STUDY OF HOLIDAY EFFECT AT THE NAIROBI STOCK EXCHANGE

BY:

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DECLARATION

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

Signed : ..... Date :.....

Adan Mukhtar Osman

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

Signed :..... Date.....

Jay Gichana

DEDICATION

With Genuine Humility, I Acknowledge Your Aid, O GOD!

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List of abbreviations

EMH – Efficient Market Hypothesis

NSE – Nairobi Stock Exchange

OMAM – Old Mutual Asset Management

CAPM – Capital Asset pricing Model

CRSP – Centre for Research in Security Prices

ABSTRACT

The objective of this study was to investigate whether the stock returns at the NSE exhibit holiday effect. The holiday effect portends that on a day prior to the public holidays, stocks exhibit relatively high returns than the rest of the trading days. According to Ariel (1990), on the trading day prior to holidays, stocks advance with disproportionate frequency and show high mean returns averaging nine to fourteen times the mean return for the remaining days of the year.

The study used regression analysis to find out if the stock returns around the public holidays were higher compared to the returns of other days of the week. The regression equation was modified to eliminate those holidays that do not fall on fixed dates in the year. These holidays are Idd ul Fitr and the Easter holidays. T-test was applied to assess the significance of the coefficients derived from the regression equation. None of the coefficients of the regression equation registered significance. The study shows that holidays do not have a significant impact on stock market activity at the Nairobi Stock Exchange. There is no holiday effect at the Nairobi Stock Exchange.

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CHAPTER ONE

1.O INTRODUCTION

1.1 Background

Security prices and their returns have been of great concern to investors. Investors and stakeholders in the stock market are interested in maximizing returns on their investments and hence wealth maximization. It therefore follows that seasonalities on return determine the behavior of stock market returns.

Stock returns are influenced by several factors such as the level of economic activity, government's fiscal policy and taxation policies, management policies and stock market conditions (Kingori, 1995). It has been noted that during economic boom, stock returns are generally higher than during recession. It is common knowledge that stock prices fluctuate from time to time. These changes in stock prices lead to fluctuations in stock returns.

Over the last two decades, researchers in finance have documented several empirical regularities which challenge the capital asset pricing model's basic proposition that beta is a sufficient measure of risk (Albert, Gabriel and Pierre, 1987). It appears that variables other than beta partially explain the cross-section of asset returns and that returns exhibit persistent seasonal components. Many of these appear to be at odds with the Efficient Market Hypothesis, which states that the past history of security prices cannot be useful for predicting future price changes. The Efficient Market Hypothesis holds that security prices fully reflect all the available information (Fama,1970). Important current information is almost freely available to all market participants. In an efficient market at any point in time the actual price of a security will be a good estimate of its intrinsic value. Eugene Fama formulated this theory in 1970. Thus, according to Efficient Market Hypothesis, no investor has an advantage in predicting a return on stock price since no one has access to information not already available to everyone else.

The Efficient Market Hypothesis has the following implications for investors:

Because information is reflected in prices immediately, investors should only expect to maintain a normal rate of return. Awareness of information when it is released does an investor no good. The price adjusts before the investor has time to trade on it.

Much of the public is skeptical of efficiency because stock prices fluctuate from day to day. However, this price movement is in no way inconsistent with efficiency; a stock in an efficient market adjusts to new information by changing price. In fact, the absence of price movements in a changing world might suggest an ineffiency.

Stock market anomalies are empirical results that seem to be inconsistent with maintained theories in the stock market. While the existence of these anomalies is well accepted, the question of whether investors can exploit them to earn superior returns in future is subject to debate. Investors evaluating anomalies should keep in mind that although they have existed historically, there is no guarantee they will persist in future.

In particular, financial economists have documented a phenomenon known as "January Effect" (Rozeff and Kinney, 1976) where investors can earn a disproportionately high returns in January compared to other months of the year. Other anomalies that contradict the Efficient Market Hypothesis include the weekend effect and small firm effect (Keim, 1983).

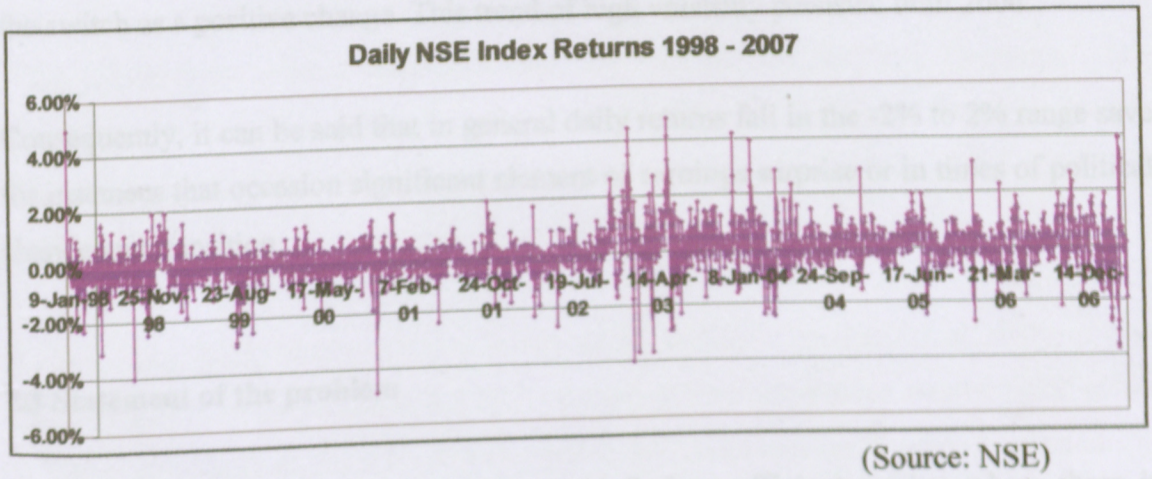
The weekend effect is the tendency of stock values and prices to be low on Mondays and increase in value in other days of the week (French, 1980).

