THE NORMALITY OF WEDNESDAY RETURNS: EVIDENCE FROM THE NAIROBI SECURITIES EXCHANGE

BY

MATY A. JIMMIE, Jr.

D61/60028/2011

A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF BUSINESS ADMINISTRATION DEGREE, SCHOOL OF BUSINESS OF THE UNIVERSITY OF NAIROBI

JUNE 2012

DECLARATION

I, Maty A. Jimmie, Jr., hereby declare that this proposal is my own work and effort and that it has not been submitted anywhere for any award.

Signature: ..... Date: 07 Nov. 2012

Maty A. Jimmie, Jr.

D61/60028/2011

Signature: ..... Date: 8/11/12

Dr. ADUDA JOSIAH

Lecturer, Department of Finance and Accounting

DEDICATION

This work is dedicated to my beloved daughter, Leemu A. Jimmie, and to the memory of my late wife, Agatha Weah-Jimmie, who passed on a love of reading and respect for education.

ACKNOWLEDGEMENT

For the success of this research I am heavily indebted to various people and organizations without whose materials and non materials support this research would have come to naught. It is a pleasure to thank those who made this project possible. I take this opportunity to express my sincere thanks to each of these people and organizations.

I am grateful to the staff of the University of Nairobi Library and Jomo Kenyatta Library who provided me the opportunity to use their facilities especially in the MBA and the Electronic Library section. From these able staff I was able to access not only research reports from earlier MBA research findings but I was able to access scholarly publications from the wider academic sphere.

I owed my deepest gratitude to my supervisor, Dr. Josiah Aduda for most of the direction on what to do at each stage of this research from the generation of the research idea, to its conceptualization, to the drafting of the research proposal, to the analysis of samples and preparation of the report finding.

I am grateful to the NSE; the data use for the analysis was acquired from the NSE data base. It would not have been possible to conduct an analysis and extract relevant finding(s) if the data was not available in the first place.

In my literature review I have cited quite a lot of scholarly publications. Some are from earlier research finding from project done by other MBA students. I have used scholarly papers from the wider academia. These are works, without which I could not have had a scholarly insight into this research; I would like to show my gratitude.

Lastly, I offer my regards and blessings to my entire family who supported me in any respect during the completion of the project.

ABSTRACT

The focus of this study was to investigate whether Wednesday returns on the NSE were normally distributed or not for the period 2007 to 2011. The study utilized descriptive studies like skewness, kurtosis and variance to determine whether the returns were normally distributed for the days used in this study, i.e. Tuesday, Wednesday and Thursday. The descriptive studies were complemented by histogram plots, normal curve plots, Q-Q plots and P-P plots. A regression analysis was used to determine whether the inter-day variation in returns were random.

This research was done using a time series analysis on the returns of firms listed on the NSE; it was conducted on all the fifty-eight firms listed on the NSE. Only firms that have consistently trade for this length of time were eligible for this study. The capture and analysis of data was done using SPSS version 17.

The finding of this study was Wednesdays stock returns were not normally distributed. The study also found that Wednesday returns are higher than the returns of the Tuesdays and Thursday. This therefore showed that Wednesday is a good day for investment with a hope of getting higher returns.

A study can be done to universalize the findings across time and across countries. This is because there is a need to investigate whether the findings of this research can be made universal across time on the NSE. The NSE has been trading since pre-independence to date, yet the period of study is only a short five years. This may make the finding not to be assumed universal, but, a research can be done to determine the nature of the distributions across longer periods of time.

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ABBREVIATIONS and ACRONYMS

ARCH	AutoRegressive Conditional Heteroskedasticity
ASE	Athens Stock Exchange
ASEAN	Association of Southeast Asian Nations
CAPM	Capital Asset Pricing Model
CDS	Central Deposit System
DASS	Delivery And Settlement System
EGARCH-M	Exponential GARCH in Mean
EMH	Efficient Market Hypothesis
FTSE	Financial Times and Stock Exchange
GARCH	Generalized Autoregressive Conditional Heteroskedasticity
MBA	Master of Business Administration
NSE	Nairobi Securities Exchange
OLS	Ordinary Least Square
PDF	Probability Distribution Function
P-P Plot	Point-Point Plot
Q-Q Plot	Quantity-Quantity Plot
RTSI	Russian Trading System Index
S&P	Standard & Poor
SPSS	Statistical Package for Social Sciences
T-ARCH	Threshold-GARCH
US	Unites Sates

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Capital market efficiency has been a very popular topic for empirical research since Fama (1970) introduced the theoretical analysis of market efficiency and proclaimed the Efficient Market Hypotheses. Subsequently, a great deal of research has been, and is still being devoted to investigating the randomness of stock price movements for the purpose of demonstrating the efficiency of capital markets. Since then, all kinds of calendar anomalies in stock market return have been documented extensively in the finance literature. The most common calendar anomalies are the January effect and the day of the week effect. Showing that market returns follow a seasonal pattern violates the assumption of weak market efficiency in that by observing the past development of returns market participants can make extraordinary profits (Gao & Kling, 2005)

Accordingly, Haugen & Jorion (1996) suggested that calendar effects should not be long lasting, as market participants can learn from past experience. Hence, if a monthly effect exists, trading based on exploiting a monthly pattern of returns should yield extraordinary profits-at least for a short time. Yet such trading strategies affect the market in that further profits should not be possible: the calendar effect should break down. Nevertheless, Haugen & Jorion (1996) found that the January effect still exists despite the argument that these anomalies should be short-lived.

The day of the week effect is also observed in stock markets of other countries. It was revealed the weekend effect was present in Australian, Canadian, Japanese and UK equity markets, and it was, further, found that the lowest mean returns for both Japanese and

Australian stock markets were on Tuesdays. Other studies confirmed the largest decline in Italian stock prices mostly on Tuesday. Afterwards, other studies showed that the distribution of stock returns varies dependent on the respective day of the week for various countries (Alexakis & Xanthakis 1995).

Calendar effects (sometimes described as seasonal effects) are cyclical anomalies in returns, where the cycle is based on the calendar. The most important calendar anomalies are the January effect and the weekend effect. The weekend effect, though, is one of the day-of-the-week anomalies. The day-of-the-week effect implies that the stocks returns are not independent of the day of the week in which they are generated (Apolinario, Santana & Sales, 2006).

Return behaviours are viewed as anomalies when judged based on the EMH and the CAPM. The anomalies indicate financial phenomenon distant from the normal prediction consonant with the EMH. Among many other anomalies concerning return on the stock exchange there are the Calendar Effects. Calendar effects include seasonality, day-of-the-week effect, Monday Effect (Kenourgios & Samitas, 2008).

Seasonality is in disagreement with the Random Walk theory. The Random Walk theory postulates that the variations in stock returns is purely random and have the normal bell-shaped distribution. In contrast, the Seasonality Model observes that stock returns are reactive to seasons and therefore dependent upon the time context. For instance in the US stock returns for January were significantly larger than the return for the remaining eleven months and this cycle repeated every year making it cyclic (Kinsey, 1976).

Analyses of the stock market use returns. A return is a ratio (or percentage) of money gained or lost on an investment proportionate to the amount of money invested. In stocks, return is usually arithmetically modeled as the price change expressed as a percentage of the stock price before the change (Miller & Modigliani, 1961).

Risk is the variation in return. During the empirical analysis of the stock markets return was operationalized by calculation of the standard deviation of the set of return in question. This therefore means that risk is the standard deviation of the return of a stock (Markowitz, 1952).

Initially it was believed that risk was constant across the period of study. However, deeper research later uncovered seasonality trends in the days of the week and the phenomena were recurrent. This led to the term "the-day-of-the-week effect" in stock prices. Day-of-the-week-effect in stock returns in the US Market has been documented by a large number of studies. For instance, in the US stock market the mean Monday stock return has been found to be negative or significantly lower than the non-Monday returns. Many studies have shown that in addition, mean stock return on Fridays is significantly high relative to other days. "The-day-of-the-week effect" argues that there is a cyclic pattern of stock returns pegged upon the day of the week (Keim & Stambough, 1984).

The Monday (Weekend) effect is the belief that the weekend has an effect on securities market returns. The effect is that on Mondays, stock returns are, not only, consistently less than the other days of the week, but are often negative on average. However, since the mid nineteen-seventies large firm securities seem to have exhibited what might be called a

'reverse Monday effect,' in which differences between Mondays trading and the rest of the week are not statistically significant (Cho, Linton, & Whang, 2006).

Researches done on the-day-of–the-week effect argue that there is a linear relationship between the weekly average return on a stock and the return within each of the trading days of the week. The linear models assume in case there is randomness, as postulated by the EMH, the intercept term should be zero while the constant of regression should be one. In case an anomaly exists the regression values will be different (Gakhovich, 2011).

Wednesday is a day in the middle of the week and naturally provides the highest number of trading days before and after any transaction involving stocks. On Wednesday, traders have the most freedom to process information. The investors have information sets of the last two days and are free to forecast for the next two days, not to mention that they have more time to react the information. Within the context of the EMH it provides an opportunity to process and react to information with least level of emotion. The distributions of returns on Wednesdays have the least volatility (Berument & Kiymaz, 2001).

In the context of this study Tuesday, Wednesday and Thursday are cushioned from the weekend effect and as such assumed to be normal trading days devoid of irrationalities. The location of Wednesday makes is the day portraying most normality. If the postulations are true, then the regression model between the average of Wednesday and Thursday returns should have the same behavior as that expected by the EMH. That is, if a regression is conducted, with Wednesday and Thursday average as the dependent variable and the Wednesday return as the independent, the intercept should be zero while the

coefficient term should be one. Further, the distribution of Wednesday returns should be statistically normal (Gakhovich, 2011).

One common assumption is that a random variable is normally distributed. Normality is critical in many statistical methods. When this assumption is violated, interpretation and inference may not be reliable or valid. Based on the assumption that the NSE is an efficient market being a stock market, a normality of Wednesday returns will be deduced if the distribution of the Wednesdays' returns is normal and if they do not differ significantly with the Tuesday and Thursday returns. Graphical methods, like the P-P and Q-Q, and numerical methods like, the Shapiro-Wilk, are used to examine normality (Park, 2008).

1.1.1 The Nairobi Securities Exchange

This study will be conducted on firms quoted on the Nairobi Stock Exchange (NSE). The NSE was registered under the Societies Act originally as a voluntary association of stockbrokers in 1954. It became exclusively for the Kenyan white community until after the attainment of independence in 1963 when other formerly restricted races were allowed to trade. 1988 realized the first privatization through the NSE when the successful sale of a 20% government stake in Kenya Commercial Bank was done (NSE, 2012). February 18, 1994 recorded the highest 20-Share Index in NSE history (NSE, 2012). More improvements have been taking place on the NSE and now there is a computerized delivery and settlement system (DASS).

Securities on the NSE are divided into Agricultural investments market Segment made up of firms in the Agricultural sector, Commercial and Services sector, the

Telecommunication and Technology Segment, Automobiles and Accessories, Banking, Insurance, Investment, Manufacturing and Allied, Construction and Allied, and Energy and Petroleum Segments. The other segment deals with Fixed Income Securities like bonds which are not eligible for this study (NSE, 2012). Trading on the NSE is done on a five-day basis with Saturday, Sunday and the holidays making the non-trading days.

The NSE is a securities market and like every other securities market it trades based on information be it in the weak, semi-strong or in the strong form. The patterns of the day of the week effect should be like those of other stock markets possibly (Keim & Stambough, 1984).. The NSE therefore provides a good context within which to study the returns of Wednesday.

