kenol	0.0000	0.3084	(0.0909)	0.0000	0.0000	
Kenya Airways Ltd	0.1885	0.0552	(0.0323)	0.0000	0.0000	
Marshalls	0.0000	0.0000	0.0000	0.0000	0.0784	
Mumias	0.0000	0.5750	(0.2430)	0.3889	0.1325	
Nation Media Group	0.2500	0.0629	0.0000	(0.0116)	0.0353	
National Bank	0.0972	0.3038	0.0862	(0.0526)	0.1140	
National Industrial Credit	0.0703	0.2247	0.2276	0.0667	(0.0103)	
Pan Africa Ins	0.0000	0.1429	0.2500	0.0201	0.0392	
Rea Vipingo	0.0000	0.0962	0.7460	0.0000	(0.1900)	
Sasini	0.0000	0.3051	0.0000	0.0086	0.0000	
Standard Chartered Bank	0.1624	0.0368	0.1488	0.0214	0.0214	
Total	0.0341	0.2967	(0.1379)	0.0265	(0.0088)	
Tourism Promotion Services	0.0000	0.5526	(0.2683)	0.1294	0.3182	
Uchumi Supermarkets	0.0957	0.3204	0.2903	(0.0278)	0.0000	
Unga	0.1000	0.4545	0.1189	0.0685	(0.0667)	
	<i>Variable 1</i>	<i>Variable 2</i>	<i>Variable 1</i>	<i>Variable 2</i>	<i>Variable 1</i>	
Mean	0.0420	0.1799	0.0262	0.0112	0.0209	
Variance	0.0044	0.0302	0.0380	0.0066	0.0056	
Hypothesized Mean Differen	0.0000		0.0000		0.0000	
t Stat (T)	(4.7845)		0.4250		(0.1961)	
t Critical two-tail (t)	2.0227		2.0227		2.0227	
Reject HO if T<-t or T>t	REJECT		ACCEPT		ACCEPT	

# 2003 Biweekly Returns

March-03		April-03		May-03		June-03
1&2	3&4	1&2	3&4	1&2	3&4	1&2
0.1736	(0.0091)	(0.0463)	0.4072	(0.0351)	(0.0839)	(0.1511)
(0.0429)	0.0000	(0.0769)	0.0250	0.0163	0.1154	(0.0345)
0.0600	(0.0182)	0.0755	0.0556	(0.1030)	(0.0365)	0.0735
0.0328	0.0345	0.0635	0.0148	(0.1000)	0.0140	0.0069
0.0000	0.0000	0.1111	0.0000	0.1615	0.0069	(0.0070)
0.0949	0.0857	(0.0272)	0.2569	(0.1161)	0.0649	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	(0.0222)	0.0000
(0.0108)	0.0216	0.0737	(0.0093)	0.0926	0.0000	(0.0244)
(0.0041)	(0.0042)	(0.0308)	0.0000	0.9091	(0.0102)	(0.0206)
0.0104	0.0101	0.1275	0.0345	0.2847	(0.1053)	0.0181
0.0274	0.0000	0.0667	0.0000	1.0050	(0.1000)	(0.0617)
0.1034	0.0406	0.1147	0.0345	(0.1860)	0.0087	(0.2439)
0.0000	0.0417	0.0000	0.0000	0.1000	0.0000	(0.0384)
0.0625	0.0000	0.0815	0.0092	(0.0179)	(0.0323)	0.0000
0.0000	0.0000	0.0000	0.0745	0.0712	0.0071	(0.0262)
0.0980	0.4413	(0.0214)	0.0229	0.2071	(0.2062)	(0.2334)
0.0000	0.0256	(0.0526)	0.0221	0.0237	(0.0214)	0.0000
0.0500	(0.0071)	0.0286	0.2416	(0.0609)	(0.2000)	0.1283
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0064	0.0000	0.0128	0.0189	0.0000	(0.0333)	0.0753
0.1591	(0.0377)	0.0385	(0.0088)	0.0370	(0.0286)	0.0982
0.4194	(0.0168)	0.3223	0.1000	(0.2701)	0.0377	(0.0192)
0.0928	(0.0847)	0.0370	0.0992	(0.0241)	(0.0671)	0.0288
(0.0375)	0.0000	0.0230	0.3077	0.0490	(0.0952)	(0.0842)
(0.0538)	0.0000	0.0079	0.0692	0.0400	0.1044	(0.0050)
0.0000	(0.0169)	(0.0086)	0.0088	0.0142	(0.0152)	0.0560
0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0588	(0.0528)	(0.1154)	(0.1875)	(0.0411)	0.0139
0.0000	0.0000	0.0938	0.0761	(0.0476)	0.0699	0.0106
0.1845	(0.1000)	(0.0427)	0.1239	0.4975	(0.0772)	(0.1765)
0.0326	(0.0707)	0.1304	0.2430	(0.0327)	(0.1353)	0.0313
0.0000	0.0000	0.0037	0.0000	0.1189	0.0000	0.0000
(0.0123)	0.0937	0.0571	(0.0294)	0.2447	0.0000	(0.0500)
0.0000	0.0000	0.0000	0.0000	0.0110	(0.0109)	0.0000
0.0490	(0.0199)	0.1842	0.0337	(0.1165)	0.0380	0.0430
0.0377	(0.0833)	0.1724	0.0160	0.0903	(0.0068)	0.0000
0.0543	(0.0673)	0.0337	0.1500	0.0513	(0.0174)	0.0000
(0.6439)	0.8966	0.0164	(0.0323)	0.0240	0.0320	0.0079
(0.0213)	0.0000	0.0857	0.2350	(0.1935)	(0.0833)	(0.3065)

