

**THE EFFECT OF CENTRAL BANK RATE ON THE SHARE  
RETURN OF COMMERCIAL BANKS LISTED AT THE NAIROBI  
SECURITIES EXCHANGE**

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF  
SCIENCE IN FINANCE, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI**

**NOVEMBER, 2014**

## DECLARATION

This research Project is my original work and has not been presented in any other University.

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

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## **ACKNOWLEDGEMENTS**

I sincerely wish to express my appreciation to my supervisor Mr. Herrick Ondigo for his immense support and guidance without which this research project would not have been complete. I wish to appreciate and thank the Board of Post Graduate Studies of the University of Nairobi for giving me an opportunity to take this course. I also wish to appreciate the lecturers who taught me throughout the entire course.

## **DEDICATION**

This project is dedicated to my entire family and close friends for their moral support, understanding and perseverance during my study period. They have been of constant encouragement during the entire period.

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## **LIST OF ABBREVIATIONS**

ANOVA	Analysis of Variance
CBK	Central Bank of Kenya
CBN	Central Bank of Nigeria
CBR	Central Bank Rate
IMF	International monetary Fund
KNBS	Kenya National Bureau of Statistics
NSE	Nairobi Securities Exchange
ROE	Return on Equity
VAR	Value at Risk



## **ABSTRACT**

A sound financial sector not only fosters economic growth by mobilizing resources for investment, but also provides a framework for undertaking effective monetary policy. The banking system and the financial system more generally, is a key pillar in any economy, considering its basic function, which is to reallocate funds from agents with a surplus to those with a deficit. A well-developed financial system promotes economic growth by enabling economic agents to diversify their portfolios and meet their liquidity requirements. The objective of this project was to determine the effect of central bank rate on the stock return of shares of commercial banks listed at the Nairobi Securities Exchange. The study adopted a descriptive research design.

The total population consisted of all 61 companies listed at the equity section of the NSE as at 31 December 2013. Since the population of the study was small, the study was using secondary data which was readily available from both the Central Bank of Kenya and the Nairobi Securities Exchange, all the listed commercial banks were included hence a census study. The data was collected using data collection sheet which was edited, coded and cleaned. The study established that the independent variable CBR and the moderating variables TBR, REPO, and Inflation had varying degrees of relationship with the share returns.

The study established that central bank rate influenced the returns of commercial banks listed at the NSE positively. The study also deduced that inflation rate negatively influenced the returns of commercial banks listed at the NSE. The study also revealed that Repo rates positively influenced returns of the listed commercial banks at the NSE. This study also established that repo rates were positively correlated with the returns at the commercial banks listed at the NSE while inflation rate negatively influenced returns. However, the variables were generally statistically insignificant as indicated by the high significant values. This study therefore recommended that the Country should handle its macroeconomic policies appropriately as the changes in the macroeconomics like repo rates and inflation bring about devaluation of the currency and affect the performance of the commercial banks listed at the Nairobi Securities Exchange.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of the Study**

A sound financial sector not only fosters economic growth by mobilizing resources for investment, but also provides a framework for undertaking effective monetary policy. Problems and inefficiencies in financial systems can reduce the effectiveness of monetary policy, deepen or prolong economic downturns, and, in case of large scale problems, trigger capital flight. Moreover, financial weaknesses or crisis in one country can rapidly spill over across national borders, as clearly evidenced by the recent 2008 global financial crisis, which had far reaching effects in many countries across the world.

A central bank's main objective during a crisis is to contain the damage and limit the impact of the crisis on the real economy. This can be achieved through various means such as enhancing confidence and calming the market, ensuring uninterrupted flow of credit, reducing uncertainty; ensuring that markets for short term credit function properly, among others. Additionally, central banks also have an important role in reducing the probability of a crisis occurring by undertaking pre-emptive measures that among other things reduce systemic risks. The role played by central bank as a key regulator of the financial sector is, therefore, critical

The banking system and the financial system more generally, is a key pillar in any economy, considering its basic function, which is to reallocate funds from agents with a surplus to those with a deficit (Gelos, 2006). By solving the problem of asymmetric

information among agents and by diversifying risks, banks manage to decrease the costs of the exchange of financial funds and enable their efficient allocation within the economy. The central bank is responsible for the conduct of monetary policy to pursue those objectives. Central banks in the world such as the Central Bank of Nigeria (CBN, 2010) often employ certain monetary policy instruments like bank rate, open market operation changing reserve requirements and other selective credit control instruments to regulate the monetary policy. Central banks also determine certain targets on monetary variables.

The Central Bank of Kenya (CBK,2013), like most other central banks around the world, is entrusted with the responsibility of formulating and implementing monetary policy directed at achieving and maintaining low inflation as one of its two principal objectives; the other being to maintain a sound market-based financial system (CBK, 2013). Since its establishment in 1966, the CBK has essentially used a monetary-targeting framework to pursue the inflation objective. The use of this monetary policy strategy has been and continues to be based on the presumption that money matters, that the behavior of monetary aggregates has a major bearing on the performance of the economy, particularly on inflation and general economic growth (CBK, 2013).

Although the monetary policy framework has essentially remained the same over the past four decades, the CBK has been continuously refining its monetary policy operations and procedures in order to enhance efficiency and effectiveness in delivering its objectives in a changing financial and economic environment (Ondieki and onsase, 2013). Thus, following the persistent failure of monetary policy to deliver on its inflation objective in

the late 1980s and the early 1990s, the CBK effected significant changes to monetary policy implementation procedures, including the introduction of new instruments (Durevall and Ndungu, 1999). The radical changes effected included the shift towards using indirect instruments of monetary control by introducing open market operations (OMO) and by liberalizing interest rates (CBK, 2013).

Consequently, the monetary policy framework has become more specific with respect to the growth objective being pursued and the instruments used to achieve it. Before then, monetary policy in Kenya was sparingly used as a tool of economic management because of the pervasive controls covering almost all economic activities, including the banking sector (CBK, 2013). Monetary policy, under the regime of direct controls, was more preoccupied with reacting rather driving monetary developments. Central Bank of other countries like Ghana uses a short-term money market interest rate as its operating target. This is where changes in the short-term interest rate are expected to influence the cost of funding for banks and eventually the level of retail deposit and lending interest rates (Arto, 2011). Today, banks all over the world continue to lend monies to clients depending on base rates set up by Central Banks' with many factors including risk of borrowing and profit margin being determined by the bank. The stated interest rates on most loans are determined through negotiations between the borrower and the lender (Goodfriend, 1991).

The ability to hit the interest rate target consistently plays a critical role in monetary policy effectiveness. It is also essential for the communication of the Central Bank's policy stance to the public (Ennis and Keister, 2008). The changes in transmission of

interest rate through the interest rate channel should ideally take place over a relatively short period of time (Goldwaite, 1995); as a faster transmission would strengthen the impact of monetary policy on the real economy. Lending is the principal business activity for most commercial banks with the loan portfolio typically forming the largest asset and the predominate source of revenue (Durevall and Ndungu, 1999).

### **1.1.1 Central Bank Rate**

Monetary policy refers to the combination of measures designed to regulate the value, supply and cost of money in an economy. It can be described as the art of controlling the direction and movement of credit facilities in pursuance of stable price and economy growth in an economy (Chowdhury, Hoffman and Schabert, 2006). The Central Bank rate is one of the monetary tools that is use to regulate liquidity in an economy. Monetary Policy is used to describe the activities undertaken by a government agency, typically the central bank of a country, to moderate the supply of money, availability of money, and cost of money or rate of interest to help promote economic growth, price stability, high employment, and a stable currency for use in international trade transactions (Chowdhury et al., 2006).

The Central Bank Rate is operationalised through the Repo market once the monetary policy committees meets once a month and decides what action to take either to increase the CBR in the case of restrictive money policy and decreasing the CBR in the case of expansionary monetary policy . The dealer at central bank will issue repo to reduce the amount of money in circulation and reverse repos to increase the amount of money in circulation. Depending on the targeted amount the repo rate will then rise and fall

according to achieve the targeted position by the Central Bank. To attract more funds the dealer will offer better rates to the bank resulting in higher repo rates and vice-versa (CBK, 2013).

The Central Bank Rate in Kenya has oscillated between the lows of 5.75% and highs of 16.50% between 2006 and 2013 with the lowest CBR in January 2011 and the highest in November 2011 and July 2012.

### **1.1.2 Stock Returns**

A return is basically a measurement used to measure profits from an investment during the holding period. The return includes both capital gains and dividends earned. It is commonly believed that large decreases in stock prices are reflective of future recession, and increasing stock prices are leading indicators of future economic growth (Mun, Siong & Thing, 2008). Stock returns are the returns that the investors generate out of the stock market. This return could be in the form of profit through trading in the secondary market or in the form of dividends given by the company to its shareholders. Stock returns are not fixed ensured returns and are subject to market risks. Stock returns are not homogeneous and may change from investor-to-investor depending on the amount of risk one is prepared to take and the quality of his stock market analysis (Choudhry, 1999).