1.2 Statement of the Problem

Trading on the securities market is based on information which is processed by both the buyers and sellers in order to find the closest estimate of the value of a stock. The price of a stock is, therefore, the product of the information, is interpretation and the reaction of both the buyer and the seller. Under the EMH the information is processed empirically and the response by the trader is efficient so that prices are true estimates of the information affecting the value of the stock (Fama, 1965). However, Keim & Stambough, (1984) found that this is not always true as the day of the week has an effect on returns. A study by Berument & Kiymaz, (2001) found Wednesday returns to have the least volatility unlike the other days of the week with Tuesday, Wednesday and Thursday not being significantly different from each other; Wednesday is a day in the middle of the week and naturally provides the highest number of trading days before and after any transaction involving

stocks. On Wednesday, investors have information sets of the last two days and forecast for the next two days and have more time to react the information. This means, therefore, that the true efficiency of the stock market is realized on Wednesdays. Returns' statistical distribution for Wednesdays should map the Gaussian bell shape.

Local studies like Mogunde (2011) which tested the applicability of beta in the CAPM on as a measure of risk on the NSE; Ndiang'ui (2011) which studied the relationship between dividend growth and risk, and Wagura (2011) which studied the impact of the CDS system on returns on the NSE applied the assumption that Wednesday returns are normal and used their returns as proxies for weekly returns. While Fama (1965) argues and is supported by Gakhovich, (2011) who studied Central and Eastern European financial markets that securities markets are efficient and have normally distributed returns including on Wednesdays, Keim & Stambough, (1984) find each day, including Wednesdays, having its own irrationalities they call the day of the week effect. This paper therefore sought to answer the question: are Wednesday returns on the NSE normal or not normal?

1.3 Objective of the study

The objective of the study was to determine the normality of the Wednesday returns of the NSE.

1.4 Significance (Value) of the Study

Investors will benefit from the findings of this research depending on the conclusions concerning Wednesday. Arbitrageurs will know how to conduct their trading so as to avoid

making unnecessary losses. Having such knowledge will allow investors to adjust their portfolios by taking into account day of the week variations in volatility.

The management of both the listed firms and the NSE will make the necessary responses to control the daily variations in returns. There may be need to find out why Wednesdays are normal and spread that to the rest of the days so that price variations become purely random.

This paper will provide an empirical basis for the acceptance of the assumption of Wednesday as having normal returns that can be used as a proxy for week's returns. Future researchers investigating return will therefore find the results useful in their discourses on relevant topics.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a discussion of the various theories that provide explanation of investor behaviour in the securities markets. These are mainly three theories: the EMH, behavioural finance, the weekend effect. The EMH postulates that markets are efficient in various form and returns for all days across the time are normal and random. The behavioural finance theory explains the behaviour of investors based on scientifically proven irrationalities in human behaviour. The weekend effect theory is an application of the behavioural finance theory specifically dealing with the predictable irrationalities among investors anchored within time dependent factors.

2.2 Review of theories

2.2.1 The Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH) suggests that stock prices are randomly decided upon on the stock market and it's therefore impossible to consistently predict tomorrow's prices. This theory is premised the fact that the major security exchanges are good examples of efficient markets. In an "efficient" there are large numbers of rational, profit-maximizers who are actively competing, with each trying to predict future market values of individual securities, and in which important current information is almost freely available to all participants. In such a market, competition among the many intelligent participants leads to a situation where actual prices of individual securities is an embodiment of past,

present and future information. In an efficient market at any point in time the actual price of a security will be a good estimate of its intrinsic value (Fama, 1965).

2.2.2 Behavioural Finance Theory

Kahneman & Tversky (1979) developed an alternative for explaining decision making under risk. The model was called the prospect theory. Kahneman and Tversky found that people place less weight on outcomes that are merely probable in comparison with outcomes that are obtained with certainty. They also found that people generally discard components that are shared by all prospects under consideration. Under prospect theory, value is assigned to gains and losses rather than to final assets; also probabilities are replaced by decision weights.

The value function is normally concave for gains (implying risk aversion), commonly convex for losses (risk seeking) and is generally steeper for losses than for gains (loss aversion). Decision weights are generally lower than the corresponding probabilities, except in the range of low probabilities. The theory, which they confirmed by experiment, predicts a distinctive fourfold pattern of risk attitudes: risk aversion for gains of moderate to high probability and losses of low probability, and risk seeking for gains of low probability and losses of moderate to high probability (Kahneman & Tversky, 1979).

Earlier, Tversky & Kahneman (1974) had described three heuristics employed when making judgments under uncertainty. These were representativeness, availability, anchoring and adjustment. Other heuristics are overconfidence and the gamblers fallacy. The prospect theory provided states of mind that can affect decision making as loss aversion, regret aversion, mental accounting, and self control.

Their publication enhanced research into the phenomena that seemed to be out of line with the rational scientific approach. Their explanations tended more towards being human behaviour. They demonstrated that human behaviour is not rational, and that the EMH does not properly explain stocks' returns in the real world (Kahneman & Tversky, 1979).

2.2.3 The Weekend Effect

Keim & Stambaugh (1984) found that stock and bond returns could be predicted from a common set of stock market and term structured variables. These predictable patterns were called Calendar anomalies. They were anomalies because they were out of the EMH. Calendar anomalies include weekend effect, day of the week effect, month of the year effect. The day of the week effect phenomenon explains that average daily returns have a predictable pattern of occurrence dependent upon the day of the week. Keim & Stambugh (1984) are some of the researchers who showed the day of the week effect. The weekend effect is a simple theory that weekend returns on stocks are generally lower than those of the rest of the week.

2.3 Normality Tests

One common assumption is that a random variable is normally distributed. In many statistical analyses, normality is often conveniently assumed without any empirical evidence or test. But normality is critical in many statistical methods. When this assumption is violated, interpretation and inference may not be reliable or valid. There are two ways of testing normality. Graphical methods visualize the distributions of random variables or differences between an empirical distribution and a theoretical distribution

(e.g., the standard normal distribution). Numerical methods present summary statistics such as skewness and kurtosis, or conduct statistical tests of normality. Graphical methods are intuitive and easy to interpret, while numerical methods provide objective ways of examining normality (Park, 2008).

Graphical and numerical methods are either descriptive or theory-driven. A dot plot and histogram, for instance, are descriptive graphical methods, while skewness and kurtosis are descriptive numerical methods. The P-P and Q-Q plots are theory-driven graphical methods for normality test, whereas the Shapiro-Wilkinson, W, and Jarque-Bera tests are theory-driven numerical methods (Park, 2008).

2.4 Empirical Literature Review

The weekend effect in the stock market is a phenomenon that is believed to be behaviourally directed though there are various other explanations of why such a phenomenon occurs. Just as it is difficult to point out the cause of the anomaly where and when it is evident, findings of its presence have not been consistent. Some studies have found the weekend effect present in some markets; others found the weekend effect not present in other markets. In some other studies the findings of the day-of–the–week effect was present but not in the same pattern as those revealed by studies on the US market, for example a study on the Russian Stock Market. This could provide an indication that the manifestation of the weekend effect is time and market specific (McGowan & Ibrihim, 2009).

A study by Berument & Kiymaz (2001) tested the presence of the day of the week effect on stock market volatility by using the S&P 500 market index during the period of January

1973 and October 1997. The stock return data used in this study consisted of logarithmic first difference of the S&P 500 stock index closing prices. There were a total of 6,409 daily observations ranging from January 3, 1973, to October 20, 1997. They initially estimated the day of the week effect in return by using an equation estimated by Ordinary Least Square method (OLS) with the independent variables being dummy variables for Monday, Tuesday, Wednesday, Thursday, and Friday.

The findings showed that the day of the week effect was present in both volatility and return equations. While the highest and lowest returns were observed on Wednesday and Monday, the highest and the lowest volatility were observed on Friday and Wednesday, respectively. Further investigation of sub-periods reinforced their findings that the volatility pattern across the days of the week is statistically different.

As research became more and more intense other studies were done to investigate the universality of the weekend effect. Chukwuogor (2011) examined the daily returns and volatilities of such returns of 40 developed and emerging global stock markets. The results were substantiated by parametric and non-parametric tests. The daily returns were tested for normality using the Shapiro-Wilkinson test. Since the result of the normality test indicated that the distributions of the returns were mostly non normal, the study used the non-parametric test, the Kruskal-Wallis to check the results for equality of mean returns. To test for the equality of variance across the days of the week, the study employed the Levene's (1960) test was employed.

The study found that more stock markets in developed economies in relation to their proportion in the sample displayed the day-of-of-the-week effect. Only a few stock markets

tested significant to the Levene's test of equality of variance of daily returns. According to the proportion of the developed and emerging stock markets in the sample under analysis, the number of developed and emerging stock markets that tested significant at the 5 percent for the equality of variance Levene's test, showed least and highest standard deviations of returns during the 1997-2004 seemed representative of each category in the sample. This can conclude to the presence of the weekend effect on global stock market indicators (Chukwuogor, 2011).

A study by Kiymaza & Berument (2003) investigated the day of the week effect on the volatility of major stock market indexes for the period of 1988 through 2002. Using a conditional variance framework, they found that the day of the week effect was present in both return and volatility equations. The highest volatility occurred on Mondays for Germany and Japan; on Fridays for Canada and the United States; and on Thursdays for the United Kingdom. For most of the markets, the days with the highest volatility also coincided with that market's lowest trading volume. Thus, their paper supported the argument that high volatility would be accompanied by low trading volume because of the unwillingness of liquidity traders to trade in periods of high stock market volatility. The study employed the standard OLS methodology by regressing returns on five daily dummy variables but excluded Wednesday.

A study by Apolinario, Santana & Sales (2006) focused on the analysis of the day of the week effect on the major European stock markets by means of GARCH and T-ARCH models. The findings indicate that abnormal behaviour is not present in the returns of these stock markets. In addition, evidence is obtained of the day of the week effect in the volatility of major European stock markets, using symmetric and asymmetric models. The

study found that a day of the week effect was present in all of the financial markets except in Portugal and the Czech Republic, where a symmetric model was applied. Exceptions were found in France and the Czech Republic, using an asymmetric T-ARCH model. Nevertheless, this effect did not agree with other analysed financial markets.

Yalcin & Yucel (2006) conducted a study that addressed the key relationships between the days of the week and returns and volatility by examining the day-of-the-week effect in the stock exchanges of 20 emerging market economies. They found that the day-of-the-week effect is not significant in returns but present for the variances of returns in the majority of European stock markets. They employed an Exponential GARCH model with an ARCH-in-mean term, the so-called EGARCH-M model. Their approach had dummy variables introduced into both return and variance specifications. The use of an EGARCH specification to handle possible asymmetries distinguishes the study. The study found that the day-of-the-week effect was not strongly present in their data, which was a sign of efficiency in the examined markets.

Researches done at country level produced mixed results. A study by Gao & Kling (2005) examines calendar effects in Chinese stock market, particularly monthly and daily effects. Using individual stock returns, they observed the change of the calendar effect over time. In Shanghai and Shenzhen, the year-end effect was strong in 1991 but disappeared later. As the Chinese year-end is in February, the highest returns could be achieved in March and April. Studying daily effects, they found that Fridays are profitable. They used regression analysis to conduct their study.

In a study by McGowan, Jr. & Ibrihim (2009) on the Russian Stock Market found that the lowest returns were for Wednesday and were negative but not statistically significant. The highest returns were for Friday and were positive but not statistically significant. Returns for Monday, Tuesday, and Thursday were all similar, approximately 0.001, but not statistically significant.

