

**STOCK MARKET REACTION TO PRESIDENTIAL ELECTION
RESULTS ANNOUNCEMENT IN KENYA: A LOOK AT 1997 - 2013
ELECTIONS**

BY

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DECLARATION

This research project is my original work and has not been presented in any other university for examination

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

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DEDICATION

This research project is dedicated to my dear wife Fidelis Wanjiru for her support and encouragement. To my son Anselm who missed quality time with his dad as I took time to study.

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ABSTRACT

Stock markets in the world individually and collectively play a critical role in their economies. They provide an avenue for raising funds, for trading in securities including futures, options and other derivatives which provide opportunities for investors to generate returns.

The main objective of this study was to investigate how stock market react to presidential elections result in Kenya. The study adopted an event study methodology and the population of this study was 60 companies listed in the NSE. The study used secondary data to gather information.

Data obtained from the NSE covered the period before and after 1997, 2002, 2007 and 2013 presidential results announcement. The collected secondary data was coded and entered into Statistical Package for Social Sciences (SPSS, Version 20) for analysis. The analysis involved evaluation of abnormal returns. The stock prices returns around the presidential election results announcement were analyzed by comparing them against the average return before the elections announcement. Summary statistics for the stocks were analyzed by looking at the mean, minimum and maximum.

The study found that the presidential election results experienced a high abnormality during announcement and days surrounding the announcement. It was also found that it takes time for information on presidential election results to be fully absorbed in the market. It was also established that stocks performed poorly than the market in periods after announcement than before the announcement.

The study concluded that there is an increase in stock returns in response to presidential election results announcement where there is a favorable regime change. The average cumulative abnormal returns exhibited a reducing trend following announcement and a sharp increase before announcement. The study, thus, recommends that Capital Market Authority (CMA) to stem market variability that might rise to the magnitude of panic buying or selling following presidential results announcement by invoking 'fuse-breakers'.

This study had some limitations in that the announcement of the presidential election results may have been affected by other market anomalies such as the Weekend and Monday effect. Macroeconomic performance such as inflation and environmental factors such as politics may have also moderated the effect of these events. These factors could not be isolated in the study due to difficulty in doing so.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Investors care about market efficiency because stock price movement affects their wealth. The small and medium investors can be motivated to save and invest in the capital market only if their securities in the market are appropriately priced. Thus, stock market inefficiency may thus affect consumption and investment spending which in turn influences the overall performance of the economy. Therefore, it is imperative for stock market to be an efficient processor of information, and that the share price incorporates instantaneously and in an unbiased manner all available information. That is, how quickly and correctly security prices reflect available information show the efficiency of the capital market (Panandiker, 2014).

Prices are the outcomes of volatile human expectations, shifting the supply and demand lines, and causing prices to oscillate. Fluctuations in prices are a natural process of changing expectations based on available information or lack thereof. Under asymmetry of information the owner of capital, who wants to invest his capital in the stock market, may foresee certain actions of country's leadership in order to stimulate the economy. The information on the decisions that the concerned politicians make available to investors and other participants of the stock market is considered as a signal to market participants about possible economic consequences of this information (Leblang and Mukherjee, 2005). At the same time politicians, who possess relevant information about the economic situation in the country, encourage stock market participants to take actions that will be most beneficial for their particular political party or for themselves.

Investors in modern financial markets have a significant amount of diverse information: corporate earnings reports, macroeconomic indicators, stock market performance, political statements and news, including election outcomes. This information is used by investors to change their forecasts of future economic growth of the country. As a consequence, expectations of investors change and this influences stock market prices.

Although it is known that prices of assets respond to new information, a number of questions still arise concerning the connection of information quality and returns on assets that investors are willing to obtain. For instance, the extent to which information about elections outcomes has an effect on stock market performance (Julio and Yook, 2012).

1.1.1 Presidential Elections Result Announcement

Elections are an important political event that determines the direction of future economic management. Changes in policies, which are determined by election outcomes, can influence not only consumers' welfare but also firms' profits. Because of this, it is natural for investors in the market to predict election outcomes well before election days, and the election itself is regarded as an additional factor that would impact volatility around elections (Julio and Yook, 2012). The business cycle has historically lasted three to five years, but sometimes longer, and sometimes it is hard to discern. Political activity can have an impact on the business cycle and the economy because of pre-campaign posturing. Some political activity would have a real effect on the economy—for instance, passing bills concerning regulation, as well as more government spending. Other political activity would affect the market psychologically— speeches claiming credit for how good things are, for instance. Most of the positive effects would occur in the pre-election year. In the election year itself, politicians are too busy campaigning to do as much, and toward the end, campaigns sometimes turn negative, with blame cast about how bad things may be (Oehler, Walker and Wendt, 2013).

Many political scientists hypothesize that changes in economic variables cause changes in other social variables such as stock market trends, public mood and voting results. A number of researchers have characterized the relationship between voters and their elected officials in terms of two types of variables: popularity functions, which are primarily economic factors thought to influence voters' views toward their leaders positively or negatively (Lewis-Beck and Paldam, 2000), and reaction functions, which are government policy-makers' reactions to their perceived popularity, by which they try to manipulate economic variables to curry voters' favor (Brender and Drazen, 2005).

The conceptualization of popularity and reaction functions carries with it three assumptions: that there is a reciprocal causal relationship between the electorate's opinions of its elected leaders (popularity functions) and the economic policy responses of those leaders (reaction functions); that voters react to economic conditions, political events and manipulation so that various economic and policy inputs have reactive voting outputs; and that voters act consciously and rationally after logically evaluating candidates' political policies and deciding whether these policies have served (retrospective voting) or will serve (prospective voting) their best interests (Wisniewski, 2009).

In contrast, socionomic offers competing models of mood, human action and making choices. Prechter, Goel, Parker and Lampert (2012) posited that social mood—the aggregate, unconscious levels of optimism and pessimism in a society—emerges spontaneously in self-organizing human social systems. They aver that this leads to significant relationship between the presidential election result and net percentage changes in the stock market. Social mood fluctuates according to an internally regulated growth process, is impervious to economic and political stimuli, and drives collective human action and non-rational decision-making unconsciously in contexts of uncertainty. Presidential elections appear to qualify as a context of uncertainty. Consistent with socionomic voting theory, social mood as reflected by the stock market is a more powerful regulator of election outcomes than economic variables as voters unconsciously credit or blame their leaders for their mood. Paldam and Nannestad (2000) have documented the typical voter's pervasive ignorance and uncertainty with respect to information about elections. Rahn (2000) found that “public mood” may be an important influence upon political decision-making, concluding that the degree of uncertainty accounts for the extent to which mood influences political behavior and other economic aggregates.

1.1.2 Stock Market Reaction to Presidential Elections Result Announcement

Under the efficient market hypothesis, share prices of publicly traded firms reflect current information about the profitability of those firms (Wells, 2004). It follows that any new

information that affects a firm's bottom line will quickly be capitalized into its share price. Therefore, any surprising event that affects some industry or group of firms will produce a coincident response in the stock prices of those firms.

Change in actual share prices immediately before and after an event captures the market valuation of the informational shock associated with the event, but it also captures the value of anything else that is simultaneously occurring (Milyo, 2012). Julio and Yook (2012) found that higher political uncertainty leads to lower firm investments in election years, which in turn influences stock market expectations about firm performance. Furthermore, He *et al* (2009) report an increase in information costs of market participants in times of political uncertainty. Consequently, voting results potentially transmit relevant information to market participant and reduce uncertainty. The uncertainty is further reduced, at least after the election day and even more after the inauguration, when the incoming president discloses more details about the political road map for the presidential term

The developing countries stock markets have been shown to be less efficient (according to efficient market hypothesis) compared to developed countries due to information asymmetry (Ciner and Karagozoglu 2008). In developing countries with low levels of democracy, that is, countries where democratic institutions are being formed, but the state reserves significant control functions, there is a greater possibility of change in democratic direction of development. Political uncertainty in these countries often has very different characteristics and a greater scale than in developed countries, where political institutions are fully formed and effectively execute their functions (Hays, Freeman and Nesseth, 2003). This can lead to higher stock prices fluctuations during the election periods and higher dependence of stock prices on information about elections and overall political transparency in developing countries.

The performance of the stock market is influenced by a number of factors the main ones among them being the political events and the general performance of the economy. Both investors and borrowers are concerned about returns and they seek to know the behavior of stock prices following a political event. Investors are, as a result, interested in knowing

the efficiency of the capital market and market information contained in presidential election owing to the ancillary policy change and implication that inherently changes with change of office holders. Market participants price their expectations about effects of political change into stock prices prior to an election and adjust their opinion according to the actual voting results and the political decision making after the election and inauguration take place. An increasing likelihood of a candidate's victory and expected changes in policy should therefore be reflected in stock prices.

1.1.3 Nairobi Securities Exchange

The NSE came into being in 1954 when trading used to take place over a cup of tea at the New Stanley Hotel (Muga, 1974). The Nairobi Stock Exchange was constituted as a voluntary association of stock brokers registered under the societies Act in 1954 and in 1991 the Nairobi Stock Exchange was incorporated under the companies Act of Kenya as a company limited by guarantee and without a share capital. Subsequent development of the market has seen an increase in the number of stockbrokers, 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 (Rutto, 2011).

In 1991 NSE was registered under the companies act and phased out the 'call over' trading system in favor of the floor based open outcry system. In 2001, NSE was restructured to give rise to three market segments namely: the Main Investments Market Segment (MIMS), the Alternative Investment Markets Segment (AIMS) and the Fixed Income Securities Market Segment (FISMS) (Munyi, 2010). The MIMS is the main quotation market, the AIMS provide an alternative method of raising capital to small, medium sized and young companies that find it difficult to meet the more stringent listing requirements of the MIMS while the FISMS provides an independent market for fixed income securities such as treasury bonds, corporate bonds, preference shares and debenture stocks, as well as short term financial instruments such as treasury bills and commercial papers. In November 2004 the Central Depository System was introduced thus automating settlement of transactions at NSE to achieve T+5. The NSE trading

hours increased from 2 to 3 hours (10.00 am- 1.00 pm) and subsequently increased to 5 hours (10.00a.m – 3.00p.m) (Otuke, 2006).

The growth of the NSE in the past five years has been attributed to positive growth rate registered by the Kenyan economy and the changing international perception of Kenya as a secure investment destination. The effect of post-election violence of the 2007 election outcome that led to slower economic growth and reduced investment has not hampered the growth of the NSE. Nairobi Securities Exchange is one of the leading developing markets in the world and investing in stocks has been hyped so much that the mention of the initial public offer (IPO) reflexively elicits a pat on the pocket.

1.2 Problem Statement

Stock markets in the world individually and collectively play a critical role in the national economies. The markets perform a wide range of economic and political functions while offering trading, investment, speculation, hedging, and arbitrage opportunities. The performance of a stock market of an economy, therefore, is of interest to various parties including investors, capital markets, the stock exchange and government among others (Oehler *et al.*, 2013).

The relationship between political elections and stock market returns occupies a central place in election and finance research (Pantzalis, Stangeland, and Turtle, 2000; Julio and Yook, 2012). In the developed countries, many research studies have been conducted to test the efficiency of the capital market reaction to presidential election and gauge information content of such events as perceived by the market. Panandiker (2014), studying how election affects Indian stock market found that returns from the seven to eight elections had no exact set pattern and the returns in the run up to the elections had been lackluster. Prechter *et al* (2012) found a positive, significant relationship between the USA incumbent's vote margin and the prior net percentage change in the stock market. Pantzalis, Stangeland and Turtle (2000) examined and explained the impact of national election events of 33 countries on stock markets and find strongly positively cumulative abnormal returns leading up to the elections date.

Chang *et al* (2006) examined the impact of Taiwan presidential election on stock market and found that the pervasiveness of three months before and one month after presidential elections exist in indices' returns of stock market. Wisniewski (2009) found overpricing of stock prices during election periods and explains that the perceived risk over election periods tend to be lower than that during non-election periods because rosy promises and optimistic policies are made by politicians in the midst of election campaigns. Bialkowski, Gottschalk and Wisniewski (2008) found that stock markets are extremely vulnerable around elections in terms of the volatility, which might reflect surprise at election outcomes.

In Kenya, in spite of the importance of stock market reaction to election, the research on stock market reaction during election periods is scant. Ondigo's (1995) study, that tested the semi-strong efficiency of NSE by analyzing the informational content of annual reports, did not provide evidence of semi-strong efficiency and found the results to be inconclusive. However, these studies lacked depth and comprehensiveness which this study seeks to leverage from. Besides, these studies did not look at presidential elections.

This study aims at analyzing whether the results of the 1997 to 2013 Kenya presidential elections results influenced the stock market performance and seek to examine factors that are expected to affect firms' stock returns around these elections. This owes to the fact that these election periods covers periods of post-election conflicts and calm. This study will use market model (MM) to test the market efficiency and test the speed with which election results announcement is incorporated in stock prices.