The small firm effect/the size effect holds that the risk adjusted annual return of small firms is greater than those of big firms (Banz, 1981). 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.

The holiday effect anomaly portends that on average high stock returns are earned on the day preceding the public holidays than other days. Lakonishok and Smidt (1988), Ariel (1990), and Cadsbuy and Ratner (1992) all provide evidence to show that returns are, on average, higher the day before a holiday than on other trading days. Brockman and Michayluk (1998) describe the pre-holiday effect as one of the oldest and most consistent of all seasonal regularities. The fact that abnormal returns can be earned by exploiting this anomaly is clear indication of market inefficiency.

1.2 Behaviour of Stock Returns in Kenya



(Source: NSE)

Major Breakout Dates on NSE index Daily Returns 1998 – 2007

Negative Return Breakouts (below -2%)

7th Sep 98 – (3.99%)
1st Nov 00 – (4.83%)
17th Jan 03 – (4.02%)
23rd Mar 03 – (3.71%)
22nd Mar 07 – (3.58%)

Positive Return Breakouts (above 2%)

6th Jan 03 – 4.46%
8th May 03 – 4.76%
25th Nov 03 – 4.16%
29th Mar 07 – 3.92%

Over the last ten years daily stock market returns have largely gravitated between -2% and 2% with occasional instances of trend breakouts. When the returns are above or below the -2% to 2% range, they are said to have broken out from the norm. Between 1998 and 2002 major trend breakouts in returns appear to occur, approximately, after every six months perhaps in tandem with the half-year announcement cycles for most listed companies. Moreover, the six-months break out in earnings is indicative of the possibility that the breakouts are occasioned by the element of earnings surprise which causes the markets to jerk up or down based on the unanticipated results announced by listed companies. This trend is broken starting January 2003 as the market becomes more volatile and as a result the index witnesses increased breakout in returns from the normal range of -2% to 2%. This is mostly attributable to the change of Government after the 2002 elections, which psychologically boosted market sentiment as investors translated the switch as a positive change. This trend of high volatility persisted until 2004.

Consequently, it can be said that in general daily returns fall in the -2% to 2% range save for instances that occasion significant element of earnings surprise or in times of political change and transition.

1.3 Statement of the problem

In real world, it is unlikely that one would find an efficient market where there is availability of information, homogenous investor expectations and zero transaction costs i.e. where no investor can out-perform the other and arbitrary profits are eliminated. There are market imperfections and these lead to stock return seasonalities. It is therefore important to understand stock market seasoalities to be able to take advantage of them.

One of the main concerns of investment analysts is the predictability of stock returns. The more predictable, the lower the risk. This concern gives value to the study of stock market behavior. Knowledge of stock market anomalies is vital to investors. Through this

knowledge, investors will apply the principle of buy low and sell high to make high profits. In perfectly efficient markets, however, this arbitrage profits are not possible.

Despite strong evidence that stock market is highly efficient, there have been scores of studies that have documented long-term historical anomalies in the stock market that seem to contradict the efficient Market Hypothesis. Studies carried out in the developed sock markets show that most stock markets are either efficient in their weak or semi strong form and hence the existence of market anomalies.

These anomalies include the weekend effect (French, 1980), turn of the year effect (Rozeff and Kinney, 1976), size effect/small firm effect (Banz, 1981) and holiday effect (Fosback, 1976), Lakonishok and Smidt (1988) and Cadsby and Ratner (1992).

Studies investigating stock market anomalies in Kenya include Elima (2006) entitled "The existence of reverse weekend effect: The case of Nairobi Stock Exchange". She sought to establish if there was 'reverse weekend effect at the Nairobi Stock Exchange. The result showed that Monday returns are not higher than the returns of the other days of the week.

On the other hand, Mokua (2003) in his study entitled "An Empirical study on the weekend Effect on the stocks at the NSE" sought to find out if there was weekend effect on the stock returns at the NSE. He concluded that there was no Weekend Effect at the NSE.

Samuel (2003) sought to establish if there was turn of the month and January Effects on stock prices at the NSE during the period July 1995 and June 2003 using the NSE daily closing prices and did not find turn of the month or January effects at the NSE.

The earliest study on stock seasonalities in Kenya was done by Kingori (1995). His objective was to establish if the NSE exhibited monthly and quarterly seasonalities.

The study found out that there was no seasonality detected at the NSE.

This study seeks to establish whether the holiday effect evident in other stock markets of the world is also present at the NSE. The research question therefore is: do the stock returns at the NSE exhibit higher returns on average on the days preceding holidays?

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

H_o: Stock returns at the NSE do not exhibit higher average returns around the public holidays.

H_A: Stock returns at the NSE exhibit higher average returns around the public holidays.

1.4 Objective of the study

To determine whether there are holiday effects at the NSE.

1.5 Importance of the study

1. The performance of the stock market is important to the Government and stakeholders in the financial market. A sound financial market is a sign of stability of the financial sector.

2. The findings from the study can be used as a guide by investors. Knowledge of the holiday effect will help investors in making buy, hold or sell decisions. It will increase information to advice on the trading approach to adopt, whether passive or active trading.

3. Academicians can use recommendations from this research as a basis to carry out further research.

4. The management of any company 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's stock.

Definition of terms

Seasonality

The seasonal patterns or behaviour of stock prices and returns.

Stock market anomalies

Empirical results that seem to be inconsistent with maintained theories in the stock market.

