# THE EFFECT OF THE CENTRAL BANK RATE ON STOCK MARKET PERFORMANCE AT THE NAIROBI SECURITIES EXCHANGE

BY:

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# A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE IN MASTER OF SCIENCE, FINANCE, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI.

OCTOBER, 2016

### DECLARATION

I hereby declare that this research j	project is my original	work and has not been	presented for
an award in any other institution.			

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## DEDICATION

This research project is dedicated to my all those who have supported me through the research project.

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### ACRONYMS AND ABBREVIATIONS

ANOVA - Analysis of Variance

- ATS Automated Trading System
- CBK Central Bank of Kenya
- CBR Central Bank Rate
- CDS Central Depository System
- CDSC The Central Depository and Settlement Corporation
- CGT Capital Gains Tax
- CMA Capital Markets Authority
- EMH Efficient Market Hypothesis
- MPC Monetary Policy Committee
- NASI NSE All Share Index
- NSE Nairobi Securities Exchange
- **REITS Real Estate Investment Trusts**
- SPSS Statistical Package for the Social Sciences
- VECM Vector Error Correction Model

#### ABSTRACT

The study sought to determine the effect of the Central Bank rate on stock market performance at the Nairobi Securities Exchange. This study used descriptive research design which relies on observation of occurrences and events so as to develop theories and postulations that explain and elucidate on the observations. Secondary data collected from the Nairobi Securities Exchange website and the Central Bank of Kenya website was used. Data analysis was done using the statistical software, Statistical Package for the Social Sciences (SPSS). A Multiple Linear Regression Model was employed in establishing the effect that the CBR has on the NASI, taking into account the prevailing rate of inflation. Monthly data was used. Significance of the results was tested using the e t-test, F-test and coefficient of determination. The study found that Central Bank Rate has negative effect on stock market performance. Therefore, increase in Central Bank Rate will lead to reduced stock market performance as measured by Nairobi Securities Exchange All Share Index. The study also found that the inflation rate has a negative effect on stock market performance at Nairobi Securities Exchange. Therefore, increase in inflation rate will lead to reduced performance of the stock market performance. The study concluded that Central Bank Rate and inflation rate combined have significant negative effect on stock market performance. Therefore, increase in inflation and CBR will lead to reduced stock market performance. This study recommended that the Central Bank of Kenya and the Monetary Policy Committee to maintain the CBR at reasonable levels. Minimal volatility on the CBR should be maintained so as to reduce the volatility of the stock market performance. The study also recommended that the Central Bank of Kenya through the monetary policy committee to ensure low inflation rates are maintained in the economy.

#### **CHAPTER ONE: INTRODUCTION**

#### 1.1 Background of the Study

In this day and age, investors as well as the general public are constantly seeking to be well informed on matters affecting their expenditure. One of such factors is the Central Bank Rate (CBR), which is set by the Monetary Policy Committee (MPC) of the Central Bank of Kenya every two months (CBK, 2014). When the Monetary Policy Committee reviews the rate at which the Central Bank of Kenya (CBK) loans money to banks, the entire economy of the country is affected. This is inclusive of business and consumer spending, bond interest rates and stock prices.

Central Banks all over the world use the Central Bank Rate to control inflation. Inflation occurs when the money in circulation is too much in comparison to the few goods available for trade. Inflation causes the prices of goods to go up: therefore, central banks can control inflation by regulating liquidity. This is often done by increasing the Central Bank Rate, and hence making expensive to acquire money, in an attempt to reduce money supply in the economy. The effect of this could be reflected by fluctuation of stock prices at the financial markets (Investopedia, n.d.).

Stock markets are exceedingly volatile, and this makes investors very keen and vigilant on any factors that may cause stock price fluctuations. Stock Market Performance helps investors to predict and anticipate price fluctuations. Business owners, policy makers, economists as well as curious Kenyans have tried to ascertain the correlation between the Central Bank Rate and Stock Market Performance over time, especially in the wake of globalization. There have been major stock market crises over the world which could have possibly been averted if it were indeed possible to control stock market prices using interest rates. Such crises usually affect the entire international trade markets, and their effects are eventually felt domestically.

#### **1.1.1 Central Bank Rate**

The Central Bank Rate can be loosely defined as the interest rate at which domestic commercial banks are charged by central banks on loans (Investopedia, 2003). Section 36 (4) of the Central Bank of Kenya Act defines the Central Bank Rate as the "lowest rate of interest it (the Central Bank of Kenya) charges on loans to banks and microfinance banks". In the USA, this rate is referred to as the Federal Funds Rate; in Australia, it is the Federal Reserve Rate; while in Myanmar it is called the Reference Exchange Rate. Sarup and Sons (2004) gives the traditional definition of the Bank Rate as the rate at which eligible bills are discounted or rediscounted by the Central Bank. The book further adds that in modern days, "the Bank Rate is the minimum rate at which the central bank provides financial accommodation to commercial banks as the lender of the last resort".

The central bank uses interest rates, specifically the Central Bank Rate, to regulate inflation in an economy so as to control the amount of money consumers have at their disposal (Hsing, 2004). This in turn, could have a substantial effect on stock prices at the financial markets. For instance, if the interest rates are low, consumers will have extra funds at their disposal to trade in fewer goods. The prices of goods such as publicly traded shares will thus go up. It is the job of central bank to stabilize interest rates so as to manage inflation and the cost of living as a whole. Also, the level at which interest rates are set by central bank is also influenced by the economic growth in a country. This growth in economy is significantly affected by the performance of both small and big businesses, some of which are traded on stock markets. The correlation between stock prices and the central bank rate is thus palpable, more so in modern day markets and growing economies. To increase liquidity in an economy, the central bank reduces the Central Bank Rate in an attempt to make the cost of borrowing funds lower, as explained by Investopedia. This makes it easy for the public to acquire line of credit given that commercial banks will also consequently lower their lending rates. To reduce the amount of money in circulation, the central bank will do the opposite and raise the Central Bank Rate so that it becomes costly to acquire funds. These adjustments are effected after every few months in Kenya.

#### **1.1.2 Stock Market Performance**

A Stock Market refers to a market where shares of publicly listed companies are traded through over-the-counter markets or stock exchanges. It is, however, not a single trading place. Zuravicky (2005) explained that the stock market is a market in which stocks are purchased and sold in a practice called trading. He further added that it is in reality a network of several interlinked markets. It enables all willing participants to acquire shares of publicly listed companies in order to raise capital for that company's profitable operations (Buehler & Kohut, 2000).

Stock Market Performance gives an indication of how the entire stock market, or a given stock, is fairing (Shauna, 2003). Fluctuations in stock prices and indices predict stock trends, as well as that of the whole economy or a specific sector, in the foreseeable future. This enables investors to make informed decisions on their investments and expenditure. In any economy, stock market performance plays are key role in signifying the health of the economy given that the financial sector is the most crucial.

Stock Market Indices are used as a statistical measure of the general performance of the economy or a given sector (Investopedia, n.d). The performance of a specific stock is shown by fluctuations in its stock price. Just like a rise in stock prices indicates positive stock

performance while a decrease shows declining performance, a higher stock index marks a better performing market or sector, as compared to a lower stock index. The NSE 20 Share Index is a price-weighted index.

#### 1.1.3 Central Bank Rate and Stock Market Performance

Central banks of various governments use the Central Bank Rate to regulate the liquidity and economic conditions in the country (Hsing, 2004). The governments' monetary and fiscal goals are achieved through manipulating this monetary tool. Also, Market Performance, as shown by Stock Price Indices, can be an indication of the economic conditions of a country. Very often, a weighted price index of selected stocks is computed and used as a sufficient representative of the whole market, for instance the NSE 20 Share Index.

Generally, a rise in the Central Bank Rate would indicate that the Central Bank seeks to slow down the rate of credit expansion and consequently the supply of money in the economy, given that higher interest rates on loans would put off borrowers for acquiring new loans. This would lead to lesser investable funds for the public. The price of publicly traded stocks would consequently plunge in response to the law of demand and supply. The decreased demand would cause prices to fall. An increase in interest rates would also increase the cost of capital for companies resulting in lower expected future earnings. Stock prices and indices would thus plunge as well. The converse is true.

