VOLATILITY IN STOCK RETURNS OF NSE LISTED COMPANIES AROUND GENERAL ELECTIONS IN KENYA

BY

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DECLARATION

I declare this Research Proposal is my original work and has not been presented for any academic award in any university.

Signed ^ S S ^ L Z . . Date ...

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This Research Paper has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

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ABSTRACT

The objective of the study was to examine volatility in stock returns of listed companies around general elections in Kenya. The study considered twenty companies out of the forty seven quoted firms at the NSE betweenl997 to 2007. Secondary data was collected from NSE database and analyzed using the GARCH model.

The findings revealed that volatility in stock returns of Kenyan listed companies' increases around general elections. Within this period investors are sensitive to the developing political landscape which then influences their decisions on whether to invest at the NSE or not. The study is in agreement with some local studies that portray general elections as having an impact on the stock returns of companies listed at the NSE.

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ABBREVIATIONS

EMH	Efficiency Market Hypothesis
GARCH	Generalized AutoRegressive Conditional Heteroskedasticity
ICRG	International Country Risk Guide
MBA	Masters in Business Administration
N.S.E	Nairobi Securities Exchange
OECD	Organization for Economic Co-operation and Development

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The Kenyan constitution provides for elections after every five years. Since independence, Kenya has had its first election in 1964 and has held several multi-party elections between 1964 and 2007. Election periods are recurring in nature and may affect both the political and investment environment of a given country. Campello (2007) observes that upcoming general elections may create uncertainty which may affect investors' decisions and behavior. Changes in investment behavior are reflected from the activities at the Nairobi Securities exchange (NSE). Elections bring about a major opportunity for the study of portfolio investors' political power in democratic systems. Campello (2007) also notes that as party ideology provides information about governments' policy agenda, elections establish a crucial moment when future government policies are disclosed. For this reason, investors' decision to buy or sell financial instruments during electoral period potentially reveals their beliefs and preferences regarding prospective policy choices. Governments of different ideological leanings are expected to have distinct sets of priorities, and to implement policies accordingly. The anticipation of these policies triggers reactions among financial investors proportional to their expected impact on future profits.

Campello (2007) argues that conservative governments are generally expected to prioritize a good investment climate over equality. These priorities reflect the attempt to establish an investor friendly environment, reducing taxes and public expenditures, and de-regulating labor markets, while keeping inflation low. All these policies, by their very definition, are likely to make business more profitable in the short term. Progressive governments, conversely, tend to prioritize social justice over investment climate, and are more likely to

accept higher levels of inflation and increase the number of public jobs in order to lower unemployment. Studies show that Leftist governments are less prone to keep balanced budgets and are expected to increase social expenditures and taxes to fund it Garrett (1998). In less developed and highly indebted countries, governments on the left are additionally associated to a higher likelihood of defaults Mosley (2003), as debt payments impose high social costs on the population. In a nutshell, left-wing policies target some level of income redistribution towards the poor Bobbio (1994), therefore reducing business profitability against the immediate interest of capital holders. According to this reasoning, the ideological leaning of future incumbents should affect portfolio investors' decision to buy or sell securities in the period that surrounds elections.

Bobbio (1994) states that these reaction should be influenced by expectations regarding the future government and the characteristics of the party currently in office. When a progressive candidate is anticipated to replace a conservative one, investors will envision policy changes likely to reduce business' profitability in the near future and sell financial assets. Conversely, portfolio managers should buy securities when a conservative government is presumed to replace a progressive one. According to that same reasoning, markets should remain indifferent in case of no ideological change in office, as no significant variations are expected in government policies and, hence, in future profits Bobbio (1994). Investors' individual decision to buy and sell financial assets should reflect itself in a rise or fall of security prices in the period around elections, observable to analysts. Theoretically, the volatility of returns on stocks is expected to increase a few days before and after a general election in Kenya.

1.1.1 The GARCH Model and its use in Volatility measure

The General Auto Regression Conditional Heteroskedasticity (GARCH) model is a preferred measure of volatility because it accommodates heteroskedasticity (Antoniou and Holmes, 1995). The stock index returns are conditionally heteroscedastic meaning that the conditional variance of returns is a linear function of lagged conditional variance terms & past squared error terms (Bollerslev, 1986).

During crises stocks volatility register high levels and stock prices fall strongly in both developed and emerging markets. In emerging markets the effects are rapid, steep and prolonged (Patel and Sarkar, 1998). Many studies have examined the relationship between stocks returns and volatility, but few have examined the behavior of stocks returns and volatility during general elections with the majority of work done on developed markets.

Al-Rjoub (2004) finds that the drastic changes in volatility during crises may initiate the negative and positive shifts based on the impact of news on the Jordanian stock market. Volatility behavior during general elections crisis behaves in different manners. Imported crises cause volatility to decrease or increase based on the general public expectations. If expectations are pessimistic, the effect will be resembled by dampen demand for investment causing volatility to decrease and the size trading to decrease. If expectations are optimistic volatility will increase derived by the increased size of investment.

Shin (2005) analyze the relation between expected stock returns and volatility in emerging markets around the Asian/Russian general elections, and found a significant impact of global general elections on stock volatility behavior. Fang (2001) finds that Taiwan stock return volatility increased during the Asian general elections. Hammoudeh and Li (2008) study the

behavior of stock returns volatility in Arab Gulf stock markets to examine stock market sensitivity to global, regional and local events. Aggarwal *et al.* (1999) examined the volatility of emerging stock markets and compare it with some of developed market. Their results show that the stock prices decline and the volatility hikes during general elections are larger in emerging market than it in developed market and it was the highest in the gulf countries.

Shin (2005) studied the impact of the Asian/Russian crisis on stock volatility and on the relation between stock return and volatility, using both a parametric and semi parametric GARCH-M model, and daily data which transformed into a weekly rate of returns to alleviate autocorrelation problem in 14 emerging markets. The study showed a positive but not significant (in most countries) relationship between expected stock returns and conditional volatility. The emerging market volatility persistence is noticeably high compared with developed stock markets, furthermore it is showed that global crisis may have a significant impact on stock volatility behavior, but the changes in volatility are not identical and based on other factor on the individual markets. Fang (2001) by using Taiwan daily data and ARCH (3) in mean model, found that negative depreciation affect stock returns and increase stock volatility; also he showed that stock return volatility increased during the Asian general elections.

Choudhry (1996) studied the stock return volatility persistence in emerging markets before and after 1987 crash, using GARCH-M approach and monthly data from six emerging stock markets. He found changing in volatility before and after the crisis of October 1987, but these changes were not uniform and related to factors other than this crisis depending on individual markets. Schwert (1990) studied daily stock returns and volatility behavior during and around general elections, focusing on the crash of October 1987 whether it differ from the average for the previous crashes, using daily data from 1885 to 1987 and lagged return shocks

simultaneously with lagged volatility measures plus lagged high-low spreads. The study showed that stock return volatility increases when stock prices collapse, also during business cycle recessions and bank general elections, which verify Schwert (1989) results.

1.2 Statement of the Problem

A study by Ball and Brown (1968) provides some evidence about the speed of share price adjustment as well as the information content of annual reports. Aharony and Swary (1980) examine all dividend and earnings announcements within the same quarter that are at least 11 trading days apart. They conclude that both quarterly earnings announcements and dividend change announcements have significant effects on stock prices. This therefore is an example of events that affect the share price. Other studies indicate that political variables are correlated with value of currencies in a country. Countries with weak governments are more vulnerable while the ones with strong governments and fragmented opposition tend to be least vulnerable (Block, 2001).

Locally studies have been done to study the effects of elections on the prices at NSE. Murigi (2008) states that the financial & investment sector experiences remarkable change in security prices during the election years under observation. The study observed that there was a negative relationship between securities in this segment and the elections. The study attributes the phenomenon to most investors being uncertain on the performance & economic policies of the new administration. The study indicates that returns on securities on this sector improved positively in the early months preceding elections largely because of the improved activity in the sector as people settle down to proceed with various economic activities. A closely related study by Miya (2007) states that during general election period, the share prices go down but after elections they start rising once again or remain relatively stable.

On the other hand, a study done by Ngugi (2008) states that it is hard to conclude that the general election is the event that causes the difference in market performance. In the study, it is observed that market volatility appears lowest in the years just before a general election and also in the election years themselves. As such, the study observes that the stock market is not very vibrant as investors wait to see the direction the country will take after the elections. The study then concludes that market performance is not strongly related to the year in question, much less the election event.

In conclusion therefore, different scholars argue from different standpoints on whether or not elections have an effect on the stock prices at the NSE. The studies give conflicting findings as to whether elections actually have an effect on the returns of stock prices or not. The differences in the findings may be attributed to the varying methodologies and the number of event dates as used by the researchers. This study will focus on the volatility in returns of listed companies around general elections in Kenya while employing the Garch model, with a view to finding out whether the outcome will yield different results.

1.3 Objective of the Study

The objective of the study is to examine volatility in stock returns of listed companies around general elections in Kenya.

1.4 Importance of the Study

Elections may or may not have an impact on the economy of a country. As such, institutional investors need to anticipate the state of an economy before, during and after elections, which will then influence their decision making. This study therefore will assist current and potential institutional investors on when is the right time to invest in the stocks at the Nairobi Securities Exchange (NSE) in order to maximise their capital gains from the stocks invested.

The study will be of use to scholars through contribution to the body of knowledge and research programs in business, finance and related fields. This will then be used as a point of reference by researchers in the area of share price movement and the general election. In addition, researchers can include the share price movements as one of their indicators as they undertake opinion polls.

The government and quasi government bodies such as capital markets authority and NSE will find the information herein as valuable for policy, legal framework and stock market development. The study will enhance financial deepening initiatives such as introduction of derivative products for managing risk and spur investor confidence through introduction of "circuit breakers" at NSE to help reduce irrational exuberance and "herding" effects.

The study will give an insight on the pattern of stock returns at the NSE around election dates. This information can be used by stock brokers to advice their clients on when is the right time to invest in the stock market and when to dispose their stock. This will ensure that clients reap maximum returns from their portfolios.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Included in this chapter is a discussion on the various theories that influence investor decision making, factors that affect the prices at NSE, investor behavioral finance and an in depth coverage on past studies on the interrelationship between investors, politics and elections.

2.2 Related Theories

Various theories exist that explain factors considered by investors when making investment decisions and the role of politics in the process. Amongst them are the theory of random walks, partisan theory, the politics of the political business cycle and efficient market hypothesis. These are explained in detail as follows;

2.2.1 Theory of Random Walks

Studies on the Theory of Random Walks concluded that the very best of the analysts in a random walk market can earn unusual profits. The rapidity of the adjustment of actual prices to intrinsic values, however, means that it takes far more than average analytical ability to achieve superior results. If successive price changes are, in fact, independent, then no method of analysis based on the recording and evaluation of past market action could result in profits which are better than those obtainable from random investment selection (Robert 1967).

2.2.2 Partisan Theory

Country's politics can exert significant influence on its income distribution and prosperity. In democratic states, voters elect parties which best represent their personal beliefs and interests. According to partisan theory propounded by Hibbs (1977), leftist governments tend to

prioritize the reduction of unemployment, whereas right-wing governments attribute higher social costs to inflation. Another influential theory presented by Nordhaus (1975) postulates that, irrespective of their political orientation, incumbents will pursue policies that maximize their chances of re-election.

As a result, they will try to self-servingly attune the business cycle to the timing of elections. The economy will be stimulated by unsustainable expansionary policies before the elections, and harsh actions aimed at curbing the resultant inflation will have to follow at the beginning of the new term of office. It has to be noted, however, that any policy induced cycles in real activity will be ephemeral if the economic agents and voters have rational expectations (Alesina, 1987; Rogoff, 1990).

2.2.3 The Politics of the Political Business Cycle

This study shows that the policy manipulations differ from one election to the next precisely because governments' incentives also differ from one election to the next. When this fact is taken into account, it is possible to find politically-motivated economic policy cycles where traditional models cannot. The study further recommends further testing and research that includes other countries and other kinds of economic policies (Kenneth, 1995). Nordhaus (1975) states that a perfect democracy with retrospective evaluation of parties will make decisions biased against future generations. It further states that within an incumbent's term in office there is a predictable pattern of policy, starting with relative austerity in early years and ending with the potlatch right before elections.

2.2.4 Efficient Market Hypothesis

An efficient market is one which securities fully reflect all possible information quickly and accurately. The concept holds that investors incorporate all available information into their decisions about the price which they are willing to buy and sell. At any point in time then, the current price of a security incorporates all information. Additionally, the current price reflects not only past information such as might be found in company's reports and financial publications, but also events that have been announced but haven't yet occurred, like a forthcoming dividend payment. Furthermore, the current prices reflect predictions about future information. Investors actively forecast important events and incorporate those forecasts into their estimates. Obviously, because of keen competition among investors, when new information becomes known, the price of the security adjusts quickly. This adjustment is not always perfect. Some time it is too large and other times it is too small. On average it balances out. The new price in effect is set after investors have fully assessed the new information (Malkiel 2003).