Jordan and Fischer (2002) defined return as the motivating force and the principal reward in the investment process and it is the key method available to investors in comparing alternative investments. They document that return has two components. The basic component is the periodic cash receipts (or income) on investments, either in the form of

interest or dividends. The second component is the change in the price of the asset – commonly called capital gain or loss. This element of return is the difference between the purchase price and the price at which the asset can be sold. According to Reilly and Brown (2003) on the other hand, stock return is the compensation for the time, the expected rate of inflation and the uncertainty of the return after investing in stocks.

### **1.1.3 Effects of Central Bank Rate on Stock Returns**

There is general agreement among economists and policymakers that monetary policy works mainly through interest rates. When the central bank policy is tightened through an increase in CBR, for instance, interest rates rise. Interest rates reflect the interaction between the, supply of savings and the demand for capital; or between the demand for and the supply of money (Jordan and Fischer, 2002). With increases in the interest rates, there will be limited loans to the citizenry to purchase stocks hence a decrease in stock prices which reduces stock returns (Capital gains).

By using the CBR, central banks affect the rate of growth of the money supply, the level of interest rate, security prices, credit availability and liquidity creation from the and of commercial bank. These factors, in turn can exert monetary imbalances or shocks on the economy by influencing the level of investment, consumption, imports, exports, government spending, total output, income and price level in the economy (Mishra and Pradhan, 2008). Therefore changes in the CBR affects credit extension to the private sector which affects expected returns from investments and consequently the performance of the stock price at the exchange.

#### **1.1.4 Listed Commercial Banks in Kenya**

The Central Bank of Kenya (CBK) was established under the Central Bank Act (CAP 481), 1966. The Act assigned to the CBK the statutory objectives to assist in the development and maintenance of a sound monetary and credit, and banking system in Kenya, conducive to the orderly and balanced economic development of the country and the external stability of the currency among other functions. With such broadly defined objectives referring only obliquely to price stability, the CBK tended to underpin its monetary policy strategy with controls on interest rates and the volume of credit expansion by banking institutions as its operational targets, and money supply growth as its intermediate target. The operational targets were communicated to banks through guidelines issued from time to time. There were, however, no explicit penalties for non-compliance (Durevall and Ndungu, 1999).

The Nairobi Securities exchange has 11 listed commercial banks. These include: Barclays bank of Kenya Limited, CFC Stanbic Holding Limited, I&M Holding Limited, Diamond Trust Bank Kenya Limited, Housing Finance Company Limited, Kenya Commercial Bank Limited, National Bank of Kenya Limited, NIC Bank limited, Standard Chartered Bank Limited, Equity Bank Limited and The Co-operative Bank of Kenya Limited. These shall form the population of the study.

#### **1.2 Research Problem**

According to (Abor, 2004), a financial system of any economy is made of institutional arrangements designed to transform savings into investments. These institutional



arrangements are determined by legal rules concerning the design of financial instruments and regulation of banks and also more importantly by banking practices. While there is widespread agreement that banks play a key part in the transmission of monetary policy actions to the economy, there is considerable controversy over the precise role that banks play. The focus of this debate being whether bank lending plays a special part in the monetary transmission mechanism. If a special lending or credit channel exists, changes in the willingness and ability of banks to extend credit may have implications for aggregate economic activity (Durham, 2003).

A well-developed financial system promotes economic growth by enabling economic agents to diversify their portfolios and meet their liquidity requirements. In this form of efficiency, financial resources are allocated in a more efficient way and risk management solutions are made available. The existence of these finance elements can push an economy's production possibility frontier outwards and hence a higher growth potential is expected in the long run. Based on the same rationale, if the operation efficiency of the financial system can be raised by compliance of required standards of performance, there will have a positive impact on long-term economic growth (Estrella, 2001). Efficiency in the banking sector is recognized by the Central Bank as a precondition for macroeconomic stability and important for effective monetary policy execution. In addition, a banking sector's ability to allocate credit efficiently is expected to have positive implications for economic growth (Hartmann, 2004).

Several scholars have reviewed the relationship between central bank rate policies on the return of commercial banks. For instance, Were and Tiriongo (2012) examined the

central bank's response to economic crises from a developing African economy perspective by using lessons from Kenya's experience. Abor (2004) studied the impact of bank of Ghana policy rate on commercial bank lending rate by reviewing the case of Barclays Bank Ghana. Kaggwa (2008) studied interest rates and loan portfolio performance in commercial banks using a case study of Centenary Bank, Entebbe Road Branch Uganda. (McShane and Sharpe, 1985) postulates a theoretical model of determining bank interest margins based on hedging behaviour of interest margin; determining the dealer model of bank interest margin and applies this model to Australian banks. Ongena, Steven and Smith (2001) did empirical investigations on the determinants of interest rate spread of commercial banks in Kenya. Melosi (2000) reviewed the signaling effects of monetary policy. Melosi developed a DSGE model in which the policy rate signals to price setters the central bank's view about macroeconomic developments.

From these analyses, there is no study that has looked at the effect of central bank rate on the stock return of shares of commercial banks listed at the Nairobi Securities Exchange. This study will therefore seek to fill this research gap by evaluating the effect of central bank rate on the stock return of shares of commercial banks listed at the Nairobi Securities Exchange. To achieve this, the study will answer one question: How does central bank rate affect stock return of shares of commercial banks listed at the Nairobi Securities Exchange?

### **1.3 Research Objective**

The objective of this project was to determine the effect of central bank rate on the stock return of shares of commercial banks listed at the Nairobi Securities Exchange.

The study was guided by the following specific research objectives:

- i. To determine the influence of inflation on the stock return of shares of commercial banks listed at the Nairobi Securities Exchange
- ii. To establish the effects of REPO rate on the stock return of shares of commercial banks listed at the Nairobi Securities Exchange
- iii. To establish the influence of 91-Day Treasury bills on the stock return of shares of commercial banks listed at the Nairobi Securities Exchange
- iv. To determine the effect of central bank rate on the stock return of shares of commercial banks listed at the Nairobi Securities Exchange

### **1.4 Value of the Study**

To scholars and academicians, this study would increase body of knowledge to the scholars of monetary policy transmission in the Kenyan Market and performance of commercial banks. It would also suggest areas for further research so that future scholars can pick up these areas and study further. Commercial Bank and other non bank financial institutions would also gain from this study as it would help banks determine the likely

impact of monetary policy committee decisions on the CBR on returns recorded by commercial banks.

The study would also be important to the government especially the Ministry of Finance for making policy decisions whose overall objectives is to influence the level of economic activity and manage the monetary policy. It also would help to facilitate better monetary policy transmission in the CBK.

As a tool to monetary policy committee of the Central Bank, this study would provide information and methodologies for the committee to ensure effective implementation of their decisions regarding money supply and demand.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter conducted a review of the literature on monetary policy and interest rates in an economy. From this review broad categories would be derived which helped to easily identify the critical relationship between monetary policy and interest rates in an economy. Specifically, the chapter addressed the theoretical framework guiding the study, measurement of interest rates, empirical literature and chapter summary.

#### **2.2 Theoretical Review**

This section presented the theoretical foundation of the study where it discussed three theories including: financial intermediation theory, stakeholders' theory and stewardship theory. These theories are discussed below:

##### **2.2.1 Financial Intermediation Theory**

Financial intermediation is a process which involves surplus units depositing funds with financial institutions who then lend to deficit units. Bisignano (1998) and Leland and Pyle (1977) identify that financial intermediaries can be distinguished by four criteria: first their main categories of liabilities (deposits) are specified for a fixed sum which is not related to the performance of a portfolio. Second the deposits are typically short-term and of a much shorter term than their assets. Third a high proportion of their liabilities are chequeable (can be withdrawn on demand). And fourth their liabilities and assets are

largely not transferable. The most important contribution of intermediaries is a steady flow of funds from surplus to deficit units.

According to Wachtel (2001), the role of the financial intermediary is essentially seen as that of creating specialized financial commodities. These are created whenever an intermediary finds that it can sell them for prices which are expected to cover all costs of their production, both direct costs and opportunity costs. Financial intermediaries exist due to market imperfections. As such, in a 'perfect' market situation, with no transaction or information costs, financial intermediaries would not exist (Leland and Pyle, 1977). Numerous markets are characterized by informational differences between buyers and sellers. In financial markets, information asymmetries are particularly pronounced. Borrowers typically know their collateral, industriousness, and moral integrity better than do lenders. On the other hand, entrepreneurs possess inside information about their own projects for which they seek financing (Leland and Pyle, 1977). Moral hazard hampers the transfer of information between market participants, which is an important factor for projects of good quality to be financed. This theory is relevant for this study because it clearly illustrates the key purpose for which commercial banks are formed. The commercial banks are involved in the financial intermediation process and as such are greatly affected by the Central Bank Rate policy as it affects the demand and supply of their loans.

