THE TURN OF THE MONTH EFFECT AT THE NAIROBI SECURITIES EXCHANGE

BY

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DECLARATION.

I declare that this project is my original work and has not been submitted by another person to any institution or presented for any award of degree.

Signed: _____ Date: _____

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This project has been submitted for examination with my approval as the university supervisor.

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To God, Be the Glory.

Thank you all.

DEDICATION

I dedicate this project to my wife, Eunice Mutave, and our Daughter, Tamara Tracy, for their encouragement and support throughout my academic journey.

LIST OF ABBREVIATION

APT: Arbitrage Pricing Theory

CAPM: Capital Asset Pricing Model

CMA: Capital Market Authority

EMH: Efficient Market Hypothesis

MPT: Modern Portfolio Theory

NSE: Nairobi Securities Exchange

OLS: Ordinary Least Squares estimators

RWH: Random Walk Hypothesis

SPI: Stock Prices Index

SPSS: Statistical Package for Social Sciences

TOM: Turn of Month

US: United States

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ABSTRACT

Based on the positive expected risk-return relationship of the traditional finance theory, the study proposes that the seasonal effects are caused by systematical monthly arrival of scheduled macroeconomic news announcements on specific days of each month. In the context of financial markets, calendar effects, that contradict the EMH, have been documented over several years. These calendar effects are trends seen in stock returns, where the returns tend to rise or fall on a particular day or month as compared to the mean. The objective was to investigate whether stock returns on the Nairobi Securities Exchange depicted a turn-of-the-month effect. Descriptive research design was used in this study. The data consists of past series of stock prices for 20 companies whose shares formed the NSE- 20 share index over the period July 2003 to June 2013. Secondary data was obtained from the Nairobi Securities Exchange library. Data used in the study included daily closing prices of NSE indices such as NSE all share prices index (NSI), NSE general index (NGEN) and NSE 20 index (NSE 20) for a period of 10 years. Data was subjected to a series of different tests; parametric and non parametric tests. Independence of share price returns was tested using the following tests; serial correlations test (also known as auto correlation) and run test. The study found that the turn-of-the-month effect occurs among both high- and low-price stocks and with indices. This analysis demonstrates that the turn-of-the-month effect is not just a variation of the high returns historically earned by small-cap stocks. Regardless of market capitalization, NSE equities earn the bulk of their returns over the four days beginning one day prior to and ending three days after the end of the month. The turn-of-the-month effect in equity returns poses a challenge to both "rational" and "behavioral" models of security pricing. The study recommends that investors should consider selling their securities at the end of the month to ensure they get high prices. Monthly performance evaluation should be done. Fund flow statement should be prepared periodically. Cost audit should be done continuously.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The notion that markets are perfectly efficient and that prices reflect all available information is a well-established, yet often-debated, concept of finance. Research argues not only that price sometimes do not incorporate all available information, but also that investors often behave irrationally (Barber & Odean, 2000). A considerable body of research focuses on calendar anomalies resulting from such irrational investor behavior (Ritter, 1988). One such anomaly is the turn-of-the-month (TOM) effect, a recurring pattern where daily average returns are abnormally high around the turn-of-the-month compared to the rest of the month.

In the recent years, there has been considerable interest in exploring the random walk theory as applied in the stock markets. Although the genesis of market professional is the chartist theories and the theory of fundamental analysis, there is radically different approach to stock market analysis – the theory of random walk in stock market prices. The random walk hypothesis (RWH) asserts that stock price returns movements are unpredictable and do not follow any known direction or patterns, they are likely to go up as they are likely to go down regardless of past performance (Kendall, 1953; Fama, 1965; Samuelson, 1973). According to Olweny (2011) prices of securities depend on factors that affect expected return and expected risk. Information on these factors is released in market at different intervals and investors react differently to the information. Security price therefore follow a random walk path and no one can predict accurately the direction and magnitude of their movement from the past series of prices.

The random walk hypothesis of stock price return has been a subject of intense debate among academics professionals, investors and financial professionals. Researchers (Osman, 2007) have uncovered market anomalies and stock market inefficiencies that contradict RWH. Proponent of random walk have argued that the anomalies are the iceberg and content that once an anomaly is discovered, investors competing to profit by exploiting it should result in its disappearance. The financial crisis of 2007 – 2010 has also led to renewed scrutiny and criticism of RWH, with some investors and market strategist (like Jeremy Grantham a British Investor and Martin Wolf, the

chief economics commentator for the financial times) claiming that belief in the hypothesis caused financial leaders to underestimation the dangers of asset bubbles breaking and dismissed the hypothesis as being a useless way to examine how markets function in reality. In addition there are investors who have beaten the market; for example, warren buffet, whose investment strategy focus on undervalued stocks, made millions and set an example for numerous followers (Osman, 2007).

The earliest effort in studying random walk of stock prices is attributed to Bachelier (1900) who his work implied that the price changes have independent and identical distributions. According to Fama (1965) theory of random walk implies that, the past history of the price series cannot be used to predict the future in any meaningful. The future path of the price level of a security is no more predictable than the path of series of cumulated random numbers or path of a drunk left in middle of a field.

Randomness is achieved through the active participation of many investors seeking greater wealth. They aggressively pounce on even the smallest information advantage at their disposal and in doing so they incorporate their information into the market prices and quickly eliminate the profiting opportunities that gave rise to their aggression (Seelenfreund, 1968). RWH presumes that information is freely and readily available and that there enough market participants with sufficient resources to take advantage of any profiting opportunity arising from systematic price movements of an individual stock. These participants compete against each other making all non random fluctuations too small to be exploited profitably (Seelenfreund, 1968).

According to Seelenfreund (1968) the main concern of empirical research on the random walk hypothesis is to test whether successive price changes are independently distributed random variables. The empirical testing of random walk hypothesis has been of two types. The first and predominant method has involved statistical tests of the series of prices over time, this include serial correlation coefficient and run test. The second method involves directly testing whether mechanical trading rules can be devised to beat a naive buy and hold strategy. If stock price changes are independent, mechanical trading rules should not show a profit.

Random walk hypothesis is inextricably related to efficient market hypothesis (Sunil, 1996). In an efficient market any new information about a firm is incorporated into share prices rapidly and rationally with respect to the direction and magnitude of the share price movement. Security prices tend to fluctuate randomly around their intrinsic values, and fully reflect the latest available information in the market. No investor has an advantage in predicting a return on a stock price since no one has access to information not already available to everyone else, and thus consistent abnormal returns cannot be earned (Fama, 1965).

Fama (1965) categorized efficient market hypothesis into three major levels depending on the type of information assumed to be used by the market in setting prices. The weak-form of the EMH states that the sequence of past price returns contains no information about future price returns. The semi strong form of EMH that holds security prices fully reflect all available public information and the strong form of the EMH that states that the security prices reflect all the information available from both public and private sources at each point in time. The levels of efficiency are nested. Strong-form efficiency implies semi-strong form of efficiency, and semi-strong efficiency in turn implies weak form of market efficiency. The empirical implication of efficiency with respect to a particular information set is that the current price of security embodies all the information in that set.

1.1.1 Turn of the Month Effect

The tendency of stock prices to increase during the last two days and the first three days of each month. Some researchers ascribe the effect to the timing of monthly cash flows received by pension funds and reinvested in the stock market.

Based on the positive expected risk-return relationship of the traditional finance theory, the study proposes that the seasonal effects are caused by systematical monthly arrival of scheduled macroeconomic news announcements on specific days of each month. Furthermore, since it is empirically extensively documented that the important announcements are released especially in the first half of the month. The clusterization of important macroeconomic news announcements causes the TOM and intramonth anomalies (Barber & Odean, 2000).

Timing of the scheduled macroeconomic releases is well known in advance, which affects investors´ expected risks and therefore expected returns as well as realized volatilities and returns. News announcements are systematically clustered on particular days of each month, especially in the first half of the month. Furthermore, the earlier literature finds that the macroeconomic news announcements released at the beginning of the month have the highest information content for investors and therefore are more important news announcements. Trading activity increases around these important announcements as investors trade according to their opinions before and after the announcements causing a positive increase in liquidity. The increase in liquidity is positively associated with price changes and this relationship is mostly driven by information arrival (Olweny, 2011)).

1.1.2 Market Return

Market returns are the sum of the increase in price of the stock plus the dividend percentage. The growth of a stock market index understates the total return because it ignores the stock dividends unless specifically called total return. When interest rates go up, the value of a bond goes down and hits bond mutual funds very hard (Rozeff & Kinney, 1976).

One way to avoid this is to buy bonds by one self from a broker or the government and then hold them to maturity till the full principal is received. High returns almost always equate to high risk, and low returns should equate to low risk but don't always. That's because fees and costs can produce low returns even though the underlying securities have high risk. It's hard to overstate the penalties of high fees and costs. Some people think that a fee or cost of 1% or even 2% is a small number (Hawawini & Keim, 2000).

However, this small number is a large percentage of the underlying security return, so if a mutual fund charges you 2% a year on an investment that returns 7%, you get only 5%. If inflation was 3%, your real gain was only 2%, the same amount as your mutual fund took from you for fees. When looking at returns over a long period of time, those who make regular deposits generally gain about 1% from dollar-cost-averaging while retirees who make regular withdrawals generally lose about 1% from reverse-dollar-cost-averaging, (Rozeff & Kinney, 1976).

1.1.3 Turn of the Month Effect and Market Return

Returns are significantly positive at the TOM. Returns are positive (zero or even negative) in the first (second) half of the month. The cumulative returns from a short window of [-1 to 4 days] can constitute as much as 55 % - 70 % of the monthly return (Hawawini & Keim, 2000).

Abnormally high positive returns at the TOM and during the first half of the month have been suggested to arise from the clusterization of salary payments and other liabilities increased liquidity (Booth et al., 2001) and from the clusterization of the earnings announcement releases (Jensen & Bennington, 1970).

The systematic arrival of the important news announcements from month to month causes consistent changes in the evolution of expected risk and return during the month, which further causes systematic changes in realized risks and returns. Therefore positive returns in the first half of the month caused by important announcements are justified by the finance theory in which positive risk-return relationship is expected to hold (Hawawini & Keim, 2000).