Fama (1970) reviewed the theory of Efficient Market Hypothesis. In his study he made a distinction between three forms of market efficiency. It is the semi strong form of EMH that has formed the basis of most research. The strong form suggests that security prices reflect all available published and unpublished information; even private information. Seyhun (1986) provides sufficient evidence that insiders profit from trading on information not already incorporated into prices. Hence strong form does not hold in a world with uneven playing field. The semi strong form of EMH asserts that security prices reflect all publicly available information. There are no undervalued or overvalued securities and thus trading rules are incapable of producing superior returns. When new information is released, it is fully incorporated into the price rather speedily. The availability of intraday data enabled tests

which offer evidence of public information impacting stock prices within minutes (Gosneil, *etal.* **1996).**

To establish whether the market is semi strong, researchers have employed event studies. One can study the effects of events such as the earnings/dividends announcements, bonus issues, rights issues or changes in accounting policies. The semi strong efficient market hypothesis implies that the share price reflects an event or information very quickly and therefore, it is not possible for an investor to beat the market using such information. The weak form of the hypothesis suggests that past prices or returns reflect future prices or returns. The security prices reflect all past information about the price movements. It is therefore not possible for an investor to predict future security price by analyzing historical prices and achieve a performance better than the stock market index. The inconsistent performance of technical analysts suggests this form holds. However the concept of the weak form was expanded to include predicting future returns with the use of accounting or macroeconomic variables.

While the semi strong form of EMH has formed the basis for most empirical research, recent studies have expanded the tests of market efficiency to include the weak form of EMH. There continues to be disagreements on the degree of market efficiency. This is exacerbated by the joint hypothesis problem. However several studies have been done to challenge the theory of the efficient market hypothesis. These studies show that security prices are random and can be exploited.

2.3 Factors Affecting the Stock Prices in the Market

Like any other commodity, in the stock market, share prices are also dependent on a wide range of factors. It is therefore hard to point out just one or two factors that affect the price of the stocks. However the following factors directly influence the share prices;

2.3.1 Demand and Supply of Shares in the Stock Market

This fundamental rule in economics also applies in the determination of the share prices in the market. This are referred to as the forces of demand and supply. When more people are buying a certain stock, the price of that stock increases and when more people are selling the stock, the price of that particular stock falls.

2.3.2 News Related to a Company

Positive news about a company can increase buying interest in the company while negative press release can ruin the prospect of a stock. However in some cases, despite amazingly good news, a stock can show least movement. Thus it is the overall performance of the company that matters more than news (Pandy, 1995).

2.3.3 Market Capitalization of the Company

This is the total dollar market value of all of a company's outstanding shares. It is calculated by multiplying a company's shares outstanding by the current market price of one share. The investment community uses this figure to determine a company's size as opposed to sales or total asset figures. The higher the market capitalization of a company, the higher the company stock price, in the market.

2.3.4 Earnings Per Share

Earnings per share are the profit that the company made per share during a financial period. It is mandatory for every public company to publish a report at the end of financial period that states the earning per share of the company. This is perhaps the most important factor for deciding the health of any company and it influences the buying tendency in the market resulting in the changes in the price of that particular stock (Reilly and Brown, 1997).

2.3.5 Price/Earnings Ratio

This gives a fair idea of how a company's share price compares to its earnings. If the price of the share is too much lower than the earning of the company, the stock is undervalued and it has the potential to rise in the near future. On the other hand, if the price is way too much higher than the actual earning of the company, then the stock is said to be overvalued and the price can fall at any point (Munga, 1974).

2.4 Investor Behavioral Finance

Robert (1998) defines behavioral finance as the study of market participants' behavior. The study indicates that behavioral finance sets out to describe events in the financial markets using behavioral assumptions that are close to reality as possible. In contrast to the efficient market hypothesis of classical finance theory, behavioral finance explains price discovery in the financial markets as a function not only of economic factors but also of the interplay between economic, psychological and sociological factors. Behavioral finance looks at the processes involved in selecting, absorbing and processing information that is relevant for decision making and at how investors form expectations and make decisions.

According to Deutshe Bundesbank Monthly Report (2011), the election period starts six months before and ends six months after the election. Effects in the pre- and post-election periods are not constrained to be the same in the regressions. If investors are able to anticipate the election outcome then changes should mostly take place during the months preceding the election. Looking at pre- and post election months, therefore, will give some insights into investors' behavior. The report seeks to explore the question of whether different parties with different priorities in terms of economic policies, will affect the return on financial investment in the domestic economy.

2.5 Studies on Investor Reaction around Election Period

Emmanuel and Javier (2010) observe that studies connected with the relations between finance and politics are neither new nor solely exclusive to developing economies. History is full of examples linking finance and politics. Some economic historians argue for example that we could trace the origins of major political events like the French Revolution back to a stock market bubble caused by a convicted Scottish murderer. Others have pointed out that being politically connected can boost your stock returns. Firms supporting the Nazi movement in the 1930s for example, experienced unusually higher returns and outperformed unconnected firms. In the US, from 1927 until the early 2000s, the excess return in the stock market was higher under Democratic presidencies than under Republican ones, according to (Santa-Clara and Valkanov, 2003).

The occurrences of major political events signal potential shift in national policy or uncertainty in society development, so they can presumably cause market-wide valuation influence. Nevertheless, most of existing studies focus on effect of economic events on stock prices and there has been far fewer empirical works that examine the impact of political events on the stock markets. Niederhoffer *et al,* (1970), (Peel, 1983; Gemmill, 1992) examine the stock price behaviors during governmental and/or congressional elections in various developed countries, and they find some inefficiency in share prices around the time of elections, implying a profitable trading rule. They argue that changes in government administration caused by elections tend to affect financial policies or legislation, thereby significantly affecting stock prices. On the other hand, Cutler *et al,* (1989) examine the impact of various political events on stock prices, but find no evidence of significant impact of non-economic events on U.S. stock market performance.

In a large and comprehensive study devoted to OECD countries, Leblang and William (2006) also showed how the prices of financial assets, stocks, bonds and currencies respond to such political developments as elections, cabinet formations and dissolutions, as well as trends in other nations. The relation between democracy and finance is however new and particularly dense in emerging markets where we witnessed both a major trend toward democratization over the past decades and an increase in financial market activities, both domestic and global. Stock markets tend to overreact to elections both in developed and developing countries.

Elections are anticipated by markets and investors in developed and emerging economies alike. In the US markets, participants almost bet on electoral results, anticipating in the 2004 elections, for example, higher equity prices, interest rates and oil prices and a stronger dollar under a George W. Bush presidency than under a John Kerry presidency. Elections therefore have some resonance on financial markets in developed economies as stressed by Snowberg *et al.* (2007), Bernhard and Leblang, (2006). Several studies have underscored the influence of political events on financial markets, both of OECD and emerging economies. As pointed out by Bernhard and Leblang (2006), political processes such as presidential and legislative elections, cabinet formations and referenda have an impact on the behavior of actors in capital markets.

Politics shape the institutions and laws that are relevant for finance i.e. the courts, tax rates, administrative efficiency, fiscal discipline, corruption, or expropriation risk. The relationship between investor behavior and politics relies on the concept of political risk, broadly defined as the unfavorable changes in public policy that affect investment values Mosley and Singer (2008). Investors evaluate this risk as best as they can, but uncertainty is exacerbated in times of political change and in particular during elections Bernhard and Leblang, (2002). Because

election periods are particularly intense in terms of political news, they present a unique opportunity to study the links between finance and politics.

Changes in the quality of democracy may occur more smoothly, but they nonetheless provide an interesting variation. International financial markets present relevant characteristics with which to study this relationship, as argued by (Campello, 2007). These *include highly* wmpefoVve markets, where information is rapidly processed and where expectation changes are very likely to be reflected in quick portfolio changes. Emerging markets also offer key features for this study. Campello (2007) finds that, although investors respond to elections in the same way in developed and less developed countries, the effect is greater in developing economies. Past instability in emerging markets may explain why portfolio managers are more reactive in these countries. Mosley (2008) underlines that political risk is higher in developing countries because of less reliable economic data and lower transparency in politics.

However, the magnitude and scope of the impact of regular events such as elections are much stronger in emerging countries where the swings of financial markets can provoke major crisis Campello, (2007). The intensity is particularly significant in emerging countries and Latin America offers some perfect examples. The four most recent and significant financial crises in the region Mexico in 1994, Brazil in 1999, Argentina in 2001, and Brazil again in 2002 took place during a presidential or parliamentary electoral year. The same is true of other emerging markets: for nine other emerging economies, the financial crises of the 1990s occurred during electoral periods or political transitions (Mei, 1999). Eichengreen *et al.* (1995) were among the first to address the political dimension of financial crises, finding intimate links between political processes and exchange-rate turbulence. Later, Frieden *et al.*

(2001) argued that weak governments might be more vulnerable to currency crises. In a detailed study of the behavior of real and nominal exchange rates in Latin America, they confirmed that changes in exchange rate regimes coincided with elections.

Currency devaluations were generally postponed until after elections. Overall, the probability of major devaluations increases in the run-up to elections, with governments, where possible, tending to put off the adjustment until after votes are cast. Latin American governments tend to defer painful exchange-rate adjustments after the presidential elections and therefore most of the financial crises tend to happen in a narrow window of one to five months after elections. Information asymmetry is also more pronounced in developing economies i.e. the cost of gathering information on the politics of developing countries is higher, and drives the investor to rely on signals rather than on sound economic analysis. Elections are critical junctures where a lot of information is released over a short period of time, not least of these being who will lead the country over the following years and what policies they intend to apply. A prime case of low uncertainty is when the incumbent is re-elected. Another is when results are predictable and something which can be identified by looking at victory margins. Campello (2007) claims further that in close elections, investors already start to react during election campaigns, while in contested elections, they mostly react after the election and once the electoral results have been released.

A low victory margin may reinforce uncertainty, as the elected party leader may not have sufficient power to impose their views. On the other hand, a very wide victory margin may signal unrestrained power with little opposition, or even rigged elections. In addition, a large amount of literature Campello, (2007); Mosley, (2008); Vaaler *et al,* (2005) argues that left-leaning governments present a greater risk for investment, meaning that elections that bring

about a move to the left are likely to magnify investors' reactions. In contrast, a move to the right is likely to be welcomed by portfolio managers. It should be noted that if political uncertainty matters in itself, then any change in the ideological platform will negatively affect portfolio flows, but that the effect may be more pronounced in the event of a move to the left.

More democratic countries may enjoy higher portfolio flows because of the greater transparency in their political environment, as well as the checks and balances that regulate political decisions. Mosley and Singer (2008) make the same conjecture and find support for it. On the other hand, autocratic countries may offer stable conditions with little political uncertainty (at least those linked with the electoral processes), which can reassure investors. Changes in democracy, whether positive or negative, are similar to elections in that they potentially modify institutions and create uncertainty about future policies and the balance of power in the country. Incorporating political variables can also improve the predictive performance of models and crisis forecasting. Portfolio allocations made by investors are also sensitive to political cycles, and consequently exchange rates. During election periods, sovereign bond and stock market prices can also become extremely volatile and the role of political information becomes therefore crucial in determining the micro behavior of capital markets during political processes.

Not all elections per se lead to financial turmoil. The behavior in the period that surrounds elections is influenced by the partisanship of the likely winner of the contest (Campello, 2007). Financial markets tend to become particularly risk-averse when leftwing candidates are the likely winners. In Brazil, in 2002, the prospect of a leftist victory headed by Lula triggered a massive devaluation of the Real. Brazilian risk premiums, shot up to more than 2,000 basis points. Up until that point, only emerging countries had ever experienced a

deterioration of that magnitude, and nearly all of them ended up defaulting on their debts. Brazil was saved in the end, and events were later to show just how mistaken the markets were in that case.

The recent history of Brazil is, however, particularly illustrative, as Lula tried several times to win the elections and on each occasion financial markets tended to overreact negatively (for a comparative analysis of the different election years and the reactions of the financial markets in Brazil, Martinez and Santiso (2003). In 2006, however, the situation changed dramatically with the prospects of Lula's re-election being seen positively. This time, the candidate was very well known, and uncertainty minimized (Nieto and Santiso, 2006). There is substantial analysis of the intricate links between financial markets and elections in emerging countries. Nevertheless, previous research tends to focus on stock market indexes, foreign exchange and spreads movements, (Vaaler *et al.* 2005, Campello, 2007) and, Chang, 2007).