Various studies have sought to find a relationship between Central Bank Rate and the Stock Market Performance. Shauna, (2003), stated that fluctuations in the lending rates affects both the profitability as well as the equity ratio of a firm as it disrupts its market stability, liquidity, pricing and corporate earnings. In earlier studies, Fama (1981) argued that the inverse relationship between the rate of inflation and stock performance was an indicator of a negative correlation between inflation and real activity, and a positive correlation between real activity and stock performance. Locally, Mwanza (2012) and Abdallah (2011) found that lower interest rates would lead to increased investments and consequently improve market performance represented by NSE 20 share index. Other researchers sought to uncover the correlation between foreign exchange drifts and stock performance: the conclusion was that there was a correlation between the variables. In this light, it is expected that there is a relationship between the Central Bank Rate and the Stock Market Performance.

#### 1.1.4 Nairobi Securities Exchange Overview

The Nairobi Securities Exchange had a total market capitalization of KES 2,038.75 billion and total traded shares amounting to 30,346,900 as at Mar 10, 2016. It has been operational since the 1920s and today it has 56 listed companies (NSE, 2016). It is the only market in Kenya where marketable securities are issued and traded under the oversight of the Capital Markets Authority, which ensures a just, transparent and efficient environment for trading. The Nairobi Securities Exchange was constituted as a voluntary association of stockbrokers in 1954, registered under the Societies Act. It was not until 1988 that NSE was privatised. In 2006, the NSE implemented Automated Trading System (ATS) to enable live trading on a first come first served basis (NSE, 2016). This system was also linked to the Central Depository System (CDS) and the Central Bank of Kenya to facilitate trading in Government bonds. In a bid to present investors with an ample measure of the performance of the NSE, the Nairobi Securities Exchange launched the NSE All-Share Index (NASI) in February 2008. Since then, it has undergone various changes and innovations, including the abolishment of the aggregate foreign ownership cap of the NSE listed companies in 2015.

The Capital Markets Authority (CMA) is the Government Regulator mandated with licensing and regulating the Nairobi Securities Exchange (NSE, 2016). Public offers and listings of securities issued and traded at the NSE are also approved by the CMA. Clearing, delivery and settlement of securities held at the NSE is done by The Central Depository and Settlement Corporation (CDSC), which also regulates the conduct of Central Depository Agents, that is, investment banks and stockbrokers. Business Daily (2015) reported that in 2016, the taxation environment changed at the NSE when Capital Gains Tax (CGT, 5%) and withholding tax (3%) on returns made from trading in shares and bonds was abolished. Also, stamp duty on Real Estate Investment Trusts (REITS) was scrapped off while Corporate Tax for firms wanting to list on the NSE was reduced to 25% from 30%. However, proceeds from Over-The-Counter securities are still charged a CGT of 5%.

The NSE has been on a bear run over the recent past with most stocks losing an estimated 31% of their listed value in 2015 (Business Daily, 2015). The most affected sectors were Banking and Insurance. The poor performance in 2015 was not only caused by rising interest rates along with weakening of the shilling, but also by the mass exit of foreigners. According to Business Daily (Dec 29, 2015), "The NSE 20-Share Index is down 23 per cent since the beginning of the year while the overall market, as captured by the NSE All-Share Index, has declined 12 per cent over the same period". However, it is expected that the NSE is on a recovery stretch. The study will use monthly change in the NSE All-Share Index (NASI) to show how market performance is affected by changes in the Central Bank Rate.

#### **1.2 Research Problem**

The Central Bank Rate affects all businesses and companies, even those not listed in the NSE. Banks, for instance, are directly affected by CBR fluctuations given that their core business is lending funds to the public and to other companies. In theory, when interest rates increase, the net profit for listed banks is expected to be high as well, and hence increase in value of the bank and its stock prices, leading to a better dividend payout to the shareholders.

Banks' asset and liability management strategies are influenced by changes in interest rates. The banks' value and net earnings are pegged on these fluctuations (Lee, 1998). Investors, firms and corporations as well as policy makers would greatly benefit from information that would help them anticipate economic changes as portrayed by stock market performance, in response to changes in the discount rate.

The NSE is Kenya's sole stock exchange market. Changes in the country's economic times are often reflected on the performance of the NSE. In this light, studying the effects of changes in CBR at the NSE would give a broader view that reflects the entire economic health of the country. This broader outlook makes this study viable in more ways and to more stakeholders, both domestic and global. Several studies have been carried out on the NSE, but very few look at the relationship between interest rates and stock market performance. Even so, those available are either out-dated, or non-exhaustive. The NSE has gone through several changes in the recent past as well as challenging economic times.

Several studies done in line with this topic have failed to be conclusive on the effect that fluctuations of the Central bank rate has on Stock Market Performance. Some of the studies that have been done in this field include Arango (2002), Hsing (2004), Gazi and Mahmudul (2009), who did studies on the correlation between interest rates and stock prices in various countries, established an inverse relationship between interest rates and stock prices. Earlier on, Gupta et al., (1997), had found that the relationship fluctuates gradually from a considerably negative relationship to lack thereof, and even at times a positive relationship, though insignificant. Nyamute (1998), researched on the relationship between stock prices and several variables, that is, interest rates, inflation rates, money supply, and exchange rates in Kenya; his conclusion was that there is a positive correlation between stock prices and interest rates. Chirchir (2012) recently found no significant relationship between interest rates

and stock prices. The issue of whether stock prices and interest rate are correlated or not, is vital since there have been major stock market crises over the world which could have possibly been averted if it were indeed possible to control stock market prices using interest rates, especially in the wake of globalization. This study sought to find the answer to the question: what are the effects of the Central Bank Rate on the Stock Market performance at the Nairobi Securities Exchange?

#### **1.3 Research Objective**

The objective of this study is to determine the effect of the Central Bank Rate on Stock Market Performance at the Nairobi Securities Exchange.

#### 1.4 Value of the Study

The study is significant as it expands on the available studies covering the effects of movements of the Central Bank Rate on performance of stock markets, in this case, the Nairobi Securities Exchange. It seeks to add more recent and exhaustive findings on previous studies. Such finding are useful to various stakeholders, for instance; the government, stock market participants, regulatory bodies as well as the general public.

The government, for instance, can use these findings to steer economic growth in the country by adjusting the CBR rate to achieve the desired market response, as well as being able to predict market trends. Stock market participants, on the other hand, could benefit from the findings of this study by using them for forecasting short term market responses. This will enable them reap greater returns and also to anticipate and reduce investment risks. Finally, the regulatory bodies, such as the Capital Markets Authority, will be able to use this information to understand how the stock market responds to interest rate movements and thus identify circumstance in which the market is manipulated artificially so as to ensure transparency and integrity in the Nairobi Securities Exchange.

Kenya being an economic hub in East Africa is currently being watched by various global entities and investors to understand the market as well as to determine its efficiency before they swoop in. It is therefore crucial to unearth the various factor that affect the Kenyan stock market not only for the domestic stakeholders but also for the global entrants.

#### **CHAPTER TWO: LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter assesses the theoretical as well as empirical literature in regards to the effect of the Central Bank Rate on stock market performance. In theoretical literature review, the study will focus on the various theories that have been formulated, their correlation, along with their level of applicability; whereas, in empirical literature review, the study will examine various studies carried out both locally and internationally that are relevant in rationalizing the variables and methodology of this study.

#### 2.2 Theoretical Review

Stock Market Performance is portrayed by movements in stock prices of individual stocks. The two main theories to be discussed in the project that have attempted to elucidate on movements in stock prices are the Efficient Market Hypothesis and Behavioural Finance Theory. The project will look into the two theories, analysing their assumptions and some of the critiques raised with regard to each one of them. It will discuss the prevailing Central Bank rates; and give an overview of the Nairobi Securities Exchange. It will then discuss some of the factors that affect stock rates, including inflation and government decisions. Finally, the project will involve an empirical study of stock market both in Kenya and beyond.