1.1.4 The Nairobi Securities Exchange

The Nairobi Securities Exchange (NSE) is a public market for the trading of securities issued by publically quoted companies and government of Kenya at an agreed price. The Nairobi Securities Exchange is the centre point of Kenya capital market; securities are listed and traded on the exchange. The apex regulatory body is the Capital market authority. With permission of the London securities exchange Nairobi Securities Exchange started its operations in 1954 as an overseas securities exchange. At first it was voluntary association of securities brokers registered under societies act and share trading was restricted to residential European community. In 1963, after independence, African and Asian were permitted to deal in securities, but it was hard to convince native Kenyans of the significance of the exchange. NSE has been the subject of significant changes towards the development of Kenya capital market in the recent years. Development of capital market is crucial for capital accumulation, efficient allocation of resources and promotion of economic growth of a country. Since its incorporation NSE has seen an increase in the number of securities brokers, introduction of investment banks, establishment of custodial institutions and credit rating agencies and the number of listed companies have increased over time. Securities traded include, equities, bonds and preference shares.

The NSE has been one of the most popular investments in Kenya in the recent past due to its high return. It has become an integral part of the Kenya economy and any fluctuation in this market influences financial lives of individuals as well as corporate entities. Presently 51 companies are listed at NSE and two indexes are computed daily; the NSE-20 share index which is equal weighted geometric mean for twenty large and most active securities that represents of all sectors and the NSE all securities index which is value weighted arithmetic mean.

1.2 Research Problem

Since theory describes individual investors as overconfident and irrational, while statistics show that they own a disproportionate share of equity on smaller indexes in Kenya, individual investor behavior may drive a TOM effect on small firm indexes rather than on large firm indexes (Barberis & Thaler, 2003. Furthermore, drawing upon previous studies of the Friday effect, where returns have been found to be significantly higher on Fridays compared to other weekdays, the study also seeks to evaluate whether or not the TOM effect is stronger for Fridays (Rogalski, 1984).

In the context of financial markets, calendar effects, that contradict the EMH, have been documented over several years. These calendar effects are trends seen in stock returns, where the returns tend to rise or fall on a particular day or month as compared to the mean. They are called anomalies because they cannot be explained by traditional asset pricing models and they violate the weak-form of market efficiency (i.e. asset prices fully reflect all past information). Examples of such patterns include the Month-of-the-year effect, Day-of-the-week effect, Intra-month effect, Turn-of-the-month effect, Holiday effect, Halloween effect, and Daylight savings effect.

Previous studies support the existence of a TOM effect in a wide range of markets (Kunkel, Comption & Beyer, 2003), although Nairobi Securities Exchange market has been given limited attention in this particular field. The purpose of this proposed study is to investigate whether a TOM effect exists in Kenya and in that case, whether the effect differs between different indexes of the NSE. Given that research proposes that improved investor liquidity in the end of the month drives the TOM effect, another area of focus is the importance of the date for salary payments (Booth, Kallunki & Martikainen, 2001). Since salaries are paid out earlier in some

sectors than in others, it makes sense to investigate whether a TOM effect in Kenya occurs earlier in the month. Another topic of interest is whether individual investor ownership drives the TOM effect, something that has not been extensively explored by previous studies.

The study sought to answer the research question; does the turn of month effect exist at NSE?

1.3 Research Objective

To investigate whether stock returns on the Nairobi Securities Exchange depict a turn-of-the-month effect.

1.4 Value of the Study

Findings of this study whether in support of or against RWH would be important. If the finding is in support, then it would be an academic success, and would enrich academic literatures that provide empirical evidence in support of RWH. In addition investors would understand why it would not be always possible to achieve the expected return within stipulated time at NSE, and that a buy and hold strategy can be followed and direct effort to portfolio diversification instead of spending time and resources vainly seeking mispriced securities. If the finding is against the RWH, then it may be possible to develop profitable trading strategies to beat the market- a gold mine for investors.

This study would be beneficial to the regulator and stock market administrators in formulating policies geared towards developing the market. Regulator and administrator belief that, the market is not a reliable price setter and that it is easy, unless they hold stringent controls to manipulate the market prices. They direct much of their effort and resources towards controlling, monitoring and supervision of the market giving other major issues such developing the market lesser attention. If findings of this study support RWH, then market is reliable price setter and thus regulators can redirects their effort to other issues in the market such as structural review necessary to increase the level of trading and activity of the exchange.

Investors sometimes entrust the investment decisions to fund managers. The fund managers attempt to select individual constituent stocks by predicting the future of the market and its sectors. The results of this study would benefit the fund managers in constructing portfolios that would maximize investors return given the nature of the stock price movement.

The efficiency of the stock market and the predictability of share prices is one area that has attracted substantial attention to researchers and scholars. This study gives a good insight to them to do further research and publication in this area. This study would add to the existing body of knowledge and suggests areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section provides reviews and summary of empirical studies and theoretical literature on efficient market hypothesis and random walk hypothesis. The chapter is organized as follows. Section 2.2 presents the theoretical literature. Section 2.3 discusses the determinants of market return. Section 2.4 gives a review of the empirical literature. Section 2.5 presents the summary of the literature review.

2.2 Theoretical Review.

In the market studies dealing with share price returns and predictability of the prices returns from historical data and efficiency of the market has been of considerable interest. Random walk and efficient market hypothesis are central ideas in explaining the stock market behavior. The supposition that market behavior embodies and reflects relevant information rapidly and rationally has a great impact on security prices, that any change in relevant information causes immediate prices adjustment.

2.2.1 Efficient Market Hypothesis

Efficient market hypothesis hold that any new information about a firm is incorporated into share prices rapidly and rationally with respect to the direction and magnitude of the share price movement. Security prices tend to fluctuate randomly around their intrinsic values, and fully reflect the latest available information in the market. No investor has an advantage in predicting a return on a stock price since no one has access to information not already available to everyone else, and thus consistent abnormal returns cannot be earned (Fama, 1965). For a capital market to be termed as efficient several assumptions are made. An important premise of an efficient market requires that a large number of profit maximization participants analyze and value securities, independent of the other. The second assumption is that new information regarding securities comes to the market in a fashion, and the timing of one announcement is generally independent of others. The third assumption is profit maximizing investors adjust security prices rapidly to reflect the effect of new information (Reilly and Brown, 2006).

Market efficiency is attained because of competitive activity of security analysts. Each analyst seeks to detect mispriced securities and create perfectly hedged portfolios with zero net investment but non zero expected return. Therefore, in an efficient market, the expected returns implicit in the current price of the security should reflect available information including its risk which means that investors who buy at these informational efficient prices should receive a rate of return that is consistent with the perceived risk of the stock. Individual analysts can make mistakes of judgment or estimation but where the mistakes made are independent, the consensus, which is the price reflected in the market, is the best possible (Foster, 1984).

Efficient market hypothesis have been categorized into three major levels depending on the type of information assumed to be used the market in setting prices. The weak-form of the EMH states that the sequence of past price returns contains no information about future price returns. It assumes that current market prices already reflect all past returns and any other security market information, this implies that past rates of return and other historical market data should have no relationship with future rates of return. Therefore, this hypothesis contends that one should gain little from using any trading rule that decides whether to buy or sell a security based on past rate of return or any other past security market data (Reilly and Brown, 2006).

The semi strong form of EMH holds that security prices fully reflect all available public information. It asserts that security prices adjust rapidly to the release of all public information; that is, current security prices fully reflect all public information. The semi strong hypothesis encompasses the weak form hypothesis, because all the market information considered by the weak- form such as stock prices, rates of return and trading volume is public. This hypothesis implies that investors who base their decision on any important new information after it is public should not derive above average risk-adjusted profits from their transactions, considering the cost of trading because the security price already reflects all such new public information (Foster, 1984).

The strong form of the EMH states that the security prices reflect all the information available from both public and private sources, at each point in time. This means no investor, even where investor has insider information, he may not be able to device trading strategies based on such information to consistently earn abnormal returns. The levels of efficiency are nested. Strong-

form efficiency implies semi-strong form of efficiency, and semi-strong efficiency in turn implies weak form of market efficiency. The empirical implications of efficiency with respect to a particular information set are that the current price of security embodies all the information in that set.

2.2.2 Random Walk Hypothesis

Random walk hypothesis postulate that successive price changes in individual securities are independent random variables. According to Fama (1965) in a random walk market, stock prices fluctuate randomly around their intrinsic values, returns quickly towards the equilibrium and fully reflect the latest information available in the market. Although the price adjustments may be imperfect, it is unbiased; meaning that sometimes the market will over-adjust and other times it will under-adjust, but it cannot be predicted which one will occur at any given time.

The random walk theory presumes that information is freely and readily available and there are large numbers of competing rational profit maximizing participants with sufficient resources to take advantage of any profit opportunity arising from systematic price movements of an individual stock. Competition will cause the full effect of new information on intrinsic values to be reflected instantaneously in the actual prices and make all non random fluctuations so small that they cannot be exploited profitably; neither the technical analysis which study past stock prices in an attempt to predict future prices nor fundamental analysis which analyze publically available information to determine misprices stocks would enable investor to achieve returns greater than those could be earned on buy and hold strategy (Seelenfreund, 1968).

According to Bodie (2009), because security prices adjust to all new information the security prices should reflect all information that is publicly available at any point in time. The security prices that prevail at any time should be an unbiased reflection of all currently available information, including the risk involved in owning the security. The combined effect of Information coming in a random, independent, unpredictable fashion, numerous competing investors adjusting stock prices rapidly to reflect this new information means that one would expect price changes to be independent and random.

2.2.3 Behavioral Finance Theory

The models within the traditional finance paradigm assume that investors act rationally and consider all available information in the decision-making process. Hence, investment markets are efficient and security prices reflect the true 'intrinsic values' of the assets. That investors act promptly to new information and update prices correctly within a normatively acceptable process. Investment market returns are believed to follow a random walk pattern; hence considered not predictable (Sheflin, 2001).

Underlying all these is the theory if arbitrage, which suggests that rational investors undo price deviation away from the fundamental values quickly and maintain market equilibrium. As such, 'prices are right' reflecting all available information and there is no 'free lunch': no investment strategy can earn excess risk-free rate of return greater than that warranted by its risk (Sheflin, 2001).

The behavioural finance paradigm has emerged in the response to the difficulties faced by the traditional paradigm. In essence, it argues that investment choices are not always made on the basis of full rationality, and it attempts to understand the investment market phenomena by relaxing the two doctrines of the traditional paradigm, that is, agents fail to update their beliefs correctly and there is a systematic deviation from the normative process in making investment choices (Barberis and Thaler, 2003).