However, using standard ARCH/GARCH analysis to determine if a day-of-the-week effect exists in the RTS (Russian Trading System) Index, McGowan, Jr. & Ibrihim (2009) found that a day-of-the-week effect existed but is not consistent with the US stock market Monday/Friday ("weekend"), day-of-the-week effect. Wednesday provided the lowest rate of return and Thursday, Friday, and Monday provide positive returns that were statistically significant. This study was conducted on the RTSI for the period 9th April 1995 to 8th November 2003.

A study by Husain, Hamid, Akash & Khan (2011) concluded that Tuesday returns were quite significant and positive on the Pakistani stock market. It was inferred that there exists day effect in Pakistani stock market. The returns of Tuesday on an average were found to be greater than those of the rest of the days. The data used in the study consisted of daily values for the major Pakistani stock market index, KSE 100 Index, from January 2006 to December 2010. They also used the regression analysis with dummy independent variables for Monday, Tuesday, Wednesday, Thursday and Friday.

By descriptive statistics Husain, Hamid, Akash & Khan (2011) noted that mean return of Tuesday was higher than the rest of the week. The mean return on Tuesday was 164.88, which was higher than the other days of week. The mean return on rest of week was

100.25. The higher mean return showed that there was Tuesday effect in Karachi Stock exchange and returns on other days are constant. The standard deviation on Tuesday was 65.56% which was more than the standard deviations on other days. It showed that Tuesday returns were more volatile.

In their paper, Liu & Li (2010) study day-of-the-week effects in the top 50 Australian companies across different industry sectors. Unlike other Australian studies, they studied weekday seasonality using stock return data of individual companies. Utilizing the daily data for the period of January 2001 through June 2010, they found that weekday anomalies are mixed across companies and industries. They also found the largest mean weekday returns occur on Monday for 15 companies, most of which are the materials and energy companies. Further tests indicated that returns on Monday were significantly larger than the other four days for six companies. Their results lent some support to the view of reversing weekend effects.

Findings on the Australian equity market were mixed, depending on the sample period and the portfolios used. However, all the studies were only limited to the use of portfolio data and none of them use individual stock data. As stock returns of different companies may have different day anomalies, to generate new findings they investigated Australian equity seasonality using the top 50 companies' stocks for the period of January 2001 through June 2010 (Liu & Li, 2010).

Liu & Li (2010) found that the largest mean weekday returns occurred on Monday for 15 companies, and lowest mean weekday returns occurred on Friday for 15 companies. Findings were mixed across companies and industries regarding the weekday effects.

Further tests indicated that returns on Monday are significantly larger than that on the other four days for six companies which were the materials and energy companies. In other words, these material and energy companies demonstrated positive anomalies on Mondays, rather than on Tuesdays in literature. The results lent some support to the reverse weekend effects. In addition, the magnitude of the difference between returns on Mondays and Non-Mondays were quite large. The results further indicated that there is no strong evidence of other-than-Monday-of-the-week effect in the sample.

In a study conducted by Lim & Chia (2010) on the ASEAN – 5 stock markets for the period June 10, 2002 through August 21, 2009 it was found that day-of-the-week effect existed in Malaysia and Thailand stock markets. In addition, Monday had significantly lower returns compared to Thursday and Friday returns in Malaysian stock market. On the other hand, Friday was found to have the highest returns in a week and significantly different compared with other days in Thailand stock market. Further there was evidence on the twist-of-the-Monday effect, where returns on Mondays are influenced by the previous week's returns in Indonesia, Malaysia and the Philippines stock markets. The Kruskal-Wallis and the Wilcoxon Rank Sum Test were used for analysis.

The study by Nath & Dalvi (2004) examines empirically the day of the week effect anomaly in the Indian equity market for the period from 1999 to 2003 using both high frequency and end of day data for the benchmark Indian equity market index. Using robust regression with biweights and dummy variables, the study found that before introduction of rolling settlement in January 2002, Monday and Friday were significant days. However after the introduction of the rolling settlement, Friday had become significant. This also indicated that Fridays, being the last days of the weeks had become significant after rolling

settlement. Mondays were found to have higher standard deviations followed by Fridays. The existence of market inefficiency was clear.

The major stock indexes on the Athens Stock Exchange (ASE) showed that the day of the week effect in both the return and volatility equations is present the period 1995- 2000 according to a study by Kenourgios & Samitas (2008). The data consisted of closing values of the general index of the Athens Stock Exchange as well as the values of three sector indexes (banks, insurance and miscellaneous indexes), and the FTSE-20 and FTSE-40 indexes, covering an eleven-year period of 1995-2005. There were daily observations between 2 January 1995 and 31 December 2000 for the general, bank, insurance and miscellaneous indexes, and 4 January 2001 and 31 December 2005 for the general, bank, FTSE-20 and FTSE-40 indexes (excluding holidays). The regression model with Monday, Tuesday, Thursday and Friday were used as independent dummy variables ignoring Wednesdays and an examined index as the dependent variable. They also used GARCH (1, 1) model to conduct the analysis.

It emerged from the findings that the day of the week effect was present in mean returns for the ASE over the period 1995-2000; there was strong evidence for the day of the week effect in both return and volatility equations during the period; and it seemed that the stock market anomaly had weakened in both return and volatility during the period 2001-2005.

The main findings of the research by (Durán, 2010) indicated that the day-of-the-week seasonality is present in three out of four of Latin American stock markets studied. For Chile the anomaly was present on stock returns, for Mexico a clear Monday-effect was observed on stock return volatility, and for Brazil on both. A clear weekend-effect was

observed for Chile and Brazil while Friday represented the day with the lowest volatility for Brazil and Mexico. As for Argentina, the same volatility pattern was observed however; the estimated coefficients were statistically insignificant.

Dickle & Levendis (2010) conducted a study to determine whether the day-of-the-week effect still exists, and to evaluate empirically the explanations of the day-of-the-week effect for international equity markets. Evaluating 51 markets in 33 countries for the period between January, 2000 and December, 2007, revealed that the day-of-the-week effect persists for a significant proportion of equity markets. Evaluating open-to-close returns, liquidity, size effect and possible spill-over effects, the day-of-the-week effect was explained for almost of all the exchanges. Individual stock analysis, covering 37,631 stocks traded in 51 equity markets showed that a day-of-the-week effect in returns existed for a statistically significant proportion of individual stocks in almost all of the markets in the study. Even markets without a market-level day-of-the-week effect contained a surprisingly large proportion of stocks with individual-level day-of-the-week effects. Interestingly, this proportion was only marginally lower than that which is found in markets with a market-level day-of-the-week effect.

2.5 Summary and Conclusions

The chapter has focused on two main things: the theoretical framework explaining the anomalies associated with the week and the various researches that make up the literature review on the anomalies. Most of the researches that have been done have almost definitely taken for granted that Wednesday returns are devoid of any anomalies due to its positioning within the week. Such studies include those that assess risk on stock markets by use of the

Wednesday returns as proxies. Those that analyse the EMH and CAPM are likely to pick on Wednesday as a proxy for the returns to be analysed and use the findings for the whole market. The other four days are unlikely to be singly used as proxies.

The researches that study the anomalies dwell on Mondays and Fridays to argue their position that the days of the week effect exists. Most of those that conduct such analyses use dummy variables for Monday, Tuesday, Thursday and Friday. No explanation is given as to why Wednesday is left out and if the reasons are empirically proven. The failure to provide response to such glaring empty spaces provides the motivation for this proposed study.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses how the research was done. It discusses the general methodology used to conduct the study. It also specifies the research design, target population, data collection method and how analysis of the data was done.

3.2 Research design

This was a time series analysis on the returns of firms listed on the NSE that consistently traded during the period of the study. This design was the most appropriate because it was similarly used by Yalcin & Yucel (2009) to study the weekend-effect phenomenon within in the emerging stock market requiring the observation of patterns across reasonable time length before conclusions. Further most of the Calendar effect researches have been conducted across time whether the variables are the returns estimated using stock indexes or using individual firm stocks (Dickle & Levendis, 2010).

3.3 Target Population

This research was conducted on all the fifty-eight firms listed on the NSE. See Appendix II.

3.4 Sample

This research covered the period starting January 1, 2007 and ending December 31, 2011. Only firms that had consistently traded for this length of time were eligible for study. Daily stock prices and the stock volumes for each firm were collected for the period of study. The

five years provided enough sample time to make plausible conclusions about the Wednesday returns. See Appendix I.

3.5 Data collection

The raw (secondary) data for this research were collected from the electronic database of the NSE. All the average day's stock prices of shares, numbers of shares sold per company for the 58 companies listed on the NSE during the period starting January 1, 2007 and ending December 31, 2011 was considered. The captured and analysis of data was done using SPSS version 17.

3.6 Data analysis

The daily return for each firm was found by the model below

_____ (i)

$$R_t = Ln\left(\frac{P_t}{P_{t-1}}\right) \times 100$$

Where,

$R_t =$ The return on a day t $(t = 1, 2, 3, \ldots\ldots)$,

$P_t =$ The stock price on the day t,

$P_{t-1} =$ the stock price on the trading day before day t.

The average returns for Tuesday, Wednesday and Thursday will be found by

_____ (ii)

$$R_t = \sum_{i=1}^{i=58} w_i \times R_i$$

Where,

R_t = The return on the day t, $(t = Tuesday, Wednesday\ or\ Thursday)$

w_i = The weight based on the number of shares of company i sold on day t.

R_i = The return of company i on day t

The Tuesday and Thursday weighted average return for all the firms will be found by the model:

_____(iii)

$$R_A = \frac{W_T}{W_T + W_{TH}} R_T + \frac{W_{TH}}{W_T + W_{TH}} R_{TH}$$

Where,

R_A = The weighted average return for Tuesday and Thursday

W_T = Number of stocks of a firm traded on the Tuesday in a given week

W_{TH} = Number of stocks of a firm traded on the Thursday in a given week

R_T = Average return of Tuesday

R_{TH} = Average return of Thursday

The regression model will be of the form:

_____(iv)

$$R_A = \beta R_W + e_i$$

Where

R_A – The average returns for Tuesday and Thursday

R_W = The return for Wednesday

$\beta =$ The coefficient of regression

$\epsilon_i =$ The random errors of regression

The $t-test$ was used to determine whether the coefficient β is significantly different from 1 and whether the intercept value is Zero. The $F-test$ was be used to determine the significance of the regression. If $\beta = 1$, it would be concluded that Wednesday returns were not be different from returns of Tuesday and Thursday and therefore normal. If $\beta \neq 1$ then the Wednesday return is different. The results were presented in a report. The P-P and the Q-Q plot, complemented by the Shapiro-Wilkinson test at 95 % confidence level were used to test the normality of the Wednesday returns themselves.

CHAPTER FOUR:
DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter focuses on the presentation of data and interpretation. The first part presents the analysis of the GDP and Tax revenues data ending with the regression results. The regression results are for the simple linear, quadratic and cubic models. The second part of this section deals with the summary and the interpretation of the findings.

4.2 Presentation of Data

4.2.1 Analysis of the distribution of the Returns

Figure 1 shows the histogram and the normal Probability Distribution Function (PDF) of the Tuesday stocks returns from January 2007 to December 2011. The normal PDF pictorially portrays an almost symmetrical distribution about zero. However, a closer look at both the curve and the histogram reveals that the distribution is leaning towards the left hand side of the distribution. The right hand tail is longer than the left hand tail. Table 1 shows that the Skewness of the distribution to be -3.335 which is in agreement with the histogram and the normal curve.