#### 2.2.1 Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH) postulates that at any given time, stock prices of an efficient market reflect all the available information (Fama, 1965). It was proposed by Eugene Fama in 1965. The implication of this hypothesis is that it is impossible for investors

to "beat the market" and gain abnormal profits given that stocks are traded at their intrinsic value. Therefore, investors wanting higher returns can only do so by making riskier investment decisions as opposed to market timing and stock selection (Investopedia). This hypothesis assumes that traders are rational and that stock prices adjust quickly to assimilate any new information. Later in 1965, Fama affirmed the Random Walk Hypothesis, which is consistent with the Efficient Market Hypothesis. It stated that stock prices are independent of each other and follow a random walk, thus cannot be forecasted using previous market data.

Fama classified EMH into three basic levels. These levels of market efficiency are Strongform efficiency, Semi-strong form efficiency, and Weak-form efficiency. In Strong-form EMH, stock prices reflect all available information, both private and public; in Semi-strong form EMH, stock prices reflect only publicly available information; whereas, in Weak-form efficiency, stock prices reflect all relevant historical data available. Despite all these, stock markets often exhibit certain patterns that could lead to abnormal returns; these are referred to as market anomalies, for example, the January effect, neglected firms effect, day-of-the-week effect, small firms effect, etc.

Despite the Efficient Market Hypothesis being the backbone of financial markets, it has a fair share of critics. The main point of contention being that the EMH assumes that investors are rational in their dealings. Assuming that investors have access to all available information and are rational, and then their market expectation would be homogenous. This would beat the point of trading after all given that trade signals existence of heterogeneous expectations. While the seller expects a dip, the buyer anticipates a rise in the stock price, and hence bears and bulls (Shostak, 1997). Also, it is not practical for all market participants to have the same information; if it were so, there would be no need for communication. Likewise, behavioural economists do not agree with the notion of rational investors, it purports irrational exuberance.

In an efficient market, all information available is incorporated in current stock prices given that stock prices adjust quickly to assimilate any new information. Given that, if the CBK announced a change in the Central Bank Rate, this information would quickly be assimilated in stock prices at the Nairobi Securities Exchange, as investors seek to adjust their investment needs. Past prices are not useful in predicting stock price movement and stock market performance; therefore, announcements that affect the market play a key role. However, the Efficient Markets Hypothesis is weakened if communication of information is nontransparent and carrying out trade is tedious, hectic or costly. Also, this could occur if the prices are sticky and investors over-react to new information.

#### 2.2.2 Behavioral Finance Theory

Psychologists have alleged that human beings usually exhibit emotional and cognitive biases that lead them to act in a rather irrational behaviour. Behavioural finance was popularized in the 20th century, with Kahnemann and Tversky (1974) outlining behaviours and biases that hinder human beings from acting rationally. They labelled these as representative heuristic, anchoring, and the availability bias. These cause people to hold stereotypes, make decisions founded on a whimsical starting point, and evaluate the probability of an occurrence based on similar past events. Behavioural finance is not consistent with the EMH theory. While EMH assumes rationality in decision making, behavioural finance recognizes heuristics in the thought processes that people use in decision making. Also, as EMH maintains that markets are efficient, though on different levels, implying that stock prices are unbiased estimates of the stocks' intrinsic value, behavioural finance challenges that stock prices are affected by heuristic errors and biases, emotions, frame dependence, and social influence hence may not be the true fundamental value (Chandra, 2008)

Critics of behavioural finance are mostly supporters of EMH. Fama (1998) insisted that despite there being market anomalies that cannot be elucidated using modern financial theories, EMH cannot be dismissed totally for behavioural finance. He further found that behavioural finance resembles a compilation of market anomalies that are explicable using market efficiency. Behavioural economics' critics contend that the observed heuristics are short-term manifestations that are corrected in the long run. They have often stated that behavioural economics limits itself to digging for failures of computation and cognition.

Often people react to new information without looking at the broad picture of other underlying factors. This would cause non-proportional changes in stock prices. On the other hand, people who have developed a negative stereotype against a certain security would not dare invest in it even if positive information was put forth in regards to it. Behavioural finance recognizes that people's decisions are not solely driven by logic and rationale, but often influence by personal experiences and preferences.

#### 2.2.3 The Law of Demand and Supply

Naturally, for an economy to thrive there must be suppliers of goods that consumers require. The law of supply and demand states that when demand is high and supply is low, the prices of goods go up, whereas when the demand is low and supply is high, the prices go down. However, the prices cannot go too high such that only a few consumers can afford them, as this would leave demand for the goods unmet. Also, when prices go up, suppliers are motivated to produce more until the supply exceeds the demand, and the prices start going down again. The economy reaches equilibrium when the supply and demand are at par. The prices should be optimal. This idea of supply and demand started spouting up in the 17th century; however, it was not until 19th century that the first supply and demand curve was drawn by Fleeming Jenkin in 1870 (Wikipedia, 2016).

Critics of the Law of Supply and Demand claim that supply and demand are not uncontrollable. They can be manipulated by investors to gain their desired outcomes. Also, they are not independent of each other as the law assumes; supply of an item can be influenced by changing its demand, and vice versa. In regards to pricing, prices are hardly ever set through demand and supply, other factors, such as the cost of production are considered. While some products can be over- or undervalued, the law of supply doesn't recognize this given that at every given point, the price is set by the demand and supply of the said good (Hazlitt1983).

Generally, a rise in the Central Bank Rate would indicate that the Central Bank seeks to slow down the rate of credit expansion and consequently the supply of money in the economy, given that higher interest rates on loans would put off borrowers for acquiring new loans. This would lead to lesser investable funds for the public. The price of publicly traded stocks would consequently plunge in response to the law of demand and supply. The decreased demand would cause prices to fall. An increase in interest rates would also increase the cost of capital for companies resulting in lower expected future earnings. Stock prices and indices would thus plunge as well. The converse is true.

In the 1930s the Swedish economist Knut Wicksell formulated the Loanable Funds Theory. He stipulated that the rate of interest in an economy is determined by the demand and supply for loanable funds. Loanable funds refers to the total sum of all the money that companies and the general public have free for saving in any economy, and they lend out to borrowers as an investment instead of using it for personal consumption. Interest rate can be seen as the cost of using the lenders money to the borrower. The market rate will therefore be determined at the point where the demand and the supply of the loanable fund are equal.

This theory assumes that: the money borrowed is solely for investing in capital assets; the decision to invest is made wholly on interest; and that the decision to spend is entirely on interest. These may not be the only factors that determine the decision to invest. According to Keynes (1936), the interest rate is determined by the supply of money and desire to hold money. He viewed money as a liquid asset and interest rate to be the loss of the liquidity. The assumption made was that people hold money for three reasons: to transact, for precaution purposes and for speculative purposes. Thus if people were to hold on money irrespective of the reason, the interest rate will be affected as the supply of the money will decrease.

Theoretically, if the general public embarked on saving more than they borrow, the supply of loanable funds would go up as compared to the demand for the same. Consequently, the cost of borrowing would go down, lowering the interest rates. This makes more funds available to the public for investment in various instruments, such as stock market securities. The increased demand for such securities would lead to higher prices and better returns to investors.

#### 2.3 Determinants of Stock market Performance

In the stock market, there are the bullish investors, those who invest with the prospect of a rise in stock prices, and the bearish investors, who anticipate for the stock market conditions to worsen and thus stock price to fall accordingly. Regardless, all these investors seek to take advantage of the stock price fluctuations to maximize their returns (Mehwish, 2013). These fluctuations in stock prices are affected by various fundamentals, for instance, interest rates,

the rate of inflation, currency exchange rates, government decisions on key economic factors, performance of the company, real output, as well as market efficiency(Karitie, 2010).

#### 2.3.1 Interest Rates

The most important rate of interest to investors is the Central Bank Rate. This rate determines how much commercial banks will charge investors for borrowing funds. If this rate increases, the general public has less money at their disposal since the cost of acquiring money goes up. This also affects businesses in the same way given that their cost of production increases diminishing their profit margins, and also indirectly, in that consumers have less discretionary money to spend, reducing companies' sales, and so do their profits and revenues (Mwanza, 2012). Consequently, it also slows down the growth rate of these companies.