Weekend Effect

This is the tendency of stock values and prices to be low on Mondays and increase in value in the other days of the week.

Turn of the year/January Effect

This refers to the tendency for securities to register higher prices in the month of January as compared to other months of the year.

The size Effect/small Firm Effect

Stock of low capitalization companies earning excess returns.

The Holiday Effect

This refers to the tendency of stock values to be higher during preholidays.

Intraday Effects

This refers to the movements of stock prices within the day.

CHAPTER TWO

2.0 LITERATURE REVIEW

An issue that is the subject of intense debate among academics and financial professionals is the efficient Market Hypothesis (EMH). Fama (1970) defined an efficient market as a market in which prices always "fully reflect" available information. The market is efficient if the reaction of market prices to new information is instantaneous such that old information cannot be used to foretell future price movements. This hypothesis has encouraged empirical research, and based on the consensus of evidence, the value of traditional security analysis is strongly questioned (Rieke 1975).

The Efficient Market Hypothesis predicts that security prices follow a random walk; it should be impossible to predict future returns based on publicly available information. Specifically, it should be impossible to predict changes in stock prices based on past price behaviour. The first attempts to test this hypothesis examined short-term serial correlations in stock prices; when no significant correlations were found, this evidence was judged consistent with a random walk.

In recent years there has been a proliferation of empirical studies documenting unexpected or anomalous regularities in security rates of return. The findings present a potentially serious challenge to classical models of market equilibrium and have stimulated the development of new theories that can account for them. This contradicts Fama's Efficient Market Hypothesis, which argued that security prices reflect all available information, and consequently any two assets/portfolios with the same risk – return matrix must be priced identically. The existence of anomalies suggests market inefficiency in which investors are able to earn abnormal rates of return, which is not commensurate with the degree of risk. More recently, researchers have demonstrated market inefficiency by identifying systematic variations in stock returns.

2.1 The Efficiency of a Market

The nature of information regulation depends on the informational efficiency of capital markets (Beaver 1989, Dyckman and Morse 1986). Consequently, researchers in accounting and finance have spent considerable effort attempting to measure efficiency. Although this investigation has spanned many research designs and has been applied to many different information signals, empirical tests all suffer from the same basic problem : the benchmark of interest, an informationally efficient market is unobservable. The asset price that would have prevailed in an efficient market must therefore be modeled, and the test of the market efficiency is confounded with a test of the asset-pricing model. Because of this ambiguity, whenever a researcher claims to find an abnormal return based on some information signal another researcher invariably responds that risk was not adequately controlled. For instance, Bernard and Thomas (1989, 1990) present evidence that markets do not adequately adjust to quarterly earnings announcements (i.e. there is a significant post announcement drift), while Ball et al. (1990) argue that the market adjustment may be correct if the level of risk during the announcement period is adequately controlled for.

Unlike naturally occurring markets, the efficiency of a laboratory market can be measured directly by creating another "artificial" economy that is identical to the economy of interest, except that all information is fully disseminated. The price in artificial economy is the efficient price by definition; it is determined endogenously and without reference to an asset-pricing model.

In any investigation of a market's efficiency, different traders must have different information at the time efficiency is being assessed; otherwise the market is efficient by definition. Although accounting disclosures are publicly available they can effectively generate different information signals to different traders. The markets presented here give two examples. In the aggregate certainty treatment, some traders received good

news signals and other traders received bad news signals. An example of this type of information system is an economy where different traders having different earnings expectation models. In such an economy the same earnings report can be good news to some traders and bad news to other traders.

2.2 Market Anomalies

Seasonalities in stock returns have been well documented in finance literature.
Some of the main anomalies that have been identified are as follows:

2.2.1 The January Effect

The January Effect refers to the phenomenon that January stock returns are, on average, higher than in other months.
Watchel (1942), Rozeff and Kinney (1976), and Dyl (1977) first observed the prevalence of significant excess returns and volume during January and suggested that tax-loss – selling at the year-end was a likely cause of the anomaly. The tax-loss-selling hypothesis is derived from the consequences of U.S tax code and Tax year-end of December 31. Properties of the U.S. tax code provide the motivation for individual investors to sell shares before the end of the year, particularly those shares for which losses have occurred.

Tax –loss selling refers to a downward price pressure induced at the end of the tax year when investors sell stocks that have experienced losses during the year. The incentive to sell resides in the ability to utilize capital losses in the current tax year to offset capital gains. This selling pressure is relieved at the beginning of the next tax year and prices bounce back creating positive excess returns.

Rozeff and Kinney used New York Stock Exchange for the period 1904-1974 and found that the average return for the month of January was higher compared to the returns of the other months. Later studies document the effect to be persistent in more recent years.

Roll (1983) hypothesized that the higher volatility of small capitalization stocks caused more of them to experience substantial short-term capital losses that investors might want to realize for income tax purposes before the end of the year. This selling pressure might reduce prices of small capitalization stock in December, leading to a rebound in early January as investors repurchase these stocks to re-establish their investment positions.

Keim (1983) found that the excess returns to small firms in January were temporarily concentrated. He concluded that 50% of the returns seen in the small caps occurred during the first five trading sessions of the month. He pointed out two possible theoretical explanations for this effect: the tax-loss-selling hypothesis and the information hypothesis. The information hypothesis refers to the supposition that smaller firms have less publicly available information than do large firms. This lack of information leads to greater uncertainty and risk, resulting in higher returns.

Reinganum (1983) examined U.S stock returns to investigate whether the tax-loss-selling hypothesis can fully explain January-size effect. He 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 cap 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.

Research by both Keim and Reinganum suggests that small firms are the most likely candidates for tax-loss-selling and that tax-loss-selling is just one of the explanations for the January effect.