The shapes of both the Q-Q plot in Fig. 2 and the P-P plot in Fig. 3 also seem to indicate that the Tuesday returns have short tails; therefore most of the observations are crowding towards the middle of the whole distribution while outliers are on the extremes. The distribution in consequence has long tails of the distribution indicating more variance than expected, while the height of the curve becomes more peaked than normal as indicated by

the Kurtosis 58.32 according to Table 1. The Tuesday distributions can, therefore, not be described as normal.

Fig. 1 Tuesday Returns

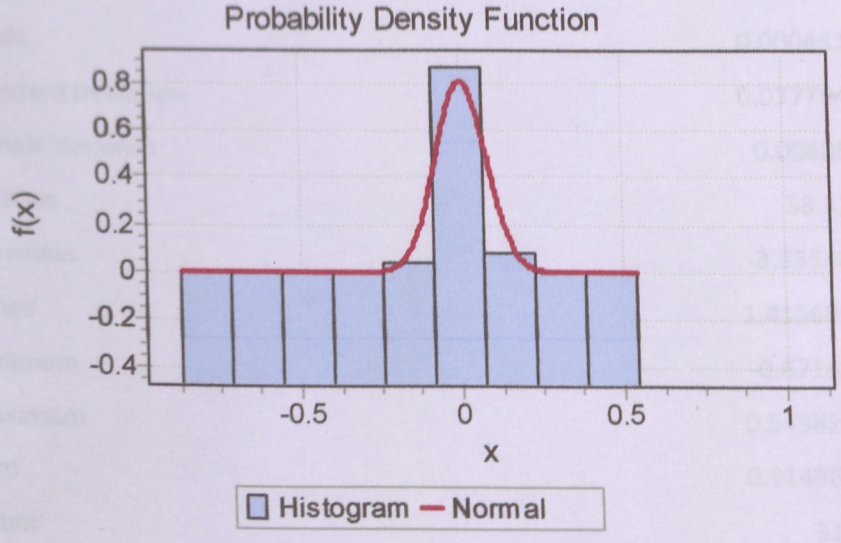

Fig. 2 Tuesday Returns QQ Plot

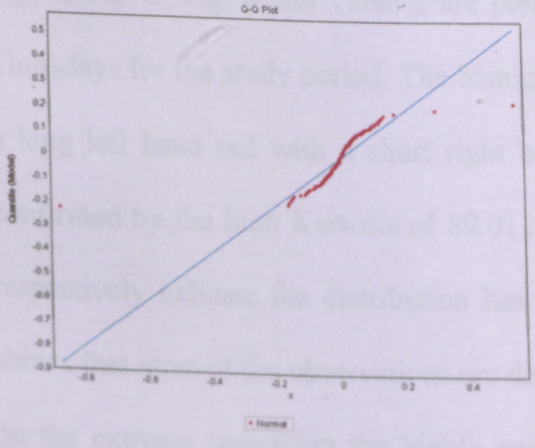

Fig. 3 Tuesday Returns PP Plot

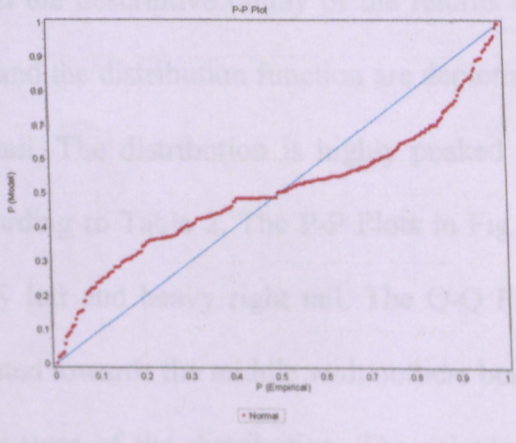

Table 1 **Descriptive Statistics for Tuesday Returns**

STATISTIC	VALUE
Mean	0.002923
Standard Error	0.004397
Median	0.003653
Mode	0.000481
Standard Deviation	0.077784
Sample Variance	0.00605
Kurtosis	58.32
Skewness	-3.33548
Range	1.415686
Minimum	-0.87186
Maximum	0.543826
Sum	0.914963
Count	313

(Source: Prepared by Researcher)

Fig. 4, Fig. 5, Fig. 6 and Table 2 are presented the descriptive outlay of the returns of Thursdays for the study period. The histogram and the distribution function are depicting a long left hand tail with a short right hand tail. The distribution is highly peaked as confirmed by the high Kurtosis of 89.012 according to Table 2. The P-P Plots in Fig. 6 respectively indicate the distribution has heavy left and heavy right tail. The Q-Q Plot shows that most of the observations are distributed towards the middle with outliers being on the extreme indicating the highly peaked nature of the distribution. The calculated skewness indicates that the distribution has a skewness of -6.13758 showing that the distribution is leaning towards the left hand side. This cannot be a normal distribution.

Figure 4 Thursday Returns

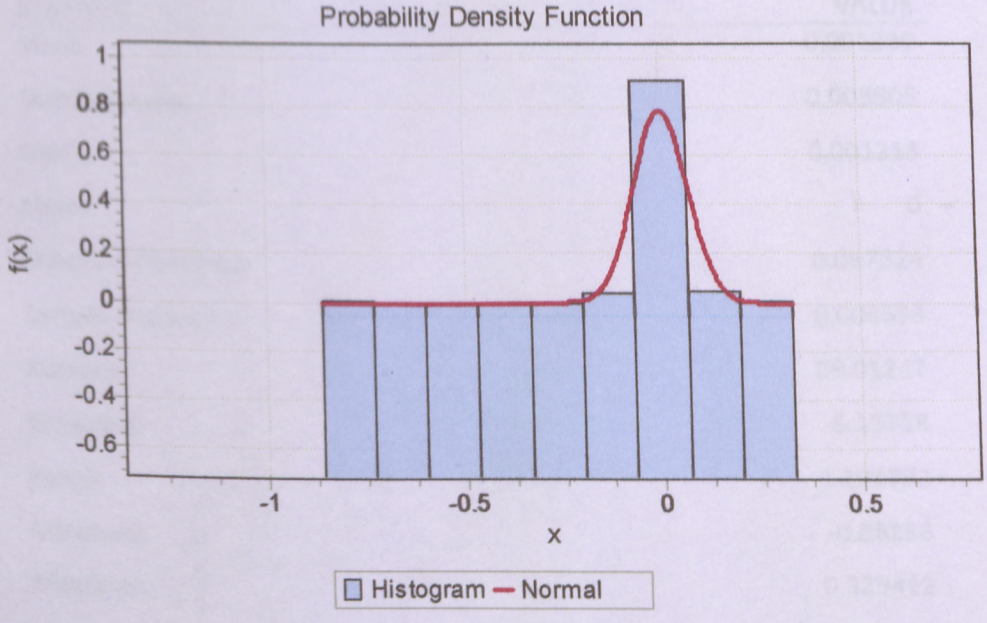

Fig. 5 Thursday Returns QQ Plot

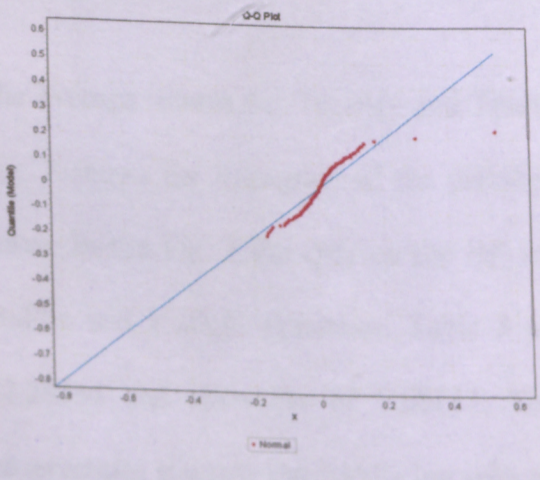

Fig. 6 Thursday Returns PP Plot

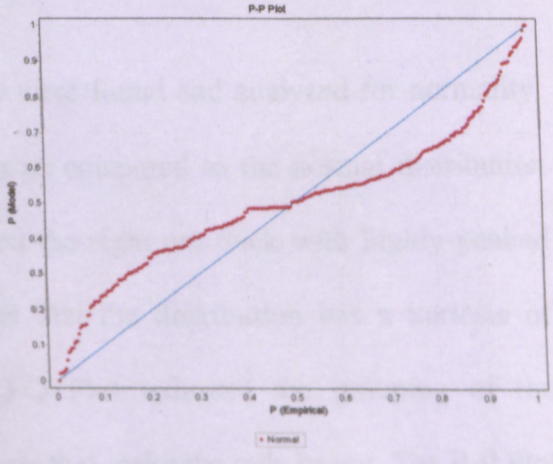

Table 2 Descriptive Statistics for Thursday Returns

STATISTIC	VALUE
Mean	0.001239
Standard Error	0.003805
Median	0.001213
Mode	0
Standard Deviation	0.067324
Sample Variance	0.004533
Kurtosis	89.01247
Skewness	-6.13758
Range	1.191792
Minimum	-0.86238
Maximum	0.329412
Sum	0.387887
Count	313

(Source: Prepared by Researcher)

The average returns for Tuesday and Thursday were found and analyzed for normality. Fig. 7 shows the histogram of the distribution as compared to the normal distribution curve. In the Fig. 7 the tails on the left and on the right are thick with highly peaked middle and a slight skewness. Table 3 shows that the distribution has a kurtosis of 22.28944 and skewness of 0.68127. The Q-Q Plot indicates the grouping of the observations towards the middle but with outliers that make the tails heavy. The P-P Plot also indicates the presence of the heavy tails in the distribution. This therefore does not provide the description that the average returns are normal.