The central bank uses interest rates, that is, the Central Bank Rate, to regulate the amount of money supply in an economy (Hsing, 2004). This in turn, has a substantial effect on stock prices at the financial markets. For instance, if the interest rates are low, consumers will have extra funds at their disposal to trade in fewer goods, as explained above. The prices of goods such as publicly traded shares will thus go up in accordance with the law of supply and demand. This will eventually turn into greater returns to the investors and an overall buoyant market. If the interest rates were to rise, the overall effect will be the opposite of the above.

#### 2.3.2 Inflation

Inflation is the sustained rise in the overall prices for goods and services (Investopedia, 2016). Interest rates and inflation go hand in hand. Central Banks all over the world use the Central Bank Rate to control inflation. Inflation occurs when the money in circulation is too much in comparison to the few goods available for trade. Inflation causes the prices of goods to go up: therefore, central banks can control inflation by regulating liquidity. This is often

done by increasing the Central Bank Rate, and hence making it expensive to acquire money, in an attempt to reduce money supply in the economy.

High inflation in an economy usually slows down sales and thus lower profits are realized. Companies' growth is also slowed down and such changes usually cause lower stock prices, which translates to poor stock market performance. However, commodities may fair well during inflation as their prices rise. This leaves consumers with less discretionary funds to spend, and economic growth becomes stunted (Hsing, 2004).

On the other hand, deflation, which is falling prices as businesses lose pricing power, translate to averagely lower profits for businesses and generally decreased economic activity. Stock prices also decrease, and the stock market goes on a bear run; investors start disposing off their shares and transfer their monies to fixed-income investments in pursuit of better returns. In order to stabilize the economy, the Central Bank may lower the CBR so as to encourage borrowing, and eventually, increased spending to awaken economic activity.

#### 2.3.3 Exchange Rates

Very evidently, the prevailing foreign currency rates directly affect the prices along with the value of securities in foreign countries. Fluctuations in currency exchange rates usually reduce or increase the cost of carrying out business in any country. This in turn affects the prices of shares of companies that carry out trade in foreign currency, for instance, banks and companies that import trade goods. Alternatively, Domestic currency depreciation makes local firms more competitive, this leads to an increase in their export revenues and consequently higher stock prices. It is hard to predict the short-term exchange rate fluctuations given that they are often caused by events, announcements and futures trading, as

opposed to the lone-term fluctuations that are driven by the fundamental market forces of supply and demand (Hsing, 2004).

Granger (2000) stipulated that multinational firms are highly affected by fluctuations in exchange rates; volatility in the exchange rates results in fluctuations in the value of a firm's foreign operations. This could cause a profit or a loss on its balance sheet and consequently changing the firm's stock price. This way, changes in exchange rates are expected to cause movements in stock prices. Currency devaluation could lead to either a rise or a decrease in a firm's stock price subject to whether the particular firm is more of an exporting firm or a heavy consumer of imported inputs. Adler and Dumas (1984) found that even firms whose operations are wholly domestic may be affected by fluctuations in exchange rates, if such movements affect their input and output prices, and consequently the demand for their products and services.

#### 2.3.4 Government Decisions on Economic Policies

The government, many at times, makes decisions that affect the economic environment in which companies operate. Also, when a new government takes over power, new policies are made. Such decisions may be good for business, while sometimes they create an adverse environment for business. Even so, such policies may favour certain groups of people, as opposed to others, for instance, locals against foreigners. They may also lead to changes in interest rates as well as inflation rates, which in turn affect stock market performance and the economy as a whole. Election cycles affect the economies of countries all over the world (Hirsch, 2012).

#### 2.4 Empirical Literature Review

Various studies related to the effect of the central bank rate on stock market performance have been conducted by both monetary and financial economists in the recent past. However, most of these studies were carried out in mostly developed markets, with only a small number of them being done in small and emerging markets, such as Kenya.

#### 2.4.1 Global Empirical Studies

Due to the advanced nature of the developed markets, most of the studies in this area were done in developed markets where information as well as the relevant data is readily available. A lot of these studies have covered a wider perspective, such as the effect of monetary policy decisions on stock market returns. The Central Bank Rate is usually used widely as one of monetary policy strategies.

For instance, in 2008, Ioannidis and Kontonikas examined the effect of the monetary policy on securities returns over the period 1972-2002 in thirteen OECD (The Organization for Economic Co-operation and Development) countries. Using regression methods on the stock market variable against monetary policy variable, they established that there was a positive correlation between securities returns and the level of money supply. Their findings pointed out that monetary policy adjustment have a significant negative effect on nominal, as well as inflation-adjusted securities, returns. Such a correlation was significantly dissimilar from zero at the 5% level in 10 out of the 13 countries. Even so, the gravity of the links varied from one country the other, perhaps due to their intrinsic structural differences (Ioannidis and Kontonikas, 2008).

In the USA alone, Bernanke and Kuttner (2005) investigated the effect of movements in the federal funds rate on stock market returns. They used the Campbell and Ammer model and found that stock price indices increased by 1% for a 0.25% decrease in interest rates.

In the Asian markets, Yoshino et al. (2014) sought to elucidate on the reaction of stock markets to monetary policy, a case of the Tehran Stock Exchange (An Asian Stock Market perspective). Using the VECM (Vector Error Correction Model), they examined the reaction of Asian stock market prices to shocks of monetary policy changes. They found that stock prices continuously rise in reaction to exogenous monetary policy easing. Also, they determined that there exists an endogenous reaction of the stock prices to monetary policy as shown by variance deposition results.

Closer to home in Africa, Nemaorani (2012) studied the relationship between interest rate changes and securities returns in Botswana for a 10 year period running from 2001 to 2011. He used regression method on real and nominal securities returns against short-term interest rates. He found that the relationship between interest rate fluctuations and stock returns was a statistically significant, positive relationship. He explained the counterintuitive results by the fact that the key participants in the domestic stock market was mostly commercial banks, who also benefit the most from increases in lending rates as they exclusively take part in the Bank of Botswana Certificates.

Naceur et al. (2009), studied how Middle East and North African markets respond to monetary policy changes. Securities prices were significantly affected in Jordan (the Middle East), and so were they in Morocco and Tunisia (North Africa). Tight monetary policies were found to cause a decrease in securities prices in Saudi Arabia and Oman. Most studies have used vector autoregressive models to study the effects of monetary policy variables, such as interest rates, on stock market performance.

#### 2.4.2 Local Empirical Studies

Most studies in relation to this topic in Kenya focus on the mode of monetary policy transmission mechanism. The Central Bank Rate fluctuations affect the performance of the entire economy, as well as inflation, via various channels that constitute the monetary policy transmission mechanism.

Recently, Chirchir (2012) examined the relationship between stock prices and interest rates in Kenya using the Toda and Yamamoto (1995) causality testing method. The variables used in the study were interest rates represented as monthly weighted-average lending rates by Kenyan commercial banks, and the NSE share index. Also, the sample data was drawn from the prevailing interest rates and NSE share index values for the period spanning from 2002 to 2012. His findings concluded that there lacked a significant causal relationship between the lending rate of commercial banks and stock prices.

In 1998, Nyamute (1998) researched on the relationship between stock price movements and other financial variables such as interest rates, money supply, exchange rates and inflation rates in Kenya. He used regression models and found that there was a negative relationship between stock prices and interest rates.

In 2008, Ngigi (2008) studied the effect of fiscal and monetary policies, such as adjustments in the Central Bank Rate, on stock market performance in Kenya. They used the general to specific model specification and deduction method. He obtained values for the expected as well as the unanticipated fiscal and monetary policies and used them in finding a link to the securities market performance. He found that expected monetary policy decisions and unanticipated fiscal policies decisions have a negative impact on securities market performance securities market performance whereas unanticipated monetary policy decisions have a positive impact on securities market performance. However, anticipated fiscal policy was found to have no effect on stock market performance.