To investigate the tax-loss-selling hypothesis, and also to see whether January returns might be merely a statistical artifact, several researchers have examined seasonal patterns in other countries.

Gultekin and Gultekin (1983) examined the monthly value weighted indices in seventeen countries with different tax laws and tax year-ends. They found a persistent January effect in most of the countries. In fact, the effect in the United States is smaller than in many other countries. In Belgium, the Netherlands and Italy, the January return exceeds the average return for the whole year.

The international evidence also suggests that while taxes seem relevant to the January effect, they are not the entire explanation. First, the January Effect is observed in Japan where no capital gains tax or loss offsets exists (Kato Schallheim, 1985). Second, Canada had no capital gains tax before 1972, yet did have a January effect before 1972 (Berges, McConnel, and Schlarbaum, 1984). Third, Great Britain and Australia have January effects, even though their tax years begin on April 1 and July 1 respectively.

January is special in some other surprising ways. De Bondt and Thaler (1985) have found that the firms, which have been the biggest winners or losers over a five-year period subsequently, have excess returns in the opposite direction. That is, the previous big winners have negative excessive returns, and the losers positive excess returns. The excess returns, especially for the losers, are concentrated in January.

Another surprising seasonal effect comes in the most recent contribution to a series of articles investigating whether stocks that pay high dividends earn higher returns (to compensate stockholders for having to pay taxes on the dividends). Keim (1986a) reports two anomalous results. Among those firms that pay positive dividends, returns do seem to increase with dividend yield. However, the highest returns are associated with the firms that pay no dividends. Also, the excess returns in both the high dividend and zero dividend groups are concentrated in January.

Berges, Mcconnell, and Schlarbaum (1984) also test whether tax-loss-selling hypothesis explains January effect using Canadian return data. They found that January effect in Canada is similar to those in the U.S.

Schultz (1985) and Jones, Lee, and Apenbrink (1991) provide further evidence for tax-loss-selling by examining the January effect around the introduction of individual taxes in 1917.

It also has been argued that the excess January returns could possibly be the effect of significant information releases that occur in January. As summarized by Jones and Lee (1995), the information hypothesis involves an adverse selection problem that may explain how seasonal selling results in price pressure that survives arbitrage.

2.2.2 The Weekend Effect

The most logical hypothesis-dubbed the "calendar time hypothesis" by French (1980) is that prices should rise somewhat more on Mondays than on other days because the time between the close of trading on Friday and the close of trading on Monday is three days, rather than the normal one day between other trading days. Accordingly, Monday returns should be three times higher than other weekday returns.

The first study of weekend effects in security markets appeared in the Journal of Business in 1931, written by a graduate student at Harvard named M.J Fields. He was investigating the conventional Wall Street Wisdom at the time "the unwillingness of traders to carry their holdings over the uncertainties of a week-end leads to liquidation of long accounts and a consequent decline of security prices on Saturday" (Fields, 1931). Fields examined the pattern of the Dow Jones Industrial Average (DJIA) for the period 1915-1930 to see if the conventional wisdom was true. He compared the closing price of the DJIA for Saturday with the mean of the closing prices on the adjacent Friday and Monday. He found that prices tended to rise on Saturdays. For the 717 weekends he studied, the Saturday price was more than $ 0.10 higher than the Friday-Monday mean 52 percent of the time, while it was lower only 36 percent of time.

Frank Cross (1973) studied the returns on the Standard and Poors index of 500 stocks (the S&P 500) over the period 1953-1970. He found that the index rose 62 percent of the

Fridays, but only 39.5 percent of the Mondays. The mean return on Fridays was 0.12 percent, while the mean return on Mondays was –0.18 percent.

Kenneth French (1980) also used the S&P index to study daily returns and obtained similar results. He studied the period 1953-1977 and found that the mean Monday return was negative for the full period (mean –0.168) and also for every five-year sub-period. The mean return was positive for all other days of the week, with Wednesdays and Fridays having the highest returns.

The Cross and French studies both measured Monday returns as the difference between the closing price on Friday and the closing price on Monday. This leaves open whether prices fall during the day on Mondays or between Friday's close and Monday's opening. This issue was investigated by Richard Rogalski (1984). Rogalski obtained opening and closing prices for the DJIA for the period from October 1, 1974 to April 30, 1984 and for the S&P 500 for January 2,1979 to April 30, 1984. He found that prices rose on Mondays from the opening to the close. The negative returns were all between the close of trading on Friday and the opening on Monday.

Thus the Monday effect became the weekend effect. He also found that weekends in January are different from other months. During January, weekend and Monday returns are positive.

Coursey and Dyl (1986) use a completely different approach to investigate weekend effect. Using the methods of laboratory market experiments, they introduced trading interruptions and observed the resulting pattern of prices. In their experiments, subjects traded assets with uncertain values. For the first two trading "days" of each three-day "week", the assets had a lifetime of one day. For the third day, which was followed by a one-period non-trading "weekend", assets had two-day lifetimes. The results were consistent with the evidence in actual security markets. The prices on the days before trading interruptions were significantly higher (per unit of return) than on other days.

Numerous explanations have been developed to rationalize the puzzling discovery of persistent daily returns. Lakonishok and Levi (1982) attribute the effect to the delay between the trading and settlements in stocks and in clearing checks. However, they also report that only 17 percent of the abnormally low Monday returns can be explained by the settlement period. Keim and Stambaugh (1984) report that neither measurement-error nor specialist-related explanations can explain the Monday effect. Flannery and Protopapadakis (1988) also suggest institutional aspects of the stock market cannot explain the Monday effect.