Fig. 7 Tuesday and Thursday Average Returns

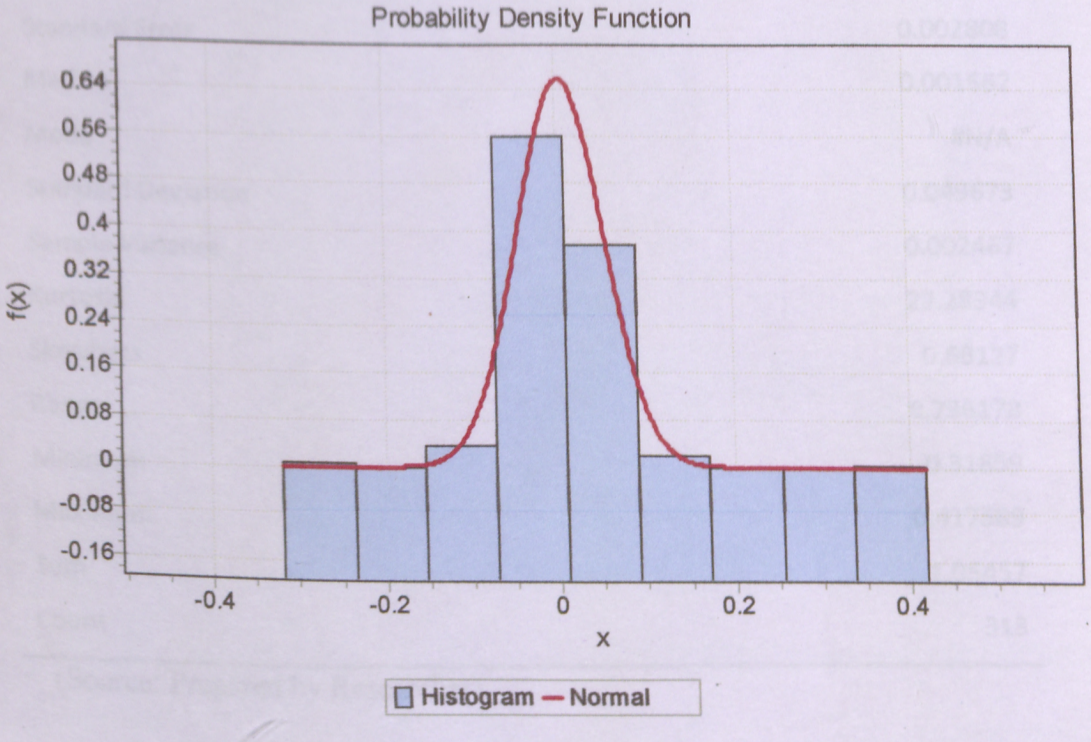

Fig. 8 Tues & Thur Mean Returns QQ plot

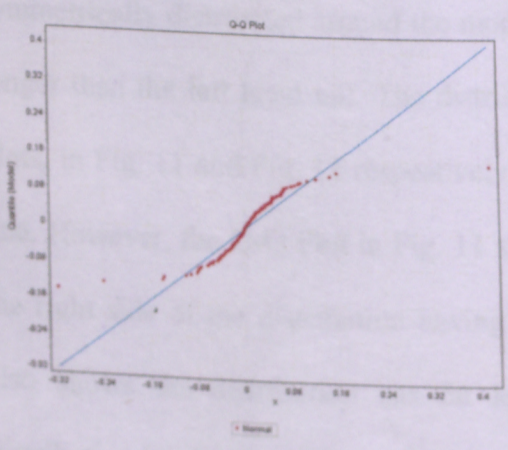

Fig. 9 Tues and Thur Mean Returns PP plot

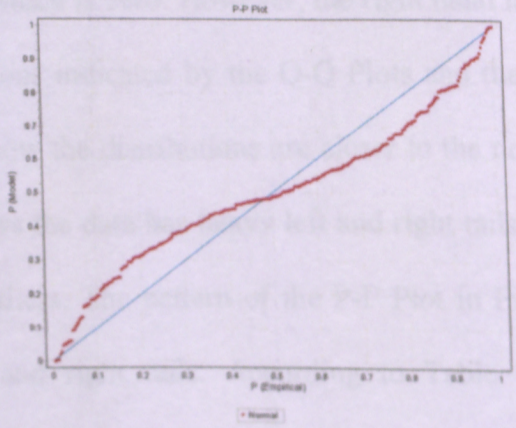

Table 3 **Descriptive Statistics for Tuesday and Thursday Mean Returns**

STATISTIC	VALUE
Mean	0.003369
Standard Error	0.002808
Median	0.001662
Mode	#N/A
Standard Deviation	0.049673
Sample Variance	0.002467
Kurtosis	22.28944
Skewness	0.68127
Range	0.736178
Minimum	-0.31859
Maximum	0.417589
Sum	1.05457
Count	313

(Source: Prepared by Researcher)

Fig. 10 shows the histogram and the normal distribution function with respect to the data. The histogram is more highly peaked than the normal curve. Further, the distribution is symmetrically distributed around the mode which is zero. However, the right hand tail is longer than the left hand tail. The distributions indicated by the Q-Q Plots and the P-P plots, in Fig. 11 and Fig. 12 respectively, show the distributions are closer to the normal line. However, the Q-Q Plot in Fig. 11 shows the data has heavy left and right tails with the right side of the distribution having outliers. The pattern of the P-P Plot in Fig. 12 also shows the distribution has fat left and right tails. According to Table 4 the distribution has kurtosis 9.781868 and skewness of 1.637032.

Fig. 10 Wednesday Returns

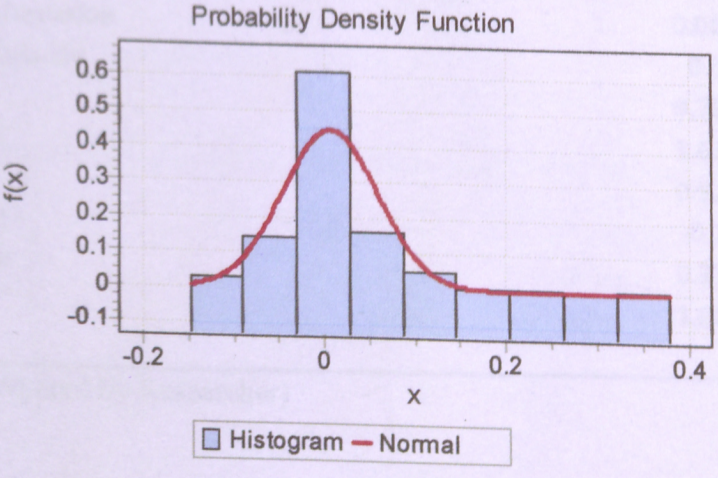

Fig. 11 Wednesday Returns QQ Plot

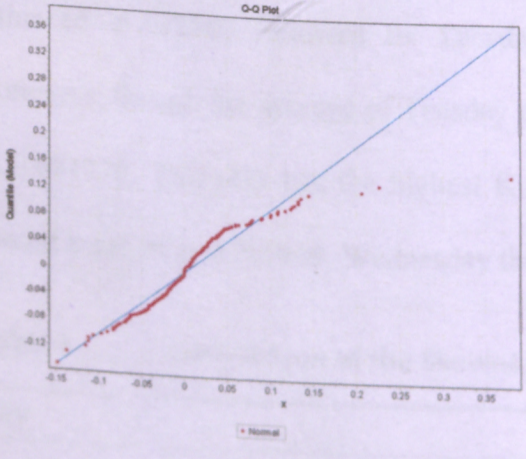

Fig. 12 Wednesday Returns PP Plot

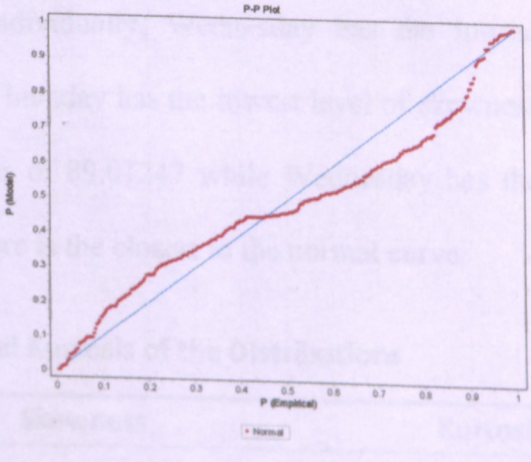

Table 4 Descriptive Statistics for Wednesday Returns

STATISTIC	VALUE
Mean	0.005945
Standard Error	0.002953
Median	0.001433
Mode	0
Standard Deviation	0.052245
Sample Variance	0.00273
Kurtosis	9.781868
Skewness	1.637032
Range	0.527599
Minimum	-0.14807
Maximum	0.379529
Sum	1.860861
Count	313

(Source: Prepared by Researcher)

A comparison of the skewness and the kurtosis of the four distributions is presented in Table 5 below. The table shows that Thursday has the most highly skewed returns with a value of -6.137580 followed by Tuesday. Individually, Wednesday has the lowest skewness, though the average of Tuesday and Thursday has the lowest level of skewness at 0.681270. Thursday has the highest Kurtosis of 89.01247 while Wednesday has the lowest kurtosis at 9.781868. Wednesday therefore is the closest to the normal curve

Table 5 Comparison of the Skewness and Kurtosis of the Distributions

Day	Skewness	Kurtosis
Tuesday	-3.335480	58.32000
Wednesday	1.637032	9.781868
Thursday	-6.137580	89.01247
Average of Tues and Thur	0.681270	22.28944

(Source: Prepared by Researcher)

4.2.2 Regression Analysis Average Returns and Wednesday Returns

Table 6 presents the regression analysis results for the ordinary linear relationship between the weekly mean returns of Tuesday and Thursday versus Wednesday returns. The mean returns of Tuesday and Thursday were the dependent variable while Wednesday returns made the independent returns.

Table 6 Regression Results for Average Returns and Wednesday Returns

	REGRESSION COEFF	T VALUE	P VALUE
CONSTAN	-0.00077	-0.39642	0.69207
COEFF	0.69541	17.9145	0
R SQ	0.535		
ADJ RSQ	0.5335		
F	111263.19		0
CORR	0.73141		
DW	2.161		

The regression model was therefore

$$R_A - -0.00077 + 0.69541(R_W)$$

The constant of the regression was -0.00077 with T-value was -0.39642 whose P-value was 0.69207 indicating the constant was not significantly different from zero. This left the relationship purely variable. The coefficient of the relationship was 0.69541 with a T-value of 17.9145 whose P-value was 0.00. The coefficient was significantly different from zero indicating there was a positive variation between the two variables. The positive relationship is supported by the correlation coefficient of 0.73141. The value of the R Square was 0.535 indicating that 53.5 % the variation in the Tuesday and Thursday

weekly averages was explained by the variation in Wednesday variation. The F-value of 111263.19 ($p = 0$) indicated that the regression was significant.

4.3 Discussion of Findings

The analysis of the Tuesdays showed that the distribution was leaning towards the left hand side of the distribution. The right hand tail was longer than the left hand tail. The Skewness of the distribution to be -3.335.The shapes of both the Q-Q plot in and the P-P plot in indicated that the Tuesday returns have short tails; therefore most of the observations are crowding towards the middle of the whole distribution while outliers are on the extremes. The distribution in consequence has long tails of the distribution indicating more variance than expected, while the height of the curve becomes more peaked than normal as indicated by the Kurtosis 58.32 according. The findings were that Tuesday distributions were not normal.

Thursday returns had long left hand tail with a short right hand tail. The distribution was highly peaked as confirmed by the high Kurtosis of 89.012. The P-P Plot indicated that the distribution had heavy left and heavy right tail. The Q-Q Plot showed that most of the observations were distributed towards the middle with outliers being on the extreme indicating the highly peaked nature of the distribution. The calculated skewness indicated that the distribution had a skewness of -6.13758 showing that the distribution was leaning towards the left hand side. Thursday returns were therefore not fitting a normal distribution.

The average returns for Tuesday and Thursday were analyzed for normality and their histogram compared to the normal distribution curve. It was found that the tails on the

left and on the right are thick with highly peaked middle and a slight skewness. The distribution had a kurtosis of 22.28944 and skewness of 0.68127. The Q-Q Plot indicated the grouping of the observations towards the middle but with outliers that made the tails heavy. The P-P Plot also indicated the presence of the heavy tails in the distribution. This therefore did not provide the description that these average returns are normal..

The histogram for the Wednesday returns was more highly peaked than the normal curve. Further, the distribution was symmetrically distributed around the mode which is zero. However, the right hand tail was longer than the left hand tail. The distributions indicated by the Q-Q Plots and the P-P plots, showed that the distributions were closer to the normal curve. However, the Q-Q Plot showed that the data had heavy left and right tails with the right side of the distribution having outliers. The pattern of the P-P Plot also showed the distribution had fat left and right tails. The distribution had kurtosis of 9.781868 and skewness of 1.637032.

A comparison of the skewness and the kurtosis of the four distributions showed that Thursday has the most highly skewed returns with a value of -6.137580 followed by Tuesday. Individually, Wednesday had the lowest skewness, though the average of Tuesday and Thursday had the lowest level of skewness at 0.681270. Thursday had the highest Kurtosis of 89.01247 while Wednesday had the lowest kurtosis at 9.781868. Wednesday therefore is the closest to the normal curve.