### **2.2.2 Stakeholder Theory**

Stakeholder governance has two main theories namely the abuse of executive power model and the stakeholder model. The Anglo-American corporate governance

arrangements invests more power with management who are likely to abuse in order to serve their own interest at the expense of stakeholders (Hutton, 1995). Supporters of this view argue that the institutional restraints on managerial behaviour, such as non-executive directors, the audit process, the threat of takeover, are simply inadequate to prevent managers abusing corporate power. Shareholders protected by liquid asset markets are uninterested in all but the most substantial of abuses (Keasey, Thompson & Wright, 1997).

Perhaps the most fundamental challenge to the orthodoxy is the stakeholder model, with its central proposition is that a wider objective function of the firm is more equitable and more socially efficient than one confined to shareholder wealth (Keasey, Thompson & Wright, 1997). The well-being of other groups such as employees, suppliers, customers and managers, who have a long-term association with the firm and therefore a “stake” in its long-term success, is recognized. The goal of corporate governance is to maximize the wealth creation of the corporation as a whole. Specifically, a stakeholder is defined as any group or individual who can affect or be affected by the achievement of the firm's objectives (Freeman, 1984), and this is “meant to generalize the notion of stockholder as the only group to whom management need to be responsive” (Freeman, 1984). These definition were formulated from the base that modern corporation is affected by a large set of interest groups, including at a minimum shareholders, lenders, customers, employees, suppliers and management, which are often referred to as the primary stakeholders, who are vital to the survival and success of the corporation(Freeman, (1984).

Corporations' secondary stakeholders include the local community, the media, the courts, the government, special interest groups and the general public, that is society in general. From this perspective, corporate governance debates often proceed with a fixation on the relationship between corporate managers and shareholders, which presupposes that there is only one right answer (Keasey, Thompson & Wright, 1997). In fact, shareholders are difficult and reluctant to exercise all the responsibilities of ownership in publicly held corporations, whereas other stakeholders, especially employees, may often too easily exercise their rights and responsibilities associated as owners. This is a compelling case for granting employees some form of ownership. In the context of this theory, Central Bank as the regulatory body mandated by law to oversee and regulate the monetary policy in a country has to do this by considering the welfare of all the stakeholders. Through the application of the Central Bank rate policy, the CBK needs to look at the wider interests of all stakeholders including commercial banks, and the loan beneficiaries and economic development purposes (Leland and Pyle, 1977).

### **2.2.3 Stewardship Theory**

To the degree that an executive feels their future fortunes are bound to their current corporate employers through an expectation of future employment or pension rights, then the individual executive may perceive their interest as aligned with that of the corporation and its owners, even in the absence of any shareholding by that executive (Donaldson, 1985). In the same manner, commercial banks operate as agents of the central Bank hence they have to adhere to the regulations set by the CBK.



Given the absence of an inner motivational problem among executives, there is the question of how far executives can achieve the good corporate performance to which they aspire. Thus, stewardship theory holds that performance variations arise from whether the structural situation in which the executive is located facilitates effective action by the executive. The issue becomes whether or not the organisation structure helps the executive to formulate and implement plans for high corporate performance (Donaldson, 1985). Structures will be facilitative of this goal to the extent that they provide clear, consistent role expectations and authorize and empower senior management. This theory is important because commercial banks have to operate in a manner that does not contravene the provisions of the CBK else they face closure.

## **2.3 Determinants of Share Returns**

The issue of stock return has been identified as an important reason for business growth or failure. It is imperative for firms to be able to finance their operations and growth over time if they are ever to remain and play an increasing and predominant role in creating value-added providing employment as well as income in terms of profits, dividends, and wages to households, expanding the size of the direct productive sector in the economy, generating tax revenue for the government and facilitating poverty reduction through fiscal transfers and income from employment and firm ownership (Hovakimian, et al. 2001).

### **2.3.1 Interest Rates**

The rationale for a relationship between interest rates and stock market return is that stock prices and interest rates are negatively correlated. A higher interest rate ensuing

from contractionary monetary policy usually affects stock market return negatively because higher interest rates reduce the value of equity as stipulated by the dividend discount model; make fixed income securities more attractive as an alternative to holding stocks; may reduce the propensity of investors to borrow and invest in stocks; and raise the cost of doing business, hence affecting profit margins. On the other hand, lower interest rates resulting from expansionary monetary policy tend to boost the stock market.

Hardouvelis (1987) pointed out that there exists an inverse relationship between stock prices and changes of interest rates, and that this can be rationalized in terms of money supply surprises. The negative (positive) reaction of stock prices (interest rates) to money supply surprises can be explained in terms of the following two hypotheses. The expected real interest rate hypothesis claims that stock prices decline because the real component of nominal interest rates is expected to increase, thereby increasing the discount rate at which future cash flows are capitalized and also because higher interest rates affect real output adversely, thereby reducing future operating cash flows.

Howells and Keith (2000) argue in their book that, equity prices just like the price of all assets will respond to changes in interest rates. That is to mean, if the Central Bank raises the interest rates, for instance, the rate available on the risk-free assets goes up and if more can be earned on risk-free assets, then the holders of risky shares will want a higher return as well. The share prices will also fall if the equity market as a whole becomes more risk averse and demand a higher premium for any level of risk. However, Bernanke and Kuttner (2003) concluded that very little of the market's reaction can be attributed to the effect of monetary policy on the real rates of interest. Robinson (1952) argued that the

financial system does not spur economic growth and that, instead financial development simply responds to developments in the real sector. Thus, many influential economists give a very minor role, if any, to the role of financial system, particularly the stock market in economic growth. The interest rate that concerns the central bank as a monetary policy is the 3 months' short-term interest rate also called the Treasury bill rate which it influences through the sale of short term government securities and forms the basis for the setting of commercial bank lending rates.

### **2.3.2 Inflation Rate**

It is generally believed that changes in economy affect the stock market performance. It is also believed that changes in stock market in turn will influence the economy as stock market serves as a leading economic indicator. The literature investigating the relationship between stock market returns and inflation is long and has produced diverse findings.

Inflation rate of a country is the rate at which prices of goods and services increasing its economy. It is an indication of the rise in the general level of prices over time. Since it's practically impossible to find out the average change in prices of all the goods and services traded in an economy due to the sheer number of goods and services present, a sample set or a basket of goods and services is used to get an indicative figure of the change in prices, which we call the inflation rate. According to Friedman's proposition (1963), inflation is always a monetary phenomenon, which suggests a relationship between money growth and inflation. Monetary policy affects macroeconomic variables largely through its impact on interest rate.

The central bank uses monetary policy tools to manipulate the money supply and interest rates, which influence indicators like output, exchange rates, and unemployment rate which consequently affect inflation and the overall economy. As a result, expansionary monetary policy will encourage investment and consumption demand leading to higher inflation, while tightening monetary policy will cool down the economy resulting in lower inflation. This proposition is supported by a significant number of empirical studies. Examples include Lee (1992) who investigates the causal relation and dynamic interaction between asset returns, real activity, and inflation and finds that interest rates explain a substantial fraction of variation in inflation. Applying a rolling VAR model to examine the relations among stock prices, interest rate, inflation and real activity, Park and Ratti (2000) find that monetary policy affects inflation.

### **2.3.3 Repo Rate**

Repo rate is the interest rate at which the central bank sells and or repurchases government securities to or from commercial banks ([www.centralbank.go.ke](http://www.centralbank.go.ke)). In Repo transactions, securities are exchanged for cash with an agreement to repurchase the securities at a future date. The securities serve as collateral for what is effectively a cash loan and, conversely, the cash serves as collateral for a securities loan. There are several types of transactions with essentially equivalent economic functions: standard repurchase agreements, sell/buy-backs and securities lending defined as repos. A key distinguishing feature of repos is that they can be used either to obtain funds or to obtain securities (Brunetti, Filippo and Harris, 2009). This latter feature is valuable to market participants because it allows them to obtain the securities they need to meet other contractual

obligations, such as to make delivery for a futures contract. In addition, repos can be used for leverage, to fund long positions in securities and to fund short positions for hedging interest rate risks (Ewerhart and Tapking, 2008). As repos are short-maturity collateralized instruments, repo markets have strong linkages with securities markets, derivatives markets and other short-term markets such as interbank and money markets which are important monetary policy tools.

Repos are useful to central banks both as a monetary policy instrument and as a source of information on market expectations. Repos are attractive as a monetary policy instrument because they carry a low credit risk while serving as a flexible instrument for liquidity management. In addition, they can serve as an effective mechanism for signaling the stance of monetary policy (Hördahl and King, 2008). Repo markets can also provide central banks with information on very short-term interest rate expectations that is relatively accurate since the credit risk premium in repo rates is typically small. In this respect, they complement information on expectations over a longer horizon derived from securities with longer maturities (Eggerston and Woodford, 2003).

#### **2.3.4 Money Supply**

Money supply is the sum of currency outside banks and deposit liabilities of commercial banks (CBK, 2012). Deposit liabilities are defined in narrower and broader senses as follows: narrow money (M1); broad money (M2); and extended broad money (M3).