1.3 Objective of the Study

The research objective was to determine the stock market reaction to presidential election results announcement in Kenya.

1.4 Value of the Study

The study will be an eye-opener for investors, academia and government as listed below:

By testing the market efficiency of NSE with regards to information on election results, the study will be an eye opener to the current and would be investors in NSE as they will know whether their stock prices would be influenced by presidential elections. Given investors' interest stock market might be influenced by presidential elections, the study will help guide against panic trading during the period.

As already established stock market efficiency affects consumption and investment spending hence overall performance of the economy, thus the study findings by establishing the state of NSE efficiency would be invaluable to the government. The government by knowing how NSE reacts to presidential election will make proper policies to mitigate negative information being sent to the market during the period or how to deal with panic trading.

This study will also be of benefit to corporate management as they would learn how presidential elections affect stock market performance, thus the market value of their firms. This will help them device ways of dealing with changes in market value of their firms during such periods.

Regulatory agencies such as NSE and Capital Market Authority (CMA) can use the study to regulate the operations of listed companies in the stock exchange during presidential elections and other political events. The study will enable the regulatory authorities to device how to set rules and regulations governing the operations of the stock exchange to streamline trading activities during such periods including mitigating market overreaction by effecting "circuit-breakers".

Though some studies have been conducted on market efficiency they have been inconclusive. Therefore, this study will be beneficial to the academicians interested in stock market efficiency studies. The study will form a good base upon which further research will be based since it will help in forming empirical study and act as a source of secondary material.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter entails literature review relating to profit warning and stock values. In this chapter, the various elements and principles profit warning, corporate disclosures, market reaction to profit warning and profit warning management are discussed. The underlying relationships among the variables concepts are analyzed. The literatures reviewed include the theories of stock values. The theories analyzed include efficient market hypothesis (EMH) Theory, agency Theory, Capital Asset Pricing Model (CAPM), and Behavioral Finance Theory. The chapter also has literature review from past empirical studies about stock value and profit warning. Lastly, the chapter will relate the hypothesis to the literature reviewed.

2.2 Theoretical Literature Review

2.2.1 Efficient Market Hypothesis Theory

The EMH has been extensively studied in finance. The theory is based on the concept of 'random walk', where the successive changes in stock prices represent random deviations from previous prices, and it is based on the argument that an investor cannot 'beat the market' since the stock prices reflect all relevant information (Clarke & Mandelker, 2001). Inasmuch as new information influences price changes in an efficient market, EMH stipulates that the market would adjust in an unbiased manner very fast, on average, to the arrival of the new information so that the prices reflect the relevant information in the market (Krassas, 2006). Efficient markets thus exist because of the intensity of the competitions among the investors who are rational and strive to profit from arrival of new and relevant information. EMH is explained in three forms, that is, the weak form, semi-weak form and strong form.

Weak form of market hypothesis is based on the argument that the current stock prices reflect all the historic information that relate to the stock (Fama, 1998). The basis of this

argument is that stock prices information are most readily and publicly available. As such it is not possible to profit from what everyone is expected to know and have access to. As such, technical analyses that is carried out by studying data on past stock trading trends and trading volumes, which are publicly available information, do not offer any basis for trading with a view to earn more than market profits. The current prices of stocks in such markets thus reflect information that is purely historical in nature. That is, the current stock prices totally signify all the historically related information, such that the past price behaviors cannot be used by the investors to earn abnormal returns. With the weak form of market efficiency therefore, the investors will not be able to outsmart the market or influence the stock prices movements by trading on the basis of past prices (Fama, 1998).

The concept of semi-strong market hypothesis is based on the argument that information that is available to the public, even if not historical, can be used to earn excess profit from the market (Fama, 1998). The difference between the weak form of market efficiency and semi-weak strong market efficiency is that unlike in the weak form, the semi-strong form require existence of expert market analysts who would evaluate and give information on market performance. The current prices of the stocks thus fully incorporate and reflect all the publicly available information. The stock prices incorporate the information about the past stock performance and trends as well as the recently released company performance such as annual reports and filings with the security exchange authorities. The other information may also entail declared dividends, any strategic decisions such as merger announcements, the economic performance and outlook and actions of key competitors.

The strong form market efficiency implies that share prices reflect all information, public and private, building and incorporating the weak form and the semi-strong efficient market hypothesis. Given the assumption that stock prices reflect all information (public and private) no investor has monopolistic access to information relevant to the formation of prices.

2.2.2 Capital Asset Pricing Model

The CAPM, designed by Sharpe (1964) and Lintner (1965) who furthered the model of portfolio choice developed by Harry Markowitz (1959), offers a theoretical way of measuring assets' risk as well as explanation of the nature of relationship between the assets' expected returns and risk exposure (Fama & French, 2004). The CAPM model is represented as (Fama & French, 2004);

$$E(R)_k = r_f + B(E(R)_m - r_f),$$

Where;

$E(R)_k$ is the The Required Rate of Return,

r_f = The Risk Free Rate,

B = Beta of the asset

$E(R)_m$ = The expected return on the overall stock market

With this formula, it would be easy to theoretically evaluate the assets' value. The assumptions of the theory such as absence of taxation, similar investor-beliefs, lack of commissions and ability to borrow at risk free rate make the theory less practicable in real life scenario.

2.2.3 Behavioral Finance Theory

Behavioral Finance Theory is also critical in the study of the relationship between profit warning and stock value. This discipline relates the financial concepts and other social sciences. According to Heesters (2011), behavioral finance concept is based on the argument that investor rationality is relative and they suffer from and form biases that are applied in investment and stock trading choices. The theoretical argument is that irrational investors would make investment decisions not by relying on market fundamentals but by relying on their psychological situations. As such, there would be both emotionally and cognitively driven errors that influence the investment decisions. The net effect of these errors would be market incongruities that may lead to market crash or stock bubbles. These biases influence how they interpret information so that

they make less rational decisions. The emergence of behavioral finance can be attributed to the realization among scholars that both econometric analysis and psychological factors play critical roles in influencing financial markets. In an efficient market however, it is expected that those who follow arbitrage models identify and exploit these biases till the stock prices are fundamentally restored to market equilibrium.

The importance of this theory is that it helps to show how psychological factors influence investment decisions and the subsequent impact these biases have on the financial market. The behavioral finance theory is thus significant in this study as it is critical of the EMH on the basis that markets maybe actually inefficient due to cognitive and emotional errors attributable to a certain class of investors.

2.3 Determinants of Market Performance

The prices of stocks around the world do not move together in an exact manner. This is because the economic system in which stock markets are located have dissimilar environments in terms of taxation, industrial growth, political stability and monetary policies among other factors. Stock markets may experience a general increase in price level referred to as bull market. Stagnant prices or sudden big price movements downward is referred to as stock market crash.

Among the determinants of stock market performance include, performance of the economy, monetary policies, fiscal policies, inflation, availability of substitute investments, change of investor preferences and sentiments. Activities of government and general performance of the economy influence performance of stock markets. Monetary and fiscal measures enacted by various agencies of national governments influence the aggregate economies of those countries. The resulting economic conditions influence all industries and companies in an economy positively or negatively which in turn affect the performance of stock markets (Reilly 1997).

Fiscal policy incentives such as tax cuts can encourage spending, where as additional taxes on income, petroleum products, cigarettes, and alcoholic beverages discourage spending. Increase or decrease in government spending also influence the general

economic activity by triggering multiplier effect (Stiglitz 1993). Monetary policy has implications to the economy. A restrictive monetary policy reduces the supply of funds for working capital and expansion of business. Alternatively, a restrictive monetary policy may lead to increased interest rates thus increasing the cost of capital, which makes it more expensive for individuals to finance home mortgage and purchase of durable goods (Mendelson 1976).

Inflation affects the performance of stock markets as it causes differences between real and nominal interest rates thus changing the spending and saving behavior of consumers and corporations. Unexpected changes in the rate of inflation make it difficult for firms to plan, which inhibits growth and innovations. Beyond the impact of the domestic economy, differential inflation and interest rate influence the trade balance between countries and exchange rate of currencies (Reilly, 1997). Events such as war, political upheavals within or outside a country or international monetary devaluation produces changes in the business environment that lead to uncertainties and earnings expectations of investors therefore increasing the risk premium of investors (Mendelson 1976)

Availability of other investments other than shares traded on the stock market affect the stock market performance. Stock markets compete for investments with other assets in an economy such as corporate bonds, governments bonds, treasury bills, real estate, and foreign equity among others. The influx of government bonds and treasury bills in Kenya, resulted into the bull-run at the Nairobi Stock Exchange between 2004 and 2006 (www.nse.co.ke)

Changes in investor composition also affect stock market performance. As supply and demand for security change overtime, different types of investors are attracted to the market. If the risk preferences of the investors are not as those of current investors the required rate of return tend to shift .Accordingly price relationship will change quite independently of any modification in earnings expectations. Participation by institutional investors at Nairobi Stock Exchange influences pricing and returns generated at the stock market (Reilly, 1997).

Market sentiment also referred to as the psychology of market participants affect stock market performance. Market sentiment is often subjective, biased, and obstinate. The uncertain mass reaction of individuals to developments affecting the stock market is one of the factors that handicaps stock market forecasting. A mild stock market flurry caused by a spurt in business activity may generate a wave of buying enthusiasm that raises prices to blossom levels .As an indication to this tendency, from January 1967 through December 1968 the American Stock Exchange index more than doubled in the face of a business activity advance of about ten percent. The stay-eyed optimism of buyers who believe that prices that increase indefinitely may produce substantial advances that are not justified by underlying financial considerations. On the other hand, pervasive investor gloom generated by political or economic uncertainties, could drive prices to levels that appear equally unjustified by standard financial tests (Mendelson, 1976)

The occasionally irrational attitude of buyers was noted by John Maynard Keynes, who observes that professional investors are concerned not with what an investment is really worth to a man who buys it 'for keeps ,' but with what the market will value it at ,under the influence of mass psychology ,three months or a year later. Psychological factors motivating individuals to buy and sell stocks are difficult to evaluate but may sometimes present opportunities for substantial profits and therefore cannot be ignored by more adventuresome investors (Mendelson 1976). This irrational behavior of investors related activities before or after an election could also affect the stock market performance.

2.3.1 NSE 20 Share Index

The NSE 20-Share Index was introduced in 1964. It is a listing of selected stocks statistically expressed to reflect the composite value of its component stocks. The Nairobi Securities Exchange 20 Share Index is a price weight index used to measure performance at the Nairobi Securities Exchange. It measures performance of 20 blue chip companies with strong fundamentals and which have consistently returned positive financial result. The members are selected based on a weighted market performance for a 12 month period as follows: Market Capitalization 40%, Shares Traded 30%, Number of deals 20%, and Turnover 10%.

2.4 Empirical Review

Mazol (2012) dealt with election cycles in stock returns of 52 developing and developed countries and provides the analysis of influence of information transparency on stock returns and volatility of returns during election periods. The data covers the period from January 1994 to January 2012. The volatility of stock returns is estimated by EGARCH model in order to capture time-varying volatility and the asymmetry effects of “bad news” and “good news” as a result of political shocks caused by election cycles. The results show that election cycle starts 9 months prior to elections and finishes 6 months after the elections. The analysis reveals that information transparency influences stock returns during election cycle, but changes in volatility of returns due to corresponding changes in information transparency has significant impact only 6 months before the elections.

Onyuma (2009) did a study on day- of- the- week and month- of- the- year effect on the Kenyan Stock Market Returns. The purpose of this study was to determine if daily and monthly seasonal anomalies do exist in the Kenyan Market. Data on prices and adjusted returns derived from the NSE 20 index were analyzed using regression analysis to identify the behavior of stock investors in Kenya during 1980 to 2006. Results indicate that Monday produces the lowest negative returns, while Friday and January produce the largest positive returns. These results are useful in providing evidence of deviation from the efficient Markets theory and in drawing conclusions about anomalies in an emerging stock market. Finding highest return volatility on Friday and lowest on Monday might be due to several economic news announcements released on Thursdays and Fridays, and is consistent with informed trader argument. The returns are therefore influenced by foreign portfolio investor behavior and delays in receiving news released from foreign financial markets. Day- of –the- week effect and January effect patterns in return and volatility might enable investors to take advantage of relatively regular shifts in the market by designing trading strategies, which accounts for such predictable patterns.

Chien, Mayer and Wang (2014) studied stock market, economic performance, and presidential elections by examining the relationships between the market return after each

Election Day and economic performance during the presidential term. They used stock market and economic data from 1900 to 2008 from 27 separate presidential administrations in the United States (U.S.), including 15 Republican and 12 Democratic. Using the theoretical framework of political economy, the authors examine how Wall Street's reaction to a presidential election acts as a predictive measure of future economic performance. The analysis shows that the after-election market movement has progressively been more accurate in predicting the future Gross Domestic Product (GDP) growth but not the future unemployment rates. Given that the results show a higher correlation over time, the model appears to provide a good starting point for judging the economic potential of future presidential administrations.