The constant of the regression for the Tuesday-Thursday average versus Wednesday was not significantly different from zero. This left the relationship purely variable. The coefficient of the relationship was 0.69541 and was significantly different from zero

indicating there was a positive variation between the two variables. The positive relationship was supported by the high correlation coefficient of 0.73141. The value of the R Square was 0.535 indicating that 53.5 % the variation in the Tuesday and Thursday weekly averages was explained by the variation in Wednesday variation. The F-value of indicated that the regression was significant.

However, the main test for the relationship between Tuesday-Thursday averages versus Wednesday relationship was the coefficient of the independent variable which was found to be 0.69541 which was less than the expected value of 1. If the variation was the normal variation, then the coefficient would be about 1 showing no difference between the Tuesday-Thursday average and the Wednesday returns. However, the 0.69541 coefficient shows that the Wednesday returns were more than the Tuesday-Thursday average and therefore different.

The findings of this study agrees with the studies done by Mogunde (2011) and Wagura (2011) which used the assumption that Wednesday returns were different from the returns of the other days of the week, but does not agree that Wednesday returns are normal as indicated in the same studies. The study, however, agrees with the findings of Nageswari and Selvam (2011) who found that Tuesday, Wednesday and Thursday had returns that were different from each other and were not normal. The study by of Nageswari and Selvam (2011) found the distributions for the three days to be negatively skewed and leptokurtic.

CHAPTER FIVE:
SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This paper sought to answer the question of whether Wednesday returns on the NSE are normally distributed or not normally distributed. The right hand tail of Tuesdays was longer than the left hand tail. The Skewness of the distribution to be -3.335.The shapes of both the Q-Q plot in and the P-P plot in indicated that the Tuesday returns have short tails. The normal curve of the distribution was more peaked than normal as indicated by the Kurtosis 58.32 according. The findings were that Tuesday distributions were not normal.

Thursday returns had long left hand tail with a short right hand tail. The distribution was highly peaked as confirmed by the high Kurtosis of 89.012. The P-P Plot indicated that the distribution had heavy left and heavy right tail. The Q-Q Plot showed that most of the observations were distributed towards the middle with outliers being on the extreme indicating the highly peaked nature of the distribution. The calculated skewness indicated that the distribution had a skewness of -6.13758 showing that the distribution was leaning towards the left hand side. Thursday returns were therefore not fitting a normal distribution.

The histogram for the Wednesday returns was more highly peaked than the normal curve. Further, the distribution was symmetrically distributed around the mode which is zero. However, the right hand tail was longer than the left hand tail. The distributions indicated by the Q-Q Plots and the P-P plots, showed that the distributions were closer to the normal curve. However, the Q-Q Plot showed that the data had heavy left and right tails

with the right side of the distribution having outliers. The pattern of the P-P Plot also showed the distribution had fat left and right tails. The Wednesday distribution had kurtosis of 9.781868 and skewness of 1.637032.

A comparison of the skewness and the kurtosis of the four distributions showed that Thursday has the most highly skewed returns with a value of -6.137580 followed by Tuesday. Individually, Wednesday had the lowest skewness, though the average of Tuesday and Thursday had the lowest level of skewness at 0.681270. Thursday had the highest Kurtosis of 89.01247 while Wednesday had the lowest kurtosis at 9.781868. Wednesday therefore is the closest to the normal curve.

The constant of the regression for the Tuesday-Thursday average versus Wednesday was not significantly different from zero. This left the relationship purely variable. The coefficient of the relationship was 0.69541 and was significantly different from zero indicating there was a positive variation between the two variables. The positive relationship was supported by the high correlation coefficient of 0.73141. The value of the R Square was 0.535 indicating that 53.5 % the variation in the Tuesday and Thursday weekly averages was explained by the variation in Wednesday variation. The F-value of indicated that the regression was significant.

5.2 Conclusions

This paper sought to answer the question of whether Wednesday returns on the NSE normal or not normal. The study was motivated by the fact that studies done on stocks returns on the NSE had used Wednesday returns as proxy for normal returns in their analyses. This study found that neither Tuesday nor Wednesday nor Thursday had

normally distributed returns. All the three days had leptokurtic distributions with Tuesday having kurtosis of 89.012 and skewness of -6.13758; Wednesday had kurtosis of 9.781868 and skewness of 1.637032 while Thursday had Kurtosis of 89.012 and skewness of -6.13758. Wednesday returns had lower variance, lower skewness and lower kurtosis as compared to Tuesday and Thursday, but the distribution was not normal.

This study also showed that the average returns of Tuesday and Thursday varied positively with the returns of Wednesday. Not only was the regression coefficient significantly different from zero and positive, the correlation coefficient was a 0.73141 which was high. It therefore meant that when Tuesday and Thursday returns were high, so were Wednesday returns. The regression coefficient of the relationship was 0.69541 and was significantly different from zero. However, this coefficient was not 1 as expected if the variation across trading days was mere randomness.

This study clearly demonstrated that the distribution of returns within Tuesday, Wednesday and Thursday are not normally distributed for they had leptokurtic and significantly skewed return distributions for the period of this study. The study also found that variation across Wednesday and the two days, Tuesday and Thursday, were not mere random occurrences. These findings showed that Wednesday returns were not normally distributed and the variation across the days was not simple variation.

5.3 Policy Recommendations

The main finding of this study is that Wednesdays do not have a normal distribution in their stocks returns on the Nairobi Securities Exchange. This therefore provides evidence against the use of Wednesdays' returns as proxy for the normality of returns as has been done in many researches studying the returns of the securities markets in Kenya.

The study also found that Wednesday returns are higher than the returns of the Tuesdays and Thursday combined in this research over the 5 years (2007 to 2011).

This therefore showed that Wednesday is a good day for investment with a hope of getting higher returns since investors have sufficient days prior to and after Wednesday.

The variability of the returns was also low indicating the expectation of the returns on Wednesdays can be reliably anticipated.

Therefore other studies could well be done so as to provide additional information if the returns of Wednesday could be normal when using additional wider scope during the studies.

It is however, not possible to know if the results of other results could be consistent with the finding with this current research.

5.4 Limitations of the Study

The scope of this research was for the five years ending and including the year 2011. It is not known whether the results would hold if a longer period would have been researched upon. Further it is not possible to tell whether the same findings will hold for the period after 2011. It is also not possible to tell whether a longer period can change the nature of the findings.

The findings of the research are NSE specific. The findings of this research do not provide enough evidence that can be used to make universal the nature of the returns of the various days of the week. There is a possibility that the findings may not hold in other countries like Uganda, Tanzania or other African countries which may have different levels of development in their securities markets.

It is not possible to tell from this research whether the market is efficient enough to enable a clean capture of the behaviour of the traders through the prices they settle the deals on the NSE. Actually the use of the data from the NSE is based on the assumption that the prices accurately capture the sentiments of the market accurately. This research does not confirm that the NSE has achieved such a level of efficiency.

5.5 Suggestions for Further Studies

A study can be done to universalize the findings across time and across countries. This is because there is a need to investigate whether the findings of this research can be made universal across time on the NSE. The NSE has been trading since pre-independence to date, yet the period of study is only a short five years. This may make the finding not to be assumed universal, but, a research can be done to determine the nature of the distributions across longer periods of time.

There are very many stock markets in the world and all of them are still developing though at different levels. This study has covered only one market out of hundreds of other markets in the world at different levels of development. A research can be conducted to investigate the nature of the distribution of the returns in the various markets of the world in order to tell what the situation is.

There is need to determine whether actually the stock market prices on the NSE are an accurate measure of the market sentiment in general and whether they capture the weekend effect. If prices are to be found not able to capture the market variables, then there is need to find methods that can be used to accurately capture the variables in order to make the findings highly believable and irrefutable.

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Appendix I: Tables of Returns

TABLE 1 TUESDAY RETURNS

TUE	RETURN	TUE	RETURN	TUE	RETURN	TUE	RETURN	TUE	RETURN	TUE	RETURN
1	0.0079	31	0.0392	61	-0.0750	91	0.0004	121	0.0465	151	-0.0231
2	0.0006	32	0.0129	62	0.0280	92	0.0212	122	0.0346	152	0.0230
3	0.0006	33	0.0066	63	0.0538	93	0.0106	123	-0.0344	153	0.0042
4	0.0225	34	-0.0239	64	0.0006	94	-0.0148	124	-0.0054	154	-0.0325
5	0.0077	35	0.0005	65	-0.0414	95	0.1132	125	-0.0565	155	0.0044
6	-0.0065	36	0.0005	66	-0.0169	96	-0.0273	126	0.0376	156	0.0520
7	-0.0566	37	0.0005	67	0.0185	97	0.0335	127	0.0154	157	0.0550
8	-0.0373	38	0.0005	68	0.0182	98	-0.0318	128	0.0256	158	-0.0254
9	0.0164	39	0.0442	69	0.0351	99	0.0098	129	-0.0769	159	-0.0526
10	-0.0382	40	0.0304	70	0.3006	100	-0.0184	130	0.0829	160	-0.0556
11	0.0329	41	0.1225	71	0.0582	101	0.0434	131	-0.0365	161	-0.0490
12	-0.0463	42	0.0004	72	-0.0480	102	-0.0042	132	0.1017	162	0.1256
13	0.0006	43	0.0056	73	0.0196	103	0.0096	133	0.0535	163	-0.0088
14	0.0170	44	0.0107	74	-0.0495	104	0.1739	134	0.0697	164	0.0098
15	0.0167	45	0.0106	75	0.0268	105	0.0043	135	-0.0924	165	0.0653
16	0.0324	46	0.0105	76	0.0774	106	0.0198	136	0.0433	166	-0.0517
17	-0.0071	47	0.0904	77	0.0005	107	-0.0414	137	-0.0144	167	-0.0362
18	0.0083	48	-0.0088	78	-0.0055	108	-0.0789	138	0.0139	168	-0.0090
19	0.0160	49	0.0100	79	-0.0115	109	-0.0081	139	0.0421	169	0.0005
20	0.0612	50	0.0282	80	-0.0117	110	0.1309	140	0.0224	170	0.0871
21	0.0005	51	0.0007	81	0.0373	111	-0.0611	141	0.0041	171	0.0005
22	-0.0280	52	0.0096	82	0.0182	112	-0.1512	142	-0.0762	172	0.0713
23	0.0226	53	0.0184	83	0.0470	113	0.0779	143	-0.0052	173	0.0996
24	-0.0138	54	0.0441	84	-0.0162	114	-0.0174	144	0.0045	174	-0.0222
25	0.0152	55	0.0006	85	-0.0448	115	-0.0954	145	0.0241	175	-0.0765
26	0.0725	56	-0.0410	86	0.0419	116	-0.0095	146	-0.0244	176	0.0088
27	0.1347	57	0.0181	87	0.0118	117	-0.8719	147	0.0145	177	0.0418
28	-0.1593	58	-0.0079	88	0.0117	118	0.0046	148	0.0437	178	0.0163
29	0.0569	59	-0.0080	89	0.1226	119	-0.0154	149	0.0327	179	-0.0230
30	0.0338	60	0.0355	90	-0.0491	120	-0.0157	150	0.0134	180	0.0244

TABLE 1 TUESDAY RETURNS (Cont...)