Using the error correction model for data spanning from 1994 to 2000, Kosimbei et al (2012) examined the decision to use interest rate as opposed to reserve money, or a combination of the two policy instruments. They found that the decision to use interest rates, in comparison to reserve money, as an optimal monetary policy caused minimal losses. When used together, only minimal losses occur as compared to using the instruments separately.

Taborda (2013) researched the relationship between the interest rate spread and profitability of commercial banks in Kenya. He employed empirical studies and researched on banks that were in operation in Kenya as at December 2012. His secondary data was from CBK publications in addition to NSE data. He found that the spread does not significantly affect the profitability of commercial banks. Most commercial banks are listed at the NSE and contribute significantly to the entire market performance.

In other relevant studies, Kilongosi (2005), sought to determine the impact of interest rates on net bank interest margin in commercial banks. His aim was to establish the magnitude to which interest rates influence the bank interest margin. He focused on commercial banks in Kenya for the period 1997 to 2004. His secondary data was collected from the NSE, Economics survey paper and CBK publications. His findings showed that commercial banks ought to concentrate their efforts on non-interest related strategies for their profitability.

#### **2.5 Conceptual Framework**



#### 2.6 Summary of Literature Review

A couple of researchers have studied the effect of macroeconomic variables on stock market performance, or related topics, both locally and internationally. Very few studies have focused on interest rates alone, and specifically the Central Bank Rate. Also, most of these studies have been carried out in developed markets, such as the USA or Europe and Australia. In Kenya, researchers such as Nyamute (1998), Ngigi (1998), Sifunjo (1999), and Chirchir (2012) have researched on similar topics.

This literature review evidently established a research gap in Kenya, given that most of the studies conducted in this area were done in developed markets. Most of these studies were done on similar macroeconomic factors such as the foreign exchange rate, inflation, and other

selected macroeconomic indicators without really focusing on the Central Bank Rate. This study aims at establishing the effect of the Central Bank Rate on stock market performance. A study period of 9 years (2008 – 2016) is considered to be a sufficient time period to support conclusive findings and encompass all details that may have been unnoticed by the earlier research studies. The study will also avail more detailed information to other scholars who may have an interest for this topic, in addition to filling any knowledge gaps that may require additional research.

#### **CHAPTER THREE: RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter explains the research methodology used in carrying out the research study. It provides a detailed description of the procedures and methodological approach used to come up with the conclusion on the effect of the central bank rate on stock market performance at the Nairobi Stock Exchange. The chapter details the research design, data collection techniques as well as data analysis techniques.

#### 3.2 Research Design

This study used descriptive research design. Descriptive research relies on observation of occurences and events so as to develop theories and postulations that explain and elucidate on the observations. It is used to obtain information on the prevailing status of the phenomena to describe "what is" with respect to the variables and conditions of a given situation.

This research design is applicable given that we are attempting to establish the effect of the Central Bank Rate on stock market persormance at the Nairobi Securities Exchange. The study used secondary time series empirical data from the NSE All-Share Index (NASI) and the CBR, as published on the Central Bank of Kenya website (www.centralbank.go.ke), to determine the impact of the CBR on the NSE performance by determining the correlation coefficients between the CBR and the monthly growth in the NSE All share index.

#### 3.3 Data Collection

This study used secondary data collected from the Nairobi Securities Exchange website and the Central Bank of Kenya website (www.centralbank.co.ke) for the period 2008-2016. Secondary data was applicable in this study given that the aim of the study was to determine the effect of the CBR on stock market performance at the NSE, represented by change in the NASI. The sources of the data are creditable organizations with long-standing plausability in the country.

#### **3.4 Data Analysis Techniques**

This study used the statistical software, Statistical Package for the Social Sciences (SPSS), to analyze the data collected. A Multiple Linear Regression Model was employed in establishing the effect that the CBR has on the NASI, taking into account the prevailing rate of inflation. Monthly data was used.

The change in NASI is the dependent variable, the change in CBR is the independent variable, while change in inflation is a control variable.

This was mathematically represented as;

 $\Delta \text{NASIt} = \beta 0 + \beta 1 (\Delta \text{CBRt}) + \beta 2 \Delta (\text{INFt}) + \epsilon$ 

Where;

 $\Delta$ NASIt = the percentage change in the NSE All-Share Index at time t,

 $\Delta CBRt =$  the percentage change in the Central Bank Rate at time t,

 $\Delta$ INFt = the percentage change in the rate of inflation at time t,

 $\beta 0$  = the proportion of the NASI that is independent of the CBR and inflation,

 $\beta 1$  = the proportion of the NASI that is influenced by the value of the CBR,

 $\beta 2$  = proportion of the NASI that is influenced by the rate of inflation

 $\epsilon = \text{error term.}$ 

The error term,  $\varepsilon$ , represents the effect of other factors influencing the rate of growth of the NASI other than the CBR: it helps in stabilizing the model.

To test for significance of the model, the study used:

(i) The t-test. This is used to check the significance of individual regression coefficients in the multiple linear regression models. The hypothesis statements to test the significance of a particular regression coefficient,  $\beta_{j}$ , are:

H<sub>0</sub>:  $\beta_{i} = 0$ 

H<sub>1</sub>:  $\beta_j \neq 0$ ,

The test statistic for this test is:

$$T_0 = \frac{\hat{\beta}_j}{se(\hat{\beta}_j)}$$

Where the standard error  $se(\hat{eta}_j)$  is obtained

The analyst failed to reject the null hypothesis if the test statistic lies in the acceptance region:

$$-t_{\alpha/2,n-2} < T_0 < t_{\alpha/2,n-2}$$

#### (ii) F-test

The F-statistic was used for the analysis of variance (ANOVA) approach to test the significance of the model or the components in the model.

H<sub>0</sub>:  $\beta_i = 0$ 

H<sub>1</sub>: At least one of  $\beta_j \neq 0$ 

The F statistic is:

 $F = \frac{MSR}{MSE}$  Where MSR is Mean Square Regression and MSE is Mean Square Error.

(iii) R<sup>2</sup>

 $R^2$  is the amount of variance in Y explained by the set of X variables. The larger the value of R-squared, the more variability is explained by the linear regression model.

# R<sup>2</sup>=SSR/SSTO

=1- SSE/SSTO

Where, SSTO is the Total Sum of Squares, SSR is the Regression Sum of Squares and SSE is the Error Sum of Squares.

#### CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

#### 4.1 Introduction

This chapter presents the analysis, findings and discussion of the study. The chapter is organized into descriptive statistics, correlation and regression analysis and discussion of the findings. The study sought to determine the effect of the Central Bank rate on stock market performance at the Nairobi Securities Exchange. Secondary data was obtained on monthly basis for the period 2008 to 2016. The data was obtained from Central Bank of Kenya and Nairobi Securities Exchange.

#### 4.2 Description of Study Variables

The study variables were the Stock Market Performance as measured by Nairobi Securities Exchange All Share Index (NASI), Central Bank Rate and inflation. The variables trends are discussed under this section.

#### 4.2.1 Nairobi Securities Exchange All Share Index

NASI was adopted in February 2008 as measure of performance of all shares traded at NSE with the initial index being set at 100. The findings on the trend in NASI are presented in Figure 4.1.

The findings indicate that NASI has recorded an upward trend over the years though not without volatilities from month to month. The initial NASI was a 100 which recorded a downward trend from then to 91.18 in September 2008 and to lowest over the study period of 54.92 in March 2009. The highest NASI index was recorded in March 2015 with an index of 172.13. For the month of September 2016, NASI was 132.66 indicating that the stock market performance dwindled in 2016 compared to 2015.



#### Figure 4.1: Trends in Nairobi Securities All Share Index

#### 4.2.2 Central Bank Rate

This section sought to determine the trends in the Central Bank Rates prevailing in Kenya over the study period. The findings are presented in Figure 4.2. The lowest CBR was recorded in February 2011 where the rate was 5.75% and thereafter, CBR continued to rise. The highest CBR at 18% was recorded in the months of June 2012, May 2012, April 2012, March 2012, February 2012, January 2012 and December 2011. The figure indicates high volatility in CBR in the months of August 2011 and November 2012. Notably, the CBR is set by the Central Bank from time to time and is not reviewed on monthly basis; explaining the reason behind some months having same CBR.