The expectations based models argue that the above described irrationality will be undone through the process of arbitrage. Behavioural finance argues that there is 'limits to arbitrage', which allows investor irrationality to be substantial and have long-lived impact on prices. To explain investor irrationality and their decision-making process, behavioural finance draws on the experimental evidence of the cognitive phycology and the biases that arise when people form beliefs, preferences and the way in which they make decisions, given their beliefs and preferences (Barberis and Thaler, 2003). As such, limit to arbitrage and psychology are seen as the two building blocks of behavioural finance.

Arbitrage is an investment strategy that offers risk-less profit at no cost. Traditional finance theorists believe that, any misprising created by irrational traders (noise traders) in the marketplace, will create an attractive opportunity which will bequickly capitalised on by the

rational traders (arbitrageurs) and the misprising will be corrected. Behavioural theorists show that, strategies required to correct the misprising can both be costly and risky; thus, rendering the misprising unattractive and allowing them to continue (Sheflin, 2001).

2.3 Determinants of Market Return

Turn of the month: A month of the year effect exists if returns tend to be higher or lower in a specific month, when compared with the other months of the year. The most commonly reported month effect is the tendency for returns to be higher in January, although other month effects have also been reported. Analysis on the US stock market observed significant higher returns in January than in the other months of the year. Also, Gultekin and Gultekin (1983) study seventeen countries using both non-parametric and parametric tests, and conclude that January returns are significantly higher when compared with the other months, in thirteen of those countries.

Keim (1983) links the January effect to a small-firm effect, and a set of international studies find that small firms achieve larger rates of returns than larger firms, and that this is particularly evident in January. The January effect is largely due to the behavior of prices of small firms, and related to a tax-loss selling hypothesis. Selling pressure at the end of the tax year depresses price that rebound back in January. A study of the UK market finds an April effect for small firms, besides a January effect for larger firms Keim (1983).

Lo (1990) examines twelve stock markets, including Australia, Japan, Korea, New Zealand, Singapore, Thailand, UK and US, and finds evidence corroborative of the January effect as he observes that average returns on January are higher than other months at a 95% level of confidence.

Other Factors include: Interest rates. Consumer price index and Industrial Factors

2.4 Empirical Review.

The empirical literature of this study was divided into two sections; international and local evidence. This sowed studies done before on turn of month effect.

2.4.1 International Evidence

Several easy accessible statistics for example a stock price- earnings- ratio or market capitalization seems to predict abnormal returns, such findings are difficult to reconcile with the efficient market hypothesis and are therefore often referred to as efficient market anomalies. Some researchers have documented these market anomalies that can be exploited to earn excess return. Such market anomalies include; Size effect, Price-earnings ratio prediction, January effect, momentum effect, Holiday effect, seasonal effect, calendar anomalies and weather.

Lucas (1978) provided evidence of the random walk on Dow Jones industrial average. He argued that security price changes fully reflect the available information set which include all public information, and that suggested that stock market prices were indistinguishable from a series of cumulated random numbers.

Lucas (1978) argued that the random walk hypothesis is neither a necessary nor sufficient conditions for rationally determined security prices; unforecastable prices need not to imply a well functioning financial market with rational investors and forecastable prices need not to imply the opposite. Various anomalies have been identified relating to calendar periods such as those across weekends and turn of the year. Variable such as market-to-book ratio and size have been shown to explain expected return.

Portfolios composed of low price to earnings ratio stocks often outperforms portfolios composed of high P/E ratio. Some researcher have hypothesized, based on the capital asset pricing model and other models relating risk to return, that the reason for this is because low P/E stocks have greater risk, and potentially greater returns. Banz (1981) revealed that portfolios of low price-earnings (P/E) ratio stocks have higher returns than portfolios for high P/E ratio stocks.

Foster et al(1984) found that the more dramatics the earning surprise, the more the effect it had on stock prices, with positive surprise causing the stock prices to rise for up to two months after the announcement and negative surprise causing decline in stock prices within first several days of the announcement. Not only does this indicate that abnormal returns can be earned by simply watching earning announcement for surprise and respond quickly to them, but it also show that price changes are not as fast as EMH would imply.

January effect refers to the tendency for stock market returns to be higher in January than any other month. The January effect is particularly strong in small size stock (Kiem, 1983), but also present in large stocks Reinganum (1983) showed that the small firm effect occur virtually in the month of January. Small firm stocks exhibit abnormally high risk adjusted returns because these firms are less analyzed and their stocks are less liquid. Liquidity effect might be a partial explanation of the abnormal returns. Another interpretation of small firms in January effect is that small firms tend to be neglected by large institutional traders, information about small firms is less available. This information deficiency makes smaller firms riskier investment that commands high returns. Neglected firms might be expected to earn higher equilibrium returns as compensation for the risk associated with limited information (Reinganum, 1983).

Researcher have documented momentum effect in stock prices; a tendency of poorly performing stocks and well performing stocks in one period to continues that abnormal performance in the following period. Jegadeesh and Tatman (1993) found that recent past winners out performed recent past losers. Momentum is found to be strong and highly significant but this is fundamental. One needs to separate any anomalous momentum effect (unwarranted time series predictability) from the fundamental momentum effect (cross sectional dispersion effect and time varying risk premium), which may be very difficult. Documented returns of momentum strategies at NSE during the period 1997 to 2007 was found that expected profits are highly predictable for most of the trading strategies from the time series component.

Reinganum (1983) showed that the ratio of book value of the firm's equity to the market value of the equity is a powerful predictor of returns across securities. They also showed that dependence of returns on book to market value ratio was independent of the beta suggesting that either high book to market value ratio firms are relatively underpriced or that the book to market ratio is serving as a proxy for a risk factor that affect the equilibrium returns.

Random walk hypothesis has been challenged by increasing number of studies that suggest that stock returns are not fully explained by common measures of risk, and other studies that have documented returns predictability across a variety of time horizons. Grossman and Stiglitz (1980) argue that perfectly informational efficient markets are impossibility. If markets were perfectly efficient, there would be no return for gathering information as such little or no reason

to trade and markets would eventually collapse. Other word the degree of market inefficiency determines the effort investors are willing to expend to gather and trade on information; hence non-degenerate market equilibrium will arise only when there are sufficient profit opportunities, i.e., inefficiencies, to compensate investors for the costs of trading and information-gathering.

Osano (2010) found portfolios for firms with low P/E achieved higher returns than portfolios with low P/E ratio at NSE. An interpretation of these results is that returns are not properly adjusted for risk. If two firms have the same expected earnings, the riskier stock will sell at a lower price and lower P/E ratio. Because of the high risk the low P/E ratio stock also have high expected return therefore unless the CAPM beta fully adjust for risk, P/E ratio will act as a useful additional descriptor of risk and will be associated with abnormal returns if the CAPM is used to establish bench mark performance.

2.4.2 Local Evidence

Parkinson (1984) examined the weak form of efficiency in Nairobi Securities Exchange over the period 1974 to 1984 using autocorrelation test and run test. He used monthly price data for 50 stocks that were listed on the NSE over the 5 years period of the study. He found that majority of the stocks had negative autocorrelation coefficient. Out of the 50 stocks 11 has first lag serial correlation greater than 0.3. On run test the actual runs were less than expected in 49 out of the 50 stocks. He concluded that there were noticeable patterns of share price and thus random walk was not a valid description of the share price changes of the Nairobi Securities Exchange.

Macharia (2002) examined the efficiency of the Nairobi Securities Exchange at the semi strong level by looking at the speed of adjustment of share prices on cash dividends announcement over the period 1998 to 2002. She used daily data for the stocks that constituted the NSE 20 share index. The event of her study was cash dividends announcement. The event window was 21 days; the date of the announcement and 10 trading days before and after announcement in order to capture the reaction over the period. She found that there were negative returns before the announcement date and positive returns after the announcement date. Cumulative adjusted excess return was significant for 10 days before and after the announcement of cash dividend. She concluded that although dividend announcement has impact on share prices at the NSE, the market does not efficiently react to cash dividend announcement in price adjustments.

According to Pesaran (2003) examples of possible market predictors are past changes in the macroeconomic variables such as; interest rates, inflation, dividend yield, price earnings ratio, output growth and the term premium. Efforts to develop models that could be used to predict share prices at the NSE have produced varying and sometimes conflicting findings.

Ngugi (2003) argued that when information disclosure is minimal, say at the firm level, investors assume the worst and therefore discount the price of shares heavily. Firms are therefore driven to disclose information because its news would not be worse than the market would assume. As a result, prices will be less noisy and therefore more accurate, increasing the trading activities with enhanced ability to transact at current prices.

Okello (2006) studied the 20 companies constituting the NSE 20 share index for three years from 1990 to 2002 to determine the profitability of filter rule test in the NSE. Using the filter rule developed by Fama and Blue (1966) he found that the filter rule exist in NSE and with a filter of between 4.3% and 4.9% investors can profit in the market. The filter rule trading strategies attempts to profit from serial dependencies in the stock return and states that an investor should buy when stock price rise by a given percentage above its local low and sell when it falls by a particular percentage below its past local high. The weekly price movement at NSE study using traditional random walk methodology of serial correlation and run test found that stock prices follow a random walk.

Akwimbi (2007) explored the relationship between stock return for companies listed at NSE and some selected market and industrial variables using arbitrage pricing model (APT) .He applied regression method on security monthly returns and economic indicators on 39 companies trading at NSE over the period 1995 to 2002. His results suggested that a multi index APT using selected economic and industrial variables such as interest provides additional power in explaining the variability of the NSE stock returns over a single index model using the market index alone. It is therefore noted that the inclusion of economic variable to large extent improve the explanation of the cross section of expected returns.

Anyumba (2010) tested whether NSE indices follows random walk. She assessed Variance ratio of NSE- 20 share index and Nairobi stock all share index (NASI) for the period March 2004 to

April 2009. He found that NSE- 20 share weekly and monthly indices and weekly NASI were unpredictable but monthly NASI was predictable in some case.

2.5 Summary of Literature Review

Much of studies on EMH and RWH have been carried out in the developed markets and there is consensus among researchers that these markets are efficient and security price returns follow random walk. On the other hand not much is documented and the consensus seems to break down when the study is extended to emerging market in general and NSE in particular where some studies suggest that stock price returns are predictable, others give a contrary suggestion that stock price returns are unpredictable and follow a random walk.