These aggregates are defined as follows:

M1= Currency outside banking system + demand deposits

$M2 = M1 + \text{time and savings deposits} + \text{certificates of deposits} + \text{deposit}$

Liabilities of Non-Bank Financial Institutions (NBFIs)

$M3 = M2 + \text{residents' foreign currency deposits.}$

The CBK has been targeting monetary aggregate (broad money M3) in its policy decisions, Rotich et al. (2007) implying that at times of high inflation, or positive output, the CBK responded by reducing money supply.

Several studies have studied the relationship between money supply and stock returns.

Naik (2013) established that money supply causes stock prices only in the long-run but no causality from stock price to money supply as found either in the long run or in the short run. One possible explanation may be the fact that money supply changes have an indirect effect through their effect on real output which in turn impact the stock prices.

Osamuonyi and Evbayiro-Osagie (2012) also arrived at the same finding when they attempted to determine the relationship between macroeconomic variables and the Nigerian capital market index. Money supply (M2) was found to have a significant but negative relationship with Stock Market Index in both the short- run and long run.

Early research on the relation between money supply and equity prices has focused on the channels of effect of money on stock prices (see Hamburger and Kochin (1972) and Homa and Jaffee (1971). Their findings suggested that knowledge of the past money supply could be used in a stock price forecasting model which was capable of generating abnormal stock returns, a conclusion inconsistent with the notion of market efficiency which holds that all relevant available information is instantaneously reflected in security prices. Later work by Pesando (1974), Rogalski and Vinso (1977) and Sorensen (1982)

found that investors' expectations incorporated information about monetary policy in such a way that stock returns impounded future changes in the supply of money. Berkman (1978) found that an unanticipated increase in the money supply depressed share prices.

Lynge (1981) reported that positive money announcements lower stock prices but he did not distinguish between expected and unexpected money supply. Pearce and Roley (1983) found that stock price respond only to the unanticipated change in the money supply as predicted by the efficient market hypothesis. An unanticipated increase in the announced money supply depresses stock prices and vice versa. Berkman (1978) found that an unanticipated increase in the money supply depressed share prices. Lynge (1981) reported that positive money announcements lower stock prices but he did not distinguish between expected and unexpected money supply. Pearce and Roley (1983) found that stock price respond only to the unanticipated change in the money supply as predicted by the efficient market hypothesis. An unanticipated increase in the announced money supply depresses stock prices and vice versa.

### **2.3.5 Exchange Rates**

Mohammad et al. (2009) establish the association between share prices of KSE (Karachi Stock Exchange) and foreign exchange reserve, foreign exchange rate, industrial production index, wholesale price index, gross fixed capital formation and broad money in the context of Pakistan. The result shows that after the reforms in 1991 the influence of foreign exchange rate and foreign exchange reserve significantly affected the stock prices. Other variables like whole sale price index, and gross fixed capital formation

insignificantly affected stock prices while external factors like money supply and foreign exchange affected prices positively.

Jamil and Ullah (2013) examined the impact of foreign exchange rates on stock prices for Pakistan by employing Co-integration Technique and Vector Error Correction Mechanism (VECM). Using monthly data from 1998 to 2009, they found that relationship exists between exchange rates and stock market returns, both in the short run and long run. The short run period was found to have a positive but significant relationship, while the long run relationship is not significant. The short run sensitivity of stock market returns to exchange rates indicates that the investments in the stock market are short term and most investors liquidate their stock within one year.

## **2.4 Empirical Review**

Several scholars have studied the concept of Central Bank Rate Policy and return of commercial banks. This section presents several empirical studies as presented by different scholars, their findings, methodology and critique. The section is divided into two sub-sections one dealing with international evidence while the second presents empirical findings from Kenya perspective.

### **2.4.1 International Evidence**

McShane and Sharpe (1984) postulates a theoretical model of determining bank interest margins based on hedging behavior of interest margin determination the dealer model of bank interest margin determination – and applies this model to Australian banks. Their model assumes the following about banks in undertaking intermediation between



depositors (suppliers of funds) and borrowers (demanders of funds): maximisation of expected utility; risk aversion in loan and deposit markets.

Giammarino (1993) examined central bank policy, inflation, and stock prices at the Dow Jones Industrial when, the Average fell 83.25 points on 8 October 1997. According to Giammarino, much of the fall was attributed to comments about inflation and stock prices made by Federal Reserve Chairman Alan Greenspan to the House of Representatives Committee on the Budget.

A policy developed by Melosi (2000) in which the policy rate signals to price setters the central bank's view about macroeconomic developments. The model is estimated with likelihood methods on a U.S. data set that includes the Survey of Professional Forecasters as a measure of price setter' inflation expectations. The estimated model with signaling effects delivers large and persistent real effects of monetary disturbances, even though the average duration of price contracts was fairly short. While the signaling effects did not substantially alter the transmission of technology shocks, they brought about deflationary pressures in the aftermath of positive demand shocks.

Bank-level dataset by Beck and Hesse (2006) on the Ugandan banking system to examine the factors behind the consistently high interest rate spreads and margins. While foreign banks have lower interest rate spreads, there is no robust and economically significant relationship between interest spread and privatization, foreign bank entry, market structure and banking efficiency. Similarly, macroeconomic variables explain little of the over-time variation in bank spreads. Bank-level characteristics, on the other hand, such as bank size, operating costs, and composition of loan portfolio, explain a large proportion

of cross bank cross-time variation in spreads and margins. However, time-invariant bank-level fixed effects explain the largest part of bank variation in spreads and margins. Further, the study finds evidence that banks targeting the low end of the market incurred higher costs and therefore had higher margins.

According to Kaggwa (2008), the impact of bank of Ghana policy rate on commercial bank lending rate was achieved by reviewing the of Barclays Bank Ghana. The main purpose of the study is to find the relationship between the Bank of Ghana Base Rate and the Commercial Banks Lending Rate, the relationship that exist between Lending Rate and the other variables and also find out the degree of responsiveness in the lending rate with respect to a change in the other variables. The study used secondary data. The preliminary findings depicted that Lending rate clearly was higher than both the Government Policy on Inflation and the Bank of Ghana Base rate for the years 2009, 2010 and 2011 in terms of the percentage fixed at that point in time. This could mean that Commercial Banks, of which Barclays Bank was of no exception considered very importantly the Bank of Ghana Base Rate and Government Policy on Inflation before deciding on their Lending rate. There was an evidence of a very strong positive relationship between the Bank of Ghana Base Rate and the Lending Rate.

A research work by Kaggwa (2008) studied interest rates and loan portfolio performance in commercial banks using a case study of Centenary Bank, Entebbe Road Branch Uganda. The study was based on three objectives that is; To examine how Centenary Bank has ensured that the bank's loan portfolio has been maintained within acceptable limits to enhance performance, To examine how the bank has ensured compliance with

regulatory requirements to enhance its performance, and To examine how the bank has worked out problem loans, including rescheduling and restructuring so as to enhance its performance. The study employed a case study research design and the methodology used in this study was both qualitative and quantitative. Questionnaires and documentary review were the major tools of data collection. The study findings indicate that although Centenary Bank has tried to follow procedures and regulations in administering credit, there is still clients' defaulting on loan repayments and increasing the effect of bad debts in the bank. This has created risk in loan portfolio performance and has affected profitability (Melosi, 2000).

#### **2.4.2 Kenyan Evidence**

Were and Tiriongo (2012) examined the central bank's response to economic crises from a developing African economy perspective by using lessons from Kenya's experience. The study examined the Central Bank of Kenya's policy responses in mitigating the economic effects of the global as well as domestic crisis that preceded the effects of the global crisis in the early 2008. The study conducted an assessment of the effectiveness of monetary policy using VAR analysis. They noted that whereas the policy interventions were initially effective in restoring confidence, lowering the short term interest rates and maintaining macroeconomic stability, the loose monetary policy stance could not be sustained following increased inflationary pressures and unprecedented depreciation of the exchange rate. The abrupt shift to a tight monetary policy stance led to a sudden rise in both short term and long term interest rates, thus partly counteracting the gains that had been achieved Were and Tiriongo (2012).

Ng'etich and Wanjau (2011) examined the effects of interest rate spread on the level of non-performing assets using a case of commercial banks in Kenya. The study applied descriptive research design. The target population of the study was all the credit officers in all the 43 commercial banks in Kenya by 2009. A questionnaire was the primary tool for collecting data. Target questions were used in the questionnaires which was based on ordinal scale for measurement purpose (where data is ranked in the sense that higher numbers represent higher values) with summated scale as its scaling technique. The study also used secondary data sources to gather information relevant in reaching at the research objectives. The secondary data collected from the CBK offices on their annual reports on the macro-economic indicators and Kenya National Bureau of Statistics (KNBS) offices (Ng'etich and Wanjau, 2011). The study established that Interest rate spread affect the non-performing assets in banks as it increases the cost of loans charged on the borrowers. Mode or type of interest rate charged (whether fixed or float) for they all have different dynamics that might affect the borrower's ability to repay credit loaned. Further, Interest rate spread affect the non-performing assets in banks as it increases the cost of loans charged on the borrowers. Mode or type of interest rate charged (whether fixed or float) for they all have different dynamics that might affect the borrower's ability to repay credit loaned. Finally, Credit risk management technique remotely affects the value of a bank's interest rates spread as interest rates are benchmarked against the associated non-performing assets (Ng'etich and Wanjau, 2011).