#### Figure 4.2: Trends in Central Bank Rate

#### 4.2.3 Inflation Rate

This section sought to determine the trend in the inflation rates in Kenya. The findings are presented in Figure 4.3. Inflation rate reduced from 16.87% in May 2009 to 3.93% in January 2011. This was the lowest inflation rate recorded over the study period. Inflation increased from 3.93% in January 2011 to 16.45% in March 2012. Inflation rate in Kenya was 6.34% in September 2016. The findings indicate the high volatility in inflation rates from 2008 to September 2013. Inflation has from 2014 been relatively stable.



Figure 4.3: Trends in Inflation Rate

#### **4.2.4 Descriptive Statistics**

The descriptive statistics for inflation, NASI, CBR, change in NASI, change in CBR and change in inflation rate are presented in Table 4.1. Inflation rate had a minimum of 3.93, maximum of 17.07, mean of 8.75 and standard deviation of 4.05. NASI minimum over the study period was 54.92, maximum of 172.93, mean of 109.73 and standard deviation of 34.79. CBR had a minimum of 5.75, maximum of 18, mean of 9.54 and standard deviation of 3.23.

Change in NASI had a minimum of 11.02, maximum of 17.16, mean of -0.50 and standard deviation of 4.72. Change in CBR had a minimum of -57.14, maximum of 21.21, mean of -0.47 and standard deviation of 9.34. Change in inflation rate had a minimum of -15.81, maximum of 12.58, mean of 0.50 and standard deviation of 7.05. NASI had the highest standard deviation of 34.79 indicating the high volatility experienced on the stock market over the study period. Change in CBR had the highest standard deviation among the change in statistics indicating the CBR experienced high volatility over the study period.

#### **Table 4.1: Descriptive Statistics**

					Std.
	Ν	Minimum	Maximum	Mean	Deviation
Inflation	97	3.93	17.07	8.75	4.05
NASI	97	54.92	172.93	109.73	34.79
CBR	97	5.75	18	9.54	3.23
Change in NASI (%)	96	-11.02	17.16	-0.50	4.72
Change in CBR (%)	96	-57.14	21.21	-0.47	9.34
Change in Inflation Rate					
(%)	96	-15.81	12.58	0.50	7.05

#### **4.3 Correlation Analysis**

Correlation analysis was used to determine the relationship between study variables. A coefficient of correlation ranges from +1 to -1 where the zero indicates no relationship and positive coefficient indicates a positive correlation and negative indicates a negative correlation. The findings are presented in Table 4.2.

Central Bank Rate and NASI had a coefficient of correlation of -0.231 and p-value of 0.024. The negative coefficient indicates that CBR has negative effect on stock market performance. The coefficient was less than 0.5 indicating that the relationship is not very strong. The p-value of 0.024 was less than 0.05 and hence indicated that the relationship was significant at 95%. Therefore, Central Bank Rate had a negative and significant effect on stock market performance as measured by NASI.

Inflation and NASI had a coefficient of -0.441. The negative correlation indicated that inflation has a negative effect on stock market performance. The p-value was 0.000 which was less than 0.05 and hence indicated that inflation has a significant effect on stock market performance. Therefore, increase in inflation will have negative and significant effect on stock market performance as measured by NASI.

		NASI	CBR	INF
CBR	Pearson Correlation	231*	1	
	Sig. (2-tailed)	0.024		
INF	Pearson Correlation	441**	.400**	1
	Sig. (2-tailed)	0.000	0.000	
	Ν	96	96	96

#### Table 4.2: Correlation Analysis Results

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

#### **4.4 Regression Analysis**

Regression was used to determine the relationship between the stock market performance and CBR and inflation. The model summary results are presented in Table 4.3. The study obtained a coefficient of correlation of -0.445, coefficient of determination of 0.198 and adjusted coefficient of determination of 0.18. The positive coefficient indicated that CBR and inflation have a negative effect on stock market performance. Hence, increase in CBR and inflation will lead to reduced stock market performance. A coefficient of determination of 0.198 indicated that CBR and inflation explains 19.8% of change in stock market

performance. Adjusted for errors, CBR and inflation explains 18% of changes in stock performance.

**Table 4.3: Regression Model Summary** 

R	R Square	Adjusted R Square
-0.445a	0.198	0.18

a. Predictors: (Constant), INF, CBR

The results of analysis of variance are presented in Table 4.4. The p-value obtained was 0.000 which was less than 0.05 and hence indicating that the relationship obtained was significant. The f-statistic obtained was 11.46 which was less than the critical F-statistic and hence the relationship obtained was significant. Therefore, CBR and inflation have significant negative effect on performance of the stock market.

**Table 4.4: Regression ANOVA Results** 

	Sum of		Mean			
	Squares	df	Square	F	Sig.	
Regression	418.396	2	209.198	11.46	.000a	
Residual	1697.647	93	18.254			
Total	2116.044	95				

a. Predictors: (Constant), INF, CBR

b. Dependent Variable: NASI

The model coefficients obtained by the study are presented in Table 4.5. The regression model coefficients obtained for CBR and inflation were -0.033 and -0.278. The constant was -0.38. The negative coefficients indicated that increase in inflation and CBR will lead to decrease in NASI. CBR had a p-vale of 0.522 and inflation 0.000. This meant that CBR coefficient was not significant and could be excluded in the model while inflation was significant. Hence, inflation has stronger relationship with NASI than CBR. The model developed that could be used in predicting NASI using CBR and inflation was  $Y = -0.38 + -0.033X_1 + -0.278X_2$  where Y is stock market performance measured by NASI,  $X_1$  is CBR and  $X_2$  inflation.

	Unstandardized				
	Coefficients		Standardized		
	В	Std. Error	Beta	t	Sig.
(Constant)	-0.38	0.439		-0.867	0.388
CBR	-0.033	0.051	-0.065	-0.643	0.522
INF	-0.278	0.068	-0.415	-4.091	0.000

**Table 4.5: Regression Model Coefficients** 

a. Dependent Variable: NASI

#### 4.5 Discussion

The study sought to determine the effect of the Central Bank Rate on Stock Market Performance at the Nairobi Securities Exchange. The issue of whether stock prices and interest rate were correlated or not, was considered vital since there had been major stock market crises over the world which could have possibly been averted if it were indeed possible to control stock market prices using interest rates, especially in the wake of globalization. Trend analysis findings indicated that CBR had statistics as higher as 18% in the months of June 2012, May 2012, April 2012, March 2012, February 2012, January 2012 and December 2011. CBR also had high volatility in CBR in the months of August 2011 and November 2012. Inflation also recorded high volatility ranging from 3.93% in January 2011 and 16.45% in March 2012. Inflation rate in Kenya had high volatility in the period 2008 to September 2013 and stabilizing 2014 where inflation have had less than one digit. NASI also continued to fluctuate over the study period.

Correlation analysis was used to show the relationship between the study variables. Central Bank Rate and NASI had a coefficient of correlation of -0.231 and p-value of 0.024. The negative coefficient indicated that CBR had negative effect on stock market performance. The coefficient was less than 0.5 indicating that the relationship was not very strong. The p-value of 0.024 was less than 0.05 and hence indicated that the relationship was significant at 95% confidence level. Therefore, Central Bank Rate had a negative and significant effect on stock market performance. Thus, increase in CBR will lead to reduced stock market performance as measured by NASI. The findings agreed with those of Nyamute (1998) who studied the relationship between stock prices and several variables that is, interest rates, inflation rates, money supply, and exchange rates in Kenya and concluded was that there is a positive correlation between stock prices and interest rates. However, the findings contradicted those of Chirchir (2012) who found no significant relationship between interest rates and stock prices.