The existence of the calendar anomalies is a denial of the weak form of efficient market hypothesis which states that stock returns are time invariant which means that there is no short-term seasonal pattern in the stock returns. The existence of seasonal pattern in the stock return infers that a market is inefficient and investors should be able to earn abnormal return. That's why finance researchers have been interested to find out the existence of the calendar anomalies or seasonality in the stock returns in different markets. Among the calendar anomalies day of the week effect is most widely documented anomaly and has been comprehensively investigated by the finance researchers in different markets of different countries considering different securities and indices and different institutional framework (Alexander, 1964).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section presents the research methodology of the study. The chapter is structured as follows; Section 3.2 is a description of the research design used. Section 3.3 presents the population of the study. Section 3.4 explains the study sample and how it was arrived at. Section 3.5 presents methods used to analyze the data.

3.2 Research Design

Descriptive research design was used in this study. A descriptive study is one in which information is collected without changing the environment (i.e., nothing is manipulated). Descriptive studies can involve a one-time interaction with groups of people (cross-sectional study) or a study might follow individuals over time (longitudinal study). Descriptive studies, in which the researcher interacts with the participant, may involve surveys or interviews to collect the necessary information. Descriptive studies in which the researcher does not interact with the participant include observational studies of people in an environment and studies involving data collection using existing records (e.g., medical record review

This is an empirical study testing whether daily value-weighted and equal-weighted market returns at the NSE indicate any pattern or are independent and hence produce a random walk sequence. The design is adopted as it allows collection of large amount of data from the target population. This design is useful in studying the randomness of market returns to test whether they exhibit random walk behavior. The data consists of past series of stock prices for 20 companies whose shares formed the NSE- 20 share index over the period July 2003 to June 2013.

3.3 Population

The population of the study comprises all the companies quoted at the NSE. There are 61 companies quoted at the NSE as at 29th august 2014.

3.4 Data Collection

Studies in stock markets rely heavily on historical quantitative data. The data consists of series of daily market returns for companies that constituted the NSE- 20 share index over the period July 2003 and June 2013. Secondary data was obtained from the Nairobi Securities Exchange library. Share price used in the study was obtained from the NSE information services historical database. The NSE information services historical database is a reliable source of data for shares price trading at NSE.

The use of a series of the daily closing prices of a single stock ensures that one is examining an understandable and clearly defined market. In addition daily price observations illustrate reactions to easily available information and inter observational data of fundamental importance that wider interval observations such as weekly or monthly cannot reflect.

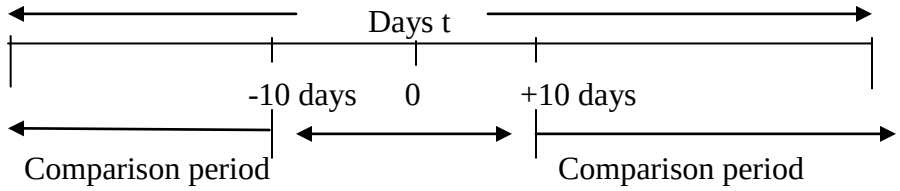
Data used in the study included daily closing prices of NSE indices such as NSE all share prices index (NSI), NSE general index (NGEN) and NSE 20 index (NSE 20) for a period of 10 years. All the data collected for this study was secondary information.

3.5 Data Analysis

In this study data was subjected to a series of different tests; parametric and non parametric tests. Independence of share price returns was tested using the following tests; serial correlations test (also known as auto correlation) and run test. Data processing was done using statistical package for social sciences (SPSS) and Microsoft excel.

3.5.1 Analytical Model

Data was analyzed as shown in the chart below;



The average daily value-weighted and equal-weighted market returns was computed on each day for the last 10 trading days and the first 10 trading days of the month over the period 2003-2013;

$$R_x = \frac{P_x - P_{x-1}}{P_{x-1}}$$

R_x = rate of return for each share on day t

P_x = closing price on share on day t

P_{x-1}= closing price on share on day t-1 (Previous day)

The mean portfolio daily return will also be calculated for the comparison periods. For each day, t-statistics and test of significance difference between the two periods was computed to establish whether excess returns around turn of the month date are significantly different.

3.5.2 Analytical Test

The turn of the month anomaly in various securities markets have been examined by previous studies, where market indices have been utilized, as this make it easier to detect time seasonalities in the market compared to individual share prices (Al-Jarrah, Khamees and Qteishat, 2011). This study investigated the presence of the turn of the month trading anomaly in the NSE using the daily closing prices of the NSE 20 share index over the period from January 2, 2003 through December 31, 2013 which makes the period sufficient to determine the existence of turn of the month anomaly in NSE.

Following Al-Jarrah, Khamees and Qteishat (2011), this study will assume that the return on the NSE 20 share index follows a geometrical random walk, that is:

$$\mathbf{Return_t = \ln (Index_t / NSE\ 20\ Share\ Index_{t-1}) = \mathit{a} + u_t} \qquad \mathbf{(1)}$$

where $Return_t$ is the continuously compounded rate of change in the stock index. Index t is the stock market index at time t, *a* is a constant and u_t is a normal random variable with a mean of zero. This implies that the average rate of change of a stock index is equal for every month of the year.

The returns are computed as percent change in the price index. Letting $P_{i,t}$ denote the price index of stock *i* at time t, then:

$$\mathbf{R_{i,t} = (P_{i,t}) - (P_{i,t-1}) * (1 / P_{i,t-1})} \qquad \mathbf{(2)}$$

where $P_{i,t}$ is the price of the i^{th} index at time t. As for calculation of returns, t represents two distinct time periods, t_1 is the index value after the first four trading days and t_2 is the second to last trading day of the month. The last trading day of each month is included in the next month's return in order to allow comparison.

A paired t-test is was used to test if there is a significant difference in mean returns. The null hypothesis of the turn of the month anomaly is: H_0: $t_1 = t_2$; or the returns for the five day period representing the beginning of the month is equal to the returns of the rest of the month. The alternative hypothesis of the monthly anomaly is H_A: $t_1 \neq t_2$.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the information processed from the data collected during the study on whether the stock returns on the Nairobi Securities Exchange depicted a turn-of-the-month effect. The chapter is set out as follows data and variables and empirical analysis.

4.2 Findings

Data for this study was collected from all the companies quoted at the NSE in Kenya for the period July 2003 and June 2013. The required financial data of these firms was obtained from the Nairobi Securities Exchange library. Consequently, the sample data begins in 2009 and ends in 2013 in order to ensure accuracy of the collected data and a number of filters were applied.

For our analysis of the turn-of-the-month effect at NSE equity returns, we use market indices. The NSE database includes NSE stocks beginning with July 2003. The data end with June 2013. Among other things, these data permit us to conduct our analysis over a holdout period not considered by prior studies and to conduct cross-sectional analyses for the full time period studied including those years considered by prior studies.

4.3 Aggregate Market Returns at the Turn-of-the-Month

4.3.1 July2003-June 2008

For comparison purposes, we begin by examining returns over the period July2003-June 2008. Table 4.1 shows the average stock market returns for the period July2003-June 2008 by day of the month. Day –1 is the last trading day of the month, day +1 is the first trading day of the month, and day 2 is the second trading day of the month and so on. As the table illustrates, returns at the turn-of-the-month over this period are unusually high relative to other days.

With Kakuzi market returns, days -1, +2, and +3 provide the highest average daily returns and the return on day +1 is also high but is a shade lower than the average return on days -2 and +4. With Bamburi Cement Ltd returns, days -1 through +3 provide average returns that are greater than any other days of the month although days -2 and day +4 are close behind. Further, with E.A.Portland Cement Ltd, day –1 provides the highest return by far of any day of the month. As we move away from the turn of- the-month average returns diminish and some days have negative average returns. Arguably, the unusually high returns at the turn-of-the-month could be construed as beginning with day -2.

For consistency with prior studies, we shall construe the turn-of-the-month as encompassing days –1 through day +3. Regardless of when the turn-of-the-month is determined to begin, it is clearly evident that daily returns are not evenly distributed across the month and that the turn-of the-month receives more than its share of the monthly equity returns during the period 2003-2008.

Table 4. 1: Turn of the Month Effect

NSE value-weighted market returns							
	Day-1	**Day+1**	**Day+2**	**Day+3**	**Day{-1,+3**	**Other Days**	**Difference**
	Panel A. July 2003- June 2008						
Mean daily returns (%)	0.17	0.09	0.18	0.21	0.16	0.01	0.15
t-statistic	5.01	2.43	4.83	5.62	8.50	0.98	7.07
Positive (%)	63	59	65	62	68	55	62
	Panel B. July 2008- June 2013						
Mean daily return (%)	0.19	0.25	0.13	0.08	0.15	-0.00	0.15
t-statistic	2.99	3.73	1.84	1.21	4.35	-0.07	3.78
Positive (%)	63	63	59	55	66	58	61
	Panel C. July 2003- June 2013						
Mean daily return (%)	0.18	0.12	0.17	0.18	0.16	0.01	0.15
t-statistic	5.83	3.97	5.10	5.53	9.60	0.87	8.06
Positive (%)	63	60	64	60	68	56	62
NSE value-weighted market returns							
	Day-1	**Day+1**	**Day +2**	**Day+3**	**Day{-1,+3**	**other Days**	**Difference**
	Panel D. July 2003- June 2008						
Mean daily return (%)	0.28	0.19	0.20	0.24	0.22	0.05	0.17
t-statistic	6.91	5.35	5.21	6.11	9.98	3.57	7.39
Positive (%)	69	62	64	65	72	61	64
	Panel E. July 2008- June 2013						
Mean daily return (%)	0.50	0.20	0.19	0.14	0.25	0.05	0.20
t-statistic	9.34	4.02	3.48	2.89	7.58	2.84	6.01
Positive (%)	85	68	67	62	79	65	75
	Panel F. July 2003- June 2013						
Mean daily return (%)	0.33	0.20	0.20	0.22	0.23	0.05	0.18
t-statistic	9.96	6.51	6.19	6.73	12.29	4.40	9.23
Positive (%)	73	63	65	64	73	62	67

Source: Research Findings.

Table 4.1 gives the numerical values for the turn-of-the month effect for three time periods: 2003-2008, 2008-2013, and 2003-2013.

The first four columns of the table give the mean daily return for days –1, +1, +2 and +3. Column 5 gives the mean daily return for the entire four-day turn-of-the month interval (denoted days [-1, +3]). Column 6 gives the mean daily return for all other days of the month (denoted "other days"). The final column of the table, labeled "difference" gives the difference between the mean daily return for the turn-of-the-month interval and the mean daily return for all other days.

The top row of each panel gives the mean daily return, the second row gives the t-statistic to test the hypothesis that the mean return is significantly different from zero, and the third row gives the percentage of days on which the mean return reported in the top row of the panel is positive. The t-statistic in the last column tests the hypothesis that the difference between the mean daily return over the turn-of-the-month is significantly different from the mean return over all other days. This last statistic will be the focus of our attention in drawing inferences about the significance of the turn-of-the-month returns.