Another study by Ongena et al., (2001) did empirical investigations on the determinants of interest rate spread of commercial banks in Kenya. Both descriptive and regression analyses were undertaken. Descriptive analysis was used to show trends and comparative

analysis of interest rate spreads and other variables of interest. Regression analysis was undertaken to empirically investigate the determinants of interest rate spreads by employing panel data estimation methodology on a panel of commercial banks using annual data for the period 2002 to 2011. The independent variables included credit risk, market concentration and bank size, liquidity risk, operating costs and return on average assets. Using panel data analysis, the empirical results show that bank-specific factors play a significant role in the determination of interest rate spreads in the banking sector in Kenya. These include bank size, credit risk, liquidity risk, return on average assets, net interest income as a ratio of total income and operating costs.

An examination of determinants was done by (Ongore and Kusa, 2013) on financial performance of commercial banks in Kenya by reviewing the moderating effect of ownership structure on bank performance. The study applied explanatory study is based on secondary data obtained from published statements of accounts of all commercial banks in Kenya, CBK, IMF and World Bank publications for ten years from 2001 to 2010. It uses panel data due to the advantage that it has. It helps to study the behavior of each bank over time and across space (Baltagi, 2005). The study showed that capital adequacy, asset quality and management efficiency significantly affect the performance of commercial banks in Kenya. However, the effect of liquidity on the performance of commercial banks is not strong. The relationship between bank performance and capital adequacy and management efficiency was found to be positive and for asset quality the relationship was negative. This indicates that poor asset quality or high non-performing loans to total asset related to poor bank performance.

Ondieki and Jagongo (2013) did an analysis of Kenyan Commercial Banks by examining the effects of lowering Central Bank Rate on bank's prime rate. The study's overall objective analyzed the significant causes that led to rigidity of commercial banks' lending rates despite cost-incentives from the central bank. Objectives of the study were decided as follows: establishing how non-performing loans impacted on commercial bank's lending rate adjustments, assessing how industry competition contributed to commercial banks' rigidity to CBK cost-inducements, finding out the significant policy barriers that insulated prime rates from the CBK's expectations, and evaluating how lending channels deterred implementation of recommended prime rates by commercial banks. The study assumed a descriptive research design. The study's target population constituted all commercial banks' task-specific officers in the lending process. These included credit supervisors and officers, head office credit departments, debt recovery units, and risk and compliance departments. This composition translated to a total number of potential respondents of 176 given that there were a total of 44 registered and active banks in Kenya. Based on the study findings, it was evident that despite concerted efforts by the CBK for the commercial banks to lower their lending rates, little gain was made since the superior chunk of determination was dependent on high-level non-performance loans, stiff industry competition, internal policy barriers and lending channels.

#### **2.4 Summary of Literature Review**

From the above review limited studies have concentrated on the relationship between central bank rate policy and return of commercial banks. Were and Tiriongo (2012) examined the central bank's response to economic crises from a developing African economy

perspective by using lessons from Kenya's experience. Cobbinah (2012) studied the impact of bank of Ghana policy rate on commercial bank lending rate by reviewing the case of Barclays Bank Ghana. Kaggwa (2008) studied interest rates and loan portfolio performance in commercial banks using a case study of Centenary Bank, Entebbe Road Branch Uganda. Giammarino (1993) examined central bank policy, inflation, and stock prices at the Dow Jones Industrial when, the Average fell 83.25 points on 8 October 1997. McShane and Sharpe (1985) postulates a theoretical model of determining bank interest margins based on hedging behaviour of interest margin determination the dealer model of bank interest margin determination – and applies this model to Australian banks. Beck and Hesse (2006) uses bank-level dataset on the Ugandan banking system to examine the factors behind the consistently high interest rate spreads and margins. Ongene et al., (2001) did an empirical investigation on the determinants of interest rate spread of commercial banks in Kenya. Melosi (2000) reviewed the signaling effects of monetary policy. Ongore and Kusa (2013) examined determinants of financial performance of commercial banks in Kenya by reviewing the moderating effect of ownership structure on bank performance. These studies listed above have concentrated on the central bank's response to economic crises, impact of bank of Ghana policy rate on commercial bank lending rate, interest rates and loan portfolio performance, central bank policy, inflation, and stock prices at the Dow Jones Industrial. None of these studies focused on the effect of CBR on the return of return of commercial banks in Kenya. This study therefore seeks to fill this research gap.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter sets out various stages and phases that were followed in completing the study. In this stage, most decisions about how research was executed and how data was gathered, towards the completion of research. Precisely, the section covers; research design, target population, data collection and data analysis.

#### **3.2 Research Design**

The study adopted a descriptive research design. Mugenda and Mugenda (2003) describes descriptive research design as a systematic, empirical inquiring into which the researcher does not have a direct control of independent variable as their manifestation has already occurred or because the inherently cannot be manipulated. Descriptive studies are concerned with the what, where and how of a phenomenon hence more placed to build a profile on that phenomenon (Mugenda and Mugenda, 2003). Descriptive research design is more appropriate because the study seeks to build a profile about a phenomenon- CBR and returns of commercial banks.

#### **3.3 Population of the Study**

Population in statistics is the specific population about which information is desired. According to Kothari (2004), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. The total population consisted of all 61 companies listed at the equity section of the NSE as at 31



December 2013. For the study, the target population was 11 listed commercial banks as listed in the appendix 1. Since the population of the study was small, the study was using secondary data which was readily available from both the Central Bank of Kenya and the Nairobi Securities Exchange, all the listed commercial banks were included hence a census study.

### **3.4 Data Collection**

The study used secondary data from the Central Bank of Kenya and the Nairobi Securities exchange. CBR Rate was collected from the Central Bank of Kenya while data on stock returns of listed commercial banks will be collected from the NSE. The data was collected using data collection sheet which was edited, coded and cleaned. The study period included 2009-2013 financial periods. This period was chosen because of the many changes that occurred within the economy that had far reaching implications on the macroeconomic variables in Kenya forcing the CBK to vary the CBR. The study used monthly data to ensure enough data points for regression analysis.

### **3.5 Data Analysis**

The study used Statistical Package for Social Sciences Version 21.0 to aid in data analysis. The paired t-test, a non-parametric test of differences developed by Sir Williams Gosset (Mugenda & Mugenda, 2003) were used in this study as a test of significance. The analysis was done at 0.05 level of significance.

### 3.5.1 Analytical Model

In order to determine the impact of central bank rate policy on the return of commercial banks in Kenya, the researcher conducted a multiple regression analysis. The model was listed below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where: Y= return of listed commercial banks (Measured by Change in share Price + dividends)

$\beta_0$  = Constant

$X_1$  = Central Bank Rate (Recorded CBR Rate)

$X_2$  = 91- day Treasury Bills Rate (Average 91- day treasury Bills rate)

$X_3$  = Repo Rate (Average Repo Rate)

$X_4$  = Inflation (Average Monthly Inflation Rate)

$\epsilon$  = Error Term

### 3.5.2 Test of Significance

In order to test the significance of the model in measuring the impact of central bank rate policy on the return of commercial banks in Kenya, this study conducted an Analysis of Variance (ANOVA). On extracting the ANOVA statistics, the researcher looked at the value of F-test and compared it with the tabulated value on the F-distribution table. The study was tested at 95% confidence level and 5% significant level. If the significance number found was less than the critical value ( $\alpha$ ) set 2.4, then the conclusion was that the model was insignificant in explaining the impact.

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND INTERPRETATION

#### 4.1 Introduction

This chapter presents the analysis of data as stipulated in the research methodology and the findings of the study as set out in the research objective. The study sought to investigate the effects of central bank rate on the share return of commercial banks listed at the Nairobi Securities Exchange. The independent variables were Central bank rate, Average 91- day treasury bills rate, Average repo rate, Average monthly inflation rate while the dependent variable is the returns of listed commercial banks which was measured by change in share price plus dividends.

#### 4.2 Descriptive Statistics

**Table 4.1: Descriptive Statistics**

	<b>Mean</b>	<b>Std. Deviation</b>
CBR	7.8750	.49429
Returns	13.8333	7.91814
TBR	7.3743	.38376
Repo Rate	7.8750	.49429
Inflation Rate	14.1117	2.74458

**Source: Research Findings**

For the independent variables in table 4.2 above, CBR has a mean of 7.8750 and a standard deviation of 0.49429, Treasury Bill Rate has a mean of 7.3743 and a standard deviation of 0.38376, Repo Rate has a mean of 7.8750 and a standard deviation of 0.49429 and Inflation Rate has a mean of 14.1117 and a standard deviation of 2.74458. A reasonable level of consistency is observed between the mean and standard deviation for all variables. For the dependent variable, Returns has a mean of 13.833 and a standard deviation of 7.91814.