TUE	RETURN	TUE	RETURN	TUE	RETURN	TUE	RETURN	TUE	RETURN
181	-0.0386	211	-0.1466	241	-0.0219	271	-0.0219	301	0.0350
182	0.0086	212	0.0133	242	-0.0340	272	-0.0107	302	0.0008
183	-0.0157	213	-0.0844	243	0.0491	273	0.0362	303	-0.0101
184	0.0086	214	-0.0256	244	-0.0106	274	0.0577	304	0.0009
185	-0.0240	215	-0.0565	245	-0.0456	275	0.0116	305	-0.0103
186	0.0171	216	-0.0919	246	-0.0113	276	-0.0311	306	-0.0216
187	-0.0405	217	-0.0244	247	0.0133	277	0.0008	307	0.0124
188	-0.0594	218	0.0144	248	-0.0356	278	-0.0101	308	-0.0219
189	0.1005	219	0.0987	249	-0.0117	279	-0.1414	309	0.0125
190	-0.1070	220	0.0071	250	0.0061	280	0.1150	310	0.0239
191	0.0190	221	0.1423	251	0.0163	281	-0.0340	311	-0.0216
192	-0.0359	222	0.0087	252	-0.0066	282	-0.0232	312	-0.0106
193	-0.0278	223	-0.0374	253	0.0263	283	0.0133	313	0.0000
194	0.0394	224	0.0117	254	-0.0188	284	0.0131	-	-
195	0.0005	225	0.0800	255	0.0211	285	-0.1003	-	-
196	-0.1023	226	-0.0235	256	0.0009	286	-0.0016	-	-
197	-0.0515	227	-0.0590	257	-0.0114	287	-0.0232	-	-
198	-0.1203	228	0.0223	258	0.0135	288	-0.0045	-	-
199	-0.1568	229	0.0062	259	0.0009	289	-0.0156	-	-
200	0.5438	230	-0.0016	260	0.0133	290	0.0321	-	-
201	-0.1053	231	0.0010	261	-0.0235	291	0.0011	-	-
202	0.0113	232	0.0789	262	0.0385	292	0.0393	-	-
203	-0.0526	233	0.0371	263	0.1094	293	0.0010	-	-
204	-0.0668	234	0.0590	264	-0.0209	294	0.0247	-	-
205	0.0609	235	0.0338	265	-0.0214	295	-0.0247	-	-
206	0.0802	236	-0.0417	266	0.0009	296	0.0010	-	-
207	-0.0205	237	0.0120	267	-0.0673	297	0.0037	-	-
208	0.0113	238	-0.0321	268	0.0253	298	0.0247	-	-
209	0.0112	239	-0.0446	269	-0.0229	299	0.0293	-	-
210	0.0008	240	0.0485	270	0.0741	300	0.1010	-	-

TABLE 2 WEDNESDAY RETURNS

WED	RETUN	WED	RETUN	WED	RETUN	WED	RETUN	WED	RETUN	WED	RETUN
1	0.0435	31	0.0200	61	-0.0655	91	-0.0180	121	-0.0103	151	-0.0175
2	0.0018	32	0.0789	62	0.0486	92	0.0380	122	-0.0424	152	0.0319
3	0.0000	33	-0.0282	63	0.0221	93	-0.0182	123	0.0465	153	0.0013
4	0.0036	34	-0.0171	64	0.0406	94	0.0236	124	0.0064	154	0.0000
5	0.0098	35	-0.0090	65	-0.0306	95	0.0253	125	0.0007	155	0.0019
6	0.0002	36	0.0268	66	-0.0096	96	0.2066	126	0.0596	156	0.0000
7	0.0009	37	-0.0024	67	0.0214	97	-0.1155	127	-0.0056	157	0.0437
8	-0.0060	38	0.0289	68	0.0515	98	0.0170	128	-0.0093	158	-0.0318
9	0.0142	39	-0.0175	69	0.1090	99	0.0163	129	-0.0160	159	-0.0526
10	-0.0065	40	0.0267	70	0.1326	100	-0.0750	130	0.0600	160	-0.0409
11	-0.0119	41	0.0226	71	0.0447	101	-0.0158	131	-0.0043	161	-0.0500
12	-0.0138	42	-0.0079	72	-0.0046	102	0.0092	132	0.0307	162	0.0907
13	-0.0079	43	-0.0044	73	0.0145	103	0.0131	133	0.0201	163	-0.0139
14	0.0076	44	0.0770	74	-0.0470	104	0.0301	134	0.0397	164	-0.0145
15	0.0185	45	-0.0197	75	0.1006	105	0.0091	135	-0.0624	165	0.0898
16	0.0193	46	0.0427	76	0.0135	106	-0.0224	136	-0.0014	166	-0.0470
17	0.0135	47	-0.0008	77	0.0454	107	-0.0242	137	0.0119	167	-0.0677
18	0.0113	48	0.0241	78	0.0071	108	-0.0625	138	0.0372	168	0.0091
19	0.0381	49	0.0000	79	-0.0187	109	-0.0194	139	0.1452	169	-0.0017
20	0.1006	50	0.0221	80	-0.0264	110	0.0106	140	0.0159	170	0.0390
21	0.0007	51	0.0069	81	-0.0147	111	-0.0089	141	-0.0342	171	0.0320
22	0.0000	52	0.0522	82	0.0326	112	-0.1123	142	-0.0408	172	0.0287
23	0.0781	53	0.0473	83	0.0128	113	-0.0287	143	-0.0107	173	0.0745
24	0.0797	54	0.0179	84	-0.0456	114	-0.0762	144	0.0013	174	0.0087
25	0.0208	55	-0.0074	85	0.0027	115	-0.0686	145	0.0000	175	-0.0901
26	0.2275	56	-0.0175	86	0.1260	116	0.0123	146	-0.0395	176	-0.0099
27	0.1174	57	0.0072	87	-0.0416	117	0.1325	147	0.0023	177	0.0145
28	-0.1120	58	-0.0018	88	0.1016	118	-0.0246	148	-0.1481	178	0.0726
29	-0.0345	59	0.0097	89	0.0048	119	-0.0670	149	0.0064	179	-0.0052
30	-0.0043	60	-0.0036	90	0.0561	120	0.1282	150	0.0310	180	0.1097

TABLE 2 WEDNESDAY RETURNS (Cont...)

WED	RETUN	WED	RETUN	WED	RETUN	WED	RETUN	WED	RETUN
181	-0.0313	211	-0.0627	241	-0.0368	271	0.0012	301	0.0166
182	-0.0368	212	0.0191	242	-0.0356	272	0.0071	302	0.0003
183	-0.0591	213	-0.0633	243	0.0280	273	0.0085	303	0.0000
184	-0.0113	214	0.0137	244	-0.0196	274	0.0020	304	-0.0125
185	-0.0362	215	-0.0561	245	0.0122	275	0.0263	305	-0.0180
186	-0.0702	216	-0.0834	246	-0.0113	276	0.0108	306	-0.0185
187	-0.0322	217	-0.0412	247	-0.0210	277	0.0264	307	0.0275
188	-0.0808	218	0.0419	248	-0.0147	278	0.0078	308	-0.0252
189	0.1085	219	0.1367	249	0.0217	279	-0.0375	309	0.0052
190	-0.0411	220	-0.0157	250	0.0274	280	0.0066	310	0.0160
191	-0.0292	221	-0.0217	251	0.0213	281	-0.0203	311	-0.0123
192	-0.0248	222	-0.0209	252	0.0069	282	0.0263	312	0.0105
193	-0.0830	223	-0.0274	253	0.0100	283	-0.0023	313	-0.0002
194	0.0408	224	0.0060	254	0.0269	284	0.0330	-	-
195	0.0007	225	0.0187	255	0.1243	285	-0.0012	-	-
196	0.0000	226	-0.0110	256	0.0008	286	0.0017	-	-
197	-0.0157	227	0.0095	257	0.0000	287	-0.0124	-	-
198	-0.1066	228	0.0380	258	0.0088	288	0.0116	-	-
199	-0.1380	229	-0.0431	259	0.0008	289	-0.0248	-	-
200	0.3795	230	0.0320	260	0.0000	290	0.0001	-	-
201	-0.0792	231	0.0198	261	0.0230	291	0.0001	-	-
202	-0.0516	232	0.0631	262	0.0897	292	0.0000	-	-
203	0.0071	233	0.0220	263	0.0451	293	0.0001	-	-
204	-0.0970	234	0.0315	264	-0.0236	294	0.0000	-	-
205	0.0118	235	0.0775	265	-0.0302	295	-0.0632	-	-
206	0.0410	236	-0.0082	266	0.0096	296	0.0090	-	-
207	0.0399	237	0.0279	267	-0.0445	297	-0.0336	-	-
208	0.0225	238	-0.0135	268	0.0252	298	0.0025	-	-
209	-0.0201	239	0.0014	269	0.0051	299	-0.0248	-	-
210	-0.0347	240	0.0364	270	0.0287	300	0.0557	-	-

TABLE 3 THURSDAY RETURNS

THU	RETURN	THU	RETURN	THU	RETURN	THU	RETURN	THU	RETURN	THU	RETURN
1	0.0657	31	-0.0186	61	0.0043	91	0.0095	121	0.0305	151	-0.0125
2	0.0013	32	0.0011	62	-0.0036	92	0.0308	122	-0.0211	152	0.0005
3	0.0013	33	-0.0110	63	0.0163	93	0.0448	123	0.0006	153	0.0005
4	0.0013	34	-0.0233	64	-0.0193	94	0.2133	124	0.0154	154	0.0204
5	0.0664	35	-0.0072	65	0.0083	95	0.0447	125	-0.0213	155	0.0005
6	0.0186	36	-0.0073	66	-0.0076	96	0.0854	126	0.0230	156	-0.0384
7	-0.0461	37	-0.0073	67	-0.0037	97	0.0828	127	0.0079	157	0.0473
8	0.0012	38	0.0012	68	0.0043	98	0.1337	128	0.0078	158	0.0000
9	-0.0573	39	0.0268	69	0.0003	99	-0.0386	129	0.0581	159	-0.0645
10	-0.0179	40	0.0011	70	0.0083	100	-0.8624	130	-0.0335	160	-0.0828
11	0.0111	41	0.0386	71	0.0083	101	-0.0244	131	0.0217	161	0.0075
12	0.0013	42	0.0051	72	0.0043	102	-0.1035	132	0.0075	162	0.0746
13	-0.0035	43	-0.0029	73	0.0160	103	-0.0061	133	0.0348	163	-0.0278
14	0.0110	44	-0.0029	74	0.0042	104	0.2732	134	0.0403	164	-0.0357
15	0.0301	45	0.0051	75	0.0118	105	-0.0169	135	-0.0759	165	0.0889
16	0.0153	46	0.0011	76	0.0117	106	-0.0525	136	0.0075	166	-0.0272
17	-0.0034	47	-0.0110	77	0.0153	107	-0.0554	137	0.0074	167	-0.0559
18	0.0151	48	0.0174	78	-0.0034	108	0.0400	138	0.0550	168	0.0000
19	0.0241	49	0.0011	79	0.0077	109	-0.0185	139	0.0134	169	0.0000
20	0.0458	50	0.0091	80	0.0077	110	0.0005	140	0.0069	170	0.0222
21	0.0012	51	0.0288	81	0.0040	111	-0.0059	141	0.0069	171	0.0217
22	0.0140	52	0.0358	82	0.0003	112	-0.1488	142	-0.0058	172	0.0071
23	0.0222	53	0.0637	83	0.0331	113	0.0464	143	-0.0375	173	0.0282
24	0.0135	54	-0.0032	84	0.0321	114	-0.0140	144	0.0005	174	0.0000
25	0.0215	55	-0.0384	85	0.0379	115	-0.0586	145	-0.0324	175	-0.0068
26	0.0291	56	0.0040	86	0.0069	116	0.0558	146	-0.0062	176	0.0000
27	0.0283	57	0.0222	87	-0.0128	117	0.0155	147	-0.0268	177	-0.0207
28	-0.0293	58	0.0074	88	0.0900	118	-0.0067	148	0.0851	178	0.0070
29	-0.0263	59	-0.0174	89	0.0307	119	-0.0364	149	-0.0384	179	0.0070
30	0.0212	60	-0.0936	90	-0.0412	120	0.0314	150	0.0343	180	0.0069

TABLE 3 THURSDAY RETURNS (Cont...)