Panels A give NSE returns, respectively, for the period 2003-2013. The mean daily return over the four-day turn-of-the-month interval is 16 times the mean daily return for all other days. Over the four-day turn-of-the-month interval, it is 0.16%; over the other 16 trading days of the month, it is 0.01%.

With t-statistics of 8.50 and 9.98, both the Kakuzi and Bamburi Cement Ltd mean turn-of-the-month returns are statistically significantly greater than zero. With a t-statistic of 0.98, the Kakuzi mean return for all other days is not significantly different from zero. The Bamburi Cement Ltd mean return for all other days is significant with a t-statistic of 3.57. Importantly, with both Kakuzi and Bamburi Cement Ltd returns, the differences between the mean daily turn-of-the-month return and the mean daily return for all other days (given in the last column of the tables) are highly significant with t-statistics of 7.07 and 7.39, respectively.

Additionally, the mean return for each of the individual turn-of-the-month days is large in comparison with the mean return of all other days and each is statistically significantly different

from zero. That is, the turn-of-the-month effect is not concentrated on a single turn-of-the-month day.

A further interesting statistic is the percentage of differences that is positive. This statistic gives the percentage of months in which the mean turn-of-the-month return is greater than the mean return for the nine preceding days and the seven following days. With Kakuzi returns, the difference is positive in 62% of the months (and negative in 38%); with Bamburi Cement Ltd returns, the difference is positive in 75% of the months (and negative in 25%). Given a null hypothesis of 50% positive differences and using a binomial test, both of these percentages are statistically significant (z-statistics = 7.4 and 10.39, respectively).

The turn-of-the-month effect is powerful over the period 2003-2008.

4.3.2 July 2008-June 2013

The more interesting results are given in table 4.2 and panels B and E of table 4.1. Table 4.2 parallels table 4.1 except that table 4.2 gives returns for the period 2008-2013. What is remarkable is the similarity between tables 4.1 and 4.2. In both exhibits, the highest average daily returns occur at the turn-of-the-month. With both Kakuzi and Bamburi Cement Ltd returns, days –1 and +1 provide the highest average daily returns. Days +2 and +3 also provide high returns and, as with the period of 2008-2013, days –2 and +4 exhibit high returns. Further, as with the 2008-2013 interval, with Bamburi Cement Ltd returns, day -1 achieves by far the highest average return of any day of the month. What is most striking is that returns are clearly not spread evenly over the month.

Table 4. 2: Excess Daily Value-Weighted and Equal-Weighted NSE Stock Market Returns at the Turn-of-the-Month, 2003-2013

Value weight market return less daily return on 30 – day t-bill							
	Day-1	**Day+1**	**Day+2**	**Day+3**	**Day{-1,+3**	**Other Days**	**Difference**
Panel A. January 2003- December 2013							
Mean Daily return (%)	0.14	0.08	0.19	0.19	0.15	0.01	0.14
t-statistic	4.23	2.18	5.35	5.11	8.05	0.53	6.8
Positive (%)	62	58	64	61	67	55	63
Panel B. June 1987 – December 2013							
Positive (%)	0.17	61	57	54	65	55	0.16
Mean daily return (%)	62	0.23	1.59	0.06	4.03	-0.78	3.92
t-statistic	2.69	3.47	0.11	0.94	0.14	-0.01	64
Panel C. January 2003- December 2013							
Mean daily return (%)	62	58	63	59	67	55	0.15
Positive (%)	5.02	3.64	5.37	4.94	8.98	0.15	7.93
t-statistic	0.15	0.11	0.17	0.16	0.15	0	63
Equal weighted market return less daily return on 30-day t-bill							
	Day-1	**Day+1**	**Day+2**	**Day+3**	**Day{-1,+3**	**Other Days**	**Difference**
Panel D. January 2003- December 2008							
Positive (%)	67	61	64	64	71	59	0.17
t-statistic	6.44	4.96	5.63	5.75	9.52	3.01	7.3
Mean daily return (%)	0.25	0.18	0.2	0.23	0.22	0.04	63
Panel E. January 2003- December 2008							
Positive (%)	85	68	66	0.12	78	63	0.2
t-statistic	9.03	3.67	3.17	60	7.25	2.17	6.22
Mean daily return (%)	0.48	0.18	0.17	2.53	0.24	0.04	75
Panel F. January 2003- December 2005							
Positive (%)	71	63	65	63	73	60	66
Mean daily return (%)	9.5	6.02	6.45	6.26	11.68	3.61	9.16
t-statistic	0.3	0.18	0.2	0.2	0.22	0.04	0.18

Source: Research findings.

Panels B and E of table 4.1 parallel panels A and D except that panels B and E report results for the 1987-2005 time period. A comparison of panels A and B and panels D and E shows that, with both Kakuzi and Bamburi Cement Ltd returns, the average daily turn-of-the-month returns

and the average daily returns for all other days for the period 2008-2013 are nearly identical to the corresponding statistics for the period 2008-2013. This means, of course, that the difference between the average daily turn-of-the-month return and the average return for all other days of the month is nearly identical between the two periods. For example, with Kakuzi returns, the average daily return over the four-day turn-of-the-month interval is 0.15%, while it is -0.001 over all other days. With Kakuzi returns, the difference between the average daily turn-of-the month return and the return for all other days is 0.15% for both 2008-2013 and for 1987-2005.

Further, for the 2008-2013 period, with both Kakuzi and Bamburi Cement Ltd returns the difference between the average daily turn-of-the month return and the return for all-other-days is highly statistically significant with t-statistics of 3.78 and 6.01, respectively.

The final statistic from panels B and E to consider is the percentage of differences that is positive. Recall that this statistic in the last column of the table gives the percentage of months in which the mean turn-of-the-month return is greater than the mean return for all other days. With Kakuzi returns it is 61% and with Bamburi Cement Ltd returns it is 75%. Both of these are statistically significantly different from 50%.

Unlike many of the anomalies studied by Schwert (2003), the data in panels B and E indicate that the turn-of-the-month in NSE equity returns did not disappear following its discovery 10 years ago. It persists over the recent two decades.

As an aside, we also split the 10-year 2003-2013 interval into two equal sub periods. The turn-of-the-month effect occurs in NSE returns. With Kakuzi returns, the difference between the mean turn-of-the-month return and the mean return over all other days during 2008 through mid-2010 is 0.17%, t-statistic = 3.63; during mid-2008 through 2005, it is 0.14%, t-statistic = 2.00.

4.3.3 July 2003-June 2013

To tie together the data, table 4.3 and panels C and F of table 4.1 show the daily returns and summary statistics for the full 10-year period of 2003-2008. These data contain no surprises.

4.4 Turn-of-the-Month Returns

4.4.1 Stocks sorted by size

Panels A.1 and A.2 of table 4.3 report Kakuzi returns for the four-day turn-of-the-month and for all other days for indices composed of the smallest decile and the largest decile, respectively, by market capitalization of NSE equities for the period 2003-2013. The turn-of-the-month effect occurs in both the small- and large-cap stocks, but it is more pronounced in the small-cap portfolio. With large-cap stocks, the average daily turn-of-the-month return is 0.15%, while the average return over all other days is 0.01%. The difference between the two is significant with a t-statistic of 7.81. With small-cap stocks, the mean turn-of-the-month return is 0.25%, while the mean return for all other days is 0.03%. This difference also is highly statistically significant with a t-statistic of 8.54.

4.4.2 Stocks sorted by price

Panels A.3 and A.4 of table 4.3 give Kakuzi returns for portfolios sorted by price as of December 31 of each year. Stocks with prices greater than $5.00 are placed into a high price portfolio and stocks with prices of $5.00 or less are placed into a low price portfolio. Panels B.3 and B.4 of table 4.3 give Bamburi Cement Ltd returns for the same sets of stocks.

The turn-of-the-month effect occurs among both high- and low-price stocks and with indices. Furthermore, given the correlation between stock price and total market capitalization, it is perhaps not surprising that the effect is more pronounced among low price stocks. Nevertheless, the effect is also strong among high-price stocks. For example, with Kakuzi returns, the mean daily turn-of-the-month return for high-price stocks is 0.19%, while the Kakuzi return for all other days is 0.04%. The t-statistic for the difference between the two is 8.22.

For low-price stocks, the mean Kakuzi turn-of-the-month return is 0.27%, while the mean return over all other days is 0.03%. This difference, too, is highly statistically significant (t statistic = 7.53). As shown in panels B.3 and B.4, with Bamburi Cement Ltd returns the results for high- and low-price stocks are quite similar to those calculated with Kakuzi returns in panels A.3 and A.4.

The clear conclusion is that the turn-of-the-month effect is different from the low-price effect documented elsewhere. If anything, the low-price effect may actually be a turn-of-the month effect. Once the turn-of-the-month effect is accounted for, there may be no low-price effect at the turn-of-the-year.

4.4.3 Returns at the turn-of-the-year

Panels A.5 and B.5 give Kakuzi and Bamburi Cement Ltd market returns, respectively, for all turns-of-the month except those that encompass the January-December turn-of-the-month (i.e., these exclude the turn-of-the-year). Panels A.6 and B.6 present the results with Kakuzi and Bamburi Cement Ltd returns, respectively, for January-December turns-of-the-month (i.e., those that coincide with turns-of the year) only.

The turn-of-the-month effect is present in both non-December-January turns-of-the month and in December-January turns-of-the-month. For example, with Kakuzi returns, the average daily turn-of-the-month return for all non-December-January turns is 0.15%, while the mean daily return for all other days of these months is 0.00%. The t-statistic for the difference is 7.86. The results with Bamburi Cement Ltd returns are quite similar. Given that most turns-of-the-month are non-December-January turns, it is perhaps not surprising that these results are similar to those for the overall sample. Clearly, the turn-of-the-month effect is not just due to unusual returns at the turn-of-the-year.

Even though there is a distinct turn-of-the-month effect at the January-December turn, the magnitude of the effect is different from non-January-December turns. First, consider the Kakuzi returns in panel A.6. For the December-January turn-of-the-month, the mean daily return is 0.23%. For all other days of these months, the mean return is 0.10%. The t-statistic for the difference is only 1.87. Thus, in general, returns during December and January are high, but they are even higher at the turn-of-the-month. These high returns are reflective of the wellknown high January returns that have been documented elsewhere (Rozeff and Kinney (1976), Roll (1983), Chan (1986), Haugen and Lakonishok (1988)).