Wong and McAleer (2009) sought to map the presidential election cycle in US stock markets. They showed that in the almost four decades from January 1965 through to December 2003, US stock prices closely followed the four-year Presidential Election Cycle. In general, stock prices fell during the first half of a Presidency, reached a trough in the second year, rose during the second half of a Presidency, and reached a peak in the third or fourth year. This cyclical trend is found to hold for the greater part of the last ten administrations, starting from President Lyndon Johnson to the administration of President George W. Bush, particularly when the incumbent is a Republican. The empirical results suggested that the Republican Party may have greater cause to engage in active policy manipulation to win re-election than their Democratic counterparts. There is irony in that bullish runs in the stock market have tended to coincide with sub-periods under Democratic administrations. The existence of the Presidential Election Cycle shown in the paper may constitute an anomaly in the US stock market, which could be useful for investors.

Goodell and Vähämaa (2013) did a study on the U.S. presidential elections and implied volatility especially with regards to the role of political uncertainty. Goodell and Vähämaa used Standard & Poor's 500 Composite Price Index (hereafter, S&P) on a weekly basis from 1 January 1965 to 31 December 2003. They checked the stationarity property of the S&P stock index, its logarithm and log-difference (or returns) and applied

spectral analysis, including both periodogram and spectral density analyses, to analyze the periodicity of the US stock market. The findings demonstrated that the presidential election process creates market uncertainty as investors develop expectations regarding potential winners and future macroeconomic policy. Goodell and Bodey (2012) undertook a study on the price-earnings changes during US presidential election cycles by looking at the voter uncertainty and other determinants. They determined that as the probable winner of the election becomes clearer, volatility decreases and markets react negatively with decreases in P/E ratios.

Miya (2007) carried out a study on the stock market behavior around the national elections in Kenya that focused on 1997 and 2002 general elections. The research constituted the prices of the stocks included in the NSE 20 share index. The sample population of the study covered 120 prices of each share, 60 trading days before the election event and 60 trading days after the election event. The results obtained from the study showed that a majority of share prices for all the listed companies sampled in the period under study go down during general election period but after the election, they start rising once again or remain relatively stable.

Onyangoh (2004) while investigating stock prices response to political announcement sampled 16 companies quoted at the NSE between 1998 and 2003. He used linear regression to analyse the data. The results of the study showed that political announcement were incorporated in the bid and offer prices several days before the announcement date. In his interpretation, he found there are significant and abnormal changes in prices and trading volume around the announcement. His sample size was small compared to the entire population of 48 listed companies at that time.

Maina (2009) in his empirical investigation of stock returns reaction around election announcement for listed companies at NSE, sampled 30 companies in main investments market segment from 2002 to 2007. Using descriptive statistic methods to analyze data, he found out that there is a strong tendency for stocks returns to steadily increase over the 15 days before the announcement day, shoot-up just before the announcement day and

then resume their upward drift after announcement day. He explained that any tendency for continuing drift depends on the earning surprise and whether there is continued abnormal trading by optimistic retail investors.

Mohamed (2010), in his event study of the effect of the political announcement on the stock prices, based his study on 45 continually listed companies at the NSE during 2002-2008. He used descriptive statistics and T-test to test the significance of abnormal returns and market return. His event window was 30 days prior and 30 days after the announcement. The findings of the study were that NSE react efficiently to earnings announcements in price adjustment up until 30 days after announcement. The study also revealed negative excess returns before and after the day of announcements date. The results of the study also showed that the announcements contain relevant information to investors, which is fully impounded in stock prices prior to or almost instantaneously at time of announcement.

Lusinde (2012) conducted a study on volatility in stock returns of NSE listed companies around general elections in Kenya. Event study research design was adopted. The study was conducted on twenty companies quoted at the NSE between 1997 to 2007 and analysis done using the GARCH model. The findings revealed that volatility in stock returns of Kenyan listed companies' increases around general elections. Lusinde stated that this is because investors are sensitive to the developing political landscape during election period which then influences their decisions on whether to invest at the NSE or not.

Menge (2013) looked at the effect of elections on stock returns at Nairobi Securities Exchange. The population of this study was 56 companies listed at the NSE and the sample was the NSE twenty share index. Event study methodology was adopted using secondary data from the NSE and the financial statements of the concerned companies. Data obtained covered the period between 29th December 2002 and 4th March 2013. He found out that stock prices tend to decrease in the period before election which cause a decrease in the stock return compared to the period after election. The study concluded

that events that tend to affect the financial performance of stock are primarily political such as elections.

2.5 Summary of Literature Review

A number of studies have been under taken establishing the relationship between the performance of stock exchange in the world and political activities in specific countries. Most of these studies were carried out in developed stock exchanges. Studies on the effect of political activities on the performance of emerging capital markets are very important as more and more investors participate in these markets. The investors in emerging markets are local and the number of foreign investors continues to increase overtime. Developed economies such as the U.S. operate in different social, economic and political environments than those found in emerging markets.

From the literature reviewed above, it is evident that limited research has been done on stock market reaction to presidential election results announcement in Kenya. This study sought to fill this gap.

CHAPTER THREE

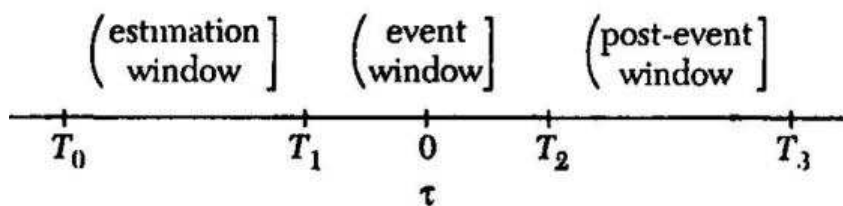
RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the way the research was carried out and the methods used in enabling the study achieve its main objective. This involves: research design, data collection procedure and data analysis.

3.2 Research Design

The study used the event study methodology to examine the market reaction to presidential election results announcements. Event studies are based on the theoretical framework of efficient capital markets and the notion that security/share prices include all information available to the market. As a result, announcements provide to market participants information that can be impounded into the market price (Konchitchki and O'Leary, 2011). The event study approach is commonly used when investigating stock price effect on specific types of events. Thus, event study research design is used as they provide a powerful setting to examine the informativeness of an event as assessed by market participants. It involves defining the event (presidential election announcements), estimating the event period (the period of time over which the stock price of the firm experiences the event), estimating whether the stock price changes beyond the “normal,” or expected changes, in response to the event announcement, and examining to determine the extent to which the event changes the market participants' evaluation of the stocks as shown below (Nagm and Kautz, 2008).



Since the study sought to investigate the stock market reaction to presidential election results announcements, a time-series design was deemed to be the best design to fulfill the objective of the study.

3.3 Population

The study population included all the firms that are listed at the Nairobi Securities Exchange but during the study period (1997 – 2013). In 1997, there were 51 listed companies which rose to 60 in 2013 (NSE 2002 and 2013).

3.4 Sample

The study however purposively selected companies that are included in the NSE-20 Share Index. NSE-20 Share Index is a price weight index and is selected as it is the oldest index (since 1964) in the Bourse unlike other indices like NSE All Share Index (NASI) that was introduced in 2008. Being a major stock market index, it tracks the performance of 20 best performing companies listed on the Bourse (Gikunju, 2007). Its members are selected based on a weighted market performance for a 12 month period as follows: Market Capitalization 40%, Shares Traded 30%, Number of deals 20%, and Turnover 10% (see Appendix 1).

3.5 Data Collection Instruments and Procedure

The study made use of secondary data sources which the researcher obtained from the NSE offices. The secondary material was collected on the data available on the market index; NSE 20-Share Index.

Data was obtained from the NSE and covered the period between January 1997 and December 2013. This , thus, constituted an estimate of 4,284 trading days within the 17 year period. Generally, stock markets have, on average, 252 trading days in a year given that trading is suspended during the weekends and public holidays. The date of each final presidential election result announcement held in Kenya in the years 1997, 2002, 2007 and 2013 was the event date. Thus, the events dates were 29th December 1997, 27th

December 2002, 31st December 2007 and 11th March 2013. However, in order to determine the normal market return, the study covered a one year period before the general elections as an estimate window (normal window) and 120 days after presidential election result announcement as a post-event window. This is given that, in Kenyan context, implementation of major political pledges during campaigns are pegged on 100 days in office. Therefore, the study had an aggregate of 1488 data points.

3.6 Data Analysis

In order to test for stock market reaction to presidential election results announcement, the study used the market model (MM). This model has been used and advocated by researchers both globally and locally by Konchitchki and O'Leary (2011) and Rutto (2011). The daily returns are calculated for the stock market index (NSE 20 share index) using the following equation:

$$\mathbf{R_{i,t} = (P_t - P_{t-1})/P_{t-1} \times 100} \quad \mathbf{(1)}$$

Where, $R_{i,t}$ = Returns on NSE-20 share index i on time t

P_t = Price of the NSE-20 share index at time t

P_{t-1} = Price of the NSE-20 share index at time $t-1$.

The Abnormal Returns (AR) was calculated by the equation below;

$$\mathbf{AR_{i,t} = R_{i,t} - R_{av}}$$

Where $R_{i,t}$ is the actual returns on security i at time t and R_{av} is the average returns on NSE 20-Share Index, one year preceding the event. According to Sponholtz (2008), the abnormal returns can be used to answer the following questions; is there information content in the presidential election announcements? If there is information content, then how quickly does the market react and adjust to the new information?

Market returns variability (MRV) was used to analyze the reaction of the market to presidential election announcements and were calculated as shown below:

$$\mathbf{MRV}_{i,t} = \mathbf{AR}_{i,t}^2 / \mathbf{V}(\mathbf{AR}) \quad (2)$$

Where: $\mathbf{MRV}_{i,t}$ = Market Returns Variability of security i in time t

$\mathbf{AR}_{i,t}^2$ = Abnormal returns on the market i on day t

$\mathbf{V}(\mathbf{AR})$ = Variance of Abnormal Returns during the announcement period

So as to ensure statistical significant in the statistics to be computed as a population parameter, significance of reaction in stock market performance was tested by using the t-statistics as follows:

$$\mathbf{t}_{\text{stat}} = (\mathbf{MRV} - 1) \times \sqrt{\mathbf{n}/\mathbf{s}}$$

Where, n is the number of days in the sample and s is the Standard Deviation of abnormal return.

a) Analysis of Abnormal Returns (AAR)

The Average Abnormal Returns was calculated by the equation given below:

$$\mathbf{AAR}_t = 1/\mathbf{n} \sum \mathbf{AR}_{i,t} \quad (3)$$

Where, \mathbf{AAR}_t is the average abnormal returns on day t and $\mathbf{AR}_{i,t}$ is the abnormal returns on security i at time t.

b) Analysis of Cumulative Abnormal Returns (CAR)

The CAR was calculated as:

$$\mathbf{CAR}_k = \sum \mathbf{AAR}_t \quad (4)$$

Where, \mathbf{CAR}_k is the cumulative average abnormal returns for the k^{th} period and \mathbf{AAR}_t is average abnormal returns of the market at time t.

CHAPTER FOUR

DATA FINDINGS AND ANALYSIS

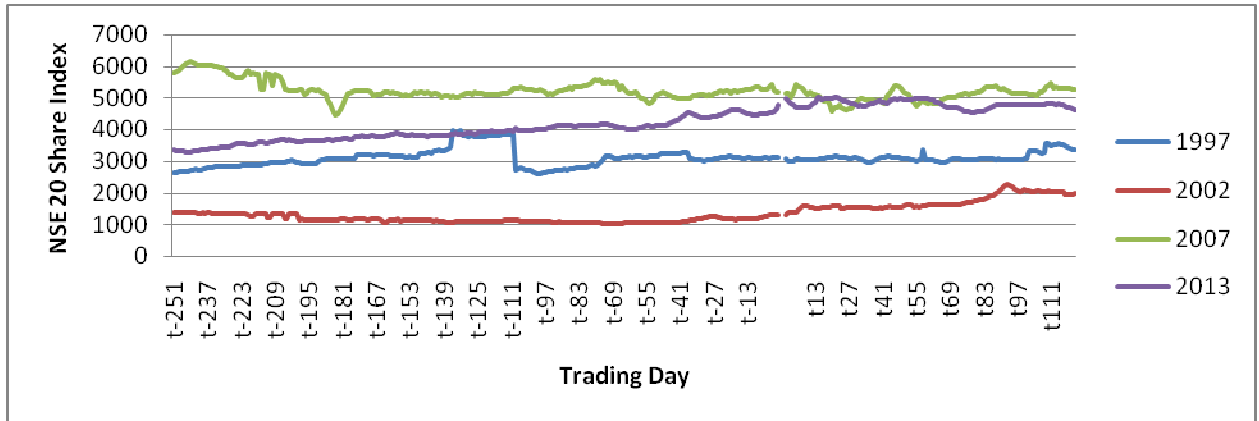
4.1 Introduction

This chapter presents the data findings on the stock market reaction to presidential election results announcement. The study looked at 1997 – 2013 presidential election results announcement data which were: 29th December 1997, 27th December 2002, 31st December 2007 and 11th March 2013, and analysed using SPSS. Analysis involved evaluation of abnormal returns. Abnormal returns present the difference between the actual returns and the expected returns over a certain period of time. The stock prices returns around the presidential election results announcement were analyzed by comparing them against the average returns before election announcements.