Lakonishok and Maberly (1990) document that individuals tend to increase trading activity (especially sell transactions) on Monday, which they believe might explain part of the weekend effect. Kamara (1995) provides evidence that individual trading is an important cause of the Monday seasonal by noting that the magnitude of the Monday effect for the S&P 500 declined significantly over the 1962-1993 period, a period of increased institutional trading activity. However, Sias and Starks (1995) report that the day-of –the week patterns in returns and volumes are more pronounced in securities in which institutional investors play a greater role.

Rogalski (1984), among others, documents that the average negative Monday return occurs during the nontrading period from Friday's close to Monday's opening (the weekend effect). Along this line of thought, Damodaran (1989) shows that firms tend to report bad news on Fridays and suggests that the delay of announcements of bad news might cause the negative Monday effect. However, he also reports that the delay of announcements of bad news on Friday can only explain a small proportion of the weekend effect. Given the available evidence, the Monday effect is still viewed as an anomaly that cannot be fully explained.

2.2.3 Empirical Studies on the Holiday Effect

Since the mid – 1970s there has been an explosion of empirical studies documenting anomalous regularities in security rates of return. One of the puzzling empirical findings reported in recent studies is the presence of abnormally high stock returns on the day before holidays. On holidays markets are closed to trading.

In French's investigation of weekend effects he looked at the price behaviour after holidays and found nothing special happening. However, in another early study, Fields (1934) found that the DJIA showed a high proportion of advances the day before the holidays. In this case, it took over 50 years for fields to be resurrected from obscurity by Robert Ariel (1985). Ariel looked at the returns on the 160 days that preceded holidays during the period 1963-1982. For an equal weighted index of stocks he found that the mean return on the preholidays was 0.529 percent, compared to 0.56 percent on other days, a ratio of greater than 9 to 1. For a value weighted index the preholiday returns average 0.365 percent compared to 0.026 percent on other days. The differences are both statistically and economically significant. Again, these results were replicated for the 90-year DJIA series by Lakonishok and Smidt (1987). They obtained an average preholiday return of 0.219 percent, compared to the normal daily rate of return of 0.0094 percent. The size of these numbers is highlighted by the fact that 51 percent of the capital gains in the DJIA have occurred on the approximately ten preholidays per year.

The study also found out that high stock returns predominate only the single trading days preceding the holidays and not on other days around the holiday period. The study also shows that the holiday effect is not a manifestation of other calendar anomalies particularly, the January effect, the weekend effect and small firm effect. The study rules out activity by specialists at the market close as a major causal factor. Covering by short-sellers who desire to close their allegedly very risk short positions in advance of holidays is given as a possible reason. The study also advances specific clienteles' investment decisions as a reason for the high pre-holiday returns. Ariel argues that there may exist some clientele, which preferentially buys (or avoids selling) on pre-holidays. Although

policy implications are indicated, the study clearly shows that there is room for devising a trading strategy using the holiday effect regularity.

Merril (1965) finds disproportionate advances of the Dow Jones Industrial Average (DJIA) on the trading day prior to the holidays for the period 1897 to 1965. Fosback (1976) reports high pre-holiday returns in the S&P 500 index. Only recently has the holiday effect been investigated in academic literature e.g. Lakonishok and Smidt (1988), Pettengill (1989), and Ariel (1990). In his comprehensive analysis of the holiday effect, Ariel (1990) documents that for CRSP value-weighted and equally weighted index returns over the 1963-1982 period, the average pre-holiday return is nine to 14 times higher than the mean return on the remaining days. He also reports that the high pre-holiday returns are not a manifestation of other calendar anomalies such as the January effect or the weekend effect. Kim C and Park (1994) found that the holiday effect exists in all three of the major stock markets in the U.S : the NYSE, AMEX and NASDAQ.

In another study, Chong, et al (1998) examined whether the holiday effect has declined in recent years across three major international markets of USA, the UK and Hong Kong. The study shows a decline of the holiday effect in these markets, significantly so, in the USA. They note that this result is not a surprise given the number of papers published on the pre-holiday effect in the US and the relative sophistication of the market. What is surprising however is that, the pre-holiday effect has actually reversed in the US with stock returns of pre-holiday becoming negative. Thus for the US, at least one anomaly has been replaced by another!

Vergin and Mcginnis (1999) show that, in the ten years from 1987 to 1996, the excess holiday returns have disappeared for large firms and have substantially diminished for small firms against earlier research findings. Earlier studies for instance Ariel (1984, 1990) show excess stock market returns in the united States on the days before holiday market closings, ranging from 6 to 27 times as large as returns on other days, as measured by a variety of indices and over periods up to 90 years.

Bhana (2002) evaluated the impact of the public holiday on the share returns of companies listed on the Johannesburg Stock Exchange (JSE) during the period 1975-1990. He used the Analysis of Variance (ANOVA) technique and nine pre-holiday periods to determine whether or not the holiday effect has an influence on share returns of companies listed on the JSE. The study finds high mean return accruing to the JSE overall Actuaries Index on the trading day prior to holidays, which is statistically significant. On average, the pre-holiday return equals five times the return accruing on non-pre-holidays. Over one-fifth of the return accruing to the broad market over the 1975-1990 period is attributable to the nine trading days prior to public holidays during each year.

Bhana's study on the holiday effect like other studies on stock market regularities has important implications for portfolio managers, active traders and speculators. The evidence presented in the study suggests that investors could benefit from the observed pre-holiday market behavior by adopting the following investment strategy : purchases should be delayed until the opening of the market after the holiday and sales should be made on the day immediately before the public holiday.