### 4.3 Regression Results

In addition to descriptive analysis, the study conducted a cross-sectional OLS multiple regression on several firm characteristics over the period 2009–2013. The analysis was done on annual basis.

#### 4.3.1 Year 2009 Analysis and Interpretations

**Table 4.2: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.878	.771	.641	4.74484

**Source: Research Findings**

The correlation and the coefficient of determination of the dependent variables (Returns of listed commercial banks for the year 2009) when all the four independent variables (CBR, TBR, REPO, Inflation) are combined was measured and tested. From the findings 64.1% of returns at the NSE in the year 2009 was attributed to the independent variables investigated in this study.

**Table 4.3: ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	532.072	4	133.018	5.908	.021
Residual	157.594	7	22.513		
Total	689.667	11			

**Source: Research Findings**

From the data findings in table 4.4 above, the sum of squares due to regression is 532.072 while the mean sum of squares is 133.018 with 4 degrees of freedom. The sum of squares due to residual is 157.594 while the mean sum of squares due to regression is 22.513 with 7 degrees of freedom. The value of F calculated is 5.908 and the significance value is

0.021. The value of critical F is 4.12. Since the value of F calculated is greater than F critical, the model is therefore significant for the study.

**Table 4.4: Coefficients of Determination**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	57.934	47.581		1.218	.023
CBR09	21.516	6.086	.982	3.535	.010
INFLATION09	2.543	1.529	.882	1.663	.014
TBR09	24.440	7.483	1.185	3.266	.014
REPO09	-3.553	9.388	-.222	-.378	.716

**Source: Research Findings**

According to the model, all the variables were significant as their significance value were less than 0.05. However, only central bank rate, inflation rate and Treasury bill rate were positively correlated with returns while repo rate was negatively correlated with returns. From the model, taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of 57.934. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 21.516 increase in returns. A unit increase in Inflation will lead to a 2.543 increase in returns. A unit increase in TBR will lead to a 24.440 increase in returns while a unit increase in REPO will lead to a 3.553 decrease in returns. This infers that central bank rate, inflation rate and Treasury bill rate contributed more to the returns of the listed commercial banks at the NSE while the REPO had a negative effect on returns. The coefficient table above was used in coming up with the model below:

$$\text{Returns} = 57.934 + 21.516\text{CBR} + 2.543 \text{TBR} + 24.440 \text{REPO} - 3.553 \text{Inflation} + 47.581$$

### 4.3.2 Year 2010 Analysis and Interpretations

**Table 4.5: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.903	.815	.757	.22027

**Source: Research Findings**

The correlation and the coefficient of determination of the dependent variables (Returns of listed commercial banks for the year 2010) when all the four independent variables (CBR, TBR, REPO, Inflation) are combined was measured and tested. From the findings 75.7% of returns of the listed commercial banks listed at the NSE in the year 2010 was attributed to the independent variables investigated in this study.

**Table 4.6: ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	34.507	4	8.626	9.275	.004
Residual	6.675	7	.953		
Total	41.182	11			

**Source: Research Findings**

From the data findings in table 4.4 above, the sum of squares due to regression is 34.507 while the mean sum of squares due to regression is 8.626 with 4 degrees of freedom. The sum of squares due to residual is 6.675 while the mean sum of squares due to regression is 0.953 with 7 degrees of freedom. The value of F calculated is 9.275 and the significance value is 0.004. The value of critical F is 4.12. Since the value of F calculated is greater than F critical, the model is therefore significant for the study.

**Table 4.7: Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	6.232	17.672		.353	.735
CBR10	.713	4.892	.120	.146	.888
TBR10	.008	1.721	.008	.005	.996
REPO10	.991	3.623	.210	.274	.792
INFLATION10	.377	2.119	.306	.178	.864

**Source: Research Findings**

According to the model on table 4.8 above, all the variables were insignificant as their significance value were more than 0.05. All the variables though were positively correlated with returns. From the model, taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of 6.232. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 0.713 increase in returns. A unit increase in TBR will lead to a 0.008 increase in returns. A unit increase in REPO will lead to a 0.991 increase in returns while a unit increase in Inflation will lead to a 0.377 increase in returns. This infers that all the independent variables contributed more to the returns of the listed commercial banks at the NSE. The coefficient table 4.8 above was used in coming up with the model below:

$$\text{Returns} = 6.232 + 0.713\text{CBR} + 0.008\text{TBR} + 0.991\text{REPO} - 0.377\text{Inflation} + 17.672$$

$$\text{Returns} = 23.994 + 0.713\text{CBR} + 0.008\text{TBR} + 0.991\text{REPO} - 0.377\text{Inflation}$$

### 4.3.3 Year 2011 Analysis and Interpretations

**Table 4.8: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.836	.698	.634	6.42480

**Source: Research Findings**

The model summary shown above shows the correlation and the coefficient of determination of the dependent variables (Returns of listed commercial banks for the year 2010) when all the four independent variables (CBR, TBR, REPO, Inflation) are combined was measured and tested. Positivity and the significance of all the values of R show that the study model is logic for the study. From the findings 63.4% of returns of the listed commercial banks listed at the NSE in the year 2011 were attributed to the independent variables investigated in this study.

**Table 4.9: ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	288.947	4	72.242	13.715	.017
Residual	36.872	7	5.267		
Total	325.819	11			

**Source: Research Findings**

The data findings from year were analyzed and the SPSS output presented in table 4.10 above. From the ANOVA statistics, the processed data at a significance level of 5% shows that the value of F calculated is 13.715 while the value of F critical at 5% level of significance was 4.72. Since F calculated is greater than the F critical, this shows that the overall model was significant. This shows that the independent variables had a significant effect on the returns of the listed commercial banks at the NSE in the year 2011.



**Table 4.10: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	15.911	10.782		1.476	.184
CBR11	12.155	23.236	9.854	.523	.617
TBR11	1.177	2.448	1.203	.481	.645
REPO11	-11.631	23.120	-9.349	-.503	.630
INFLATION11	-2.704	4.007	-1.741	-.675	.521

**Source: Research Findings**

According to the model, all the variables were insignificant as their significance value was more than 0.05. However, central bank rate and Treasury bill rate were positively correlated with returns of the listed commercial banks at the NSE while Repo rate and inflation rate were negatively correlated with returns of the listed commercial banks at the NSE. From the model, taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, Returns had an autonomous value of 15.911. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 12.155 increase in returns. A unit increase in TBR will lead to a 1.177 increase in returns. A unit increase in REPO will lead to a 11.631 decrease in returns while a unit increase in Inflation will lead to a 2.704 decrease in returns. This infers that CBR and TBR contributed more to the returns of the listed commercial banks at the NSE while REPO and Inflation had a negative effect on the returns of the listed commercial banks at the NSE. The coefficient table 4.11 above was used in coming up with the model below:

$$\text{Returns} = 15.911 + 12.155\text{CBR} + 1.177\text{TBR} - 11.631\text{REPO} - 2.704\text{Inflation} + 10.782$$

$$\text{Returns} = 26.693 + 12.155\text{CBR} + 1.177\text{TBR} - 11.631\text{REPO} - 2.704\text{Inflation}$$

#### 4.3.4 Year 2012 Analysis and Interpretations

**Table 4.11: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.852	.725	.668	4.51423

**Source: Research Findings**

The model summary on table 4.12 above shows the correlation and the coefficient of determination of the dependent variables (Returns of listed commercial banks for the year 2010) when all the four independent variables (CBR, TBR, REPO, and Inflation) are combined was measured and tested. Positivity and the significance of all the values of R show that the study model is logic for the study. From the findings 66.8% of returns of the listed commercial banks listed at the NSE in the year 2012 were attributed to the independent variables investigated in this study.

**Table 4.12: ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	144.409	4	36.102	4.800	.635
Residual	52.648	7	7.521		
Total	197.057	11			

**Source: Research Findings**

The data findings from year 2012 were analyzed and the SPSS output presented in table 4.13 above. From the ANOVA statistics, the processed data at a significance level of 5% shows that the value of F calculated is 4.800 while the value of F critical at 5% level of significance was 4.72. Since F calculated is greater than the F critical, this shows that the overall model was significant. This shows that the independent variables had a significant effect on the returns of the listed commercial banks at the NSE in the year 2012.