4.2 Descriptive Statistics

The study used 372-day event period; 252 trading days before the announcement and 120 trading days after the announcement. The announcement date was denoted by t_0 . Summary statistics for the stock returns were analyzed by looking at the mean, minimum and maximum, and quartile data was analyzed.

Figure 4.1: NSE-20 Share Index



The trend line presented in Figure 4.1 shows that: the 1997 election exhibited a constant slope after presidential election announcement than before; the 2002 NSE index rose slowly but steadily after the announcement; the 2007 index had great variability after the presidential election announcement which trended downwards and picked later; and, the 2013 index rose slow but steadily with much variability after the election results announcement.

Table 4.1: Post Announcement Period

Statistics	1997	2002	2007	2013
Minimum	-0.0928	-0.0370	-0.0489	-0.0162
Maximum	0.0993	0.0510	0.0472	0.0395
Mean	0.0008	0.0036	0.0002	(0.0002)
1st Quartile	-0.0043	-0.0028	-0.0055	-0.0046
2nd Quartile	-0.0012	0.0019	-0.0005	-0.0005
3rd Quartile	0.0027	0.0117	0.0053	0.0025

Table 4.1 shows that on average, in three elections results announcements (1997, 2002 and 2007), the stock prices exhibited positive returns. This is depicted by mean values of 0.0008, 0.0036 and 0.0002 respectively. The quartile values show that while the second quartile value for 1997 (-0.0012), 2007 (-0.0005) and 2013(-0.0005) were negative meaning that at least half of the trading days yielded negative returns, the second quartile for 2002 was positive; 2002 (0.0019). Thus, during the year, trade in stocks after the presidential election announcement yielded positive return in at least 50% of the trading days. This depicts that presidential election announcements affects stock market performance. The third quartile values were positive in all the presidential election announcement showing that at least 25% of the trades yielded positive returns.

The study conducted independent sample T-test to determine the differences in the means of the abnormal returns of companies before and after announcement of presidential election announcement. This tested the null hypothesis that the means of the two groups are not significantly different against the alternative hypothesis that the means of the two groups are significantly different.

Table 4.2: T-Test

		Levene's Test		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
1997	Equal variances assumed	11.171	.001	.779	59	.439	.00638
	Equal variances not assumed	1	1	.788	38.157	.435	.00638
2002	Equal variances assumed	1.571	.215	5.405	59	.016	-.00336
	Equal variances not assumed	1	1	5.386	34.406	.017	-.00336
2007	Equal variances assumed	.247	.621	.712	59	.479	.00256
	Equal variances not assumed	1	1	.716	53.802	.477	.00256
2013	Equal variances assumed	2.963	.090	6.678	59	.050	.00250
	Equal variances not assumed	1	1	6.673	46.334	.049	.00250

From Table 4.2, significant results were found in 2002 ($t = 5.386$; $p = .017$) and 2013 ($t = 6.678$; $p = .05$) presidential elections. This depicts that there were differences in the means of abnormal returns during pre and post presidential election results announcement. The means of the abnormal returns were higher after the announcement than before the events.

4.3 AR Time Intervals

Table 4.3: Result Announcement

Estimation Period	Mean	STDDEV
From day -15 to day +15	0.001	0.0095
From day -15 to day -1	0.003	0.0109
From day 1 to day +15	-0.001	0.0081
From day 0 to day +1	0.004	0.0034
From day -1 to day 1	0.003	0.0024
Form day -3 to day +3	-0.001	0.0078
From day -7 to day +7	0.001	0.0118

The study further analyzed the data with regards to time intervals within the event window. Table 4.3 shows that while the average AR for t_{-15} to t_{-1} is -0.001, the average AR for t_1 to t_{+15} time period is -0.006. This signifies that though there is decline in market valuation of shares of companies after election announcements. The average AR for t_0 to t_{+1} is 0.011. This shows that announcement of presidential elections was absorbed fast in the market. The average AR for t_{-1} to t_{+1} is 0.01; t_{-3} to t_{+3} AR is 0.005. However, the stocks performed poorly than the market in periods after announcement than before announcement.

One sample T-test by comparing the AR with the 0. This was aimed at determining if there is significant difference between the means of AR from 0 which signifies market

efficiency of the stock market to announcement of presidential election announcement. This depicts insignificant difference between the actual AR and predetermined 0 values.

4.4 Stock Returns

Figure 4.2: Stock Returns - 1997

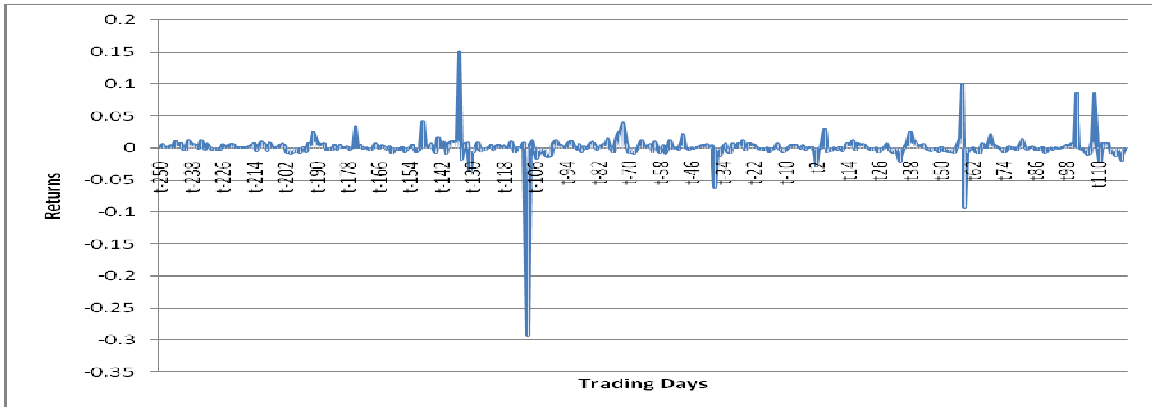


Figure 4.2 shows variability in returns before and after election results announcement for the 372 trading days within the event windows. The trend-line shows that on was neared zero just before and after election announcement. The variability increased after 50th trading day during the post-announcement period.

Figure 4.3: Stock Returns - 2002

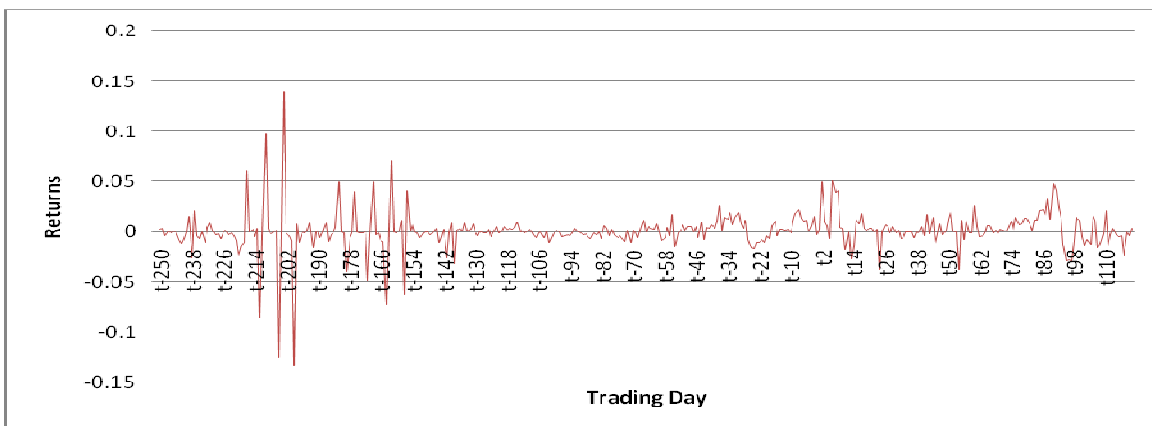


Figure 4.3 shows variability in returns before and after 2002 election results announcement. The variability improved greatly just before and after the election results announcement. The post-election announcement results were visible above 0 signifying positive returns during the post-election period.

Figure 4.4: Stock Returns - 2007

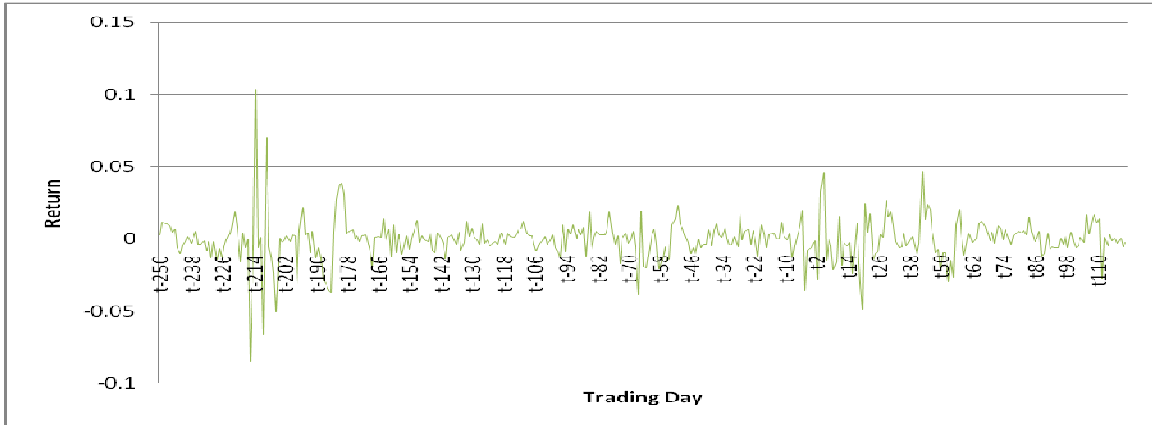


Figure 4.4 shows variability in returns before and after 2007 election results announcement. The stock returns showed greater variability especially after the presidential election results announcement than before the announcement.

Figure 4.5: Stock Returns - 2013

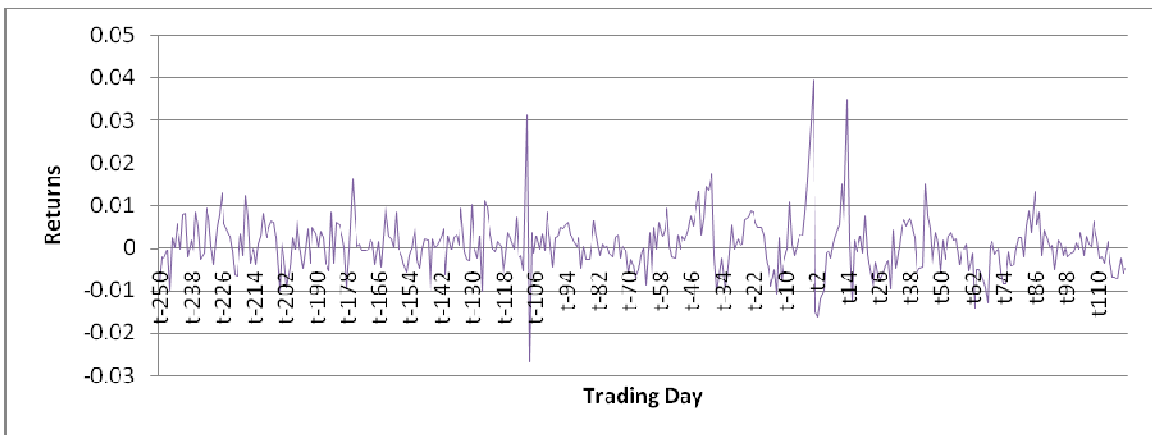


Figure 4.5 shows variability in returns before and after 2013 election results announcement. The stock returns showed greater variability before and after the presidential election results announcement.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the summary of the finding in chapter four. Conclusion and recommendations drawn from these findings are discussed in relation to the objectives of the study: stock market reaction to presidential elections.