Fielder and Subrahmamyam studied how daily returns (from the CRSP) and volume (from NYSE website) behave around the Jewish High Holidays. They found that on both Rosh Hashanah and Yom Kippur, volume is down significantly, relative to that on all trading days in the sample period. They find that results are consistent with their prior intuition that Jews play a major role in equity trading so that their sentiment around important Jewish holidays has a significant impact in the US equity market.

They examined the average daily returns on the S&P over the period July 1962-December 2000 for Jewish holidays of Rosh Hashanah, Yom Kippur and Chanukah. They also examined the daily percentage change in dollar volume on the NYSE over the same period. They note that the study is important especially in the light of continuing debate on market efficiency. The study shows that markets appear to behave in particular

fashion around the High Holy Days. They argue that markets are predictable during Jewish holidays because the market is up around days of celebrations and festivity because Jewish stock market participants are in a positive frame of mind and more confident, but the market is down during solemn days of atonement because the participants are in a more neutral and perhaps even negative state of mind.

2.2.4 Turn of the Month Effect

Ariel (1987) has also examined the pattern of returns within months. For the period 1963-1981, he divided months into two parts, the first part starting with the last day of the prior. He then compared the cumulative returns for the two periods using both equal-weighted indexes. The return for the latter half of the month is negative. All the returns for the period occur in the first part of the month. This result has been replicated and sharpened by Lakonishok and Smidt. Using their 90-year series for the Dow, they find that the returns for the four days around the turn of the month, starting with the last day of the prior month, is 0.473 percent. The average return for a four-day period is 0.612 percent. Also, the turn-of –the month four-day return is greater than average total monthly return which is 0.35 percent. In other days, aside from the four days around the turn of every month, the DJIA falls.

2.2.5 Intraday Effect

The most recent contribution to the analysis of seasonal price movements was made possible by the existence of the Francis Emory Fitch tape, which provides a time-ordered record of common stock transaction (all 15 million) made on the NYSE for the fourteen months between December 1,1981 and January 31, 1983.

Lawrence Harris (1986a) used this tape to investigate intraday price movements. He computed rates of return for every fifteen-minute period the market was open. He found that the weekend effect spills over into the first 45 minutes of trading on Monday, with

prices falling during this period. On all other days, prices rise sharply during the first 45 minutes. Also, returns are high near the very end of the day, particularly on the last trade of the day. Furthermore, the day-end price changes are greatest when the final transaction is within the last five minutes of trading. Harris (1986b) investigated and rejected the possibility that this odd result can be attributed to errors in the data or price manipulations by specialists.

One fact which argues against these hypotheses is that opening price changes tend to be positive, whereas if the price increases at the end of the day were artifacts, one would expect the subsequent opening changes to be negative. One of the most intriguing aspects of the end-of-the day results is that similar patterns have been observed in experimental markets. For example, Forsythe, Palfrey, and Plot (1982, 1984) and Plott and Sunder (1982) found positive price blips just before trading closed in their experimental asset markets. This was originally thought to be an experimental markets anomaly, but it appears to be present on the NYSE as well.

2.3 Probable causes of Holiday Effects

Bhana (2002) tested a number of hypotheses to explain the holiday effect.

First, he attributes the holiday strength to the abnormal trading activity by market makers and investors at the market close as a major causal factor because there is fairly large bid/ask component to the pre-holiday return. The empirical evidence suggests that the pre-holiday return may, in part, be due to simultaneous movements from the bid to ask price.

Secondly, he attributes pre-holiday strength to covering by short-sellers who desire to close allegedly very risky short positions in advance of holidays and revert to short-selling after the holiday period (Lakonishok and Smidt, 1988).

Thirdly, as Ritter (1988) and Harris and Gurel (1986) have demonstrated that seasonality in share prices can be induced by specific clients' investment decisions, he suggests the possibility there may exist, in this case as well, some clients who preferentially buy (or

avoid selling) on pre-holidays. Miller (1988) suggests that individual investors often buy shares before holidays, at the broker's urging, and also make sell decisions after a period of introspection during the holiday period.

Fourthly, Bhana enjoins explanations rooted in human nature as promising explanations. For example he notes that experimental market games conducted by psychologists have demonstrated that there is a behavioural predisposition to bid up share prices prior to market closings for weekends and holidays (Coursey and Dyl, 1986).

Lastly, he argues that the holiday effect has also been related to the human tendency to announce good news quickly and defer bad news. Jacobs and Levy (1988) report that most bad news, such as bank failures, reduced earnings, management reorganization, and more recently insider trading indictments, were generally announced after the market close on weekends and public holidays. The timing of the news release was to allow the market to "absorb the shock" over an extended period.

What conclusions can be drawn from the seasonal anomaly literature? Marc Reinganum (1984, p. 839), one of the participants in this field, interprets the result as a challenge to the theorists: "What then do the anomalies mean? They mean that the theories of capital asset pricing (at least as they pertain to equity markets) have been toppled. They mean that the most interesting insights into the pricing behavior of stocks are being discovered by tedious and painstakingly thorough examination of data. They mean that, in the constant ebb and flow between theory and empirics, empirics currently hold the upper hand." The clues that will allow us to understand these puzzles must come from additional econometric and experimental investigations. Only then can the formal modelers try to put the pieces together conceptually. The challenge, then, is really to all economists to try to understand why the seasonal price movements occur, and how they can persist for at least 90 years, and for at least 50 years after their existence has been published.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This section sets out the methodology that was employed to carry out the study. The study uses the daily AIG index returns from AIG Investment services from 1st January 1998 to 31st December 2006.