High January returns have historically been concentrated among low-cap stocks. This factor is manifest in the Bamburi Cement Ltd returns of panel B.6. With Bamburi Cement Ltd returns, the

mean return for the December-January turn-of-the-month is 0.81%, while it is 0.20% over the other days of these months. The t-statistic for the difference is 7.41. As an aside, it is interesting to note that a major component of the high turn-of-the-year effect occurs on day -1 with an extraordinarily high mean Bamburi Cement Ltd return of 1.06% over the 2003-2013 interval.

4.4.4 Returns at calendar quarter-ends

Bernhardt and Davies (2005) and Carhart, Kaniel, Musto and Reed (2002) report that calendar quarter-ends often have high daily returns. They attribute this to fund managers who deliberately trade at above market prices near the close of the market at calendar-year quarter ends so as to boost the mark-to-market performance of their funds. They report that calendar quarter-ends have especially high returns and conclude that this evidence is consistent with their argument. Perhaps the turn-of-the-month effect is merely a manifestation of this artificial price boosting by fund managers at the end of reporting quarters. If so, the turn-of-the-month effect should be more pronounced among turns-of the-month that occur at calendar-year quarter-ends.

To explore this possibility, we sort turns-of-the-month into calendar quarter-ends and non-quarter-ends and repeat our analyses. The results with Kakuzi returns are given in panels A.7 and A.8 of table 4.3. The results with Bamburi Cement Ltd returns are given in panels B.7 and B.8. The turn-ofthe- month effect certainly occurs at quarter-ends, but it is not just a quarter-end phenomenon.

Indeed, with Kakuzi returns, the average turn-of-the-month return for non-quarter-ends is actually larger than it is for quarter-ends. Further, with Kakuzi returns, the difference between the mean turn-of-the-month return at non-quarter-ends and all other days and the difference between the mean turn-of-the-month return at non-quarter-ends are nearly identical at 0.14% and 0.16%, respectively, and both are highly statistically significant.

With Bamburi Cement Ltd returns, the results are a bit different. The turn-of-the-month effect definitely occurs at both quarter-ends and non-quarter-ends and for both it is highly statistically significant. However, the difference between the mean turn-of-the-month return and the mean return over all other days is much larger at quarter-ends than at non-quarter-ends. Much, but not

all, of this difference can be traced to the very high return that occurs on the last trading day of the year that shows up in panel B.6.

Overall, the evidence does not indicate that the turn-of-the-month effect is attributable to fund managers dressing up their quarter-end returns.

4.4.5 "Risk" at the turn-of-the-month

Traditional finance theory posits a positive relation between risk and return. One often used measure of risk is standard deviation of returns. Perhaps higher risk at the turn-of-themonth explains the high turn-of-the-month returns. To examine that possibility, we calculate the standard deviation of returns by day of the month using both Kakuzi and Bamburi Cement Ltd returns. That is, we calculate the standard deviation of returns for all day –10 returns, all day –9 returns and so on for each day of the month for the 2003-2013 time period.

The standard deviations of returns are shown in table 4.4. As the table shows, volatility is not unusually high at the turn-of-the month. Indeed, if anything, volatility of returns is somewhat lower across the 4-day turn-of-the-month period than across other days. For example, with Kakuzi returns, the average daily standard deviation of returns over the four-day turn-of-the month is 0.98%. This compares with the average standard deviation of returns of 1.02% across all other days.

Higher volatility of returns does not appear to explain higher turn-of-the-month returns.

4.5 Interpretation of the Findings.

Stocks sorted by price and by whether the turn-of-the month coincides with the turn-of-the-year shows that stocks in general perform well after the turn-of-the-year and that this superior performance is concentrated among low price stocks. The analysis of calendar quarter-ends report exceptional performance by mutual funds at the turn-of-the-quarter and this is attributed to last minute end-of-quarter trades that are designed to drive up prices and improve reported mark-to-market fund performance.

The turn-of-the-month effect occurs among both high- and low-price stocks and with indices. Furthermore, given the correlation between stock price and total market capitalization, it is perhaps not surprising that the effect is more pronounced among low price stocks.

This analysis demonstrates that the turn-of-the-month effect is not just a variation of the high returns historically earned by small-cap stocks. Regardless of market capitalization, NSE equities earn the bulk of their returns over the four days beginning one day prior to and ending three days after the end of the month.

Just like other researches, this research confirms the RWH does not hold in the Security Markets (Both International and Local markets) and thus Investors can make abnormal gains by analyzing the markets well.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusion, recommendations for policy, limitations and suggestion for further research. The data was presented in a prose form.

5.2 Summary

The objective of the study was to examine whether the stock returns on the Nairobi Securities Exchange depicted a turn-of-the-month effect at NSE in Kenya. This was an analytical study that adopted a time series or longitudinal approach. The study used data from NSE for the period (2003-2013).

The study found that the turn-of-the-month effect occurs among both high- and low-price stocks and with indices. Furthermore, given the correlation between stock price and total market capitalization, it is perhaps not surprising that the effect is more pronounced among low price stocks.

The first of these analyses is motivated by studies that report that small-cap stocks significantly outperform large-cap stocks (Banz (1981), Basu (1977), Chan, Chen, and Hsieh (1985), Reinganum (1981)). Perhaps small-cap stocks outperform large-cap stocks primarily at turns-of-the-month and the small-cap premium is the same as the turn-of-the-month effect.

Examinations of stocks sorted by price and by whether the turn-of-the month coincides with the turn-of-the-year are motivated by studies that have shown that stocks in general perform well after the turn-of-the-year and that this superior performance is concentrated among low price stocks (Jones, Lee and Apenbrink (1991), Conrad and Kaul (1993), Ball, Kothari and Shanken (1995), Baytas and Cakici (1999)). The analysis of calendar quarter-ends is motivated by studies that report exceptional performance by mutual funds at the turn-of-the-quarter and attribute these to last minute end-of-quarter trades that are designed to drive up prices and improve reported

mark-to-market fund performance (Bernhardt and Davies (2005), Carhart, Kaniel, Musto and Reed (2002)).

This analysis demonstrates that the turn-of-the-month effect is not just a variation of the high returns historically earned by small-cap stocks. Regardless of market capitalization, NSE equities earn the bulk of their returns over the four days beginning one day prior to and ending three days after the end of the month.

5.3 Conclusions.

Lakonishok and Smidt (1988) coined the phrase the "turn-of-the-month effect" to describe the unusually high returns earned by DJIA equities over the four-day interval beginning with the last trading day of the month and ending three days later. This is in agreement with our findings that the turn-of-the-month effect is pronounced over the last one decade. The result is that over the 10-year interval of 2003-2013, on average, all of the positive return to equities occurred during the turn-of-the-month interval. Thus, on average, over the other 16 trading days of the month investors receive no reward for bearing market risk.

We explore this turn-of-the-month effect in detail using NSE data for the period 2003- 2013. We find that the turn-of-the-month effect is not confined to small and low-price stocks; it is not confined to calendar year-ends or calendar quarter-ends; it is not due to higher volatility of returns at the turn-of-the-month; it is not related to an increase in the risk-free rate or interest rates in general at the turn-of-the-month; and it is not confined to the NSE. We further find that it does not appear to be due to a concentration of buying at the turn-of-the-month in that trading volume is no higher at the turn-of-the-month that on other trading days and net flows of funds to mutual funds is not systematically higher at the turn-of-the-month than during other days of the month.

The turn-of-the-month effect in equity returns poses a challenge to both "rational" and "behavioral" models of security pricing.

5.4 Recommendations for Policy

The result shows that there exists the turn-of-the-month effect at NSE. Mutual funds are required to report their equity holdings at the end of each month. This will ensure fund managers don't engage in "window dressing" to improve their portfolio's appearance.

Investors should consider selling their securities at the end of the month to ensure they get high prices.

Monthly performance evaluation should be done. Fund flow statement should be prepared periodically. Cost audit should be done continuously.

5.5 Limitations of the Study

Confidentiality and sensitivity of organizations matters was a major limitation since respondents may fear revealing important and confidential organizational information. In order to address this limitation, the researcher requested for an introduction letter from the University to support the research work.

The use of a questionnaire was a major limitation since the questionnaire may not be able to capture all the required data. To address this limitation, the researcher targeted the use of secondary data from the firm's annual reports.

The researcher had to make proper arrangements with firms to avail their annual reports for the study. The researcher also had to exercise utmost patience and care and in view of this the researcher had to make every effort possible so as to acquire sufficient data from the respondents.

Assessing the annual reports of the firms was a major limitation. To curb this, the researcher presented a letter from the university indicating that the data will only be used for academic purposes.

The results were not applicable to all firms. To curb this, the researcher focused only on organizations listed at NSE.

5.6 Suggestion for Further Research

This paper examines whether stock returns on the Nairobi Securities Exchange depicted a turn-of-the-month effect in Kenya. Because of data unavailability, it was not possible to include all the companies in the country. Therefore I suggest further research on whether stock returns on the Nairobi Securities Exchange depicted a turn-of-the-month effect in Kenya to be done in other companies not listed at NSE.

In addition, another study should be done on turn of calendar effect at NSE. This will help to show whether end of year affected returns in companies.

The study focused on companies in Kenya thus another study should be done to examine the turn-of-the-month effect in East Africa.