5.2 Discussions

The study found that the presidential election results experienced a high abnormality during announcement and days surrounding the announcement. Announcement of presidential election results was absorbed faster in the market as shown by average AR whose values were t_0 to t_{+1} is 0.011. It was also found that it takes time for information on presidential election results to be fully absorbed in the market as shown by average AR for t_{-1} to t_{+1} is 0.01. It was also established that the stocks performed poorly than the market in periods after announcement than before announcement in some elections. T-significance values were lower than 0.05 depicting significant difference between the actual AR and predetermined 0 values. This points to normal returns which is in line with the efficiency hypothesis of no investors benefiting from the abnormal returns.

The study further established that the cumulative returns exhibited an increasing trend up to the announcement day which reduced drastically after the announcement in the case of presidential election results and was moderately constant after announcement which reduced after the 18th day after announcement. The cumulative abnormal returns on the presidential election results is negative from the 5th day showing that an investor trading continuously using the presidential election outcome loses the gains after the 5th day after trading. This further depicts that with absorption of the information into the stock prices, no investor could benefit from the publicly available information. T-test also shows that the stocks performed better during a favourable regime change as shown in the 2002

presidential election results. T-significance confirmed differences in means in the same as the p-values were less than 0.05.

5.3 Conclusions and Recommendations

From the findings presented in the previous chapter, it is concluded that the companies share returns exhibits erratic positive returns before and after presidential election results announcement. Though there is a steady increase in abnormal returns before presidential election results announcement, the returns exhibit decline in case of presidential election results where there is no favourable regime change or there is post-election violence as exhibited in 2007 and 1997 elections. Hence the information is useful for valuing the securities though the market does not value the information that favours bad governance. However, the market was more indifferent to 2013 presidential election results. The study also found that information of presidential election results is used by investors to gain five days to announcement pointing at insider trading.

It can, thus, be concluded that there is an increase in stock returns in response to presidential election results announcement where there is a favourable regime change. The average cumulative abnormal returns exhibited a reducing trend following announcement and a sharp increase before announcement. The study, thus, recommends that Capital Market Authority (CMA) to stem market variability that might rise to the magnitude of panic buying or selling following presidential results announcement by invoking 'fuse-breakers'.

5.4 Limitations of the Study

The announcements of presidential election results may have been affected by other market anomalies such as the Weekend and Monday effect. Macroeconomic performance such as inflation and environmental factors such as politics might have also moderated the effect of these events. These factors could not be isolated in the study owing to difficulty in doing so. Earlier events such as dividends issues or investors experiences with same corporate actions at earlier date in some companies might influence the market reaction.

5.5 Recommendation for Further Studies

The study recommends that a similar study can be done on other elections such as referendum so as to get a holistic picture on how the stock market reacts corporate events that have potential macro policy effect.

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APPENDICES

Appendix I: NSE-20-Share Index Companies

1. Mumias Sugar,
2. Express Kenya,
3. Rea Vipingo,
4. Sasini Tea,
5. CMC Holdings,
6. Kenya Airways,
7. Safaricom,
8. Nation Media Group,
9. Barclays Bank Kenya,
10. Equity Bank,
11. Kenya Commercial Bank,
12. Standard Chartered Bank,
13. Bamburi Cement,
14. British American Tobacco,
15. KeNGEN,
16. Centum Investment Company,
17. East African Breweries,
18. East African Cables,
19. Kenya Power and Lighting Company Ltd
20. Athi River Mining

Appendix II: NSE 20 Share Index

Trading Day	1997	2002	2007	2013
t-251	2647.39	1,373.82	5,811.58	3358.6
t-250	2650.08	1,377.71	5,826.51	3332.89
t-249	2664.6	1,382.77	5,895.68	3326.35
t-248	2671.33	1,377.53	5,962.46	3318.95
t-247	2673.54	1,379.02	6,026.51	3317.62
t-246	2681.18	1,377.53	6,085.59	3285.51
t-245	2683.94	1,379.02	6,117.36	3293.1
t-244	2712.97	1,379.08	6,161.46	3293.91
t-243	2724.13	1,368.32	6,125.28	3312.85
t-242	2745.84	1,352.89	6,066.66	3312.56
t-241	2740.16	1,343.51	6,041.42	3339.27
t-240	2731.07	1,343.82	6,030.83	3367.23
t-239	2764.1	1,364.70	6,041.61	3360.12
t-238	2778.29	1,329.44	6,025.41	3366.89
t-237	2792.8	1,357.89	6,027.17	3363.72
t-236	2804.9	1,352.89	6,060.21	3392.23
t-235	2802.37	1,343.51	6,039.05	3408.7
t-234	2834.61	1,343.82	6,016.47	3400.48
t-233	2829.65	1,329.61	6,010.17	3396.83
t-232	2847.64	1,335.61	5,961.61	3429.02
t-231	2853.7	1,347.91	5,949.71	3454.34
t-230	2848.06	1,349.60	5,870.68	3456.35
t-229	2837.7	1,345.45	5,858.88	3443.94
t-228	2832.3	1,343.41	5,774.27	3461.19
t-227	2827	1,335.06	5,739.05	3489.24
t-226	2841.61	1,333.59	5,663.65	3534.27
t-225	2849.72	1,335.52	5,633.61	3554.46
t-224	2852.89	1,332.23	5,628.88	3571.2
t-223	2868.26	1,330.39	5,649.99	3581.33
t-222	2883.08	1,325.08	5,710.21	3579.57
t-221	2881.76	1,313.57	5,817.04	3557.13
t-220	2881	1,282.36	5,867.03	3534.53
t-219	2885.16	1,265.52	5,773.29	3546.66
t-218	2887.32	1,252.32	5,798.73	3541.07
t-217	2885.95	1,329.75	5,766.46	3585.12
t-216	2892.33	1,329.61	5,765.79	3611.1
t-215	2900.82	1,333.61	5,275.65	3599.13
t-214	2921.53	1,327.44	5,254.52	3599.18
t-213	2910.28	1,332.54	5,798.73	3585.93
t-212	2918.34	1,218.09	5,766.46	3589.43
t-211	2948.01	1,214.54	5,771.39	3599.33

t-210	2967.46	1,332.80	5,387.28	3628.64
t-209	2954.09	1,337.72	5,763.85	3637.08
t-208	2978.2	1,335.06	5,732.67	3655.07
t-207	2983.29	1,333.59	5,665.79	3677.81
t-206	2984.6	1,335.52	5,534.20	3699.69
t-205	2986.98	1,168.15	5,254.52	3708.88
t-204	2999.54	1,168.88	5,256.53	3672.36
t-203	3017.87	1,332.23	5,245.65	3678.02
t-202	3027.76	1,330.39	5,239.01	3668.21
t-201	3006.68	1,325.08	5,250.04	3634.85
t-200	2979.11	1,313.57	5,241.25	3618.53
t-199	2962.24	1,139.32	5,256.53	3627.64
t-198	2944.48	1,148.73	5,268.99	3626.07
t-197	2942.06	1,136.87	5,103.83	3650.85
t-196	2920.8	1,136.47	5,137.31	3653.29
t-195	2923.86	1,135.69	5,250.04	3635.86
t-194	2907.45	1,137.41	5,265.09	3634.82
t-193	2928.35	1,147.43	5,289.76	3651.27
t-192	2945.58	1,129.29	5,241.25	3639.46
t-191	3018.55	1,129.33	5,271.22	3657.01
t-190	3049.92	1,131.44	5,200.75	3670.18
t-189	3065.05	1,124.82	5,171.13	3670.75
t-188	3082.52	1,124.52	5,103.83	3685.36
t-187	3102.16	1,134.47	4,961.89	3694.23
t-186	3092.89	1,123.98	4,809.72	3682.23
t-185	3083.38	1,120.47	4,637.31	3663.11
t-184	3073.82	1,119.04	4,465.09	3694.55
t-183	3085.56	1,124.04	4,489.76	3682.24
t-182	3078.93	1,179.81	4,614.40	3704.7
t-181	3091.35	1,180.13	4,791.22	3725.55
t-180	3091.19	1,179.26	4,978.93	3738.15
t-179	3092.82	1,131.90	5,133.67	3739
t-178	3098.74	1,125.65	5,154.77	3704.7
t-177	3092.24	1,124.82	5,183.11	3703.94
t-176	3094.38	1,170.60	5,216.68	3763.91
t-175	3198.23	1,170.20	5,215.20	3790.07
t-174	3198.06	1,168.86	5,227.81	3791.79
t-173	3211.76	1,168.15	5,218.64	3795.32
t-172	3209.01	1,168.88	5,228.75	3793.32
t-171	3210.45	1,111.44	5,242.88	3791.06
t-170	3203.19	1,109.66	5,228.88	3789.33
t-169	3191.78	1,164.58	5,185.67	3797.4
t-168	3187.01	1,160.72	5,085.89	3802.96
t-167	3207.73	1,160.03	5,092.07	3788.64

t-166	3203.34	1,149.80	5,099.01	3795.1
t-165	3213.28	1,139.32	5,105.41	3778.1
t-164	3219.37	1,057.34	5,178.08	3788.52
t-163	3212.81	1,061.77	5,173.33	3825.93
t-162	3218.65	1,136.87	5,211.27	3835.93
t-161	3189.83	1,136.47	5,148.07	3844.61
t-160	3183.82	1,135.69	5,199.44	3845.93
t-159	3179.2	1,137.41	5,151.46	3878.49
t-158	3168.1	1,151.25	5,169.53	3878.52
t-157	3170.25	1,079.20	5,116.02	3870.51
t-156	3154.25	1,124.04	5,091.12	3854.28
t-155	3149.34	1,124.54	5,101.43	3832.42
t-154	3148.87	1,133.90	5,067.74	3825.65
t-153	3161.16	1,133.31	5,071.33	3825.08
t-152	3141.71	1,131.90	5,114.17	3843.58
t-151	3128.4	1,125.65	5,181.77	3833.58
t-150	3126.07	1,124.82	5,169.28	3815.44
t-149	3258.08	1,124.52	5,179.21	3815.1
t-148	3266.55	1,123.98	5,175.11	3823.49
t-147	3271.01	1,120.47	5,167.34	3831.01
t-146	3292.75	1,119.04	5,191.53	3792.22
t-145	3291.93	1,122.64	5,154.41	3800.23
t-144	3267.96	1,111.44	5,108.69	3801.03
t-143	3320.71	1,106.48	5,132.74	3804.54
t-142	3322.99	1,109.66	5,134.51	3814.1
t-141	3353.51	1,080.64	5,118.39	3832.1
t-140	3322.99	1,080.06	5,048.23	3808.47
t-139	3346.64	1,090.11	5,054.35	3819.45
t-138	3383.76	1,055.41	5,068.68	3817.7
t-137	3418.16	1,057.34	5,064.57	3826.89
t-136	3460.17	1,061.42	5,047.37	3839.12
t-135	3982	1,061.77	5,074.08	3842.38
t-134	3911.2	1,071.07	5,036.53	3878.13
t-133	3937.03	1,072.18	5,025.68	3875.11
t-132	3972.15	1,074.73	5,089.22	3865.76
t-131	3833.61	1,083.32	5,096.68	3855.14
t-130	3806.32	1,083.47	5,137.45	3895.86
t-129	3786.09	1,079.20	5,146.22	3897.45
t-128	3819.56	1,080.24	5,144.20	3888.14
t-127	3801.86	1,079.11	5,127.16	3899.62
t-126	3791.59	1,077.96	5,181.07	3860.41
t-125	3781.75	1,080.80	5,165.06	3903.72
t-124	3781.03	1,075.77	5,160.89	3941.1
t-123	3797.74	1,074.73	5,136.53	3953.84