In emerging markets, both Chan and Wei (1996) and Kim and Mei (2001) document that political news substantially increase stock volatility in Hong Kong. Bilson, Brailsford, and Hooper (2002), utilizing the Political Risk Services' International Country Risk Guide (ICRG) as the political risks proxies, report that political risk tend to be far more prevalent in emerging markets (especially those in the Pacific Basin), than in the developed markets. Ma *et al,* (2003) use the Tiananmen-Square Bloodshed to examine the effect of unexpected political event on the share prices of U.S. firms with joint ventures in Mainland China. Their results show that the incident indeed had a significant impact on U.S. firms with joint ventures in 168 Chen, Bin, and Chen. China and the U.S. stock market reacted efficiently to both the high- and low-degree of risk exposure of the joint ventures located in different locations in China. On the other hand, according to the ICRG, Taiwan is highly sensitive to international political and economic climate due to her export-oriented economy and uneasy

political relationship with Mainland China; yet so far we have found few existing published studies that investigate the valuation impact of political events on Taiwan's equity market.

Several recent papers look at whether security returns are impacted by politics. Booth and Booth (2003) report that the U.S. stock market tends to perform better in the second half of the presidential term. This phenomenon could be a reflection of the political business cycle but can also be explained behaviorally. The authors argue that investors may be over-optimistic about the implications of the impending elections, but their optimism wears off quickly once the new administration fails to keep its election campaign promises. Santa-Clara and Valkanov (2003) show that the market excess return was higher under Democrat than Republican presidencies throughout the period from 1927 to 1998. This anomaly cannot be explained away by variation in business condition proxies. Additional evidence is provided by Nofsinger (2004), who contends that the stock market is a barometer of public sentiment and its movements can indicate whether incumbents will be re-elected.

Panic among portfolio investors facing the prospects of left-wing governments have not been limited to developing countries. The French presidential election of 1981 triggered a financial crisis later dubbed the Mitterrand Effect. In the day after the disclosure of electoral results, the so-called Black Monday, the French stock market was forced to close in order to avoid a crash. Investors panicked at the prospect of nationalization of private companies, increases in social expenditures, and the taxation of wealth, among other policies advanced by the Socialist Party during campaign.

As established by the literature on economic voting Fiorina (1981), Lewis-Beck (1988), Remmer (1993), Lewis-Beck and Stegmeier (2000), Stokes (2001), Samuels (2004),

economic growth significantly raises the chances that an incumbent or party remains in power in democratic systems. Since in market economies growth depends on levels of private investment and, hence, on business confidence to invest, the likelihood that capital strikes negatively affect economic performance keeps governments of all ideological leanings in permanent consideration of the potential effects of policy choices on investors' behavior. The constraints imposed by capital strikes on policy making have been frequently claimed to prevent further democratic development, as they limit governments' capacity to respond to voters' demands whenever they conflict with business' priorities.

Campello (2007) observes that international financial markets offer prime conditions for the study of investors' political influence in market societies. These are highly competitive markets, where information is processed very fast and portfolio investors' reaction is almost immediate, therefore any impact of political events might have on future profits should reflect on the behavior of security prices and cross-border capital flows, and be easily observable. At the same time, investors' immediate and often homogeneous responses tend to produce economic results that affect policy choices in a distinguishable way, even more so as financial markets become internationalized. Capital movements affect the value of local currencies, the prices of tradable goods, and rates of inflation. As trade flows react more slowly to price changes than finance, sudden capital outflows potentially result in balance of payments crises. In case of pegged systems, crises are likely to lead to a run on the currency which, besides depleting countries' international reserves ultimately leads to a disorganized devaluation. In highly indebted countries with significant dollar-denominated passives that effect worsens as debt rises jeopardize countries' capacity to repay financial obligations.

Case studies confirm investors' contrasting reactions to the election of left and right-wing incumbents in the US Yantek and Cowart (1986), Canada Mauser and Fitzsimmons (1991), England, Herron (2000) and Belgium Vuchelen (2003). In Brazil, Santiso and Martnez (2003) associate the prospects of Lula's victory to the financial market crash occurred in the months previous to the poll, while Jensen and Schmith (2005) observes higher market volatility during the campaign period, but found no support to the hypothesis that the partisanship of the likely winner of the contest was associated to that. Leblang and Bernhard (2000) and Leblang (2002) also show that exchange market pressures are more likely to occur under left wing governments and during the post electoral period, in developed and less developed economies, respectively. Block and Vaaler (2004) demonstrate that credit rating agencies view elections negatively, and downgrade developing country ratings more often in election years.

Locally, studies have been done to study the effects of elections on the prices at NSE. Murigi (2008) carried out a research investigating the effect of Kenyan elections in the returns of stocks at the NSE. This was done by examining the abnormal returns for each market segment in the NSE, 60 days before and after the national elections of 1992, 1997 & 2002.Using the market model, the researcher concluded that the financial and investment sector experiences remarkable change in security prices during the election years under observation. The study also observed that there was a negative relationship between securities in this segment and the elections and the phenomenon is attributed to most investors being uncertain on the performance & economic policies of the new administration. Moreover, the study indicates that returns on securities on the financial & investment sector improved positively in the early months preceding elections largely because of the improved activity in the sector as people settle down to proceed with various economic activities.

A closely related study was done by Miya (2007) on stock market behavior around national elections in Kenya. With a sample of 20 companies, the study used the market model to analyze daily residuals 60 days prior and after the event dates of 1992 & 1997. The conclusion was that during general election period, the share prices go down but after elections they start rising once again or remain relatively stable. On the other hand, a study was done by Ngugi (2008) examining the stock market performance before and after general elections. This involved undertaking a monthly trend analysis of the NSE 20 index from Jan 1992 through the event dates to December 1997. The findings were that it was hard to conclude that the general election is the event that causes the difference in market performance. The study, observed that market volatility appeared lowest in the years just before a general election and also in the election years themselves. As such, the researcher observes that the stock market is not very vibrant as investors wait to see the direction the country will take after the elections. The conclusion was that the market performance is not strongly related to the year in question, much less the election event.

2.6 Summary

In summary; various theories attempt to explain the factors that influence investor decision making process and the role of elections (politics) in the decision process. On one hand are the partisan theories, the politics of the political business cycle theory whose commonality centers on the incumbents' zeal to pursue policies that will maximize reelection chances irrespective of their political orientation. On the other hand random walk theory disputes this by postulating that no analysis method will result in profits via analyzing past market action. Then there is the efficient market hypothesis that looks at the different market efficiencies (Strong, semi strong and the weak form). This will then inform the extent of information as reflected in the share prices which will then influence investor decision making. The investor

behavioral finance on the other hand, explains price discovery in the financial markets as a function of the interplay between economic, psychological and sociological factors.

The following myriad factors affect the price of stock in the market. They include demand and supply of shares in the stock market, news related to company, market capitalization of the company, earnings per share and the price earnings ratio among others. Various studies have been undertaken with a view to establish the relationship between finance and politics and the effect of political events on stock prices. This is made necessary because election periods are particularly intense in terms of political news and they therefore present a unique opportunity to study the links between finance and politics. Some of the studies indicate that political connection will boost stock returns. Other studies conclude that changes in government administration caused by elections tend to affect financial policies thereby significantly affecting stock prices. Yet other studies find no evidence of significant impact of non economic events on stock market performance. Studies done in Kenya also give divergent views as to whether elections affect the stock prices or not. The above studies attempt to depict investors' behavior around national elections. This study is aimed at accomplishing the same objective via a different approach (Garch model).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The main purpose of this study is to examine the volatility of stock returns of companies listed on NSE around general election periods. This chapter therefore covers the research design, population of the study, sample design, data collection method, data analysis & presentation and the model used in the study.

3.2 Research Design

The research design used was an event study using the Garch model which was used to identify investor behavior as reflected in the share prices quoted at the NSE around the event dates.

3.3 Population of the Study

The population of the study covered 47 companies as listed at the NSE between 1997 and 2007 (See Appendix 1).

3.4 Sample Design

Mugenda and Mugenda (1999) in his study indicated that a representative sample is one that represents at least 10% of the population of interest. Therefore a sample size of 20 (42.5%) of the target population was used. The 20 companies comprised of companies used in the computation of the NSE market index as at 2007. (Appendix II).

3.5 Data Collection

Data on the sampled institutional investors share prices was collected from NSE database spanning 30 days before and after 27th December 1997, 27th December 2002 and 27th December 2007.

3.6 Data Analysis and Presentation

Line graphs were used to depict the volatility of returns on stock before and after the general elections. MS Excel was employed in the data analysis. T test of significance was used to determine any significant differences in performance before and after the election dates. This was then used to indicate whether general elections have an impact on the volatility of stock returns or not.

3.7 Model Specification

Volatility has been measured using standard deviations, rolling standard deviations etc by researchers like Hogson and Nicholls (1991). Simply testing for changes in unconditional variance may be inadequate as some researchers show that stock index returns are conditionally heteroscedastic (Bollerslev, 1986). The GARCH model has been a preferred measure of volatility by many researchers (Antoniou and Holmes, 1995) to accommodate heteroscedasticity in the observed returns.

The price series data for the NSE stock index was obtained from the NSE data, which contains price and traded volume. The data set consisted of daily observations surrounding the dates of 27th December 1997, 27th December 2002 and 27th December 2007.

The standard GARCH *(p, q)* model introduced by Bollerslev (1986) suggests that the conditional variance of returns is a linear function of lagged conditional variance terms and past squared error terms. The resultant linear regression model was used to depict the sensitivity of stock returns 30 days to, during and 30 days after the event dates. The standard GARCH model is expressed as follows:

. s_t — c **h-** $nm^{\wedge}_{x}$ -+• ps_{t_x}

S, - Stock return which is a conditional variance term

C-y - intercept

n - News coefficient

m - NSE Market index return

p - Persistence coefficient.

Following the onset of stock trading, an increase in n would suggest that news is impounded into prices more rapidly, and a decrease in p would suggest that old news has a less persistent effect on prices changes. Conversely, a reduction in n would suggest that news is being impounded into prices more slowly, and an increase in p would suggest greater persistence. The strength of the model was measured via the t statistic. This was used to measure the extent of sensitivity of the stock returns. The closer the t statistic is to 2, the higher the sensitivity.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the findings derived from the collected and analyzed data. The analyzed data is presented via line graphs that depict the volatility of the stock returns of each company in the event periods covered. Interpretations of the findings come after each graph.

4.2 Data Analysis

The gathered data was analyzed via the following steps. The first step entailed populating the stock prices for each company 45 days before and 30 days after 27th December 1997, 27th December 2002 and 27th December 2007 (event dates).

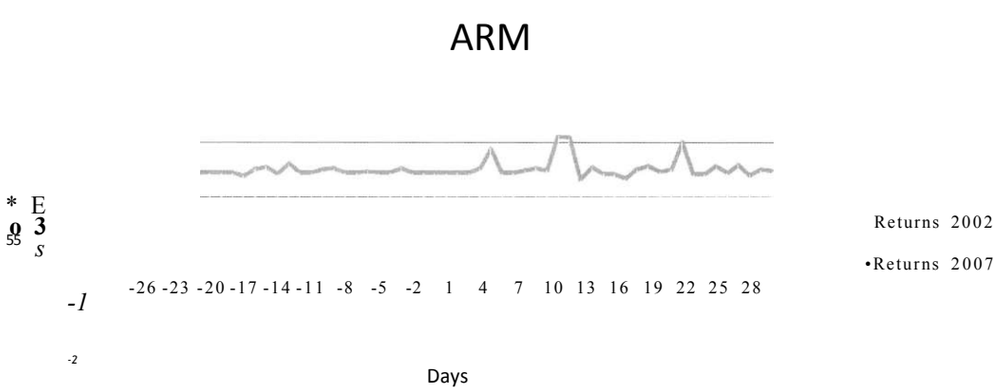
The relevant GARCH model was derived through regressing (S,), (w,_,^{2}) and (s,_,) variables that lie between the 45th day and 30th day prior to each of the event dates for each company. The coefficients for the resultant GARCH models are as shown in Appendix III.

The derived GARCH models were then used to compute the expected returns for each of the companies 30 days before and after each of the event dates. Abnormal returns were then computed by getting the difference between the actual returns and the expected returns (Appendix IV)

4.3 Results and Discussions

The output from the analysis was depicted via the following line graphs

Athi River Mining



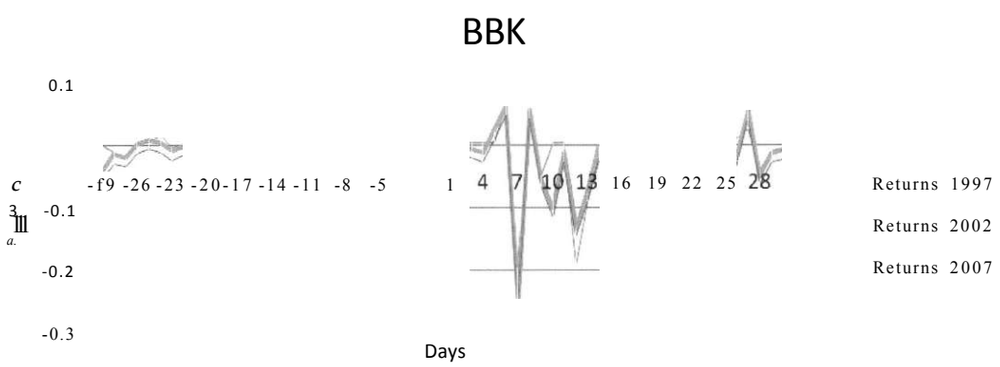
The line graph indicates that the volatility of ARM stock returns was low before the general election of 2002 but became more volatile thereafter. However in the 2007 general elections, there was relative calm in the volatility of the stock returns.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. In 2007, the t statistics for the news and persistent coefficients were negative in 2007 and positive in 2002. This therefore implies that the volatility of stock returns was higher in 2002 than it was in 2007. This therefore means that the general election most likely had an impact on the stock returns of ARM in 2002 than it did in 2007.