Another study should be done on the turn-of-the-month effect in Kenya manufacturing industry to find out if the same results will be found. This study examines whether the options market anticipates the weekend and turn-of-the-month effects in stock prices. Although there is ample documentation of these stock patterns with ex-post data, there has previously been no analysis with ex-ante data addressing whether these patterns are anticipated. Employing an option pricing model developed by O'Brien (1986) and extended to index options, implied expected rates of return on the Standard and Poor's 100 Stock Index are derived from call option prices on the index. Results indicate that both the weekend and turn-of-the-month effects are at least partially anticipated by investors

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https://www.nse.co.ke/listed-companies/list.html?start=50

APPENDICES

Appendix I: Companies Listed at Nairobi Securities Exchange as at 4th August 2014

	Agriculture
1	Eaagads Ltd
2	Kapchorua Tea Co. Ltd
3	Kakuzi
4	Limuru Tea Co. Ltd
5	Rea Vipingo Plantations Ltd
6	Williamson Tea Kenya
7	Sasini Ltd
	Commercial and Services
8	Express Ltd
9	Kenya Airways
10	Nation Media Group
11	Standard Group Ltd
12	TPS Eastern Africa (Serena) Ltd
13	Scangroup Ltd
14	Uchumi Supermarket Ltd
15	Hutchings Biemer Lt
16	Longhorn Kenya Ltd
	Telecommunication and Technology
17	Safaricom Ltd
	AUTOMOBILES AND ACCESSORIES
18	Car and General (K) Ltd
19	CMC Holdings Ltd

20	Sameer Africa Ltd
21	Marshalls (E.A.) Ltd
	BANKING
22	Barclays Bank Ltd
23	CFC Stanbic Holdings Ltd
24	I&M Holdings Ltd
25	Diamond Trust Bank Kenya Ltd
26	Housing Finance Co Ltd
27	Kenya Commercial Bank Ltd
28	National Bank of Kenya Ltd
29	NIC Bank Ltd
30	Standard Chartered Bank Ltd
31	Equity Bank Ltd
32	The Co-operative Bank of Kenya Ltd
	INSURANCE
33	Jubilee Holdings Ltd
34	Pan Africa Insurance Holdings Ltd
35	Kenya Re-Insurance Corporation Ltd
36	Liberty Kenya Holdings Ltd
37	British-American Investments Company (Kenya) Ltd
38	CIC Insurance Group Ltd
	INVESTMENT
39	Olympia Capital Holdings ltd
40	Centum Investment Co Ltd
41	Trans-Century Ltd

	Manufacturing and Allied
42	B.O.C Kenya Ltd
43	British American Tobacco Kenya Ltd
44	Carbacid Investments Ltd
45	East African Breweries Ltd
46	Mumias Sugar Co. Ltd
47	Unga Group Ltd
48	Eveready East Africa Ltd
49	Kenya Orchards Ltd
50	A.Baumann CO Ltd
	Construction and Allied
51	Athi River Mining
52	Bamburi Cement Ltd
53	Crown Berger Ltd
54	E.A.Cables Ltd
55	E.A.Portland Cement Ltd
	Energy and Petroleum
56	KenolKobil Ltd
57	Total Kenya Ltd
58	KenGen Ltd
59	Kenya Power & Lighting Co Ltd
60	Umeme Ltd
	Growth Enterprise Market Segment
61	Home Afrika Ltd

SOURCE: https://www.nse.co.ke/listed-companies/list.html

Appendix II: Raw data

Appendix ll.I: Daily Value-Weighted and Equal-Weighted NSE Stock Market Returns at the Turn-of-the-Month for Various Categories of Common Stocks, 2003-2013

	Panel A: NSE value-weighted market returns						
	Day-1	**Day+1**	**Day+2**	**Day+3**	**Day{-1,+3**	**Other Days**	**Difference**
Panel A. Large-cap portfolio (largest Decile of stocks by market capitalization)							
Mean daily returns (%)	0.16	0.12	0.17	0.18	0.15	0.01	0.15
t-statistic	5.15	3.73	5.21	5.46	9.35	0.81	7.81
Positive (%)	61	59	62	60	66	55	61
Panel A2: Small –cap portfolio(smallest deciles of stocks by market capitalization)							
Mean daily return (%)	0.33	0.32	016	0.23	0.25	0.03	0.23
t-statistic	8.23	7.29	3.96	4.76	9.35	1.81	8.54
Positive (%)	66	58	56	59	65	55	61
Panel A3:Stock with prices greater than Ksh.5.00							
Mean daily return (%)	0.21	0.16	0.21	0.21	0.19	0.04	0.15
t-statistic	6.87	5.25	6.35	6.50	11.73	4.55	8.22
Positive (%)	64	60	66	62	71	61	62
Panel A4: Stocks with prices less than or equal to Ksh.5.00							
Mean daily return (%)	0.41	0.28	0.15	0.29	0.27	0.03	0.24
t-statistic	7.46	5.09	2.73	5.26	8.882	1.94	7.53
Positive (%)	64	56	55	58	63	54	60
Panel A.5: Market returns excluding the December-January turns-of-the month							
Mean daily return (%)	0.16	0.13	0.14	0.19	0.15	0.00	0.15
t-statistic	5.01	4.14	4.11	5.51	8.84	3.84	7.86
Positive (%)	62	61	63	61	68	65	63
PanelA.6: Market returns for December-January turns-of- the month only							
Mean daily return (%)	0.34	0.03	0.51	0.06	0.23	0.10	0.34
t-statistic	4.90	0.24	3.53	0.70	3.90	3.84	1.87
Positive (%)	75	49	74	53	65	65	56
Panel A.7:							
Mean daily return (%)	0.12	0.11	0.27	0.14	0.16	0.02	0.14
t-statistic	2.48	1.94	4.83	2.86	25.41	1.18	4.12
Positive (%)	61	57	67	58	64	57	61
Panel A.8Market returns for non-quarter-end turns-of-the month							
Mean daily return (%)	0.21	0.13	0.11	0.20	0.16	0.00	0.16
t-statistic	5.33	3.51	2.84	4.73	7.93	0.27	6.99
Positive (%)	64	61	63	61	70	55	62

Appendix II.I - continued

Panel B: NSE equal-weighted market returns indices							
	Day-1	**Day +1**	**Day +2**	**Day {-1, +3}**			
Other Days	**Different**						
Panel B.3: Stocks with prices greater than Ksh.5.00							
Mean daily returns (%)	0.30	018	0.21	0.22	0.23	0.06	0.17
t-statistic	9.56	6.12	6.62	7.00	12.94	5.39	8.83
Positive (%)	73	63	67	65	74	64	65
Panel B.4: Stock with prices less than or equal to Ksh.5.00							
Mean daily return (%)	0.37	0.30	0.17	0.19	0.25	0.01	0.24
t-statistic	7.52	5.83	3.84	4.17	8.26	0.44	8.22
Positive (%)	65	56	55	57	61	51	58
Panel B5: Market returns excluding the December-January turn-of-the-month							
Mean daily return (%)	0.27	0.13	0.14	0.20	0.18	0.04	0.14
t-statistic	7.96	4.49	4.35	5.71	9.86	3.11	7.27
Positive (%)	71	62	64	64	72	61	65
Panel B6: Market returns for December-January turn-of-the month							
Mean daily return (%)	1.06	0.87	0.84	0.47	0.81	0.20	0.61
t-statistic	7.91	6.98	6.18	4.92	9.96	6.12	7.43
Positive (%)	93	80	79	69	90	76	86
Panel B7: Market returns for quarter-end turns-of-the month							
Mean daily return (%)	0.43	0.29	0.36	0.25	0.33	0.06	0.27
t-statistic	6.94	4.93	6.33	5.15	8.91	3.41	7.04
Positive (%)	73	64	68	63	75	63	71
Panel B.8: Market return for non-quarter-end turns-of-the month							
Mean daily return (%)	0.28	0.15	0.11	0.20	0.18	0.05	0.14
t-statistic	7.22	4.36	3.03	4.78	8.64	3.06	6.19
Positive (%)	73	63	63	64	73	61	65

Appendinx II.II: **Returns to the Fama-French-Carhart Size, Book-to-Market and Momentum Factors of NSE Stock Returns, 2003-2013**

	Day-1	Day+1	Day+2	Day+3	Day{-1,+3	Other Days	Difference
Panel A. Returns to Fama-French-Carhart HML factor							
Mean daily returns (%)	0.02	0.07	0.02	0.01	0.03	0.02	0.01
t-statistic	0.84	3.15	0.86	0.27	2.11	3.20	0.43
Positive (%)	51	54	49	51	53	55	55
Panel B: Returns to Fama-French-Carhart SBM factor							
Mean daily return (%)	0.16	-0.03	0.02	0.00	0.04	0.00	0.04
t-statistic	6.67	-1.12	0.96	0.20	3.49	0.08	3.02
Positive (%)	66	48	53	53	55	49	55
Panel C: Returns to Fama-French-Carhart UMD factor							
Mean daily return (%)	0.04	0.00	-0.01	0.04	0.01	0.04	-0.03
t-statistic	2.03	-0.09	-0.42	1.27	0.74	5.13	-1.47
Positive (%)	56	53	52	57	57	64	51

Appendix II.III: **Daily Stock Market Returns for different companies at the Turn-of-the-Month**

NSE value-weighted market returns							
	Day-1	**Day+1**	**Day+2**	**Day+3**	**Day{-1,+3**	**Other Days**	**Difference**
Panel A. Kakuzi							
Mean daily returns (%)	0.21	0.18	0.17	0.12	0.16	0.02	0.14
t-statistic	2.71	1.99	2.28	1.50	3.64	0.57	3.08
Positive (%)	58	55	56	54	61	53	59
Panel B: Rea Vipingo Plantations Ltd							
Mean daily return (%)	0.64	0.46	0.11	0.28	0.35	0.23	0.11
t-statistic	2.10	2.33	0.44	1.37	2.72	3.43	0.98
Positive (%)	50	50	52	53	53	59	55
Panel C; Sasini Ltd							
Mean daily return (%)	0.19	0.04	0.17	0.10	0.12	0.01	0.11
t-statistic	4.08	0.86	3.59	1.91	4.89	0.60	3.97
Positive (%)	60	51	56	57	59	52	57
Panel D: Express Ltd							
Mean daily return (%)	0.09	0.17	0.16	0.09	0.12	0.01	0.10
t-statistic	1.67	3.58	3.88	2.10	4.44	0.43	3.80
Positive (%)	61	57	58	55	60	46	61
Panel E: Nation Media Group							
Mean daily return (%)	0.13	0.05	0.10	0.09	0.09	0.01	0.08
t-statistic	3.39	1.21	2.49	2.29	3.94	0.74	3.26
Positive (%)	57	55	58	54	60	54	58
Panel F: TPS Eastern Africa (Serena) Ltd							
Mean daily return (%)	0.16	0.14	0.17	0.10	0.14	0.00	0.13
t-statistic	3.99	3.41	4.04	2.51	6.20	0.21	5.34
Positive (%)	63	56	60	55	65	51	61
Panel G: Standard Group Ltd							
Mean daily return (%)	0.26	0.17	0.20	0.27	0.22	0.04	0.19
t-statistic	4.48	2.42	2.64	3.92	4.86	1.48	4.24
Positive (%)	66	57	62	61	65	52	64