t-122	3791.57	1,080.60	5,120.40	3953.53
t-121	3801.74	1,079.90	5,112.62	3950.18
t-120	3816.37	1,080.95	5,095.68	3956.54
t-119	3820.48	1,086.62	5,117.37	3959.1
t-118	3831.41	1,088.07	5,121.08	3934.52
t-117	3832.69	1,091.66	5,104.13	3927.44
t-116	3831.01	1,094.86	5,123.23	3942.4
t-115	3868.86	1,099.50	5,131.99	3950.97
t-114	3842.16	1,110.61	5,137.51	3950.9
t-113	3840.4	1,110.69	5,154.42	3980.53
t-112	3843.49	1,112.35	5,193.14	3972.03
t-111	3846.16	1,111.50	5,230.04	3965.75
t-110	3879.72	1,111.91	5,296.22	3945.25
t-109	2743.03	1,114.43	5,317.73	4069.33
t-108	2756.63	1,111.46	5,329.56	3961.05
t-107	2788.83	1,104.67	5,340.08	3975.79
t-106	2777.31	1,103.44	5,321.19	3971.68
t-105	2733.53	1,103.51	5,277.38	3983.16
t-104	2718.07	1,096.82	5,263.46	3982.94
t-103	2707.03	1,097.73	5,256.44	3997
t-102	2673.52	1,086.18	5,265.41	3995.03
t-101	2635.03	1,080.12	5,246.57	4029.5
t-100	2601.27	1,079.15	5,240.83	4032.41
t-99	2619.81	1,080.51	5,256.76	4014.03
t-98	2649.89	1,079.89	5,227.08	4023.55
t-97	2661.95	1,074.69	5,184.29	4034.07
t-96	2674.2	1,070.38	5,120.53	4053.79
t-95	2677.93	1,067.12	5,171.30	4072.5
t-94	2683.47	1,062.98	5,126.68	4095.26
t-93	2705.46	1,062.03	5,165.41	4119.5
t-92	2735.24	1,065.56	5,181.75	4132.91
t-91	2742.3	1,066.08	5,234.70	4141.23
t-90	2737.58	1,065.03	5,237.76	4143.35
t-89	2753.33	1,062.14	5,274.53	4153.35
t-88	2739.46	1,059.93	5,290.38	4133.28
t-87	2745.73	1,054.68	5,334.03	4135.28
t-86	2743.87	1,047.87	5,274.53	4124.53
t-85	2762.47	1,047.08	5,371.72	4113.96
t-84	2788.98	1,044.16	5,334.03	4121.13
t-83	2802.82	1,043.82	5,341.16	4148.79
t-82	2797.77	1,036.88	5,371.72	4159.73
t-81	2803.74	1,043.38	5,387.76	4152.11
t-80	2818.29	1,047.41	5,403.17	4156.86
t-79	2834.6	1,043.27	5,419.63	4157.59

t-78	2873.43	1,045.82	5,458.40	4160.49
t-77	2877.93	1,042.38	5,560.23	4155.99
t-76	2860.23	1,036.74	5,582.38	4147.94
t-75	2893.12	1,033.00	5,563.11	4158.38
t-74	2957.44	1,026.49	5,576.04	4171.87
t-73	3040.33	1,017.27	5,481.63	4162.79
t-72	3159.28	1,018.91	5,484.63	4166.55
t-71	3183.1	1,008.79	5,507.30	4163.91
t-70	3157.88	1,010.69	5,490.99	4139.02
t-69	3136.14	1,010.77	5,488.20	4128.62
t-68	3107.33	1,004.70	5,519.74	4111.92
t-67	3090.29	1,010.17	5,491.27	4083.52
t-66	3100.67	1,021.95	5,282.77	4063.09
t-65	3138.37	1,021.98	5,384.46	4056.41
t-64	3145.82	1,027.79	5,282.77	4057.39
t-63	3149.03	1,031.50	5,176.88	4022.64
t-62	3166.09	1,034.60	5,146.46	4037.99
t-61	3144.65	1,043.08	5,163.11	4012.05
t-60	3175.8	1,043.40	5,200.32	4031.72
t-59	3177.83	1,034.96	5,181.63	4031.7
t-58	3153.42	1,029.44	5,076.04	4056.18
t-57	3162.81	1,034.47	5,005.89	4067.21
t-56	3131.7	1,030.77	4,979.98	4085.7
t-55	3125.57	1,048.73	4,900.89	4124.06
t-54	3161.8	1,032.92	4,835.16	4127.6
t-53	3157.1	1,031.69	4,884.75	4119.1
t-52	3157.64	1,032.75	4,953.31	4109.28
t-51	3152.06	1,039.82	5,069.50	4122.74
t-50	3175.36	1,041.76	5,122.40	4122.22
t-49	3239.95	1,047.53	5,162.14	4133.02
t-48	3239.75	1,053.64	5,175.80	4140.43
t-47	3233.88	1,053.78	5,164.78	4159.25
t-46	3234.67	1,059.44	5,115.51	4191.05
t-45	3232.14	1,053.51	5,087.14	4212.49
t-44	3231.63	1,064.47	5,034.46	4247.74
t-43	3238.97	1,056.80	5,034.55	4305.03
t-42	3248.9	1,061.07	5,005.14	4319.73
t-41	3257.76	1,064.86	4,989.02	4349.87
t-40	3276.62	1,072.34	4,971.04	4413.97
t-39	3280.08	1,075.66	5,003.99	4474.68
t-38	3289.32	1,087.50	4,980.49	4553.25
t-37	3086.14	1,116.36	5,009.87	4545.7
t-36	3074.56	1,118.44	5,063.06	4500.09
t-35	3035.06	1,134.49	5,075.85	4471.21

t-34	3036.35	1,149.46	5,080.63	4461.32
t-33	3057.41	1,171.67	5,124.31	4417.17
t-32	3040.84	1,180.15	5,125.94	4385
t-31	3014.95	1,197.86	5,106.23	4379.71
t-30	3035.06	1,220.79	5,087.22	4403.38
t-29	3036.35	1,230.73	5,095.47	4402.75
t-28	3058.53	1,234.87	5,069.08	4412.61
t-27	3071.3	1,249.25	5,156.90	4416.6
t-26	3108.03	1,239.36	5,153.84	4420.79
t-25	3097.14	1,219.38	5,181.29	4450.78
t-24	3120.09	1,199.45	5,217.68	4483.62
t-23	3133.17	1,187.46	5,198.23	4522.53
t-22	3149.48	1,175.19	5,231.27	4561.16
t-21	3157.28	1,166.01	5,222.12	4588.42
t-20	3154.39	1,153.61	5,162.42	4611.03
t-19	3146.29	1,149.67	5,215.36	4633.48
t-18	3135.62	1,141.62	5,234.54	4648.09
t-17	3135.61	1,148.33	5,205.06	4637.54
t-16	3115.34	1,161.12	5,221.96	4614.75
t-15	3107.53	1,156.59	5,246.16	4573.88
t-14	3103.17	1,159.71	5,266.78	4551.06
t-13	3124.16	1,162.93	5,265.15	4502.75
t-12	3116.45	1,164.47	5,269.08	4513.21
t-11	3100.15	1,167.18	5,332.03	4477.89
t-10	3082.03	1,165.92	5,342.96	4463.65
t-9	3078.45	1,178.70	5,339.80	4463.89
t-8	3088.51	1,199.87	5,359.81	4513.55
t-7	3098.85	1,225.95	5,291.69	4518.59
t-6	3112.65	1,242.98	5,267.16	4510.47
t-5	3111.53	1,256.53	5,287.93	4519.05
t-4	3108.86	1,270.95	5,339.75	4533.82
t-3	3117.51	1,270.67	5,444.83	4546.83
t-2	3110.78	1,279.09	5,251.72	4585.07
t-1	3110.73	1,298.50	5,211.55	4658.64
t0	3113.44	1,294.96	5,180.67	4796.33
t1	3099.99	1,298.86	5,167.18	4985.91
t2	3011.72	1,362.85	5,159.81	4911.45
t3	3008.22	1,376.48	5,015.50	4831.85
t4	3004.15	1,384.98	5,180.14	4774.12
t5	3090.2	1,376.48	5,419.93	4727.04
t6	3071.89	1,446.74	5,338.77	4721.23
t7	3066.45	1,504.20	5,341.82	4719.05
t8	3052.05	1,565.84	5,317.88	4708.56
t9	3052.64	1,572.12	5,207.16	4713.6

t10	3045.73	1,578.21	5,124.45	4732.79
t11	3048.12	1,551.06	5,206.15	4758.22
t12	3035.06	1,550.89	5,111.74	4830.44
t13	3036.35	1,509.43	5,098.48	4860.83
t14	3058.53	1,488.59	5,076.31	5030.91
t15	3071.3	1,507.11	5,063.44	5038.74
t16	3108.03	1,518.92	4,942.30	4975.77
t17	3097.14	1,546.19	4,912.25	4985.68
t18	3120.09	1,551.63	4,967.88	4980.84
t19	3133.17	1,554.07	4,811.79	4995.84
t20	3149.48	1,559.78	4,576.31	4990.04
t21	3157.28	1,564.96	4,690.72	5027.9
t22	3154.39	1,565.07	4,712.71	5020.5
t23	3146.29	1,568.62	4,795.96	4994.94
t24	3135.62	1,510.63	4,724.57	4947.51
t25	3135.61	1,511.59	4,677.47	4932.77
t26	3115.34	1,522.99	4,637.45	4902.6
t27	3107.53	1,530.94	4,651.94	4868.29
t28	3103.17	1,528.68	4,657.60	4839.49
t29	3124.16	1,536.75	4,784.00	4824.44
t30	3116.45	1,535.51	4,857.64	4810.4
t31	3100.15	1,537.67	4,947.54	4764.52
t32	3073.84	1,527.96	4,996.08	4785.38
t33	3064.3	1,519.95	4,986.06	4763.09
t34	3000.26	1,520.16	4,958.80	4765.23
t35	2976.23	1,519.69	4,932.52	4788.26
t36	2981.46	1,518.86	4,951.86	4821.17
t37	2995.04	1,510.95	4,929.78	4846.43
t38	3068.22	1,510.07	4,924.35	4881.75
t39	3093.88	1,508.21	4,933.08	4905.68
t40	3127.73	1,515.94	4,909.76	4917.46
t41	3134.67	1,510.85	4,858.47	4888.97
t42	3142.33	1,537.42	4,843.75	4866.05
t43	3158.22	1,534.96	5,072.41	4844.81
t44	3155.23	1,557.74	5,142.27	4918.27
t45	3147.52	1,540.84	5,268.04	4955.61
t46	3135.18	1,538.27	5,377.60	4978.79
t47	3125.34	1,550.80	5,405.38	4960.3
t48	3120.76	1,546.73	5,354.68	4978.65
t49	3104.8	1,549.68	5,317.34	4983.54
t50	3107.6	1,569.03	5,205.38	4956.95
t51	3095.24	1,600.76	5,159.32	4965.98
t52	3082.44	1,601.57	5,111.01	4953.03
t53	3065.7	1,601.26	4,959.44	4967.75

t54	3050.67	1,542.73	4,886.98	4987.16
t55	3026.52	1,560.29	4,759.77	4996.07
t56	3029.29	1,548.73	4,809.26	5006.96
t57	3074.23	1,566.96	4,907.29	4986.93
t58	3379.62	1,565.47	4,905.77	4985.48
t59	3066.1	1,564.20	4,851.29	4984.33
t60	3044.8	1,605.82	4,835.26	4989.04
t61	3037.7	1,614.42	4,855.36	4962.66
t62	3038.86	1,607.10	4,843.17	4957.08
t63	3021.22	1,600.46	4,839.14	4886.64
t64	2993.99	1,598.81	4,838.08	4862.69
t65	2967.69	1,608.34	4,892.25	4838.01
t66	2985.98	1,618.44	4,951.73	4806.52
t67	2986.29	1,617.27	4,996.14	4761.89
t68	3007.8	1,620.71	5,015.29	4701.22
t69	3067.74	1,617.35	5,010.42	4705.19
t70	3080.75	1,622.03	5,035.08	4713.39
t71	3089.14	1,624.99	5,021.82	4706.8
t72	3089.12	1,626.42	5,070.81	4706.8
t73	3081.14	1,635.08	5,109.94	4680.33
t74	3062.49	1,653.65	5,107.23	4641.07
t75	3047.13	1,656.39	5,141.29	4602.4
t76	3053.02	1,680.14	5,143.62	4598.16
t77	3049.06	1,692.09	5,126.15	4579.21
t78	3048.76	1,705.13	5,136.26	4561.74
t79	3039.82	1,727.73	5,156.53	4562.83
t80	3048.18	1,751.39	5,184.06	4574.1
t81	3088.83	1,763.43	5,207.23	4585.42
t82	3093.18	1,766.48	5,240.39	4576.21
t83	3086.5	1,787.21	5,255.42	4600.45
t84	3086.99	1,808.14	5,336.03	4640.5
t85	3093.21	1,846.63	5,364.72	4658.46
t86	3082.83	1,886.36	5,355.02	4720.53
t87	3076.91	1,917.72	5,356.24	4746.26
t88	3067.4	1,980.99	5,384.81	4786.47
t89	3069.34	2,005.74	5,324.55	4778.88
t90	3047.27	2,100.67	5,274.44	4800.16
t91	3039.95	2,187.48	5,293.87	4807.53
t92	3039.75	2,240.28	5,257.86	4807.41
t93	3033.88	2,270.95	5,229.28	4811.81
t94	3034.67	2,243.41	5,199.38	4787.78
t95	3032.14	2,179.16	5,169.22	4796.3
t96	3031.63	2,119.13	5,170.55	4801.63
t97	3038.97	2,057.61	5,153.13	4793.82

t98	3048.9	2,039.73	5,163.87	4796.97
t99	3057.76	2,068.74	5,132.85	4787.56
t100	3076.62	2,093.51	5,159.42	4781.4
t101	3080.08	2,083.21	5,149.96	4777.12
t102	3344.21	2,056.38	5,119.15	4783.4
t103	3339.31	2,040.83	5,094.21	4783.12
t104	3337.16	2,016.08	5,101.04	4801.03
t105	3323.34	2,049.89	5,090.36	4792.87
t106	3287.57	2,074.67	5,175.83	4805.34
t107	3257.41	2,041.60	5,194.50	4810.29
t108	3290.84	2,018.84	5,253.53	4812.27
t109	3573.9	2,015.22	5,341.41	4842.59
t110	3578.83	2,056.79	5,401.76	4851.54
t111	3502.65	2,027.48	5,477.70	4840.69
t112	3529.18	2,021.82	5,328.13	4830.5
t113	3555.45	2,029.44	5,334.50	4814.12
t114	3583.95	2,024.05	5,309.08	4821.5
t115	3553.47	2,015.34	5,328.13	4806.48
t116	3534.9	2,007.51	5,320.28	4774.58
t117	3489.89	1,961.03	5,321.69	4742.15
t118	3474.07	1,961.36	5,307.71	4708.05
t119	3406.47	1,953.15	5,311.82	4697.75
t120	3387.05	1,959.60	5,284.08	4669.85
t121	3382.9	1,979.18	5,271.90	4648.21