**Table 4.13: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	10.038	12.001		.836	.431
CBR12	1.748	6.988	1.259	.250	.810
TBR12	1.748	.457	.392	.828	.435
REPO12	-4.504	6.250	-3.073	-.721	.494
INFLATION12	2.282	2.783	1.305	.820	.439

**Source: Research Findings**

According to the model, all the variables were insignificant as their significance value was more than 0.05. However, central bank rate, Treasury bill rate and inflation were positively correlated with returns of the listed commercial banks at the NSE while Repo rate was negatively correlated with returns of the listed commercial banks at the NSE. From the model, taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, Returns had an autonomous value of 10.038. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 1.748 increase in returns. A unit increase in TBR will lead to a 0.378 increase in returns. A unit increase in REPO will lead to a 4.504 decrease in returns while a unit increase in INFLATION will lead to a 2.282 increase in returns. This infers that CBR, TBR and INFLATION contributed more to the returns of the listed commercial banks at the NSE while REPO had a negative effect on the returns of the listed commercial banks at the NSE. The coefficient table 4.14 above was used in coming up with the model below:

$$\text{Returns} = 10.038 + 1.748\text{CBR} + 1.748\text{TBR} - 4.504\text{REPO} + 2.282\text{Inflation} + 12.001$$

$$\text{Returns} = 22.039 + 1.748\text{CBR} + 1.748\text{TBR} - 4.504\text{REPO} + 2.282\text{Inflation}$$

#### 4.3.4 Year 2013 Analysis and Interpretations

**Table 4.14: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.861	.741	.702	.69769

**Source: Research Findings**

The model summary on table 4.15 above shows the correlation and the coefficient of determination of the dependent variables (Returns of listed commercial banks for the year 2013) when all the four independent variables (CBR, TBR, REPO, and Inflation) are combined was measured and tested. Positivity and the significance of all the values of R show that the study model is logic for the study. From the findings 70.2% of returns of the listed commercial banks listed at the NSE in the year 2013 were attributed to the independent variables investigated in this study.

**Table 4.15: ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.063	4	.516	1.059	.443
Residual	3.407	7	.487		
Total	5.470	11			

**Source: Research Findings**

The data findings from year 2013 were analyzed and the SPSS output presented in table 4.16 above. From the ANOVA statistics, the processed data at a significance level of 5% shows that the value of F calculated is 1.059 while the value of F critical at 5% level of significance was 4.72. Since F calculated is less than the F critical, this shows that the overall model was insignificant. This shows that the independent variables had an insignificant effect on the returns of the listed commercial banks at the NSE in the year 2013.

**Table 4.16: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	-5.847	5.200		-1.124	.298
CBR13	-.729	.759	-.532	-.961	.369
TBR13	.027	.145	.058	.188	.856
REPO13	1.821	1.010	1.271	1.802	.114
INFLATION13	.572	.307	.950	1.865	.104

**Source: Research Findings**

According to the model, all the variables were insignificant as their significance value was more than 0.05. However, Treasury bill rate, Repo rate and inflation were positively correlated with returns of the listed commercial banks at the NSE while central bank rate was negatively correlated with returns of the listed commercial banks at the NSE. From the model, taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, Returns had an autonomous value of -5.847. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 0.729 decrease in returns. A unit increase in TBR will lead to a 0.027 increase in returns. A unit increase in REPO will lead to a 1.821 increase in returns while a unit increase in INFLATION will lead to a 0.572 increase in returns. This infers that TBR, REPO and Inflation contributed more to the returns of the listed commercial banks at the NSE while CBR had a negative effect on the returns of the listed commercial banks at the NSE. The coefficient table 4.17 above was used in coming up with the model below:

$$\text{Returns} = -5.847 - 0.729\text{CBR} + 0.027\text{TBR} + 1.821\text{REPO} + 0.572\text{Inflation} + 5.200$$

$$\text{Returns} = -0.647 - 0.729\text{CBR} + 0.027\text{TBR} + 1.821\text{REPO} + 0.572\text{Inflation}$$

#### **4.4 Interpretation of Findings**

The study found that the regression equations for the period 2009 to 2013 related Returns of the commercial banks listed at the NSE to their CBR, TBR, REPO, and Inflation. From the findings of the model summary in 2009, 64.1% of returns at the NSE were explained by the independent variables (CBR, TBR, REPO, and Inflation) investigated in the study while other factors not studied in this research contributed 35.9%. The value of the F calculated from the regression table was 5.908 while the value of critical F was 4.72. Since calculated F was greater than the critical F, the model was significant for the study. From the coefficient table of 2009, taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, Returns will be 57.934. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 21.516 increase in returns. A unit increase in Inflation will lead to a 2.543 increase in returns. A unit increase in TBR will lead to a 24.440 increase in returns while a unit increase in REPO will lead to a 3.553 decrease in returns.

From the findings of the model summary in 2010, 75.7% of returns of the listed commercial banks listed at the NSE were explained by the independent variables (CBR, TBR, REPO, and Inflation) investigated in the study while other factors not studied in this research contributed 24.3%. The value of the F calculated from the regression table was 9.275 while the value of critical F was 4.72. Since calculated F was greater than the critical F, the model was significant for the study. From the coefficient table of 2010, the model showed that taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of 6.232. The data findings analyzed also showed that

taking all other independent variables at zero, a unit increase in CBR lead to a 0.713 increase in returns. A unit increase in TBR lead to a 0.008 increase in returns. A unit increase in REPO lead to a 0.991 increase in returns while a unit increase in Inflation lead to a 0.377 increase in returns.

From the findings of the model summary in 2011, 63.4% of returns of the listed commercial banks listed at the NSE were explained by the independent variables (CBR, TBR, REPO, and Inflation) investigated in the study while other factors not studied in this research contributed 36.6%. The value of the F calculated from the regression table was 13.715 while the value of critical F was 4.72. Since calculated F was greater than the critical F, the model was significant for the study. The coefficient table of 2011 showed that taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of 6.232. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 12.155 increase in returns. A unit increase in TBR will lead to a 1.177 increase in returns. A unit increase in REPO will lead to a 11.631 decrease in returns while a unit increase in Inflation will lead to a 2.704 decrease in returns. This infers that CBR and TBR contributed more to the returns of the listed commercial banks at the NSE while REPO and Inflation had a negative effect on the returns of the listed commercial banks at the NSE.

From the model summary of 2012, 66.8% of returns of the listed commercial banks listed at the NSE were attributed to the independent variables (CBR, TBR, REPO, and Inflation) investigated in the study while other factors not studied in this research contributed 33.2%. The value of the F calculated from the regression table was 13.715

while the value of critical F was 4.72. Since calculated F was greater than the critical F, the model was significant for the study. From the coefficient table of 2012, taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of 10.038. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 1.748 increase in returns. A unit increase in TBR will lead to a 0.378 increase in returns. A unit increase in REPO will lead to a 4.504 decrease in returns while a unit increase in Inflation will lead to a 2.282 increase in returns.

The findings from the model summary of 2013 showed that 70.2% of returns of the listed commercial banks at the NSE were attributed to the independent variables (CBR, TBR, REPO, and Inflation) investigated in the study while other factors not studied in this research contributed 29.8%. The value of the F calculated from the regression table was 1.059 while the value of critical F was 4.72. Since calculated F was less than the critical F, the model was therefore insignificant for the study. From the coefficient table of 2013, taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of -5.847. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 0.729 decrease in returns. A unit increase in TBR will lead to a 0.027 increase in returns. A unit increase in REPO will lead to a 1.821 increase in returns while a unit increase in Inflation will lead to a 0.572 increase in returns.



#### **4.5 Discussions**

From the summary of findings, it is clearly evident that central bank rate had an effect on the share returns of commercial banks as indicated by the coefficients of determination for the respective years. The study found that the four independent variables in the study (CBR Rate, TBR, Repo Rate and Inflation) influenced the share returns for the period under study. Inflation rate negatively influenced share return in 2011. The findings are in agreement with Giammarino (1993) who deduced that much of the fall in share prices at the Dow Jones were attributed to comments about inflation. The study found that the central bank rate for all the years positively influenced the returns except in 2013 where there was a negative relationship. The findings concur with (Jordan and Fischer, 2002) who deduced that when there is an increase in the interest rates, there will be limited loans to the citizenry to purchase stocks hence a decrease in stock prices which reduces stock returns.

The changes in Central Bank Rate affected the share returns as shown for all the years positively except for 2013. These findings concur with Howells and Keith (2000) who posited that equity prices just like the price of all assets will respond to changes in Central Bank's interest rates. The study concluded that the various macroeconomic variables studied had either positive or negative effect on returns, the findings are in agreement with Osamuonyi and Evbayiro-Osagie (2012) who found that Money supply has a significant but negative relationship with Stock Market Index in both the short- run and long run. For the year 2011, the study observed a negative relationship between inflation and return. This finding is in agreement with Berkman (1978) who found that an unanticipated increase in the money supply depressed share prices. Lynge (1981) also

deduced that positive money announcements lower stock prices. Pearce and Roley (1983) also found that stock prices respond only to the unanticipated change in the money supply as predicted by the efficient market hypothesis and hence unanticipated increase in the announced money supply depresses stock prices and vice versa.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

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

The dependent variables (return of listed commercial banks for the year 2009) when all the four independent variables (CBR, TBR, REPO, and Inflation) are combined was measured. The study found out that 64.1% of return of listed commercial banks at the NSE in the year 2009 was attributed to the four independent variables investigated in this study. The F critical at 5% level of significance was 4.72. Since F calculated is greater than the F critical (value = 4.72), this shows that the overall model was significant. All the variables were significant as their significance value was less than 0.05. Central bank rate, inflation rate and Treasury bill rate were positively correlated with returns while repo rate was negatively correlated with returns. Taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of 57.934. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 21.516 increase in returns. A unit increase in INFLATION will lead to a 2.543 increase in returns. A unit increase in TBR will lead to a 24.440 increase in returns while a unit increase in REPO will lead to a 3.553 decrease in returns.