THU	RETURN	THU	RETURN	THU	RETURN	THU	RETURN	THU	RETURN
181	-0.0276	211	-0.0658	241	-0.0090	271	-0.0701	301	0.0000
182	-0.0071	212	0.0010	242	-0.0546	272	0.0452	302	0.0000
183	-0.0214	213	-0.0755	243	0.0117	273	-0.0192	303	-0.0147
184	-0.0073	214	-0.0376	244	-0.0043	274	0.0490	304	0.0149
185	0.0074	215	-0.0736	245	-0.0149	275	0.1028	305	-0.0368
186	-0.0219	216	-0.0671	246	0.0064	276	-0.0169	306	-0.0305
187	-0.0597	217	-0.0254	247	-0.0581	277	0.0086	307	0.0079
188	0.0079	218	-0.0261	248	0.0182	278	-0.0171	308	-0.0469
189	0.0000	219	0.1352	249	0.0123	279	0.0174	309	0.0000
190	-0.0079	220	-0.0174	250	0.0177	280	0.0256	310	-0.0492
191	0.0000	221	0.0455	251	-0.0208	281	-0.0250	311	0.0086
192	-0.0317	222	0.0193	252	-0.0269	282	0.0085	312	0.0256
193	-0.0246	223	0.0071	253	0.0183	283	0.0000	313	0.0000
194	0.0000	224	0.0011	254	-0.0215	284	0.0169	-	-
195	0.0000	225	0.0307	255	0.0647	285	0.0000	-	-
196	-0.1261	226	-0.0104	256	0.0010	286	0.0250	-	-
197	-0.0577	227	0.0360	257	-0.0587	287	0.0407	-	-
198	-0.0102	228	0.0123	258	0.0185	288	0.0156	-	-
199	-0.1237	229	0.0011	259	0.0011	289	0.0615	-	-
200	0.3294	230	0.0122	260	0.0238	290	-0.0797	-	-
201	-0.0531	231	0.0450	261	0.0288	291	0.0000	-	-
202	-0.0654	232	0.0484	262	0.0649	292	0.0394	-	-
203	-0.0150	233	0.1366	263	0.0355	293	0.0000	-	-
204	-0.0254	234	-0.0168	264	-0.0098	294	-0.0152	-	-
205	0.0365	235	0.0369	265	-0.0594	295	0.0077	-	-
206	0.0050	236	-0.0687	266	0.0421	296	-0.0458	-	-
207	0.0000	237	-0.0178	267	-0.0253	297	0.0640	-	-
208	0.0100	238	-0.0181	268	0.0570	298	0.0226	-	-
209	0.0198	239	0.0204	269	0.0098	299	0.0074	-	-
210	0.0204	240	-0.0467	270	0.0388	300	-0.0073	-	-

TABLE 4 AVERAGE RETURNS FOR TUESDAY AND THURSDAY

WK	RETURN	WK	RETURN	WK	RETURN	WK	RETURN	WK	RETURN	WK	RETURN
1	0.0390	31	0.0135	61	-0.0454	91	-0.0027	121	0.0222	151	-0.0177
2	0.0012	32	0.0310	62	0.0243	92	0.0300	122	-0.0096	152	0.0185
3	0.0006	33	-0.0109	63	0.0307	93	0.0124	123	0.0042	153	0.0020
4	0.0091	34	-0.0214	64	0.0073	94	0.0741	124	0.0055	154	-0.0040
5	0.0280	35	-0.0053	65	-0.0212	95	0.0611	125	-0.0257	155	0.0023
6	0.0041	36	0.0067	66	-0.0114	96	0.0882	126	0.0401	156	0.0045
7	-0.0339	37	-0.0031	67	0.0121	97	0.0003	127	0.0059	157	0.0487
8	-0.0140	38	0.0102	68	0.0247	98	0.0397	128	0.0080	158	-0.0191
9	-0.0089	39	0.0179	69	0.0481	99	-0.0041	129	-0.0116	159	-0.0566
10	-0.0209	40	0.0194	70	0.1472	100	-0.3186	130	0.0365	160	-0.0597
11	0.0107	41	0.0612	71	0.0371	101	0.0010	131	-0.0064	161	-0.0305
12	-0.0196	42	-0.0008	72	-0.0161	102	-0.0329	132	0.0466	162	0.0970
13	-0.0036	43	-0.0006	73	0.0167	103	0.0055	133	0.0362	163	-0.0168
14	0.0119	44	0.0283	74	-0.0308	104	0.1591	134	0.0499	164	-0.0135
15	0.0218	45	-0.0013	75	0.0464	105	-0.0011	135	-0.0769	165	0.0813
16	0.0223	46	0.0181	76	0.0342	106	-0.0183	136	0.0165	166	-0.0420
17	0.0010	47	0.0262	77	0.0204	107	-0.0403	137	0.0017	167	-0.0533
18	0.0116	48	0.0109	78	-0.0006	108	-0.0338	138	0.0354	168	0.0000
19	0.0261	49	0.0037	79	-0.0075	109	-0.0153	139	0.0669	169	-0.0004
20	0.0692	50	0.0198	80	-0.0101	110	0.0473	140	0.0150	170	0.0494
21	0.0008	51	0.0121	81	0.0089	111	-0.0253	141	-0.0077	171	0.0181
22	-0.0047	52	0.0325	82	0.0170	112	-0.1374	142	-0.0409	172	0.0357
23	0.0410	53	0.0432	83	0.0310	113	0.0319	143	-0.0178	173	0.0674
24	0.0265	54	0.0196	84	-0.0099	114	-0.0359	144	0.0021	174	-0.0045
25	0.0192	55	-0.0151	85	-0.0014	115	-0.0742	145	-0.0027	175	-0.0578
26	0.1097	56	-0.0182	86	0.0582	116	0.0195	146	-0.0234	176	-0.0004
27	0.0935	57	0.0158	87	-0.0142	117	-0.2413	147	-0.0034	177	0.0119
28	-0.1002	58	-0.0008	88	0.0677	118	-0.0089	148	-0.0064	178	0.0320
29	-0.0013	59	-0.0052	89	0.0527	119	-0.0396	149	0.0002	179	-0.0071
30	0.0169	60	-0.0206	90	-0.0114	120	0.0480	150	0.0262	180	0.0470

TABLE 4 AVERAGE RETURNS FOR TUESDAY AND THURSDAY (Cont...)

WK	RETURN	WK	RETURN	WK	RETURN	WK	RETURN	WK	RETURN
181	-0.0325	211	-0.0917	241	-0.0225	271	-0.0302	301	0.0172
182	-0.0118	212	0.0111	242	-0.0414	272	0.0139	302	0.0004
183	-0.0321	213	-0.0744	243	0.0296	273	0.0085	303	-0.0083
184	-0.0033	214	-0.0165	244	-0.0115	274	0.0362	304	0.0011
185	-0.0176	215	-0.0620	245	-0.0161	275	0.0469	305	-0.0217
186	-0.0250	216	-0.0808	246	-0.0054	276	-0.0124	306	-0.0235
187	-0.0441	217	-0.0303	247	-0.0219	277	0.0120	307	0.0159
188	-0.0441	218	0.0101	248	-0.0107	278	-0.0065	308	-0.0313
189	0.0697	219	0.1235	249	0.0074	279	-0.0538	309	0.0059
190	-0.0520	220	-0.0087	250	0.0171	280	0.0491	310	-0.0031
191	-0.0034	221	0.0554	251	0.0056	281	-0.0264	311	-0.0084
192	-0.0308	222	0.0024	252	-0.0088	282	0.0039	312	0.0085
193	-0.0451	223	-0.0192	253	0.0182	283	0.0037	313	-0.0001
194	0.0267	224	0.0063	254	-0.0045	284	0.0210	-	-
195	0.0004	225	0.0431	255	0.0700	285	-0.0338	-	-
196	-0.0761	226	-0.0150	256	0.0009	286	0.0083	-	-
197	-0.0416	227	-0.0045	257	-0.0234	287	0.0017	-	-
198	-0.0790	228	0.0242	258	0.0136	288	0.0076	-	-
199	-0.1395	229	-0.0119	259	0.0009	289	0.0071	-	-
200	0.4176	230	0.0142	260	0.0124	290	-0.0159	-	-
201	-0.0792	231	0.0219	261	0.0095	291	0.0004	-	-
202	-0.0352	232	0.0635	262	0.0643	292	0.0262	-	-
203	-0.0202	233	0.0652	263	0.0633	293	0.0004	-	-
204	-0.0631	234	0.0246	264	-0.0181	294	0.0032	-	-
205	0.0364	235	0.0494	265	-0.0370	295	-0.0267	-	-
206	0.0421	236	-0.0396	266	0.0175	296	-0.0119	-	-
207	0.0065	237	0.0074	267	-0.0457	297	0.0113	-	-
208	0.0146	238	-0.0213	268	0.0358	298	0.0166	-	-
209	0.0036	239	-0.0076	269	-0.0027	299	0.0039	-	-
210	-0.0045	240	0.0127	270	0.0472	300	0.0498	-	-

Appendix II: Listed Companies
(Source: NSE)

AGRICULTURAL

1. Eaagads Ltd
2. Kapchorua Tea Co. Ltd
3. Kakuzi
4. Limuru Tea Co. Ltd
5. Rea Vipingo Plantations Ltd
6. Sasini Ltd
7. Williamson Tea Kenya Ltd

COMMERCIAL AND SERVICES

8. Express Ltd
9. Kenya Airways Ltd
10. Nation Media Group
11. Standard Group Ltd
12. TPS Eastern Africa (Serena) Ltd
13. Scangroup Ltd
14. Uchumi Supermarket Ltd
15. Hutchings Biemer Ltd

TELECOM AND TECHNOLOGY

16. AccessKenya Group Ltd
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. Diamond Trust Bank Kenya Ltd
25. Housing Finance Co Ltd

26. Kenya Commercial Bank Ltd
27. National Bank of Kenya Ltd
28. NIC Bank Ltd
29. Standard Chartered Bank Ltd
30. Equity Bank Ltd
31. The Co-operative Bank of Kenya Ltd

INSURANCE

32. Jubilee Holdings Ltd
33. Pan Africa Insurance Holdings Ltd
34. Kenya Re-Insurance Corporation Ltd
35. CFC Insurance Holdings
36. British-American Invest (K) Ltd

INVESTMENT

37. City Trust Ltd
38. Olympia Capital Holdings ltd
39. Centum Investment Co Ltd
40. Trans-Century Ltd

MANUFACTURING AND ALLIED

41. B.O.C Kenya Ltd
42. British American Tobacco (K) Ltd
43. Carbacid Investments Ltd
44. East African Breweries Ltd
45. Mumias Sugar Co. Ltd
46. Unga Group Ltd
47. Eveready East Africa Ltd
48. Kenya Orchards Ltd
49. A.Baumann CO Ltd

CONSTRUCTION AND ALLIED

50. Athi River Mining
51. Bamburi Cement Ltd
52. Crown Berger Ltd

53. E.A.Cables Ltd
54. E.A.Portland Cement Ltd

ENERGY AND PETROLEUM

55. KenolKobil Ltd
56. Total Kenya Ltd
57. KenGen Ltd
58. Kenya Power & Lighting Co Ltd