Appendices III: Stock Price Returns

Trading Day	1997	2002	2007	2013
t-250	0.001016	0.0028315	0.002569	-0.00765
t-249	0.005479	0.0036728	0.011872	-0.00196
t-248	0.002526	-0.003789	0.011327	-0.00222
t-247	0.000827	0.0010816	0.010742	-0.0004
t-246	0.002858	-0.00108	0.009803	-0.00968
t-245	0.001029	0.0010816	0.005221	0.00231
t-244	0.010816	4.351E-05	0.007209	0.000246
t-243	0.004114	-0.007802	-0.00587	0.00575
t-242	0.00797	-0.011277	-0.00957	-8.8E-05
t-241	-0.002069	-0.006933	-0.00416	0.008063
t-240	-0.003317	0.0002307	-0.00175	0.008373
t-239	0.012094	0.0155378	0.001787	-0.00211
t-238	0.005134	-0.025837	-0.00268	0.002015
t-237	0.005223	0.0214	0.000292	-0.00094
t-236	0.004333	-0.003682	0.005482	0.008476
t-235	-0.000902	-0.006933	-0.00349	0.004855
t-234	0.011505	0.0002307	-0.00374	-0.00241
t-233	-0.00175	-0.010574	-0.00105	-0.00107
t-232	0.006358	0.0045126	-0.00808	0.009476
t-231	0.002128	0.0092093	-0.002	0.007384
t-230	-0.001976	0.0012538	-0.01328	0.000582
t-229	-0.003638	-0.003075	-0.00201	-0.00359
t-228	-0.001903	-0.001516	-0.01444	0.005009
t-227	-0.001871	-0.006216	-0.0061	0.008104
t-226	0.005168	-0.001101	-0.01314	0.012905
t-225	0.002854	0.0014472	-0.0053	0.005713
t-224	0.001112	-0.002463	-0.00084	0.00471
t-223	0.005388	-0.001381	0.00375	0.002837
t-222	0.005167	-0.003991	0.010658	-0.00049
t-221	-0.000458	-0.008686	0.018709	-0.00627
t-220	-0.000264	-0.02376	0.008594	-0.00635
t-219	0.001444	-0.013132	-0.01598	0.003432
t-218	0.000749	-0.01043	0.004406	-0.00158
t-217	-0.000474	0.0618292	-0.00557	0.01244
t-216	0.002211	-0.000105	-0.00012	0.007247
t-215	0.002935	0.0030084	-0.08501	-0.00331
t-214	0.007139	-0.004627	-0.00401	1.39E-05
t-213	-0.003851	0.003842	0.10357	-0.00368
t-212	0.002769	-0.085889	-0.00557	0.000976
t-211	0.010167	-0.002914	0.000855	0.002758
t-210	0.006598	0.0973702	-0.06655	0.008143

t-209	-0.004506	0.0036915	0.0699	0.002326
t-208	0.008162	-0.001988	-0.00541	0.004946
t-207	0.001709	-0.001101	-0.01167	0.006221
t-206	0.000439	0.0014472	-0.02323	0.005949
t-205	0.000797	-0.125322	-0.05054	0.002484
t-204	0.004205	0.0006249	0.000383	-0.00985
t-203	0.006111	0.1397492	-0.00207	0.001541
t-202	0.003277	-0.001381	-0.00127	-0.00267
t-201	-0.006962	-0.003991	0.002105	-0.00909
t-200	-0.00917	-0.008686	-0.00167	-0.00449
t-199	-0.005663	-0.132654	0.002915	0.002518
t-198	-0.005995	0.0082593	0.00237	-0.00043
t-197	-0.000822	-0.010324	-0.03135	0.006834
t-196	-0.007226	-0.000352	0.00656	0.000668
t-195	0.001048	-0.000686	0.021943	-0.00477
t-194	-0.005612	0.0015145	0.002867	-0.00029
t-193	0.007188	0.0088095	0.004686	0.004526
t-192	0.005884	-0.015809	-0.00917	-0.00323
t-191	0.024773	3.542E-05	0.005718	0.004822
t-190	0.010392	0.0018684	-0.01337	0.003601
t-189	0.004961	-0.005851	-0.0057	0.000155
t-188	0.0057	-0.000267	-0.01301	0.00398
t-187	0.006371	0.0088482	-0.02781	0.002407
t-186	-0.002988	-0.009247	-0.03067	-0.00325
t-185	-0.003075	-0.003123	-0.03585	-0.00519
t-184	-0.0031	-0.001276	-0.03714	0.008583
t-183	0.003819	0.0044681	0.005525	-0.00333
t-182	-0.002149	0.0496157	0.027761	0.0061
t-181	0.004034	0.0002712	0.038319	0.005628
t-180	-5.18E-05	-0.000737	0.039178	0.003382
t-179	0.000527	-0.040161	0.031079	0.000227
t-178	0.001914	-0.005522	0.00411	-0.00917
t-177	-0.002098	-0.000737	0.005498	-0.00021
t-176	0.000692	0.0406998	0.006477	0.016191
t-175	0.033561	-0.000342	-0.00028	0.00695
t-174	-5.32E-05	-0.001145	0.002418	0.000454
t-173	0.004284	-0.000607	-0.00175	0.000931
t-172	-0.000856	0.0006249	0.001937	-0.00053
t-171	0.000449	-0.049141	0.002702	-0.0006
t-170	-0.002261	-0.001602	-0.00267	-0.00046
t-169	-0.003562	0.0494926	-0.00826	0.00213
t-168	-0.001494	-0.003314	-0.01924	0.001464
t-167	0.006501	-0.000594	0.001215	-0.00377
t-166	-0.001369	-0.008819	0.001363	0.001705

t-165	0.003103	-0.009115	0.001255	-0.00448
t-164	0.001895	-0.071955	0.014234	0.002758
t-163	-0.002038	0.0041898	-0.00092	0.009875
t-162	0.001818	0.0707309	0.007334	0.002614
t-161	-0.008954	-0.000352	-0.01213	0.002263
t-160	-0.001884	-0.000686	0.009978	0.000343
t-159	-0.001451	0.0015145	-0.00923	0.008466
t-158	-0.003491	0.012168	0.003508	7.73E-06
t-157	0.000679	-0.062584	-0.01035	-0.00207
t-156	-0.005047	0.0415493	-0.00487	-0.00419
t-155	-0.001557	0.0004448	0.002025	-0.00567
t-154	-0.000149	0.0083234	-0.0066	-0.00177
t-153	0.003903	-0.00052	0.000708	-0.00015
t-152	-0.006153	-0.001244	0.008447	0.004837
t-151	-0.004237	-0.005522	0.013218	-0.0026
t-150	-0.000745	-0.000737	-0.00241	-0.00473
t-149	0.042229	-0.000267	0.001921	-8.9E-05
t-148	0.0026	-0.00048	-0.00079	0.002199
t-147	0.001365	-0.003123	-0.0015	0.001967
t-146	0.006646	-0.001276	0.004681	-0.01013
t-145	-0.000249	0.003217	-0.00715	0.002112
t-144	-0.007281	-0.009976	-0.00887	0.000211
t-143	0.016142	-0.004463	0.004708	0.000923
t-142	0.000687	0.002874	0.000345	0.002513
t-141	0.009184	-0.026152	-0.00314	0.004719
t-140	-0.009101	-0.000537	-0.01371	-0.00617
t-139	0.007117	0.009305	0.001212	0.002883
t-138	0.011092	-0.031832	0.002835	-0.00046
t-137	0.010166	0.0018287	-0.00081	0.002407
t-136	0.01229	0.0038587	-0.0034	0.003196
t-135	0.150811	0.0003297	0.005292	0.000849
t-134	-0.01778	0.008759	-0.0074	0.009304
t-133	0.006604	0.0010363	-0.00215	-0.00078
t-132	0.00892	0.0023783	0.012643	-0.00241
t-131	-0.034878	0.0079927	0.001466	-0.00275
t-130	-0.007119	0.0001385	0.007999	0.010563
t-129	-0.005315	-0.003941	0.001707	0.000408
t-128	0.00884	0.0009637	-0.00039	-0.00239
t-127	-0.004634	-0.001046	-0.00331	0.002953
t-126	-0.002701	-0.001066	0.010515	-0.01005
t-125	-0.002595	0.0026346	-0.00309	0.011219
t-124	-0.00019	-0.004654	-0.00081	0.009575
t-123	0.004419	-0.000967	-0.00472	0.003233
t-122	-0.001625	0.0054618	-0.00314	-7.8E-05

t-121	0.002682	-0.000648	-0.00152	-0.00085
t-120	0.003848	0.0009723	-0.00331	0.00161
t-119	0.001077	0.0052454	0.004257	0.000647
t-118	0.002861	0.0013344	0.000725	-0.00621
t-117	0.000334	0.0032994	-0.00331	-0.0018
t-116	-0.000438	0.0029313	0.003742	0.003809
t-115	0.00988	0.004238	0.00171	0.002174
t-114	-0.006901	0.0101046	0.001076	-1.8E-05
t-113	-0.000458	7.203E-05	0.003291	0.0075
t-112	0.000805	0.0014946	0.007512	-0.00214
t-111	0.000695	-0.000764	0.007106	-0.00158
t-110	0.008726	0.0003689	0.012654	-0.00517
t-109	-0.292982	0.0022664	0.004061	0.03145
t-108	0.004958	-0.002665	0.002225	-0.02661
t-107	0.011681	-0.006109	0.001974	0.003721
t-106	-0.004131	-0.001113	-0.00354	-0.00103
t-105	-0.015763	6.344E-05	-0.00823	0.00289
t-104	-0.005656	-0.006062	-0.00264	-5.5E-05
t-103	-0.004062	0.0008297	-0.00133	0.00353
t-102	-0.012379	-0.010522	0.001706	-0.00049
t-101	-0.014397	-0.005579	-0.00358	0.008628
t-100	-0.012812	-0.000898	-0.00109	0.000722
t-99	0.007127	0.0012603	0.00304	-0.00456
t-98	0.011482	-0.000574	-0.00565	0.002372
t-97	0.004551	-0.004815	-0.00819	0.002615
t-96	0.004602	-0.00401	-0.0123	0.004888
t-95	0.001395	-0.003046	0.009915	0.004615
t-94	0.002069	-0.00388	-0.00863	0.005589
t-93	0.008195	-0.000894	0.007555	0.005919
t-92	0.011007	0.0033238	0.003163	0.003255
t-91	0.002581	0.000488	0.010219	0.002013
t-90	-0.001721	-0.000985	0.000585	0.000512
t-89	0.005753	-0.002714	0.00702	0.002414
t-88	-0.005038	-0.002081	0.003005	-0.00483
t-87	0.002289	-0.004953	0.008251	0.000484
t-86	-0.000677	-0.006457	-0.01115	-0.0026
t-85	0.006779	-0.000754	0.018426	-0.00256
t-84	0.009596	-0.002789	-0.00702	0.001743
t-83	0.004962	-0.000326	0.001337	0.006712
t-82	-0.001802	-0.006649	0.005722	0.002637
t-81	0.002134	0.0062688	0.002986	-0.00183
t-80	0.005189	0.0038624	0.00286	0.001144
t-79	0.005787	-0.003953	0.003046	0.000176
t-78	0.013699	0.0024442	0.007154	0.000698