The year 2007 had a news coefficient of -17.03 meaning that news is impounded into prices slowly. A persistent coefficient of -0.646 in the same year implies that old news had a less

persistent effect on prices. On the other hand in 2002 the news and persistent coefficients of 379 & 0.69 respectively indicates that news is imbibed into the stock prices rapidly and that old news has a persistent effect on prices.

Barclays Bank of Kenya

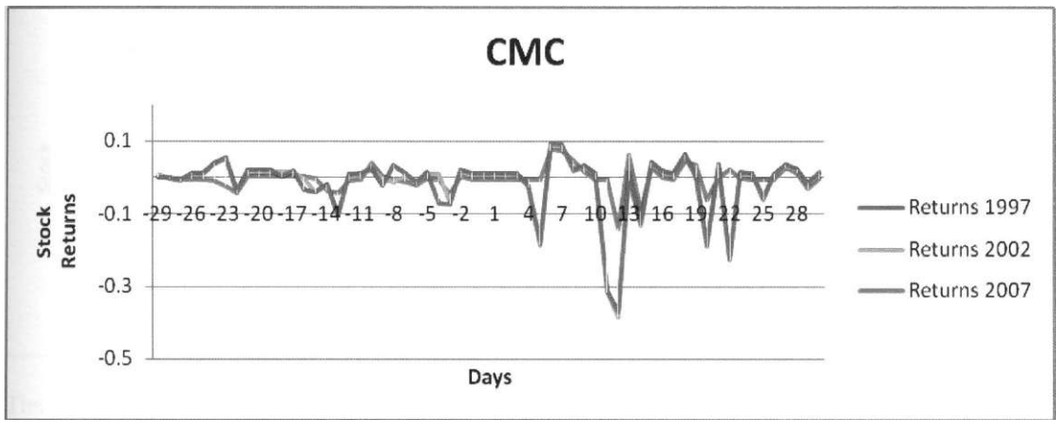


The line graph indicates that in the three event dates, the volatility of BBK stock returns had been low before each of the three general elections after which it significantly increased after the general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 7 out of the 9 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of BBK.

From the 6 news and persistent coefficients, there is only one negative coefficient in 2007. This therefore is indicative of the possibility that news was imbibed into stock prices faster and hence the high stock volatilities.

CMC Ltd

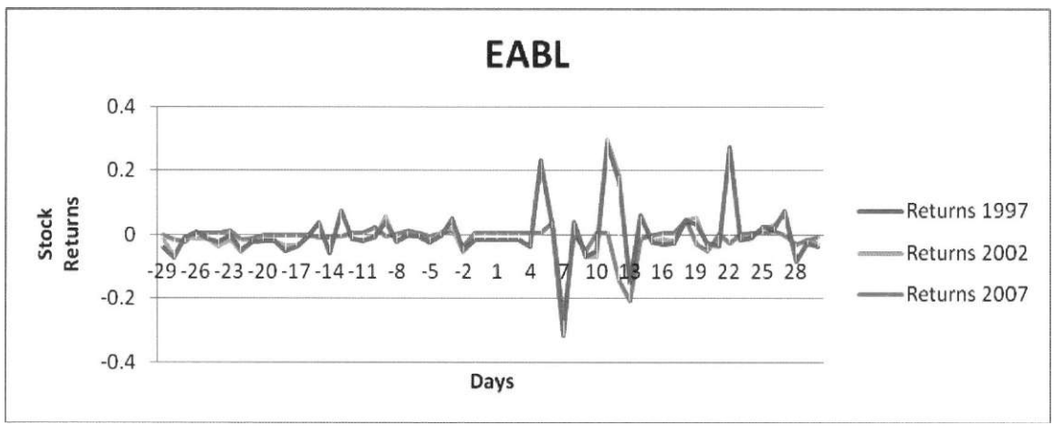


The line graph indicates that the volatility of CMC stock returns were volatile before each of the 3 general elections which then increased after each of the 3 general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 5 out of the 9 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of CMC.

From the 6 news and persistent coefficients, there were three negative coefficients. This therefore is indicative of the possibility that news was averagely imbibed into stock prices and hence the high stock volatilities.

East African Breweries Ltd

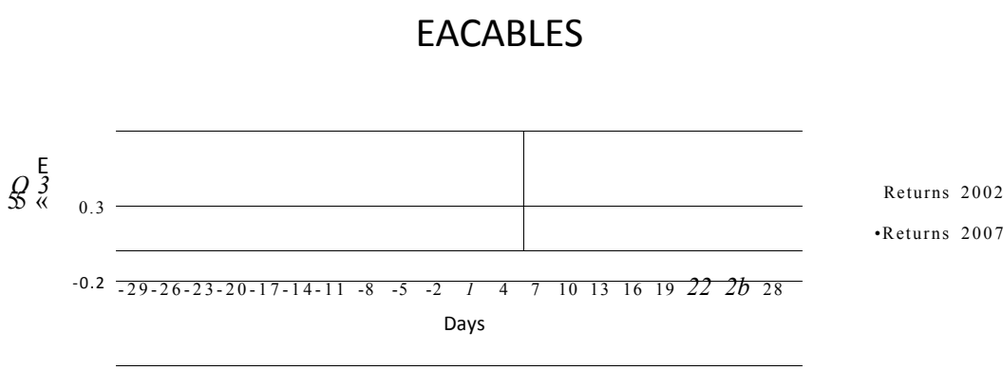


The line graph indicates that the volatility of EABL stock returns were volatile before each of the 3 general elections which then subsequently increased.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 5 out of the 9 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of EABL.

From the 6 news and persistent coefficients, there were two negative coefficients. This therefore is indicative of the possibility that news was averagely imbibed into stock prices and hence the high stock volatilities.

East African Cables Ltd

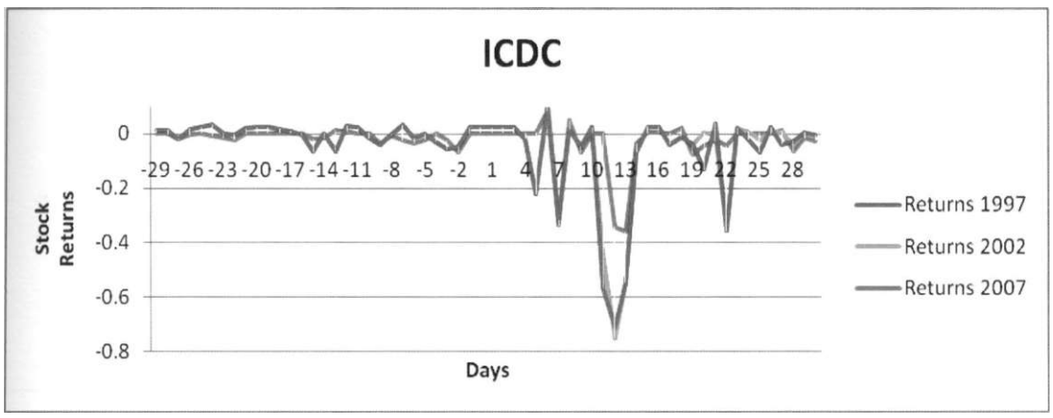


The line graph indicates that the volatility of EACABLE stock returns exhibited low volatility in 2002 before the general election and then sharp volatility immediately after. Stock prices after January 2008 were however not available.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 3 out of the 6 coefficients were positive. It is therefore likely that the general elections had an average impact in the stock returns of EACABLE.

From the 4 news and persistent coefficients, there were three negative coefficients. This therefore is indicative of the possibility that news was slowly imbibed into stock prices and hence the high stock volatilities.

ICDC Investments Ltd

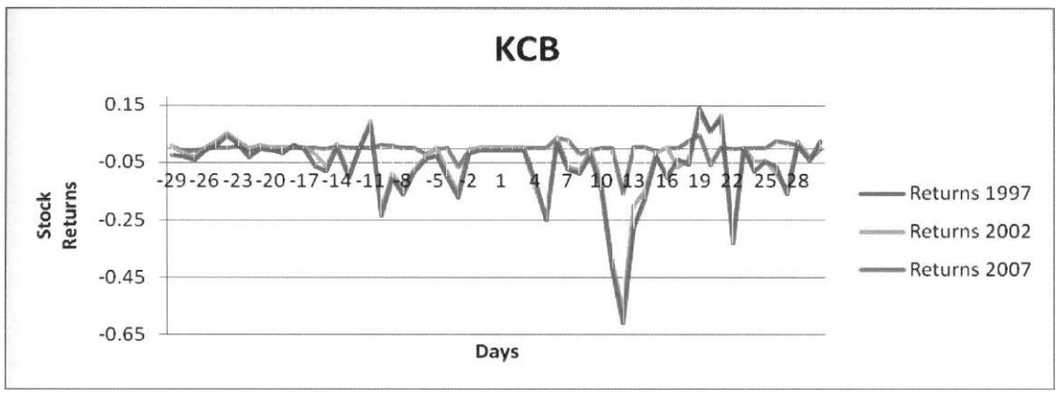


The line graph indicates that the volatility of ICDC stock returns was high before each of the 3 general elections which then subsequently increased after the general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 5 out of the 9 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of ICDC.

From the 6 news and persistent coefficients, there were four negative coefficients. This therefore is indicative of the possibility that news was slowly imbibed into stock prices and hence the high stock volatilities.

Kenya Commercial Bank

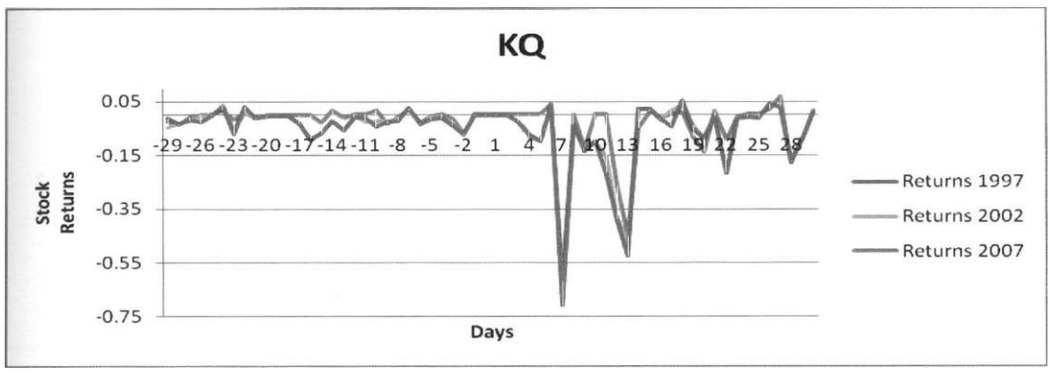


The line graph indicates that the volatility of KCB stock returns was high before and after the general elections of 1997 and 2002. The volatility of the returns in the year 2007 was considerably lower.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 3 out of the 9 coefficients were positive. It is therefore unlikely that the volatility of the KCB stock returns can be attributable to the general elections.

From the 6 news and persistent coefficients, there were four negative coefficients. This therefore is indicative of the possibility that news was slowly imbibed into stock prices despite the high stock volatilities.

Kenya Airways Ltd

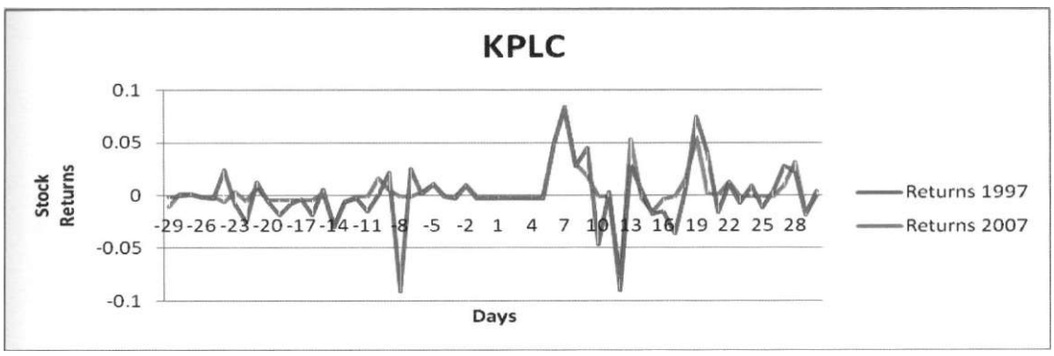


The line graph indicates that the volatility of KQ stock returns was high before and after the 3 general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 5 out of the 9 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of KQ.