Inflation rate and NASI had a coefficient of -0.441. The negative correlation indicated that inflation had a negative effect on stock market performance. The p-value was 0.000 which was less than 0.05 and hence indicated that inflation had a significant effect on stock market

performance. Therefore, increase in inflation will have negative and significant effect on stock market performance as measured by NASI.

Regression was used to determine the relationship between the stock market performance and CBR and inflation. The study obtained a coefficient of correlation of -0.445, coefficient of determination of 0.198 and adjusted coefficient of determination of 0.18. The positive coefficient indicated that CBR and inflation have a negative effect on stock market performance. Hence, increase in CBR and inflation will lead to reduced stock market performance. A coefficient of determination of 0.198 indicated that CBR and inflation explains 19.8% of change in stock market performance. Adjusted for errors, CBR and inflation explained 18% of changes in stock performance.

The p-value obtained was 0.000 which was less than 0.05 and hence indicated that the relationship obtained was significant. The f-statistic obtained was 11.46 which was less than the critical F-statistic and hence the relationship obtained was significant. Therefore, CBR and inflation have significant negative effect on performance of the stock market. The findings compared with those of Ngigi (2008) who studied the effect of fiscal and monetary policies, such as adjustments in the Central Bank Rate, on stock market performance in Kenya. The study found that that expected monetary policy decisions and unanticipated fiscal policies decisions had a negative impact on securities market performance securities market performance. However, anticipated fiscal policy was found to have no effect on stock market performance.

The regression model coefficients obtained for CBR and inflation were -0.033 and -0.278 respectively. The constant was -0.38. The negative coefficients indicated that increase in inflation and CBR will lead to decrease in NASI. CBR had a p-vale of 0.522 and inflation 0.000. This meant that CBR coefficient was not significant and could be excluded in the model while inflation was significant. Hence, inflation has stronger relationship with NASI than CBR. The model developed that could be used in predicting NASI using CBR and inflation was  $Y = -0.38 + -0.033X_1 + -0.278X_2$  where Y is stock market performance measured by NASI, X<sub>1</sub> is CBR and X<sub>2</sub> inflation.

These findings compared to those of Yoshino *et al.* (2014) who found that stock prices continuously rise in reaction to exogenous monetary policy easing and that there existed an endogenous reaction of the stock prices to monetary policy. Further, Taborda (2013) researched the relationship between the interest rate spread and profitability of commercial banks in Kenya and found that the spread does not significantly affect the profitability of commercial banks.

#### **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the summary of the findings, conclusion drawn from the findings and recommendation for policy and areas for further research. Data analysis and summary and conclusions were made in line to the study objective.

#### **5.2 Summary of the Findings**

The study sought to determine the effect of the Central Bank Rate on Stock Market Performance at the Nairobi Securities Exchange. Correlation analysis was used to show the relationship between the study variables. Central Bank Rate and NASI had a coefficient of correlation of -0.231 and p-value of 0.024. The negative coefficient indicated that CBR had a negative effect on stock market performance. The coefficient was less than 0.5 indicating that the relationship was not very strong. The p-value of 0.024 was less than 0.05 and hence indicated that the relationship was significant at 95% confidence level. Therefore, Central Bank Rate had a negative and significant effect on stock market performance. Thus, increase in Central Bank Rate will lead to reduced stock market performance as measured by NASI.

Inflation rate and NASI had a coefficient of -0.441. The negative correlation indicated that inflation had a negative effect on stock market performance. The p-value was 0.000 which was less than 0.05 and hence indicated that inflation had a significant effect on stock market performance. Therefore, increase in inflation will have negative and significant effect on stock market performance as measured by NASI.

Regression was used to determine the relationship between the stock market performance and CBR and inflation. The study obtained a coefficient of correlation of -0.445, coefficient of determination of 0.198 and adjusted coefficient of determination of 0.18. The positive coefficient indicated that CBR and inflation had a negative effect on stock market

performance. Hence, increase in CBR and inflation will lead to reduced stock market performance. A coefficient of determination of 0.198 indicated that CBR and inflation explained 19.8% of change in stock market performance. Adjusted for errors, CBR and inflation explained 18% of changes in stock performance.

The p-value obtained was 0.000 which was less than 0.05 and hence indicated that the relationship obtained was significant. The f-statistic obtained was 11.46 which was less than the critical F-statistic and hence the relationship obtained was significant. Therefore, CBR and inflation have significant negative effect on performance of the stock market.

The regression model coefficients obtained for CBR and inflation were -0.033 and -0.278 respectively. The constant was -0.38. The negative coefficients indicated that increase in inflation and CBR will lead to decrease in NASI. The model developed that could be used in predicting NASI using CBR and inflation was  $Y = -0.38 + -0.033X_1 + -0.278X_2$  where Y is stock market performance measured by NASI, X<sub>1</sub> is CBR and X<sub>2</sub> inflation.

#### **5.3** Conclusion

The study concludes that Central Bank Rate has negative effect on stock market performance. Therefore, increase in Central Bank Rate will lead to reduced stock market performance as measured by Nairobi Securities Exchange All Share Index. Central Bank Rate determines how much commercial banks will charge investors for borrowing funds. Increase in CBR will lead to the general public having less money at their disposal since the cost of acquiring money goes up. This also affects businesses in the same way given that their cost of production increases diminishing their profit margins, and also indirectly, in that consumers have less discretionary money to spend, reducing companies' sales, and so do their profits and revenues. This therefore reduces the ability of investors to invest at the stock market and hence reduces stock market performance.

The study also concludes that inflation rate have a negative effect on stock market performance at Nairobi Securities Exchange. Therefore, increase in inflation rate will lead to reduced performance of the stock market performance. Inflation occurs when the money in circulation is too much in comparison to the few goods available for trade. Inflation causes the prices of goods to go up: slows down sales and thus lower profits are realized. Companies' growth is also slowed down and such changes usually cause lower stock prices, which translates to poor stock market performance. Inflation causes the prices of goods to go up: therefore, central banks can control inflation by regulating liquidity. This is often done by increasing the Central Bank Rate, and hence making expensive to acquire money, in an attempt to reduce money supply in the economy. The effect of this could be reflected by fluctuation of stock prices at the financial markets

The study also concludes that Central Bank Rate and inflation rate combined have significant negative effect on stock market performance. Therefore, increase in inflation and CBR will lead to reduced stock market performance. Inflation and CBR usually moves together since Central Banks use the Central Bank Rate to control inflation. This is often done by increasing the Central Bank Rate, and hence making it expensive to acquire money, in an attempt to reduce money supply in the economy. Reduced liquidity in the economy reduces the available funds for investment at the stock market and hence reduces stock market performance.

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#### **5.4 Recommendations**

The study found that Central Bank Rate negatively affects the stock market performance. Therefore, this study recommends that the Central Bank of Kenya and the Monetary Policy Committee to maintain the CBR at reasonable levels. Minimal volatility on the CBR should be maintained so as to reduce the volatility of the stock market performance. Increase in CBR will lead to increased interest rates and reduced stock market performance. CBK maintaining low CBR rate will promote the performance of the stock market which will lead to stock market development and economic growth. Notably, stock market plays an important role in economic development and growth by creating liquidity and allocation of resources to deficit sectors of the economy.

The study also found that inflation rates increase result in reduced stock market performance. Therefore this study recommends that the Central Bank of Kenya through the monetary policy committee to ensure low inflation rates are maintained in the economy. This will in turn lead to increased performance of the stock market. However, too low inflation rates are not appropriate for an economy. Very low inflation rate is likely to slow down economic growth which will lower the stock market performance. However, high inflation rate will negatively affect the economy and performance of stock market. Therefore, an optimal inflation rate needs to be maintained.

#### 5.5 Limitations of the Study

The study was faced a number of challenges which may need to be considered in adopting the recommendations made and findings presented. The study entirely used secondary data to make the conclusions and recommendations. However, there could be other factors affecting stock market performance in relation to Central Bank Rate and inflation which could not be measured quantitatively. Further, the accuracy of the information obtained was not verified.

Further, the data used was collected for different use and not solely for this study. Data published is usually affected by the objective of publication of the information.