Variable 2	Variable 1	Variable 2	Variable 1	Variable 2	Variable 1	Variable 2
0.0256	0.0304	0.0401	0.0621	0.0639	(0.0239)	(0.0229)
0.0187	0.0262	0.0059	0.0114	0.0621	0.0047	0.0080
	0.0000		0.0000		0.0000	
	(0.3241)		(0.0398)		(0.0588)	
	2.0227		2.0227		2.0244	
	ACCEPT		ACCEPT		ACCEPT	



## CURRENT LISTING OF MAIN INVESTMENT MARKET SEGMENT

### **Agricultural**

Brooke Bond Ltd Ord. 10.00

Kakuzi Ltd. Ord. 5.00

Rea Vipingo Plantations Ltd. Ord. 5.00

Sasini Tea and Coffee Ltd. Ord. 5.00

### **Commercial and Services**

African Lakes Corporation PLC Ord. 5.00

Car and General (K) Ltd. Ord. 5.00

CMC Holdings Ltd. Ord. 5.00

Hutchings Biemer Ltd. Ord. 5.00

Kenya Airways Ltd. Ord. 5.00

Marshalls (E.A) Ltd. Ord. 5.00

Nation Media Group Ord. 5.00

Tourism Promotion Services Ltd. Ord. 5.00 (Serena)

Uchumi Supermarket Ltd. Ord. 5.00

### **Finance and Investment**

Barclays Bank Ltd. Ord. 10.00

C.F.C Bank Ltd. Ord. 5.00

Diamond Trust Bank Kenya Ltd. Ord. 4.00

Housing Finance Co. Ltd. Ord. 5.00

I.C.D.C Investments Co. Ltd. Ord. 5.00

Jubilee Insurance Co. Ltd. Ord. 5.00

I

Kenya Commercial Bank Ltd. Ord. 10.00

National Bank of Kenya Ltd. Ord. 5.00

NIC Bank Ltd. Ord. 5.00

Pan African Insurance Ltd. Ord. 5.00

Standard Chartered Bank Ltd. Ord. 5.00

**Industrial and Allied**

Athi River Mining Ord. 5.00

B.O.C Kenya Ltd. Ord. 5.00

Bamburi Cement Ltd. Ord. 5.00

British American Tobacco Kenya Ltd. Ord. 5.00

Carbacid Investments Ltd. Ord. 5.00

Crown Berger Ltd. Ord. 5.00

Dunlop Kenya Ord. 5.00

E.A Cables Ltd. Ord. 5.00

E.A Portland Cement Ltd. Ord. 5.00

East African Breweries Ltd. Ord. 10.00

Firestone East Africa Ltd. Ord. 5.00

Kenya Oil Company Ltd. Ord. 5.00

Mumias Sugar Company Ltd. Ord. 2.00

Kenya Power and Lighting Ltd. Ord. 5.00

Total Kenya Ltd. Ord. 5.00

Unga Group Ltd. Ord. 5.00

**Alternative Investment Market Segment**

A. Baumann and Company Ltd. Ord. 5.00

City Trust Ltd. Ord. 5.00

E.A. Packaging Ltd. Ord. 5.00

Eaagads Ltd. Ord. 1.25

Express Ltd. Ord 5.00

Williamson Tea Kenya Ltd. Ord. 5.00

Kapchorua Tea Company Ltd. Ord. 5.00

Kenya Orchards Ltd. Ord. 5.00

Limuru Tea Company Ltd. Ord. 20.00

Standard Newspapers Group Ord. 5.00

**Fixed Income Securities Market Segment**

Preference Shares

Kenya Power and Lighting Ltd. 4.0% Pref. 20.00

Kenya Power and Lighting Ltd. 7.0% Pref 20.00

Marshalls (East Africa) Ltd. 7% Pref 20.00

Standard Newspapers Group Pref 5.00

Kenya Planters Co-operative Union 10% Unsec. Red Loan Stock 1996 - 2000

East African Development Bank (TB + 0.75%) 2003

Government of Kenya Treasury Bonds (Government Securities).

UNIVERSITY OF NAIROBI  
LOWER KENYATE LIBRARY