From the 6 news and persistent coefficients, there were three negative coefficients. This therefore is indicative of the possibility that news was averagely imbibed into stock prices despite the high stock volatilities.

Kenya Power Limited Company

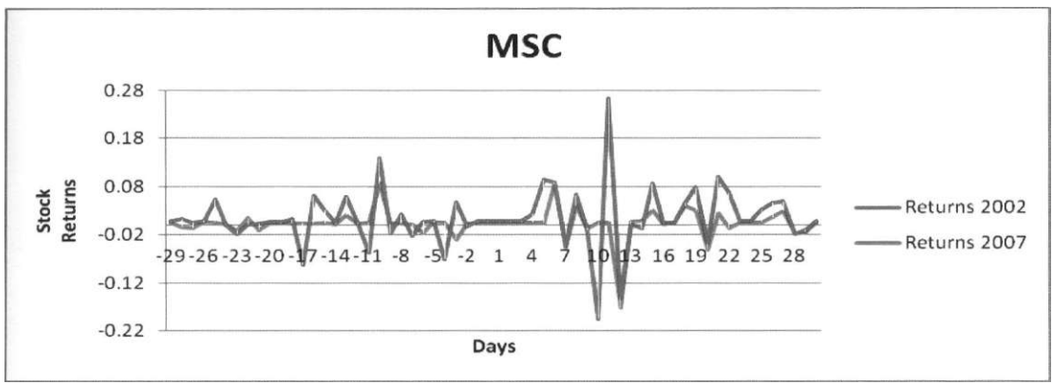


The line graph indicates that the volatility of KPLC stock returns was high before and after the 2 general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 3 out of the 6 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of KPLC.

From the 4 news and persistent coefficients, there was one negative coefficient. This therefore is indicative of the possibility that news was fast imbibed into stock prices and hence the high stock volatilities.

iVfumias Sugar Company

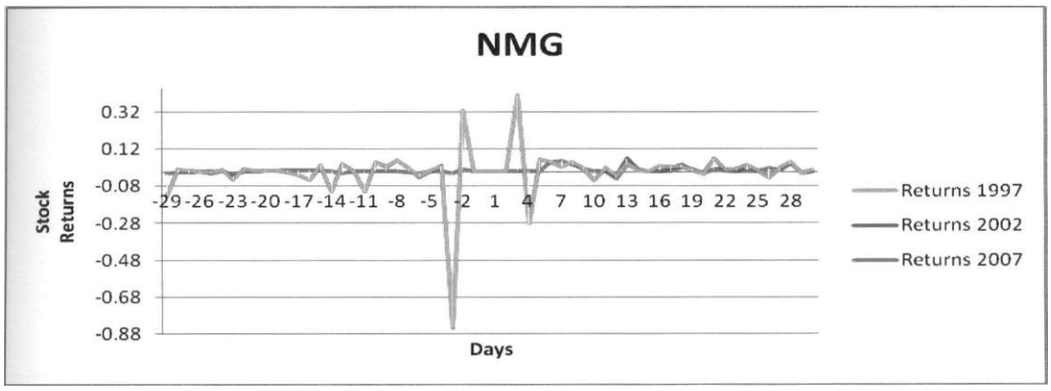


The line graph indicates that the volatility of MSC stock returns was high before and after the 2 general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 5 out of the 6 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of MSC.

From the 4 news and persistent coefficients, there was one negative coefficient. This therefore is indicative of the possibility that news was fast imbibed into stock prices and hence the high stock volatilities.

Nation Media Group

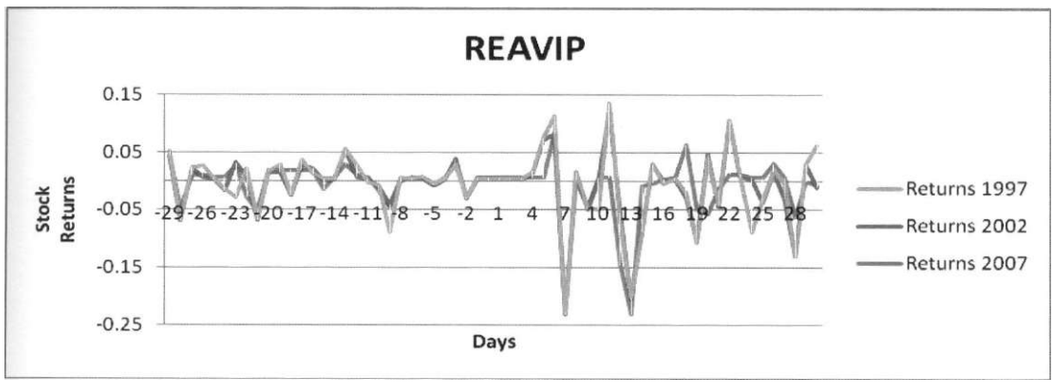


The line graph indicates that the volatility of NMG stock returns was high before and after the 3 general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 6 out of the 9 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of NMG.

From the 6 news and persistent coefficients, there were 2 negative coefficients. This therefore is indicative of the possibility that news was fast imbibed into stock prices and hence the high stock volatilities.

Rea Vipingo Ltd

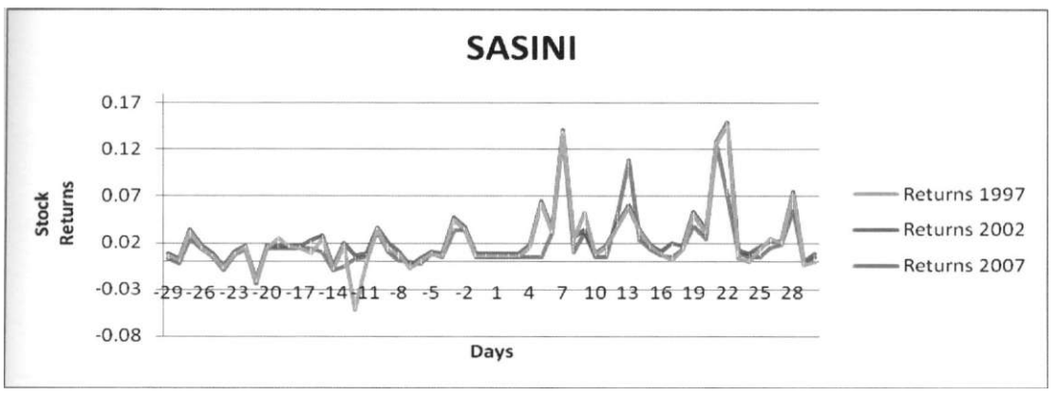


The line graph indicates that the volatility of REAVIP stock returns was high before and after the 3 general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 6 out of the 9 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of REAVIP.

From the 6 news and persistent coefficients, there were 2 negative coefficients. This therefore is indicative of the possibility that news was fast imbibed into stock prices hence the high stock volatilities.

Sasini

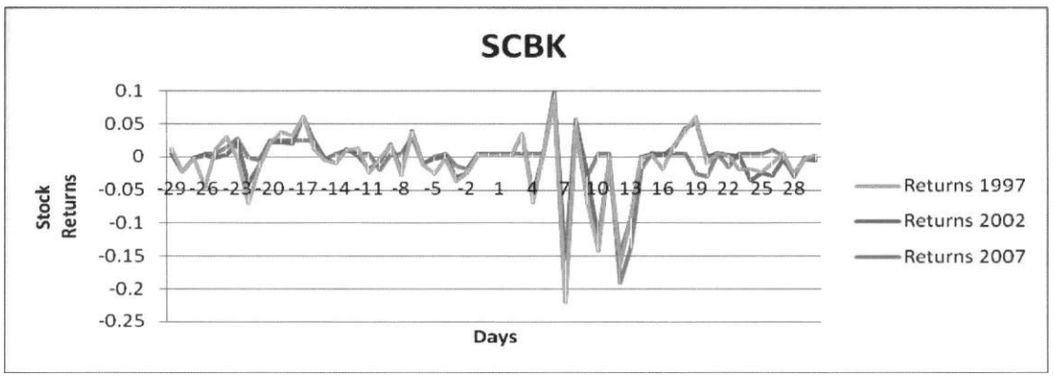


The line graph indicates that the volatility of SASINI stock returns was high before and after the 3 general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 6 out of the 9 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of SASINI.

From the 6 news and persistent coefficients, there were 2 negative coefficients. This therefore is indicative of the possibility that news was fast imbibed into stock prices and hence the high stock volatilities.

Standard Chartered Bank of Kenya

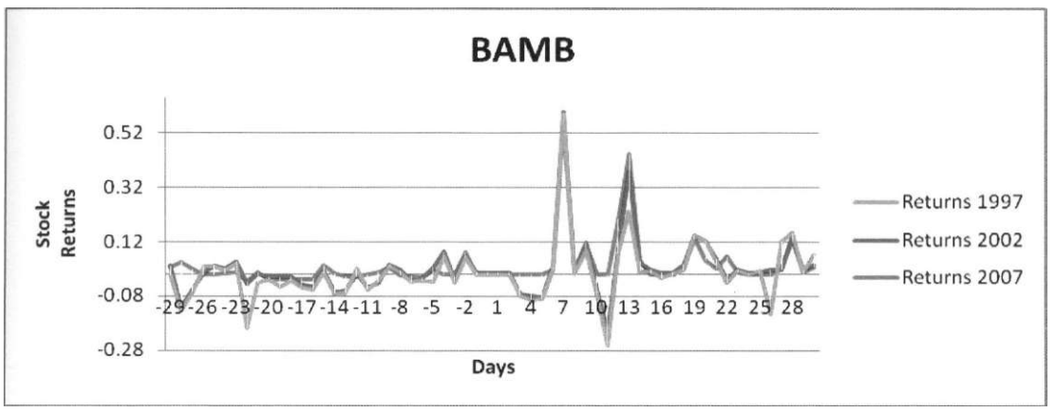


The line graph indicates that the volatility of SCBK stock returns was high before and after the 3 general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 4 out of the 9 coefficients were positive. It is therefore unlikely that the general elections had an impact in the stock returns of SCBK.

From the 6 news and persistent coefficients, there were 3 negative coefficients. This therefore is indicative of the possibility that news was averagely imbibed into stock prices despite the high stock volatilities.

Bamburi

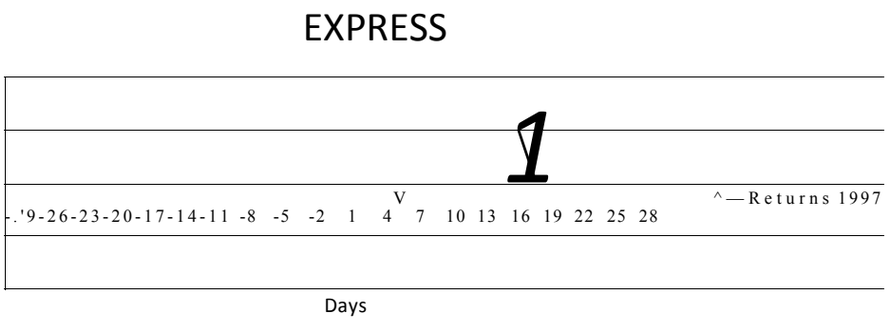


The line graph indicates that the volatility of BAMB stock returns was high before and after the 3 general elections.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 3 out of the 9 coefficients were positive. It is therefore unlikely that the general elections had an impact in the stock returns of BAMB.

From the 6 news and persistent coefficients, there were 4 negative coefficients. This therefore is indicative of the possibility that news was slowly imbibed into stock prices despite the high stock volatilities.

Express Ltd

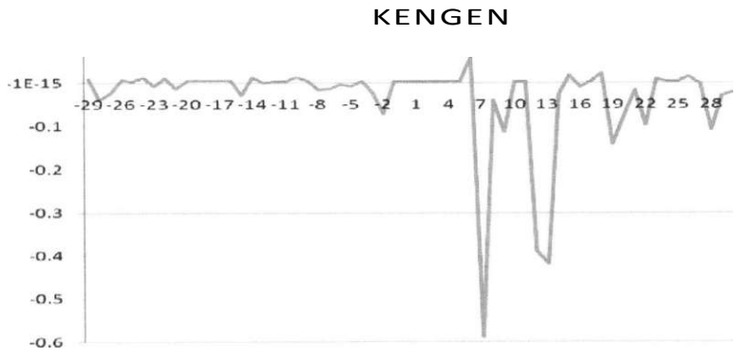


The line graph indicates that the volatility of EXPRESS stock returns was very low before the 1997 general elections. However there are instances of high volatilities after the general election.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 1 out of the 3 coefficients was positive. It is therefore unlikely that the general elections had an impact in the stock returns of EXPRESS.