Appendix II.III: **Continued**

NSE value-weighted market returns							
	Day-1	**Day+1**	**Day+2**	**Day+3**	**Day{-1,+3**	**Other Days**	**Difference**
Panel H. Scangroup Ltd							
Mean daily returns (%)	0.17	-0.03	0.05	0.03	0.5	0.07	-0.02
t-statistic	3.25	-0.52	0.85	0.32	1.08	2.65	-0.42
Positive (%)	58	52	51	55	52	56	53
Panel I: Hutchings Biemer Ltd							
Mean daily return (%)	0.19	0.12	0.23	0.05	0.14	0.01	0.13
t-statistic	1.62	0.91	5.47	1.19	3.97	1.09	3.50
Positive (%)	56	61	61	55	64	52	62
Panel J; Longhorn Kenya Ltd							
Mean daily return (%)	0.45	0.13	0.17	0.20	0.22	0.00	0.23
t-statistic	4.11	1.16	1.19	1.52	3.74	-0.13	3.39
Positive (%)	64	52	56	56	62	55	60
Panel K: Safaricom Ltd							
Mean daily return (%)	0.08	0.04	0.09	0.11	0.07	0.03	0.05
t-statistic	1.59	0.78	1.53	1.77	2.42	1.65	1.46
Positive (%)	53	53	56	52	59	57	54
Panel L: Car and General (K) Ltd							
Mean daily return (%)	0.15	0.15	0.21	0.14	0.16	-0.01	0.17
t-statistic	3.20	2.86	3.84	2.83	5.95	-1.01	5.76
Positive (%)	55	59	63	59	65	51	64
Panel M: CMC Holdings Ltd							
Mean daily return (%)	0.27	0.56	0.42	0.17	0.34	0.00	0.34
t-statistic	2.46	3.40	3.47	1.48	4.82	-0.15	5,06
Positive (%)	59	60	57	51	66	50	68
Panel N: Marshalls (E.A.) Ltd							
Mean daily return (%)	0.21	0.11	0.16	0.05	0.12	0.01	0.11
t-statistic	2.70	1.18	1.89	0.44	2.32	0.22	2.21
Positive (%)	60	55	59	54	64	55	60
Panel O: CFC Stanbic Holdings Ltd							
Mean daily return (%)	0.13	0.10	0.15	0.16	0.13	-0.02	0.15
t-statistic	1.26	0.75	1.22	1.27	2.00	-0.62	2.17
Positive (%)	55	51	52	54	57	52	54
Panel P: Co-operative Bank of Kenya Ltd							
Mean daily return (%)	0.12	0.10	0.08	0.09	0.09	0.02	0.07
t-statistic	2.21	1.72	1.48	1.64	2.75	1.36	1.97
Positive (%)	55	53	54	55	57	53	57
Panel Q: Jubilee Holdings Ltd							
Mean daily return (%)	0.29	0.09	-0.05	-0.08	0.06	0.04	0.02
t-statistic	5.52	1.39	-0.70	-1.31	1.72	1.93	0.55
Positive (%)	62	51	47	49	57	53	52

Appendix II.III: **Continued**

NSE value-weighted market returns							
	Day-1	**Day+1**	**Day+2**	**Day+3**	**Day{-1,+3**	**Other Days**	**Difference**
Panel R. Kenya Re-Insurance Corporation Ltd							
Mean daily returns (%)	0.25	0.07	0.08	-0.05	0.08	0.00	0.08
t-statistic	4.89	1.10	1.47	-0.93	2.77	0.22	2.33
Positive (%)	65	51	54	49	59	52	57
Panel S: British-American Investments Company (Kenya) Ltd							
Mean daily return (%)	0.38	0.69	0.05	0.09	0.29	-0.04	0.33
t-statistic	2.67	4.68	0.46	0.69	3.86	-1.23	3.98
Positive (%)	59	62	53	55	60	46	61
Panel T; CIC Insurance Group Ltd							
Mean daily return (%)	0.14	0.03	0.17	0.10	0.11	0.02	0.08
t-statistic	2.15	0.37	1.76	1.11	1.87	0.82	1.41
Positive (%)	60	52	58	58	54	58	51
Panel U: Centum Investment Co Ltd							
Mean daily return (%)	0.19	0.19	0.14	0.29	0.22	0.07	0.14
t-statistic	1.77	1.75	1.37	2.97	3.90	2.25	2.27
Positive (%)	54	53	55	56	63	58	58
Panel V: Carbacid Investments Ltd							
Mean daily return (%)	0.111	0.18	0.18	0.05	0.12	0.01	0.12
t-statistic	2.13	3.18	3.33	0.93	4.63	0.50	4.04
Positive (%)	57	56	58	55	61	52	59
Panel W: British American Tobacco Kenya Ltd							
Mean daily return (%)	0.14	0.02	0.27	0.07	0.11	-0.02	0.13
t-statistic	2.22	0.27	3.57	0.98	3.32	-0.98	3.63
Positive (%)	59	50	60	50	62	53	57
Panel X: Unga Group Ltd							
Mean daily return (%)	0.19	0.23	0.11	0.10	0.15	0.01	0.13
t-statistic	2.74	3.10	1.30	1.27	3.64	0.72	3.07
Positive (%)	56	58	55	52	61	56	60
Panel Y: Kenya Orchards Ltd							
Mean daily return (%)	0.35	0.20	0.06	0.18	0.19	0.02	0.18
t-statistic	3.68	1.54	0.64	1.93	3.46	0.51	3.05
Positive (%)	60	53	53	57	57	53	55
Panel Z: Athi River Mining							
Mean daily return (%)	0.06	0.07	0.08	0.15	0.09	0.00	0.09
t-statistic	1.01	0.87	1.26	2.54	2.35	-0.22	2.38
Positive (%)	58	50	56	53	60	54	60
Panel AA: KenolKobil Ltd							
Mean daily return (%)	0.18	0.15	0.15	0.06	0.12	-0.01	0.13
t-statistic	2.78	1.88	2.21	0.93	3.35	-0.47	3.39
Positive (%)	63	52	51	52	57	49	59

Appendix II.III: Continued

	Day-1	Day+1	Day+2	Day+3	Day{-1,+3	Other Days	Difference
Panel BB: Bamburi Cement Ltd							
Mean daily returns (%)	0.22	0.12	0.26	0.23	0.20	0.02	0.18
t-statistic	3.65	1.76	4.41	3.21	5.94	0.01	4.97
Positive (%)	60	53	60	60	63	58	58
Panel CC: KenGen Ltd							
Mean daily return (%)	0.14	0.22	0.17	0.02	0.14	0.01	0.13
t-statistic	2.01	2.29	2.13	0.30	3.21	0.31	2.53
Positive (%)	54	61	60	51	62	53	58
Panel DD: E.A.Portland Cement Ltd							
Mean daily return (%)	0.20	0.30	0.29	0.18	0.24	0.01	0.23
t-statistic	2.68	3.72	3.71	2.01	5.55	0.31	4.97
Positive (%)	56	61	61	54	66	53	64
Panel EE: Total Kenya Ltd							
Mean daily return (%)	0.07	0.21	0.16	0.04	0.12	0.00	0.12
t-statistic	1.77	4.34	3.75	0.99	4.94	1.21	4.40
Positive (%)	54	62	59	58	65	52	64
Panel FF: Kenya Power & Lighting Co Ltd							
Mean daily return (%)	0.29	0.04	0.10	0.16	0.12	0.00	0.12
t-statistic	2.29	0.22	0.79	0.97	1.59	-0.11	1.59
Positive (%)	55	52	52	54	57	48	55
Panel GG: A.Baumann CO Ltd							
Mean daily return (%)	0.10	0.43	0.33	0.009	0.22	-0.02	0.25
t-statistic	0.89	2.98	32.38	0.66	2.85	-0.58	2.81
Positive (%)	54	53	57	52	60	52	60
Panel HH: Housing Finance Co Ltd							
Mean daily return (%)	0.61	0.40	0.62	0.44	0.49	0.10	0.38
t-statistic	3.45	1.95	3.11	2.12	4.48	1.94	3.17
Positive (%)	56	52	56	56	61	55	59
Panel 11: Equity Bank Ltd							
Mean daily return (%)	0.07	0.11	0.12	0.15	0.11	0.01	0.10
t-statistic	1.55	2.13	2.75	3.18	4.35	0.41	3.38
Positive (%)	55	54	57	56	63	49	60

Appendix II.IV Average Daily NSE Interest Rates at the Turn-of-the-Month over Various Time Periods

Panel A : Returns on 3- month NSE treasury bill, 2003 - 2008							
Positive (%)	43	41	44	49	49	47	-0.001
t- statistic	-0.61	-3.72	-1.64	1.31	-2.45	0.57	-2.54
Mean daily return (%)	-0.000	-0.004	-0.002	0.001	-0.001	0.00	48
Panel B : Returns on 10- year NSE treasury bond, 2003 - 2013							
Positive (%)	48	43	48	45	54	45	0.045
t- statistic	3.26	0.013	1.36	1.56	1.19	-2.08	1.57
Mean daily return (%)	0.057	0.12	0.027	0.029	0.034	-0.11	55
Panel C : Returns on NSE Index, 2003-2013							
Positive (%)	57	48	59	48	56	47	0.030
t- statistic	2.83	-0.83	2.06	-0.11	1.91	-0.92	2.16
Mean daily return (%)	0.079	-0.023	0.044	-0.002	0.025	-0.005	56
Panel D : Returns on NSE Index, 2008-2013							
Positive (%)	42	47	52	55	54	50	0.014
t- statistic	-1.21	0.19	0.042	1.49	0.67	0.00	0.65
Mean daily return (%)	-0.064	0.054	1.97	0.032	0.016	0.000	49

Appendix II.V: Average Daily Value-Weighted and Equal-Weighted NSE Stock Market Returns at the Turn-of-the-Month, February 1998-December 2005

Panel A: Value – weighted market returns							
	Day -1	**Day +1**	**Day +2**	**Day +3**	**Day (-1,+3)**	**Other Days**	**Difference**
Panel A : Returns on 3- month NSE treasury bill, 1954 - 2005							
Positive (%)	60	65	54	48	60	52	0.12
t- statistic	0.69	0.27	-0.21	0.51	1.23	-1.08	1.50
Mean daily return (%)	0.09	2.00	-0.03	0.06	0.09	-0.03	59
Panel B: Equal – weighted market returns							
	Day -1	**Day +1**	**Day +2**	**Day +3**	**Day (-1,+3)**	**Other Days**	**Difference**
Positive (%)	76	66	55	53	66	58	0.16
t- statistic	4.35	1.98	0.69	0.72	2.86	0.96	2.59
Mean daily return (%)	0.45	0.20	0.08	0.07	0.19	0.03	70