The study independent variables were the central bank rate and inflation rate and examined how these variables affected stock market performance. This means that the study did not capture other variables and information responsible for the stock market performance. These variables could be like economic growth and other qualitative factors. The stock market performance also is affected by performance of other stock markets across the globe. These were not included in the model. Regression models assume that the variables included in the model are the only ones that affect dependent variables.

#### **5.6 Suggestions for Further Research**

A repeat study is recommended on the effect of the central bank rate on stock market performance at the Nairobi Securities Exchange. The study could use both the secondary and primary data. Use of primary data will enable capturing of other factors affecting stock market performance in relation to Central Bank Rate and inflation which could not be measured quantitatively.

The study independent variables were the central bank rate and inflation rate and examined how these variables affected stock market performance and did not capture other variables and information responsible for the stock market performance. A repeat study is therefore recommended on the effect of the central bank rate on stock market performance at the Nairobi Securities Exchange. The study should incorporate other factors other than inflation and central bank rate. These factors could be economic growth, lending interest rates, money supply and performance of the other stock markets in the world.

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# **APPENDICES**

# Appendix 1: List of Listed companies in the Nairobi Securities Exchange (NSE)

1) Eaagads Ltd	22) Kenya Airways Ltd		
2) Kapchorua Tea Co. Ltd	23) Nation Media Group		
3) Kakuzi	24) Standard Group Ltd		
4) Limuru Tea Co. Ltd	25) TPS Eastern Africa (Serena) Ltd		
5) Rea Vipingo Plantations Ltd	26) Scangroup Ltd		
6) Sasini Ltd	27) Uchumi Supermarket Ltd		
7) Car and General (K) Ltd	28) Hutchings Biemer Ltd		
8) Sameer Africa Ltd	29) Longhorn Publishers Ltd		
9) Marshalls (E.A.) Ltd	30) Atlas Development and Support		
10) Barclays Bank Ltd	Services		
11) CFC Stanbic Holdings Ltd	31) Deacons (East Africa) Plc		
12) I&M Holdings Ltd	32) Nairobi Business Ventures Ltd		
13) Diamond Trust Bank Kenya Ltd	33) Athi River Mining		
14) HF Group Ltd	34) Bamburi Cement Ltd		
15) KCB Group Ltd	35) Crown Berger Ltd		
16) National Bank of Kenya Ltd	36) E.A.Cables Ltd		
17) NIC Bank Ltd	37) E.A.Portland Cement Ltd		
18) Standard Chartered Bank Ltd	38) KenolKobil Ltd		
19) Equity Group Holdings	39) Total Kenya Ltd		
20) The Co-operative Bank of Kenya	40) KenGen Ltd		
Ltd	41) Kenya Power & Lighting Co Ltd		
21) Express Ltd Ord 5.00	42) Umeme Ltd		

- 43) Jubilee Holdings Ltd
- 44) Pan Africa Insurance Holdings Ltd
- 45) Kenya Re-Insurance Corporation Ltd
- 46) Liberty Kenya Holdings Ltd
- 47) Britam Holdings Ltd
- 48) CIC Insurance Group Ltd
- 49) Olympia Capital Holdings Ltd
- 50) Centum Investment Co Ltd
- 51) Trans-Century Ltd
- 52) Home Afrika Ltd
- 53) Kurwitu Ventures
- 54) Nairobi Securities Exchange Ltd
- 55) B.O.C Kenya Ltd
- 56) British American Tobacco Kenya

#### Ltd

- 57) Carbacid Investments Ltd
- 58) East African Breweries Ltd
- 59) Mumias Sugar Co. Ltd
- 60) Unga Group Ltd
- 61) Eveready East Africa Ltd
- 62) Kenya Orchards Ltd
- 63) A. Baumann CO Ltd
- 64) Flame Tree Group Holdings Ltd

65) Telecommunication

- Technology
- 66) Safaricom Ltd

# Appendix II: Study Data

Month	NASI	CBR	Inflation
Sep-08	91.18	10	6.34
Oct-08	75.53	10	6.47
Nov-08	76.15	10.5	6.44
Dec-08	69.94	10.5	6.46
Jan-09	70.68	10.5	6.56
Feb-09	60.51	11.5	6.72
Mar-09	54.92	11.5	6.88
Apr-09	58.43	11.5	6.87
May-09	59.41	11.5	6.77
Jun-09	65.96	11.5	6.58
Jul-09	71.66	11.5	6.42
Aug-09	70.18	11.5	6.31
Sep-09	68.12	11.5	6.29
Oct-09	66.63	11.5	6.34
Nov-09	69.16	11.5	6.54
Dec-09	70.64	10	6.63
Jan-10	77.29	8.5	6.65
Feb-10	78.74	8.5	6.69
Mar-10	82.65	8.5	6.63
Apr-10	87.66	8.5	6.63
May-10	91.15	8.5	6.74
Jun-10	93.73	8.5	6.88
Jul-10	95.74	8.5	6.97
Aug-10	99.40	8.5	7.08
Sep-10	97.09	8.5	7.19
Oct-10	101.16	8.5	7.33
Nov-10	100.92	8.5	7.19
Dec-10	97.00	8.5	7.05
Jan-11	101.08	8.5	6.85
Feb-11	97.62	8.5	6.58
Mar-11	91.50	8.5	6.39
Apr-11	93.47	8.5	6.21
May-11	93.84	8.5	6.01
Jun-11	91.97	8.5	5.72
Jul-11	87.31	8.5	5.39
Aug-11	79.52	8.5	5.05
Sep-11	73.83	8.5	4.75
Oct-11	69.62	8.5	4.5
Nov-11	71.09	8.5	4.44
Dec-11	66.53	8.5	4.56
Jan-12	68.57	8.5	4.96
Feb-12	69.75	9.5	5.61
Mar-12	73.37	9.5	6.33
Apr-12	75.45	9.5	7.24

Month	NASI	CBR	Inflation
May-12	78.71	9.5	8.2
Jun-12	79.73	11	9.38
Jul-12	82.87	11	10.67
Aug-12	83.70	13	12.04
Sep-12	86.37	13	13.29
Oct-12	88.74	16.5	14.33
Nov-12	92.43	16.5	15.27
Dec-12	93.13	18	15.97
Jan-13	101.91	18	16.4
Feb-13	106.37	18	16.5
Mar-13	113.61	18	16.45
Apr-13	119.70	18	15.93
May-13	124.83	18	15.1
Jun-13	121.71	18	14.02
Jul-13	120.87	16.5	12.82
Aug-13	123.95	11	11.49
Sep-13	123.23	7	10.18
Oct-13	131.11	6.25	9
Nov-13	136.78	6.25	7.88
Dec-13	135.47	6	6.88
Jan-14	140.62	6	5.96
Feb-14	137.96	6	5.2
Mar-14	143.23	6	4.49
Apr-14	146.54	5.75	4.05
May-14	150.92	5.75	3.93
Jun-14	149.67	6	3.96
Jul-14	151.59	6	4.02
Aug-14	155.72	6.75	4.12
Sep-14	161.27	6.75	4.4
Oct-14	161.34	6	4.69
Nov-14	161.44	6	5.03
Dec-14	162.59	6.75	5.43
Jan-15	164.43	6.75	5.85
Feb-15	172.13	6.75	6.32
Mar-15	172.93	6.75	7.03
Apr-15	171.95	7	7.88
May-15	167.62	7	8.64
Jun-15	163.06	7	9.24
Jul-15	157.02	7	10.24
Aug-15	148.03	7.75	11.42
Sep-15	146.65	7.75	12.41
Oct-15	139.87	7.75	13.42
Nov-15	142.74	7.75	14.35
Dec-15	144.30	8	15.11
Jan-16	141.07	8	15.93
Feb-16	140.61	8.25	16.72
Mar-16	145.62	8.25	17.07

Month	NASI	CBR	Inflation
Apr-16	146.34	8.5	16.87
May-16	145.86	8.5	16.56
Jun-16	144.40	8.5	16.27
Jul-16	139.72	9	15.25
Aug-16	142.82	9	14.13
Sep-16	132.66	9	13.02