From the 2 news and persistent coefficients, 1 is negative coefficients. This therefore is indicative of the possibility that news was averagely imbibed into stock prices.

Kenya Electricity Generating Company



The line graph indicates that the volatility of KENGEN stock returns was high before and alter (fie general election of 2007.

A t statistic of 2 or thereabout is interpreted as being indicative of the existence of an impact of the general elections on the volatility of stock returns. From the derived GARCH model t statistics, 2 out of the 3 coefficients were positive. It is therefore likely that the general elections had an impact in the stock returns of KENGEN.

From the 2 news and persistent coefficients, there was 1 negative coefficients. This therefore is indicative of the possibility that news was averagely imbibed into stock prices despite the high stock volatilities.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

5.1 Introduction

The objective of the study was to examine volatility in stock returns of listed companies around general elections in Kenya. This chapter is a recap of the findings detailed in the previous chapters and make recommendations for further research to researchers and policy makers. The significant findings are summarized and conclusions drawn.

5.2 Summary

The study sought to examine volatility in stock returns of listed companies around general elections in Kenya. Most of the sampled companies exhibited higher volatility a few days to and after the three events dates. The company stock volatilities can be attributable to the election events, given their t statistics values. The news and persistent coefficients for most of the companies were positive and therefore suggesting that news accruing from the unfolding political scene during the event period, influenced investors trading decisions at the NSE.

5.3 Conclusions

Generally therefore, the volatility in stock returns of Kenyan listed companies' increases around general elections. Within this period investors are sensitive to the developing political landscape which then influences their decisions on whether to invest at the NSE or not. Depending on the investors fluctuating risk perception, they will then react accordingly by either buying or selling stocks.

5.4 Limitations of study

The findings are based on assumptions made from analyzed secondary data. This would be better handled If primary data was used instead by getting information from NSE players on their take regarding stock returns volatility around general elections.

The study is restricted to election years and their impact on securities at NSE. It does not consider other events that may have significant impact on the volatility of NSE stocks returns as well.

The study is applicable only to the Kenyan context due to the diverse nature of politics and elections in other countries. This handicap can be eased if more stock markets in other countries are included in the analysis to monitor the stock returns volatility trends around general elections

The study used companies used to compute NSE 20 market index as at 2007. The composition of these companies however changes over the 3 event periods. Data was therefore missing on some of the companies which were not trading in the affected periods.

In Kenya the NSE is not operational during the weekends. This therefore interferes with the daily returns analysis. During the research, an assumption that prices reflected on the Friday preceding the weekend was therefore made.

In the event period of 11th November 1997 to 27th January 1998 the NSE did not have daily NSE 20 market index. For the research purposes, the monthly NSE index was assumed to be the daily NSE market index in the event period.

Problems of survivorship bias coupled with low liquidity or infrequent trading makes it difficult for share price information to be gathered and meaningful conclusions to be derived.

A study of this nature requires an ideal market return portfolio and this study used the NSE 20 index which has in the past been criticized for various reasons.

5.5 Recommendations for Further Research

The result of this study is not conclusive and therefore there is need to carry on further research on the volatility of stock returns before and after a general election. It is imperative to apply other diagnostics to verify that the regression assumptions are met and if not, adopt other methods of measuring the price movements at the NSE.

A replication of this study should be done after a while to find out if there are any changes that have taken place and comparison with current data be done. From this, a definite recommendation should be done.

A further study should be done to investigate the underlying causes of volatility of some of the stock returns around general elections given that the GARCH model could not link the volatility of these company returns' to the election periods. Models like eGARCH and TGARCH can be used.

A study should be done to establish the factors that lead to changes in the return to securities at the NSE during the election years. This will enable investors understand the issues behind the drastic change in security prices during elections

A research can be done to find out the reason why the response to security prices is not uniform across all the companies. This will help in understanding why some companies are worst hit than others when it comes to the impact of national elections on stock market returns volatility.

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APPENDICES

Appendix I: Companies Listed at the NSE

Sector/Industry	Name of the Company	
Agricultural	Eaagads Ltd Kapchorua Tea Co. Ltd Kakuzi Ord Sasini Ltd	Limuru Tea Co. Ltd Rea Vipingo Plantations Ltd William Tea Kenya Ltd
Commercial & Services	Express Ltd Kenya Airways Ltd Nation Media Group Standard Group Ltd	TPS Eastern Africa (Serena) Ltd Uchumi Supermarket Ltd Hutchings Biemer Ltd
Automobiles & Accessories	Car and General (K) Ltd CMC Holdings Ltd	Sameer Africa Ltd Marshalls (EA) Ltd
Banking	Barclays Bank Ltd Diamond Trust Bank Kenya Ltd Housing Finance Co Ltd Kenya Commercial Bank Ltd	National Bank of Kenya Ltd NIC Bank Ltd Standard Chartered Bank Ltd
Insurance	Jubilee Holdings Ltd Pan Africa Insurance Holdings Ltd	
Investment	City Trust Ltd Olympia Capital Holdings Ltd	Tran Century Ltd Centum Investment Co Ltd
Manufacturing	B.O.C Kenya Ltd British American Tobacco Kenya Ltd Carbacid Investments Ltd A Baumann Co Ltd	East African Breweries Ltd Unga Group Ltd Kenya Orchards Ltd
Construction & Allied	Athi River Mining Bamburi Cement Ltd Crown Berger Ltd	4. E.A Cables Ltd 5. E.A Portland Cement Ltd
Energy and Petroleum	Kenol Kobil Ltd Total Kenya Ltd	Kenya Power & Lighting Co Ltd

Source: NSE & CMA (2011)

Appendix II: Sample to be used

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

Appendix III Regression Coefficients

YEAR	ARM		EABL	
2007	Coefficients	t Stat	Coefficients	t Stat
	0.004	1.298	0.006	1.940
	-17.031	-0.197	-103.312	-1.164
	-0.646	-2,540	0.145	0.433
2002				
	1.445	1.488	-0.019	-1 675
	379.778	1.230	195.311	1 900
	0.698	3.526	0.231	0.774
1997				
			0.000	-0.112
			0.000	65535.000
			-0.175	-0.685

	BBK		EACABIJE	
2007	Coefficients	t Stat	Coefficients	t Stat
	0.003	1.012	0.008	1.123
	-69.487	-0.730	-194.046	-0.901
	0.307	1.109	0.130	0486
2002				
	-0.004	-0.521	0.003	1.304
	18.020	0.271	-17.088	-0.851
	0.216	0.717	-0.052	-0,177

KCB		MSC	
Coefficients	t Stat	Coefficients	t Stat
0.000	-0,259	0.005	1.518
-12.979	-0.288	-17.975	-0.170
0.002	0.008	0.133	0.408
0.005	0.172	0,003	0.287
-204.136	-0,785	72.104	0.856
-0.096	-0.325	0.539	2.216
-0.011	-1.931		
0.000	65535.000		
-0,247	-0.834		

KQ		NMG	
Coefficients	t Stat	Coefficients	t Stat
0.003	0.976	0.001	0.582
-224.615	-1.863	20.533	0.271
0 883	1714	-0.052	-0,162
-0.004	-0.548	-0.001	-0.273
-71.234	-0.838	14.308	0.634
-0.163	-0.394	0 384	1.075

1997				
	0.000	0.084		
	0.000	65535.000		
	0.135	0.523		
	CMC		ICDC	
2007	Coefficients	t Stat	Coeffic	t Stat
	-0.005	-2.417	0.001	
	27.268	0.458	-159.778	
	-0.093	-0.454	-0.365	
2002				
	0.014	0.909	0.022	
	-163.628	-1.273	-206.566	
	0.146	0.514	-0.138	
1997				
	0.005	1.255	0.000	
	0.000	65535,000	0.000	
	-0.098	-0.335	0.293	
	SASINI		SCBK	
2007	Coefficients	t Stat	Coefficients	t Stat
	0.005	1.415	0.005	1.
	47.329	0.459	-61.709	-0.
	-0.371	-1.308	0.029	0.

0.001	0.149	0.002	0.449
0.000	65535.000	0.000	65535.000
0.017	0.059	-0.166	-0.590

KPLC

REAVIP

Coefficients	t Stat	Coefficients	t Stat
-0.001	-0.526	0.006	0.612
30.232	0.342	-95.332	-0.304
-0.135	-0.527	-0.186	-0.587
		-0.003	-0.296
		59.588	0.658
		0.349	1.218
-0.001	-0.147	0.002	0.392
0,000	65535.000	0.000	65535.000
0.330	1.207	0.021	0.094

BAMB

oefficients	t Stat	Coefficients	t Stat
-0.003	-0.375	-0.005	-1.230
211.973	0.811	243.940	1.762
-0.568	-1.463	-0.806	-2.741

2002			
	0.004	0.511	-0.003
	46.963	0.862	13.122
	0.079	0.273	-0.161
1997			
	-0.003	-1 040	-0.001
	0.000	65535.000	0.000
	-0.116	-0.464	-0.057

	EXPRESS		KENGEN
2007	Coefficients	t Stat	Coefficients
			0.005
			-236.232
			0.536
1997			
	-0.001	-1.337	
	0.000	65535.000	
	-0.385	-7.404	

t

0.010	1218	-0.012	-1.638
-60.005	-0.859	96.437	1.651
-0.426	-1.619	0.194	0.701

-0.009	-2.096	0.000	-0.106
0.000	65535.000	0.000	65535.000
-0.168	-0.581	0.111	0.391

Appendix IV Abnormal Stock Returns

				BBK		
DAYS	*2007*	*2002*	*2007*	*2002*	*1997*	
-29	-0.00132514	1.431018636	0.014033696	-0.037211061	-0,013701392	
-28	0.005053804	1.461624396	-0,009932516	-0,00377177	-0.013701392	
-27	0.033983686	1.489670703	-0 017388086	-0.000180557	-0.013701392	,
-26	0024257518	1 444986645	0.00629317	-0.004204007	-0.013701392	
-25	0.00385977	1.444986645	0.003164418	0005302467	-0.013701392	
-24	0.00385977	1 491709747	0.016236314	-0.012319466	-0.013701392	
-23	-0.002174901	1.431354585	-0,003054908	-0,005433476	-0.013701392	
-22	-0 005335601	1.439274416	0.002431884	-0.002269107	-0.013701392	;
-21	-3.7935E-05	1.450140451	0.001672072	-0.004224154	-0.013701392	
-20	-0.001838114	1.444986645	0.002090923	-0.004204007	-0.013701392	
-19	-0.001838114	1,444986645	0.002090923	-0.004204007	-0.013701392	'
-18	-0.001838114	1,444986645	0.002090923	-0.010554716	-0.013701392	
-17	-0 001838114	1 401108654	0.002090923	-0.009595136	-0.013701392	
-16	-0 001838114	1.521571652	0.002090923	-0.000716251	-0.013701392	
-15	-0 00208302	1 567432879	-0.006750515	0 001636867	-0.013701392	
-14	-0.012356446	1 444986645	0 003164418	-0 007704017	-0.013701392	
-13	-0.00137407	1.624459068	0.009365404	0.005067897	-0.013701392	
-12	0.007291827	1.444986645	0.001145466	-0.004204007	-0.013701392	
-11	0.00385977	1.451756471	0.003164418	-0.010126853	-0.013701392	
-10	0.00385977	1.506691413	0,003164418	-0.020603855	-0.013701392	
-9	0001632182	1.526781434	-0.012460438	0,00235083	-0,013701392	
-8	0 003757115	1.455509339	0 004753253	-0 010172439	-0.013701392	
-7	0.00385977	1 441511938	0.003164418	-0.008733058	-0.013701392	
-6	0003851172	1.472480366	-0.009857677	-0.002043676	-0.013701392	
-5	0002224263	1.444986645	0.000480585	-0.004204007	-0.013701392	:
-4	0.00385977	1.444986645	0.003164418	-0.015809539	-0.013701392	
-3	0.009207364	1.537653504	-0.009656094	-0.004975377	-0.013701392	:
-2	0.000720979	1.441366289	-0.019806844	-0.002597988	-0.013701392	J
-1	0.00385977	1 444986645	0.003164418	-0.004204007	-0.013701392	
0	0.00385977	1.444986645	0.003164418	-0.004204007	-0.013701392	
1	0.00385977	1.444986645	0.003164418	-0.004204007	-0.013701392	;
2	000385977	1 444986645	0 003164418	-0.004204007	-0.013701392	'I
3	0.00385977	1.444986645	0.003164418	-0 009306048	-0.013701392	:i
4	0.00385977	1.522812591	0.003164418	-0.015116894	-0.013701392	I
5	0.00385977	1.895974047	0.003164418	0.020588338	-0.013701392	<
6	0.00385977	1.444986645	0.066455558	-0.004204007	-0.013701392	
7	-0.04032949	1.444986645	-0.196576178	-0.046392933	-0.013701392	
8	0.099896689	1 54516272	0.04745352	0.009663608	-0.013701392	i
9	0.057414004	1.444986645	-0,048066929	-0.004204007	-0 013701392	
10	0.00385977	1.444986645	0.003164418	-0 104340635	-0.013701392	(
11	0.00385977	2.120137962	0.003164418	-0.015292141	-0.013701392	;
12	-0.121634575	2.095721808	-0.192279906	0.060052585	-0.013701392	1
13	-0.144895283	1.448087462	-0,089709584	0.014836457	-0.013701392	
14	-0.017449593	1.703108502	-0.024700902	0.023060319	-0.013701392	|
15	-0.020732421	1.451091834	-0.00128674	-0.009212869	-0.013701392	
16	-0.016364479	1 444986645	0.005027738	-0.004204007	-0.013701392	