t-77	0.001566	-0.003289	0.018656	-0.00108
t-76	-0.00615	-0.005411	0.003984	-0.00194
t-75	0.011499	-0.003607	-0.00345	0.002517
t-74	0.022232	-0.006302	0.002324	0.003244
t-73	0.028028	-0.008982	-0.01693	-0.00218
t-72	0.039124	0.0016122	0.000547	0.000903
t-71	0.00754	-0.009932	0.004133	-0.00063
t-70	-0.007923	0.0018834	-0.00296	-0.00598
t-69	-0.006884	7.915E-05	-0.00051	-0.00251
t-68	-0.009186	-0.006005	0.005747	-0.00404
t-67	-0.005484	0.0054444	-0.00516	-0.00691
t-66	0.003359	0.0116614	-0.03797	-0.005
t-65	0.012159	2.936E-05	0.019249	-0.00164
t-64	0.002374	0.005685	-0.01889	0.000242
t-63	0.00102	0.0036097	-0.02004	-0.00856
t-62	0.005418	0.0030053	-0.00588	0.003816
t-61	-0.006772	0.0081964	0.003235	-0.00642
t-60	0.009906	0.0003068	0.007207	0.004903
t-59	0.000639	-0.008089	-0.00359	-5E-06
t-58	-0.007681	-0.005334	-0.02038	0.006072
t-57	0.002978	0.0048862	-0.01382	0.002719
t-56	-0.009836	-0.003577	-0.00518	0.004546
t-55	-0.001957	0.0174239	-0.01588	0.009389
t-54	0.011591	-0.015075	-0.01341	0.000858
t-53	-0.001486	-0.001191	0.010256	-0.00206
t-52	0.000171	0.0010274	0.014036	-0.00238
t-51	-0.001767	0.0068458	0.023457	0.003276
t-50	0.007392	0.0018657	0.010435	-0.00013
t-49	0.020341	0.0055387	0.007758	0.00262
t-48	-6.17E-05	0.0058328	0.002646	0.001793
t-47	-0.001812	0.0001329	-0.00213	0.004545
t-46	0.000244	0.0053711	-0.00954	0.007646
t-45	-0.000782	-0.005597	-0.00555	0.005116
t-44	-0.000158	0.0104033	-0.01036	0.008368
t-43	0.002271	-0.007205	1.79E-05	0.013487
t-42	0.003066	0.0040405	-0.00584	0.003415
t-41	0.002727	0.0035719	-0.00322	0.006977
t-40	0.005789	0.0070244	-0.0036	0.014736
t-39	0.001056	0.003096	0.006628	0.013754
t-38	0.002817	0.0110072	-0.0047	0.017559
t-37	-0.06177	0.0265379	0.005899	-0.00166
t-36	-0.003752	0.0018632	0.010617	-0.01003
t-35	-0.012847	0.0143503	0.002526	-0.00642
t-34	0.000425	0.0131954	0.000942	-0.00221

t-33	0.006936	0.0193221	0.008597	-0.0099
t-32	-0.00542	0.0072375	0.000318	-0.00728
t-31	-0.008514	0.0150066	-0.00385	-0.00121
t-30	0.00667	0.0191425	-0.00372	0.005404
t-29	0.000425	0.0081423	0.001622	-0.00014
t-28	0.007305	0.0033639	-0.00518	0.00224
t-27	0.004175	0.011645	0.017325	0.000904
t-26	0.011959	-0.007917	-0.00059	0.000949
t-25	-0.003504	-0.016121	0.005326	0.006784
t-24	0.00741	-0.016344	0.007023	0.007378
t-23	0.004192	-0.009996	-0.00373	0.008678
t-22	0.005206	-0.010333	0.006356	0.008542
t-21	0.002477	-0.007812	-0.00175	0.005977
t-20	-0.000915	-0.010635	-0.01143	0.004928
t-19	-0.002568	-0.003415	0.010255	0.004869
t-18	-0.003391	-0.007002	0.003678	0.003153
t-17	-3.19E-06	0.0058776	-0.00563	-0.00227
t-16	-0.006464	0.0111379	0.003247	-0.00491
t-15	-0.002507	-0.003901	0.004634	-0.00886
t-14	-0.001403	0.0026976	0.00393	-0.00499
t-13	0.006764	0.0027766	-0.00031	-0.01062
t-12	-0.002468	0.0013242	0.000746	0.002323
t-11	-0.00523	0.0023272	0.011947	-0.00783
t-10	-0.005845	-0.00108	0.00205	-0.00318
t-9	-0.001162	0.0109613	-0.00059	5.38E-05
t-8	0.003268	0.0179605	0.003747	0.011125
t-7	0.003348	0.0217357	-0.01271	0.001117
t-6	0.004453	0.0138913	-0.00464	-0.0018
t-5	-0.00036	0.0109012	0.003943	0.001902
t-4	-0.000858	0.011476	0.0098	0.003268
t-3	0.002782	-0.00022	0.019679	0.00287
t-2	-0.002159	0.0066264	-0.03547	0.00841
t-1	-1.61E-05	0.0151749	-0.00765	0.016046
t0	0.000871	-0.002726	-0.00593	0.029556
t1	(0.0043)	0.0030	(0.0026)	0.0395
t2	(0.0285)	0.0493	(0.0014)	(0.0149)
t3	(0.0012)	0.0100	(0.0280)	(0.0162)
t4	(0.0014)	0.0062	0.0328	(0.0119)
t5	0.0286	(0.0061)	0.0463	(0.0099)
t6	(0.0059)	0.0510	(0.0150)	(0.0012)
t7	(0.0018)	0.0397	0.0006	(0.0005)
t8	(0.0047)	0.0410	(0.0045)	(0.0022)
t9	0.0002	0.0040	(0.0208)	0.0011
t10	(0.0023)	0.0039	(0.0159)	0.0041

t11	0.0008	(0.0172)	0.0159	0.0054
t12	(0.0043)	(0.0001)	(0.0181)	0.0152
t13	0.0004	(0.0267)	(0.0026)	0.0063
t14	0.0073	(0.0138)	(0.0043)	0.0350
t15	0.0042	0.0124	(0.0025)	0.0016
t16	0.0120	0.0078	(0.0239)	(0.0125)
t17	(0.0035)	0.0180	(0.0061)	0.0020
t18	0.0074	0.0035	0.0113	(0.0010)
t19	0.0042	0.0016	(0.0314)	0.0030
t20	0.0052	0.0037	(0.0489)	(0.0012)
t21	0.0025	0.0033	0.0250	0.0076
t22	(0.0009)	0.0001	0.0047	(0.0015)
t23	(0.0026)	0.0023	0.0177	(0.0051)
t24	(0.0034)	(0.0370)	(0.0149)	(0.0095)
t25	(0.0000)	0.0006	(0.0100)	(0.0030)
t26	(0.0065)	0.0075	(0.0086)	(0.0061)
t27	(0.0025)	0.0052	0.0031	(0.0070)
t28	(0.0014)	(0.0015)	0.0012	(0.0059)
t29	0.0068	0.0053	0.0271	(0.0031)
t30	(0.0025)	(0.0008)	0.0154	(0.0029)
t31	(0.0052)	0.0014	0.0185	(0.0095)
t32	(0.0085)	(0.0063)	0.0098	0.0044
t33	(0.0031)	(0.0052)	(0.0020)	(0.0047)
t34	(0.0209)	0.0001	(0.0055)	0.0004
t35	(0.0080)	(0.0003)	(0.0053)	0.0048
t36	0.0018	(0.0005)	0.0039	0.0069
t37	0.0046	(0.0052)	(0.0045)	0.0052
t38	0.0244	(0.0006)	(0.0011)	0.0073
t39	0.0084	(0.0012)	0.0018	0.0049
t40	0.0109	0.0051	(0.0047)	0.0024
t41	0.0022	(0.0034)	(0.0104)	(0.0058)
t42	0.0024	0.0176	(0.0030)	(0.0047)
t43	0.0051	(0.0016)	0.0472	(0.0044)
t44	(0.0009)	0.0148	0.0138	0.0152
t45	(0.0024)	(0.0108)	0.0245	0.0076
t46	(0.0039)	(0.0017)	0.0208	0.0047
t47	(0.0031)	0.0081	0.0052	(0.0037)
t48	(0.0015)	(0.0026)	(0.0094)	0.0037
t49	(0.0051)	0.0019	(0.0070)	0.0010
t50	0.0009	0.0125	(0.0211)	(0.0053)
t51	(0.0040)	0.0202	(0.0088)	0.0018
t52	(0.0041)	0.0005	(0.0094)	(0.0026)
t53	(0.0054)	(0.0002)	(0.0297)	0.0030
t54	(0.0049)	(0.0366)	(0.0146)	0.0039

t55	(0.0079)	0.0114	(0.0260)	0.0018
t56	0.0009	(0.0074)	0.0104	0.0022
t57	0.0148	0.0118	0.0204	(0.0040)
t58	0.0993	(0.0010)	(0.0003)	(0.0003)
t59	(0.0928)	(0.0008)	(0.0111)	(0.0002)
t60	(0.0069)	0.0266	(0.0033)	0.0009
t61	(0.0023)	0.0054	0.0042	(0.0053)
t62	0.0004	(0.0045)	(0.0025)	(0.0011)
t63	(0.0058)	(0.0041)	(0.0008)	(0.0142)
t64	(0.0090)	(0.0010)	(0.0002)	(0.0049)
t65	(0.0088)	0.0060	0.0112	(0.0051)
t66	0.0062	0.0063	0.0122	(0.0065)
t67	0.0001	(0.0007)	0.0090	(0.0093)
t68	0.0072	0.0021	0.0038	(0.0127)
t69	0.0199	(0.0021)	(0.0010)	0.0008
t70	0.0042	0.0029	0.0049	0.0017
t71	0.0027	0.0018	(0.0026)	(0.0014)
t72	(0.0000)	0.0009	0.0098	0.0000
t73	(0.0026)	0.0053	0.0077	(0.0056)
t74	(0.0061)	0.0114	(0.0005)	(0.0084)
t75	(0.0050)	0.0017	0.0067	(0.0083)
t76	0.0019	0.0143	0.0005	(0.0009)
t77	(0.0013)	0.0071	(0.0034)	(0.0041)
t78	(0.0001)	0.0077	0.0020	(0.0038)
t79	(0.0029)	0.0133	0.0039	0.0002
t80	0.0028	0.0137	0.0053	0.0025
t81	0.0133	0.0069	0.0045	0.0025
t82	0.0014	0.0017	0.0064	(0.0020)
t83	(0.0022)	0.0117	0.0029	0.0053
t84	0.0002	0.0117	0.0153	0.0087
t85	0.0020	0.0213	0.0054	0.0039
t86	(0.0034)	0.0215	(0.0018)	0.0133
t87	(0.0019)	0.0166	0.0002	0.0055
t88	(0.0031)	0.0330	0.0053	0.0085
t89	0.0006	0.0125	(0.0112)	(0.0016)
t90	(0.0072)	0.0473	(0.0094)	0.0045
t91	(0.0024)	0.0413	0.0037	0.0015
t92	(0.0001)	0.0241	(0.0068)	(0.0000)
t93	(0.0019)	0.0137	(0.0054)	0.0009
t94	0.0003	(0.0121)	(0.0057)	(0.0050)
t95	(0.0008)	(0.0286)	(0.0058)	0.0018
t96	(0.0002)	(0.0275)	0.0003	0.0011
t97	0.0024	(0.0290)	(0.0034)	(0.0016)
t98	0.0033	(0.0087)	0.0021	0.0007

t99	0.0029	0.0142	(0.0060)	(0.0020)
t100	0.0062	0.0120	0.0052	(0.0013)
t101	0.0011	(0.0049)	(0.0018)	(0.0009)
t102	0.0858	(0.0129)	(0.0060)	0.0013
t103	(0.0015)	(0.0076)	(0.0049)	(0.0001)
t104	(0.0006)	(0.0121)	0.0013	0.0037
t105	(0.0041)	0.0168	(0.0021)	(0.0017)
t106	(0.0108)	0.0121	0.0168	0.0026
t107	(0.0092)	(0.0159)	0.0036	0.0010
t108	0.0103	(0.0111)	0.0114	0.0004
t109	0.0860	(0.0018)	0.0167	0.0063
t110	0.0014	0.0206	0.0113	0.0018
t111	(0.0213)	(0.0143)	0.0141	(0.0022)
t112	0.0076	(0.0028)	(0.0273)	(0.0021)
t113	0.0074	0.0038	0.0012	(0.0034)
t114	0.0080	(0.0027)	(0.0048)	0.0015
t115	(0.0085)	(0.0043)	0.0036	(0.0031)
t116	(0.0052)	(0.0039)	(0.0015)	(0.0066)
t117	(0.0127)	(0.0232)	0.0003	(0.0068)
t118	(0.0045)	0.0002	(0.0026)	(0.0072)
t119	(0.0195)	(0.0042)	0.0008	(0.0022)
t120	(0.0057)	0.0033	(0.0052)	(0.0059)
t121	(0.0012)	0.0100	(0.0023)	(0.0046)