3.2 The Holidays

The holidays considered are those which can provoke stock market closings and are known in advance and gazetted as public holidays in Kenya. These include the following:

1. 1st January — New year celebrations
2. April (dates change) — Easter Holidays
3. 1st May — Labour day
4. 1st June — Madaraka day
5. 10th October — Moi day
6. 20th October — Kenyatta day
7. 12th December — Jamhuri day
8. 25th December — Christmas day
9. 26th December — Boxing day
10. Idd ul Fitr — Muslim holiday at the end of the month of Ramadhan (fasting).

Some of the holidays above invariably fall on a weekday, and therefore are always accompanied by an extra stock market closing. Other holidays may fall on weekends and therefore will not always induce an extra market closing. No distinction has been made in this study between holidays accompanied by market closings and those which are not.

The only gazetted Muslim holiday in Kenya, Idd ul Fitr, was excluded from the study. The dates for this holiday keep changing depending on the citing of the moon.

The Easter holiday was also excluded from the study because the dates for the holiday keep changing. The Christmas holiday was combined with the New Year holiday.

3.3 Population of the study

The population of the study consists of all the companies constituting the AIG Index as at 31st December 2006. The population therefore consists of 27 companies. 20 of these companies constitute the NSE 20 Share Index.

3.3.1 Sampling frame

The sample included companies listed and constituting the AIG Index from 1st January 1998 to 31st December 2006. All the 27 companies listed on the AIG Index in a given year from 1st January 1998 to 31st December 2006 satisfied the sampling criteria. A list of the sample companies is shown in Appendix 1. We used secondary data from AIG Investment Services. The duration of nine years was considered adequate to perform regression analysis.

3.3.2 Data Analysis

Robert Ariel (1990) used regression model to carry out a study on holiday effect. This study will also use a regression model to carry out the analysis.

The Model used to carry out the analysis will be as follows:

$$R\,t = \alpha + \beta_1 NY + \beta_2 EH + \beta_3 LD + \beta_4 MD + \beta_5 MOD + \beta_6 KD + \beta_7 JD + \beta_8 CB + e\,t$$

Where:

α is the regression constant

Rt is the dependent variable – based on day-on-day returns of the AIG index.

β_1 through β_8 are coefficients to be estimated from the results of the above regression.

NY is New year celebration

EH is Easter holiday

LD is Labour day

MD is Madaraka day

MOD is Moi day

KD is Kenyatta day

JD is Jamhuri day

CB is Christmas & Boxing days

et is a disturbance term

In the above equation, the returns of the AIG Index *(Rt)* will be regressed vis-à-vis the dummy variables one (if the day, *t*, falls on any of the four days before and after a holiday) and zero otherwise.

A two-tailed t-test will be applied to assess the significance of the coefficients derived from the above regression equation.

CHAPTER FOUR

4.0 DATA ANALYSIS AND FINDINGS

Using the equation below a regression analysis was performed on an eight - day window (four days before and four days after the holiday).

$$R\,t = \alpha + \beta_1 NY + \beta_2 EH + \beta_3 LD + \beta_4 MD + \beta_5 MOD + \beta_6 KD + \beta_7 JD + \beta_8 CB + e\,t$$

The equation was then modified to eliminate those holidays that do not fall on fixed dates in the year. Christmas holiday was merged with the New Year holiday resulting in the below modified regression model:

$$R\,t = \alpha + \beta_3 LD + \beta_4 MD + \beta_6 KD + \beta_7 JD + \beta_8 CB + e\,t$$

Subsequently, a correlation analysis was undertaken to test for multicollinearity. Correlation analysis is a measure of the degree to which a change in the independent variable will result in a change in the dependent variable. A low correlation coefficient (e.g., ±0.1) suggests that the relationship between the two variables is weak or non-existent. A high correlation coefficient (e.g., ±0.80) indicates that the dependent variable will most likely change when the Independent variable changes. Correlation can also be used for a study between an indicator and a stock or index to help determine the predictive abilities of changes in the indicator.

The relationship between two variables is said to be highly correlated if a movement in one variable results or takes place at the same time as a similar movement in another variable. A useful feature of correlation analysis is the potential to predict the movement in one security when another security moves. Sometimes, there are securities that lead other securities. In other words a change in price in one results in a later change in price of the other. A high negative correlation means that when a securities price changes, the other security or indicator or otherwise financial vehicle, will often move in the opposite direction.

The result in Table 1 below (Correlation analysis) did not show any strong correlation among the variables.

If two variables are strongly correlated then it is difficult to ascertain their individual influence on the dependent variable hence one must eliminate one of the two independent variables from the regression equation.

Table 1- Correlation analysis

	Index Returns	Labour Day	Madaraka	Kenyatta	Jamhuri	X-mass
Index Returns	1					
Labour Day	0.000046067	1				
Madaraka	0.003998597	0.026845562	1			
Kenyatta	0.004326027	-0.032951315	-0.031932629	1		
Jamhuri	-0.010251243	-0.033264031	-0.032235678	-0.029530051	1	
X-mass	0.044620599	-0.032635946	-0.03162701	-0.02897247	0.047006583	1

With the variables not showing any strong correlation (0.50 and above), the equation was left intact.

Table 2 below (Regression analysis) gives the regression result. It should be noted that the critical t in this case is 1.67 and therefore any of the coefficients can only be of any significance if the value of the coefficient is more than 1.67.

Table 2 – Regression analysis

R t =	α	$+ \beta_3 LD$	$+ \beta_4 MD$	$+ \beta_6 KD$	$+ \beta_7 JD$
R t =	0.35%	+ 0.000372806	+ 0.000366353	-0.000163388	+ 0.000849894
t-statistic	0.287919611232985	0.030475959	0.02994843	-0.01335652	0.069479937

Significance at the 5% level; (critical t is 1.67)

From the regression result above, none of the coefficients (α, β_3, β_4, β_6, β_7) registered significance. Each of these coefficient measures the sensitivity of the dependent variable, Rt, to changes in the respective independent variables – LD, MD, KD, JD. Therefore holidays do not have a significant impact on stock market activity at the NSE. This means that there are no holiday effects on stock returns at the NSE and therefore a strategy of investing around holidays cannot be employed the NSE i.e. no arbitrage would be gained from such a strategy.