CMC			*EABL*	
2002	*1997*	*2007*	*2002*	*1997*
0.004225654	-0.009144132	-0.00200497	-0,009556534	-0.026685395
-0,0027099	0.003293531	-0.013331454	-0.052524972	-0.004733958
-0.004913416	0.004510096	-0.023160229	0.015110803	-0.000248223
0.013811711	0.004510096	0.006860948	-0.01857607	0.019941801
0.013811711	0.004510096	0.005543835	-0 01628025	-0.001555966
0043576255	0.004510096	0.005543835	-0.041510103	0.013376765
0.074571274	0.004510096	0,014536986	-0,02823632	0.01330623
0.002824256	0.004510096	-0.015955097	-0,035826198	0.006634142
0,011628174	0.004510096	-0.012270108	-0.010720482	0.00061995
0.013811711	0.004510096	0.000607942	-0.01857607	-0.000248223
0.013811711	0.004510096	0.000607942	-0.01857607	-0.000248223
0.013811711	-0.013894812	0.000607942	-0.032821726	-0.016417377
0.013622961	0.002707639	0.000607942	-0.032601216	-0.003083822
-0.005850505	-0 031634482	0.000607942	-0.00451456	-0.000248223
-0.038944398	0.00097033	-0 008340807	0 047512555	-0 000248223
0.013811711	0.004510096	-0 006220871	-0.0496878	-0.000248223
-0.063514201	0.004510096	-0.004815845	0.080923118	-0.000248223
0.013811711	0.004510096	0.007191033	-0.01857607	-0.000248223
0.013811711	0.004510096	0.005543835	-0.018837438	-0.005144184
-0.017747544	0.004510096	0.022785214	-0,031493681	0.003765275
-0.005628205	-0.018745718	-0,004617333	0,063665655	-0.018977641
-0.007734626	0.047687118	0.004074513	-0,026995926	0.005921183
0.013803992	0008961619	0.011426188	-0.013668162	0.001436011
0.006630777	0 004510096	0.004640105	-0 009896397	-0 000248223
0.013811711	0.004510096	-0.004377586	-0.01857607	-0.000248223
0.013811711	-0.078823237	0.005543835	0.003479801	-0.009945193
-0.023862362	-0.00365103	0.011460995	0.012836676	0.028063216
0.013799115	0.004510096	-0.035320946	-0.016604993	0.005015009
0.013811711	0.004510096	0.005543835	-0.01857607	-0.000248223
0,013811711	0 004510096	0.005543835	-0.01857607	-0.000248223
0.013811711	0.004510096	0.005543835	-0.01857607	-0.000248223
0.013811711	0.004510096	0.005543835	-0.01857607	-0.000248223
0.013811711	0.004510096	0.O05543835	-0.01857607	-0.000248223
-0.019719692	0.004510096	0.005543835	-0.042435978	-0.000248223
-0.18049676	0.004510096	0.005543835	0.228141887	-0.000248223
0.013811711	0,004510096	0.041258121	-0.01857607	-0.000248223
0.013811711	0.004510096	-0.267690185	-0.046201194	-0.000248223
-0.029349272	0 004510096	0001071332	0.039335939	-0.000248223
0.013811711	0 004510096	-0.049024848	-001857607	-0.000248223
0.013811711	0 004510096	0005543835	-0.073492803	0.019553757
-0.311594655	0.004510096	0.005543835	0.294096835	-0.016977552
-0.244279413	0.015499107	-0.142818197	0.328516679	-0.019880178
-0,069386575	0.022252955	-0.204517561	0.055554146	0.001802323
-0.039338887	0.006142321	-0.012495641	0,073460736	0.000606203
0.011181283	0.004510096	-0.001380847	-0.020935936	-0.000248223
0.013811711	0.004510096	0.006258692	-001857607	-0.014936105

17	0.00385977	1.360496356	0.003164418	0047890848	-0.013701392
18	0.00385977	1.509691124	0.022272699	0.011164241	-0.013701392
19	-0 000903081	1.566736709	-0 049238716	0.048368138	-0.013701392
20	0.002827366	1 469250091	-0.012372477	-0.003695143	-0013701392
21	0029987712	1.515378624	-0.00159499	-0.009177203	-0013701392
22	-0018704325	1.993531867	-0.004042468	0.025385489	-0013701392
23	-0.019942922	1.444986645	-0.00332621	-0.004204007	-0.013701392
24	0.00385977	1.444986645	0.003164418	-0.022594249	-0.013701392
25	0.00385977	1.572498493	0.003164418	-0.032093443	-0.013701392
26	0.00385977	1 44381862	0.009831085	-0.030660237	-0.013701392
27	0.033373474	1 59792209	0.024741642	0.030236024	-0.013701392
28	0.03967171	1.388356385	-0.038236114	-0.010055747	-0.013701392
29	0.046804245	1.465872036	-0.00845035	-0.003829945	-0.013701392
30	0018797722	1.444986645	-0.004266477	-0.004204007	-0013701392
	0.00385977	1 444986645	0 003164418	-0.005758353	-0.013701392

	EACABLE		*icnc*		
	2007	*2002*	*2007*	*2002*	*1997*
-29	0.008329138	0.002313151	0000725974	0.012759874	0.00045972
-28	0.048446043	0.002560142	-0.000986216	0.014830163	0.00045972
-27	-0.05260523	0.001029219	-0.018293041	-0 003675719	0.00045972
-26	-0.043446807	0.003150413	-0.004436436	0.021965389	0.00045972
-25	0.010275652	0.003150413	0.001204181	0.021965389	0.00045972
-24	0.008329138	0.002890003	-0.008229781	0.042859117	0.00045972
-23	0.00264732	0.003026167	-0.016656195	0.017133587	0.00045972
-22	-0.053586822	0.003018689	-0.022413336	0.019451519	0.00045972
-21	-0.013137523	0.002922376	9.76046E-05	0019208859	0.00045972
-20	0018041204	0.003150413	0.002057304	0.021965389	000045972
-19	0.025034938	0.003150413	0 002057304	0.021965389	0.00045972
-18	0.025034938	0.003150413	0.002057304	0.01511307	0.00045972
-17	0.025034938	0.003130701	0.002057304	0.008075106	0.00045972
-16	0.025034938	-0.033385767	0.002057304	-0.007241895	0.00045972
-15	0.025034938	-0.004142146	-0,021594028	-0 044998328	0.00045972
-14	-0.02287794	0.003150413	-0.017314337	0.017598577	0.00045972
-13	0008329138	-0 004925111	0,011947369	-0.07625644	0.00045972
-12	0.007512264	0.003150413	0.007791288	0.021965389	0.00045972
-11	0.008261263	0.003150413	0.001204181	0.021965389	0.00045972
-10	0.008329138	-0 000145475	0.001204181	-0.017875478	0.00045972
-9	0.025088915	0.001120207	-0.038213202	-0.002575847	0.00045972
-8	0.009186584	0.000900224	-0.006524925	0.003460629	0.00045972
-7	0.003480236	0.003149607	-0.026068546	0.058247034	0.00045972
-6	0.014177092	0.002400473	-0.035389652	0.017756988	0.00045972
-5	0.019238508	0.003150413	-0.023839827	0.021965389	0.00045972
-4	-0 01182944	-0.010991001	0.001204181	-0.032580065	0.00045972
-3	0.008329138	-0.009483404	-0,024657888	-0 033145211	0.00045972
-2	0.008329138	0.002737094	-0,070119894	0,021949487	0.00045972
-1	-0.066816317	0.003150413	0,001204181	0.021965389	0.00045972
0	0.008329138	0.003150413	0.001204181	0.021965389	0.00045972
1	0.008329138	0.003150413	0.001204181	0.021965389	0.00045972
2	0.008329138	0.003150413	0.001204181	0.021965389	0.00045972

-0.005085889	0.013811711	0.004510096	0.005543835	-0.023695413	-0.00764914
0.046997444	0.011356491	0.004510096	0.047460003	0000220299	-0 001094403
0.034724814	-0,034627856	0.004510096	-0.028804659	0 084808277	-0.020656386
-0.060834732	-0 129034693	0.004510096	-0.050851995	0.019056986	0005584544
-0.001544074	0 034654872	0 004510096	0001887357	-0.035802812	0.001402327
0.022596942	-0.25017612	0.004510096	-0.024751859	0.29789128	-0 000248223
-0.003176317	0.013811711	0.004510096	0,003920658	-0,01857607	-0.000248223
-0.005085889	0.013811711	0.004510096	0.005543835	-0.011844879	-0.000248223
-0.005085889	-0.055565698	0.004510096	0,005543835	0.021467937	-0.000248223
-0.005085889	0.010190551	0 004510096	0.011995448	0,018173737	-0.009749411
0028435991	0.003258809	0 004510096	-0.00017841	0.070055366	0.00749731
0.013645482	0 005629954	0,004510096	-0,028028514	-0,053555554	0.001402327
-0.031862264	0.013407152	0.004510096	-0.01534373	-0.011152268	-0.000248223
-0.003928746	0.013811711	0 004510096	-0 00674552	-0.01857607	-0.009749411
-0.005085889	0 013811711	0 004510096	0 005543835	-0.025164751	-0.001914455

KCH			*KQ*		
2007	*2002*	*1997*	*2007*	*2002*	*1997*
0008820188	-0.004965734	-0.028844953	-0.025365392	-0.019163966	0 035220169
-0,011457245	-0 001987873	-0.014351744	-0.034918947	0.003399706	1.95119E-05
-0.011009338	-0.020008844	-0.010690382	-0,007229673	-0.010908492	0.00061 1158
-0.000560835	0.005330582	-0.010690382	-0.000124957	-0.003973256	-0.020665437
-0.000400225	0.026163915	-0.016529798	0.002912897	-0.004160677	0.000978735
-0.000400225	0,052995177	-0.012133547	0.017950491	0.01814811	-0.006333286
0.008362421	0.018081254	-0.010690382	-0.017487119	-0.0391265	-0013061972
-0.009811103	0 010999959	-0.032461064	0 008178602	0.002336533	0.021257612
0.008510269	0.0032131	-0.01607083	-0.008650293	-0.002788693	0.000258585
-0.00061553	0.005330582	-0.010690382	-0.000557128	-0 003973256	0.000611158
-0.00061553	0.005330582	-0.023474473	-0.000557128	-0.003973256	0.000611158
-0.00061553	0.005330582	0.005785477	-0.000557128	-0.003457176	0.000611158
-0.00061553	0.004825605	-0.005837666	-0.000557128	-0.032747576	0.000611158
-0.00061553	-0.018955659	-0.045025146	-0 000557128	-0.085729687	-0.006333286
-0 002252181	-0.060460082	-0.019175941	-0.029136674	-0.038094889	0.000731131
0.008859034	0.005330582	-0.010690382	0.018297513	-0 03887892	0.000611158
-0.000469793	-0.09113826	-0.010690382	-0 011614843	-0.043319662	0.000611158
-0.000404765	0.005330582	-0.003774753	0.002834329	-0.003973256	-0 006285393
-0,000400225	0.096239673	-0.015945029	0.002912897	-0.026807862	0.014428934
0 008945569	-0.225729841	-0.01794393	0018537897	-0 040763693	-0.020458833
0.007321001	-0.093103353	-0.018935275	-0.032324482	0.012986556	-0.005831644
-0.000493671	-0.140224731	-0.019220721	-0.005447691	-0.007597326	-0.006028074
-0.000400225	-0.071475781	-0.01237851	0.018912897	0.005961302	0.000727889
-0.019454397	-0.009949112	-0.010690382	-0 027586135	-0 005510658	0 000611158
-0.001615949	0005330582	-0 029686312	-0.004302531	-0.003973256	-0.006100251
-0 000400225	-0.084059986	-0.015385073	0 002912897	-0.014886174	0.000727105
-0.065820786	-0.087160225	-0.017348172	-0.013087103	-0.018878827	-0 006055508
-0.005321002	0.001774895	-0.012335801	-0.069945084	-0.003445956	0 000726332
-0.000400225	0.005330582	-0.010690382	0.002912897	-0.003973256	0.000611158
-0.000400225	0.005330582	-0.010690382	0.002912897	-0.003973256	0.000611158
-0.000400225	0.005330582	-0,010690382	0.002912897	-0.003973256	0.000611158
-0.000400225	0.005330582	-0.010690382	0.002912897	-0 003973256	0.000611158

3	0.008329138	0.003150413	0 001204181	0.021965389	0.00045972	-0.000400225	0.005330582	-0.010690382	,	0.002912897	-0.027802028	0.000611158
4	0.008329138	-0.000351436	0.001204181	-0.020365147	0.00045972	-0.000400225	-0.137168442	0.02105565		0.002912897	-0.083828712	0.007233675
5	0.008329138	-0017142173	0.001204181	-0.223332476	0.00045972	-0.000400225	-0.246733652	-0 002844607		0.002912897	-0 098557249	0.000496747
6	1.008329138	0 003150413	0.085237795	0,021965389	0.00045972	0.034687494	0.005330582	-0.017520983		0042282976	-0.003973256	0.000611158
7		0.003150413	-0.336797704	0.018517113	0.00045972	0.029502489	-0.091715361	-0.01237851		-0.614653353	-0 094413952	0.000611158
8		-0.0013571	0.049508581	-0.032998988	0.00045972	-0.020482191	-0.057820682	-0.010690382		0.001385762	-0.03748812	0.000611158
9		0.003150413	-0.069137	0.021965389	0.00045972	-0.007224426	0.005330582	-0.022902051		-0.122963574	-0,003973256	-0.006055508
10		0.003150413	0.001204181	0.021965389	0.00045972	-0.000400225	-0.116620637	-0.027113223	i	0.002912897	-0 106058128	0.007348849
11		-0,128659455	0.001204181	-0.435730632	-0.129651805	-0.000400225	-0.390588116	-0.025908038		0.002912897	-0 154922419	-0 066169919
12		-0.028861544	-0.340966458	-0.409976324	0.038606147	-0.15724322	-0.414217418	-0.038469149		-0.263916835	-0.119957769	-0.004487103
13		-0.000587896	-0.360543006	-0.185422363	0.00045972	0.005351859	-0.205244079	-0.078053037		-0.448435744	-0,019486919	-0.055181487
14		-0.002144392	-0.036866342	-0.030876302	0.00045972	0.005256381	-0.15741035	-0.02582152		-0.046442434	0.067229819	0.001576902
15		0,002875705	0.003399593	0.02231508	0.00045972	-0.009114013	-0.00630359	-0.010690382	^	0.012055457	0009672118	0.000611158
16		0.003150413	0.004165966	0.021965389	0.00045972	-0.000405958	0.005330582	-0.108046151	a	-0.011901763	-0.003973256	0.000611158
17		0.003150413	0.001204181	-0.040872006	0.00045972	-0.000400225	-0.064469232	0.027680471		0002912897	0014306305	-0.058212371
18		-0,039625956	0.018903296	-0,030098387	0.00045972	0.025461844	-0.063159606	-0017457192	J	0 011246231	0025927874	0.018294065
19		-0.029791244	-0.07538747	0.033992391	0.00045972	0.045176564	0,077130708	0.016966848		-0.081770866	0.045598665	-0.016625929
20		0.001822153	-0.044906847	0.05108884	-0.137698175	-0.059835224	0.114460429	0.003410773	I	-0.136987848	0.051693905	0.000903973
21		0.003150413	-0.024712426	0.021088007	0.040965202	0.00524064	0.110817291	-0.009229733		0012879028	-0.018725888	0 000611158
22		-0.02441913	-0 044756229	-0.311767377	0.00045972	-0.004682739	-0.314777718	-0.010690382	»	-0.092285553	-0,122490718	0 000611158
23		0.003150413	0.000129038	0.021965389	0,00045972	-0.000487562	0.005330582	-0.00593414		-0.00641129	-0,003973256	0.000611158
24		0.003150413	0.001204181	0.006311286	-0.028442015	-0.000400225	-0,046124748	-0.032215035	;	0.002912897	-0.011501887	0.000611158
25		0.000506623	0.001204181	-0.025240963	-0.044437583	-0.000400225	-0.041584566	-0.00461829		0.002912897	-0.008163547	-0.004944397
26		-0.012189672	0.001204181	0.007466755	0.016107102	0.026385489	-0,114662072	0.025293716		0.02077004	0.01398389	0.006231999
27		-0.003098018	0.012147472	-0.00747631	-0.044873614	0.017303656	-0.161267449	-0.013513189		0.06764659	-0,03846414	0.000515711
28		0.002939063	-0.065492254	0.023730026	0.013750661	0.010780918	0.013561866	-0.013409547		-0.176807707	0.006099031	0.000611158
29		0.003108163	-0.016881917	0.021340608	0.00045972	-0 039002251	0 006689956	-0010690382		-0.083367555	-0.001969807	0.000611158
30		0.003150413	-0.027746561	0,021965389	0.00045972	-0.002125219	0.005330582	0 023166933		0.017504813	-0.003973256	0.000611158
		0.003150413	0.001204181	-0 001919039	0.010663801	-0.000400225	0.05898196	-0.0135869		0.002912897	-0.002596614	0.056166714

	KPLC			*MSC*			*NMG*			*REAV1P*		
	2007	*2002*	*1997*	*2007*	*2002*	*1997*	*2007*	*2002*	*1997*	*2007*	*2002*	*1997*
-29	-0.010192963	NA	0.009506486	0 005247336	0.002919876	N/A	-0.011795896	-0,115090841	-0.005785149	0.051206171	-0.007063308	0.007659411
-28	0.001194272		-0,001160221	-0.003968545	0.016003787		-0.003230998	0.013824978	0.000731444	-0.047474239	-0.021088419	0.001815766
-27	0 001695982		-0.001160221	-0.005979587	0.01199561		-0.006654523	0.011736744	0.002027351	0.010588415	0.011222829	0.001925402
-26	-0.001074399		-0.001160221	0.006426884	0.003045326		0.001194457	-0.00079048	0.002027351	0.009261337	-0.003146709	0.020322248
-25	-0.001483277		-0.001160221	0.005301135	0.048478382		0,001435015	-0.009054943	0.002027351	0.00611633	-0.003049364	0.001539658
-24	-0.006156174		0.0301513	0.001899774	-0,002479958		0.004702988	0.00184664	0.002027351	0.00611633	-0.021979695	0.001925402
-23	0.00349593		-0.011492937	-0.011766518	-0.006073206		-0.020693509	-0.000395413	-0.021228463	0.0274829	0,004157306	-0.05965425
-22	-0.005209573		-0.020515684	0.014028806	-0.013065537		0.006860394	-0.007204918	0013321283	-0.027846157	0.035774154	0.014565906
-21	0.007837491		0.005227028	-0,009392928	0.012996324		-0.001014289	0,001908138	0.004540624	-0.05110792	-0015760919	0.001687431
-20	-0 004455272		-0.001160221	0.003494455	0.003045326		0.0047988	-0.00079048	0.002027351	0.018656542	-0.003146709	0 001925402
-19	-0 004455272		-0.013882143	0 003494455	0.003045326		0.0047988	-0 00079048	0.002027351	0.018656542	-0.003146709	0.013404994
-18	-0.004455272		-0.003149329	0.003494455	0.009192867		0.0047988	-0,008958384	0.002027351	0.018656542	-0 043146709	0.001684699
-17	-0.004455272		0 000881573	0 003494455	-0 084888072		0.0047988	-0,024329231	0.002027351	0.018656542	0.010867786	0.008377015
-16	-0.004455272		-0.013645081	0.003494455	0.057391302		0.0047988	-0.050496052	0.002027351	0.018656542	0.004013625	-0.009898187
-15	0.00283041		0.002959748	0.004905891	0.026292748		0.00368933	0.027530218	0.002027351	-0.014059499	0.016065335	0.002170482
-14	-0.029006213		-0.001160221	0.002085701	0.003045326		0.001435015	-0,112071835	0.002027351	0.00611633	-0.003146709	0.001925402
-13	-0.005071552		-0.001160221	0.021678049	0,037119638		-0.00803269	0.048740481	0.002027351	0.028442285	0,025012851	0.001925402
-12	-0,001472702		-0.001160221	0.003166971	0.003045326		0.000942098	-0.00079048	0.002027351	0.010315765	-0.003146709	0.019897161
-11	-0.001483277		-0.01339911	0.005301135	-0.061431559		0.001435015	-0.112465088	0.002027351	0.00611633	-0.003146709	-0.004987376
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-8	-0.001301049	-0.089383628	0.003780237	0.01854675
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21	0000309906	-0.016084345	0 024972277	0.074691043
22	0.01244188	-0.001160221	-0.006727995	0.073726786
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24	-0.001483277	0.011004492	0.005301135	0.003045326
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26	-0.001483277	0.005883861	0.016371246	0.030559766
27	0.009177158	0.018284789	0.02911754	0.020543594
28	0.031210268	-0.00815302	-0.016190349	-0.001822288
29	-0.017437885	-0.001160221	-0.013352935	0.003223599
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-27	0.024288387	0,009358387	-0,002746633	-0.000475273	-0.000677724
-26	0.012834277	0,003528871	-0.002746633	0.004605035	-0.002881329
-25	0.00488687	0.003528871	-0,002746633	0.005439629	-0.007014831
-24	-0.009480946	0,004244538	-0.002746633	0.015055013	-0.012268054
-23	0.00672927	0.003870329	-0.002746633	0.027472487	-0.006634123
-22	0.013183446	0.003890878	-0.002746633	-0.000897232	-0.038280603

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0001393656	0.056360758	0 002027351	-0.000807471	0.00469976	0.002932952
-0.004854294	0.023094771	0 002027351	0.00611633	-0.003143898	0.001925402
-0 008258824	-0.018982287	0 002027351	0 006068199	-0.000531648	0.001925402
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0.008900188	0.318406519	0 00329358	-0,02670819	-0.003142122	0.002185228
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0 050514769	-0.00079048	0 002027351	0.084768015	-0 003146709	0.031301167
0.057279781	-0.033936978	0002027351	-0.226592695	-0.003146709	0.001309453
0 034581957	001572303	0.002027351	0001989303	0.012571105	0.001925402
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0,001435015	0.017654627	0 006978875	0 00611633	-0.003146709	0.002050211
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-19	0.013382193	0.003528871	0.008375713		0,024384263	-0 002881329	0 015572932	-0019045256
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-17	0.013382193	0.003583045	-0.002746633		0.024384263	0.036754923	-0.000199228	-0019045256
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-15	0 009540504	0.018670427	-0.004053749		-0.003510445	0.000364076	-0 001484855	0.030499096
-14	-0.009197637	0.003528871	-0.002746633		0.005439629	-0.014437944	-0.000838446	0.002495955
-13	-0.005688938	0.025722217	-0.002746633		0.010154978	0.001464904	-0.000838446	-0 009201992
-12	0.002844625	0.003528871	-0.058358362		0.005272264	-0.002881329	0.010285024	-0 008468957
-11	0.00488687	0.003528871	-0.009209521		0.005439629	-0.023547966	-0.005823525	-0.002658684
-10	0.032511179	0.003916037	-0.002746633		-0,019560371	0.012926102	0.004431191	0.007597726
-9	0.009951001	0.009796054	-0.00849376		0.002978758	0.015606158	-0.000517049	0.025709976
-8	0.000960973	0.009712895	-0.003414533		0.004924733	-0.025580536	-0.006462743	-0.004323186
-7	-0 000731108	-0.003876321	-0.002746633		0,029949433	0.00913645	-0 001161651	-0 007813323
-6	-0.00275776	0.006177401	-0.002746633		-0.010385081	0.000311823	-0.000838446	-0010606912
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-4	0 00488687	0003528871	-0 002746633		0,005439629	-0.00568739	-0.002124033	-0.002658684
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6	0.030601155	0.003528871	-0.002746633		0.097672638	-0.002881329	-0 006218647	0.017749479
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9	0.030972627	0.003528871	0.018205748	§|||f:	-0.028721425	-0 002881329	-0038655071	0.10930404
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13	0.108145998	-0.047876551	-0.002746633	111	-0.137981409	0.045558395	-0.001444584	0.439724184
14	0.02246869	0.012042022	-0.002746633	§	-0.017810096	0.017660433	-0.000838446	0.049974378
15	0.012999383	0.005340372	-0.002746633		0.005708175	-0.001030072	-0.000838446	0.000307675
16	0.007151706	0.003528871	-0.002746633		0.005345713	-0.002881329	-0.021040466	-0.002336078
17	0.00488687	0.014796477	-0.018310836		0.005439629	0.010437646	0.002951125	-0.002658684
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19	0.038470731	0.014582531	-0.002746633	f	-0.025240113	0.07749641	0.008776645	0.134044585
20	0.023964917	0 009437254	-0.002746633	>	-0.029880139	0.030428286	-0010269478	0.050821713
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1997

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	-0 017796*42	0.058914073
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