The findings of this study are inconsistent with previous findings in the developed markets. Ariel (1990) found that for the daily stock index returns drawn from the Center for Research in Security Prices' (CRSP) value-weighted index, only the mean return on the trading day immediately before holidays differs significantly from the return on all remaining trading days. However, for the equally-weighted index, mean returns on trading days immediately before and immediately after holidays are significantly different from the returns accruing to other days.

The findings of this study are also inconsistent with the findings of Bhana (2002). Bhana (2002) found a strong pre-holiday effect averaging five times the non pre-holidays at the Johannesburg Stock Exchange.

The NSE is at its infant stage compared to the developed stock markets such as the U.S. stock market. The level of market activity in the developed stock markets is higher compared to those in the developing economies such as the NSE and as a result the level of participation by non-institutional investors (specific clientele) may be higher compared to the NSE, which in turn occasions non-fundamental based investment patterns and preferences. It is likely that non-institutional investment in stocks is not guided by stock fundamentals; rather it is subject to the availability of funds and the affordability of stocks in terms of their face value.

CHAPTER FIVE

5.0 CONCLUSIONS, LIMITATIONS AND SUGGESTIONS FOR FURTHER STUDY

5.1 Conclusion

The objective of the study was to determine whether there are holiday effects on stock returns at the NSE. The study used AIG index returns from 1st January 1998 to 31st December 2006 in its analysis. On the basis of the regression results of the AIG Index returns, none of the coefficients of the regression equation registered significance. The study therefore shows that there are no holiday effects at the NSE.

These results are not consistent with findings by Ariel (1990). Ariel found a strong holiday effect averaging nine to fourteen times for the equally and value weighted index of the CRSP. Bhana (2002) also found a strong pre-holiday effect averaging five times the non pre-holidays at the Johannesburg Stock Exchange.

A number of factors may explain the observed lack of regularity at the NSE. One of these factors is the share purchase motive of the investors. There could be long-term investors as opposed to speculative investors. Long-term investors will focus on dividends and capital gains in the long run unlike the short term speculative investors who focus on quick buying and profits.

The nature of tax policy could also be responsible for this behavior. There is no incentive for traders to dispose stocks since capital gains are not subject to taxation in Kenya. NSE traders are therefore under no tax pressure to necessitate sale of stocks.

5.2 Limitations of the study

Some of the empirical regularities in the stock market overlap. For instance there is an overlap of the holiday effect and turn of the year effect at the end of the year. The New Year holiday comes immediately after the Christmas holiday at the end of the year. An independent study should be carried out to ascertain that the holiday effect in the New Year is not as a result of the turn of the year effect.

Some of the holidays fall on Fridays, which is followed by a weekend. On the other hand, the Christmas holiday is followed by another holiday in Kenya (Boxing day). There is no trading on both these days and the weekend.

The study covered a nine-year period from 1st January 1998 to 31st December 2006. This may be short period for more robust results. Other similar researches in the developed world such as Ariel (1990) and Bhana (2002) used longer periods of thirty and sixteen years respectively. A longer sample period may therefore produce more robust results.

5.3 Suggestions for further study

(i) Further research can be done to investigate whether reported empirical anomalies are valid for individual shares.

(ii) Further research can be done to investigate intra-day effect.

(iii) Possible causes of calendar effects should be investigated.

(iv) This study used regression in its analysis. Another study using descriptive statistics can be carried out to find out if the results will be the same.

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APPENDIX I

	NSE Index	AIG Index
	AGRICULTURE	
1	UNILEVER	UNILEVER
2	KAKUZI	KAKUZI
3	SASINI	SASINI
4		REA VIPINGO
5	WILLIAMSON TEA	
	COMMERCIAL	
6	UCHUMI	SCANGROUP
7		CMC
8	KENYA AIRWAYS	KENYA AIRWAYS
9	TPS SERENA	TPS SERENA
10	NATION	NATION
	BANKING	
11	BARCLAYS	BARCLAYS
12		CFC
13	DIAMOND TRUST	DIAMOND TRUST
14	KCB	KCB
15		NBK
16	NIC BANK	NIC BANK
17		HOUSING FINANCE
18		ICDCI
19	STANCHART	STANCHART
	INDUSTRIAL	
20	BAMBURI	BAMBURI
21		ARM
22		E.A. PORTLAND
23	BAT	BAT
24	EABL	EABL
25	BOC	KENGEN
26	KPLC	KPLC
27	TOTAL (K)	TOTAL (K)
28	SAMEER	SAMEER

APPENDIX I

	NSE Index	AIG Index
	AGRICULTURE	
1	UNILEVER	UNILEVER
2	KAKUZI	KAKUZI
3	SASINI	SASINI
4		REA VIPINGO
5	WILLIAMSON TEA	
	COMMERCIAL	

APPENDIX II - CORRELATION ANALYSIS

	Index Returns	*Labour Day*	*Madaraka*	*Kenyatta*	*Jamhuri*	*X-mass*
Index Returns	1					
Labour Day	0.000046067	1				
Madaraka	0.003998597	0.026845562	1			
Kenyatta	0.004326027	-0.032951315	-0.031932629	1		
Jamhuri	-0.010251243	-0.033264031	-0.032235678	-0.029530051	1	
X-mass	0.044620599	-0.032635946	-0.03162701	-0.02897247	0.047006583	1