From the findings of the model summary in 2010, 75.7% of returns of the listed commercial banks listed at the NSE were explained by the independent variables (CBR, TBR, REPO, and Inflation) investigated in the study. The study further found out that the

value of the F calculated from the regression table was 9.275 while the value of critical F was 4.72. Since calculated F was greater than the critical F, the model was significant for the study. From the coefficient table of 2010, the model showed that taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of 6.232. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 0.713 increase in returns. A unit increase in TBR will lead to a 0.008 increase in returns. A unit increase in REPO will lead to a 0.991 increase in returns while a unit increase in Inflation will lead to a 0.377 increase in returns.

From the findings of the model summary in 2011, the study established that 63.4% of returns of the listed commercial banks listed at the NSE were explained by the independent variables (CBR, TBR, REPO, and Inflation) investigated in the study. The value of the F calculated from the regression table was 13.715 while the value of critical F was 4.72. Since calculated F was greater than the critical F, the model was significant for the study. Central bank rate and Treasury bill rate were positively correlated with returns of the listed commercial banks at the NSE while Repo rate and inflation rate were negatively correlated with returns of the listed commercial banks at the NSE. From the coefficient table, the study established that taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of 6.232. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 12.155 increase in returns. A unit increase in TBR will lead to a 1.177 increase in returns. A unit increase in REPO will lead to a 11.631 decrease in returns while a unit increase in Inflation will lead to a 2.704 decrease in returns. This

infers that CBR and TBR contributed more to the returns of the listed commercial banks at the NSE while REPO and Inflation had a negative effect on the returns of the listed commercial banks at the NSE.

From the model summary of 2012, the study found out that 66.8% of returns of the listed commercial banks listed at the NSE were attributed to the independent variables (CBR, TBR, REPO, and Inflation) investigated in the. The study also established that the value of the F calculated from the regression table was 13.715 while the value of critical F was 4.72. Since calculated F was greater than the critical F, the model was significant for the study. From the coefficient table, the study established that taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of 10.038. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 1.748 increase in returns. A unit increase in TBR will lead to a 0.378 increase in returns. A unit increase in REPO will lead to a 4.504 decrease in returns while a unit increase in Inflation will lead to a 2.282 increase in returns.

For the period of 2013, the findings established that from the model summary, 70.2% of returns of the listed commercial banks at the NSE were explained by the independent variables (CBR, TBR, REPO, and Inflation) investigated in the study. The study also established that the value of the F calculated from the regression table was 1.059 while the value of critical F was 4.72. Since calculated F was less than the critical F, the model was therefore insignificant for the study. The study further found out that all the variables were insignificant as their significance value was more than 0.05. However, Treasury bill rate, Repo rate and inflation were positively correlated with returns of the listed

commercial banks at the NSE while central bank rate was negatively correlated with returns of the listed commercial banks at the NSE. From the coefficient table, the study found out that taking all factors (CBR, TBR, REPO, and Inflation) constant at zero, returns had an autonomous value of -5.847. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in CBR will lead to a 0.729 decrease in returns. A unit increase in TBR will lead to a 0.027 increase in returns. A unit increase in REPO will lead to a 1.821 increase in returns while a unit increase in Inflation will lead to a 0.572 increase in returns.

### **5.3 Conclusion**

From the analysis, it can be noted that the four independent variables (CBR, TBR, REPO, and Inflation) had varying degrees. The study concludes that central bank rate influences the returns of commercial banks listed at the NSE positively. These results are consistent with the research done by Howells and Keith (2000) who argued in their book that if the Central Bank raises the interest rates then the holders of risky shares will want a higher return as well.

The study also deduced that inflation rate negatively influenced the returns of commercial banks listed at the NSE. The results are similar to work Friedman (1963) who stated that inflation is always a monetary phenomenon, which suggests a relationship between money growth and inflation. Monetary policy affects macroeconomic variables largely through its impact on interest rate. Lee (1992) suggested that central bank uses monetary policy tools to manipulate the money supply and interest rates, which influence indicators

like output, exchange rates, and unemployment rate which consequently affect inflation and the overall economy.

The study also revealed that Repo rates positively influences returns of the listed commercial banks at the NSE. These findings are consistent with the works of Hördahl and King (2008) who stated that Repos are useful to central banks both as a monetary policy instrument and as a source of information on market expectations. Hördahl and King (2008) further stated that Repos are attractive as a monetary policy instrument because they carry a low credit risk while serving as a flexible instrument for liquidity management.

#### **5.4 Recommendations for Policy and Practice**

This study established that Central bank rate, treasury bills rate, repo rate, and inflation play a key role on the returns at the commercial banks listed at the NSE. This study therefore recommends that the Country handles its macroeconomic appropriates as the changes in the macroeconomics like repo rates and inflation bring about devaluation of the currency and affect the performance of the commercial banks listed at the Nairobi Securities Exchange. This will ensure stability at the NSE which promotes fair trade.

This study also established that repo rates were positively correlated with the returns at the commercial banks listed at the NSE while inflation rate negatively influenced returns. This study therefore recommends that commercial banks balance off their inflation rates since inflation rate of a country is the rate at which prices of goods and services increasing its economy.

### **5.5 Limitations of the Study**

During the period of study, there was a massive change in the monetary policies in the Country which may have influenced the relationship among the study variables. However, to overcome this challenge, the researcher standardized study variables.

The study also faced the challenge of unstandardized accounting practices among financial institutions especially in as far as policies and guidelines on depreciation are concerned. The policy applied in the preparation of financial statements and in the computation of returns on assets was not uniform across all the financial institution. This made it difficult to do comparison across the commercial banks.

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

This paper examines the effects of central bank rate on the share return of commercial banks listed at the Nairobi Securities Exchange. Because of data unavailability, it was not possible to include unlisted commercial banks in our sample. Therefore I suggest further research on the effects of central bank rate on the share return of commercial banks listed at the Nairobi Securities Exchange that are not listed in the NSE.

The study showed that the central bank rate, treasury bills rate, repo rate, and inflation influences the returns of commercial banks listed at the NSE. The analytical model may be incomplete. For example, the extent of commercial banks' foreign operations and ownership structure might impact on Returns. The study excluded these variables due to data and cost constraints. Future research should consider these issues.



Since the study findings on returns of commercial banks listed at the NSE contradicts some of those done by earlier researchers who had established that central bank rate, treasury bills rate, repo rate, and inflation has a significant negative association with returns such that commercial banks that are more capital-intensive have lower returns. Further studies should be done to establish the cause of such discrepancy.

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## **APPENDICES**

### **APPENDIX I: LISTED COMMERCIAL BANKS AS AT 31st December 2013**

1. Barclays bank of Kenya Limited
2. CFC Stanbic Holding Limited
3. I&M Holding Limited
4. Diamond Trust Bank Kenya Limited
5. Housing Finance Company Limited
6. Kenya Commercial Bank Limited
7. National Bank of Kenya Limited
8. NIC Bank limited
9. Standard Chartered Bank Limited
10. Equity Bank Limited
11. The Co-operative Bank of Kenya Limited

**Source: Nairobi Securities Exchange**

## APPENDIX II: CBR RATES AVERAGE

CBR Rates Average						
	2009	2010	2011	2012	2013	Average
Jan	8.5	7	5.75	18	9.5	9.75
Feb	8.5	7	5.75	18	9.5	9.75
March	8.25	6.75	5.75	18	9.5	9.65
April	8.25	6.75	5.75	18	9.5	9.65
May	8	6.75	6.125	18	8.5	9.475
Jun	8	6.75	6.125	18	8.5	9.475
Jul	7.75	6.75	6.25	16.5	8.5	9.15
Aug	7.75	6.75	6.25	16.5	8.5	9.15
Sep	7.75	6.75	7	13	8.5	8.6
Oct	7.75	6.75	11	13	8.5	9.4
Nov	7	6	16.5	11	8.5	9.8
Dec	7	6	18	11	8.5	10.1

### APPENDIX III: INFLATION RATE

		Inflation (month-on-month) %	Inflation (annual average) %
2009	Jan	13.22	16.56
	Feb	14.69	16.87
	Mar	14.6	17.07
	Apr	12.42	16.72
	May	9.61	15.93
	Jun	8.6	15.11
	Jul	8.44	14.35
	Aug	7.36	13.42
	Sep	6.74	12.41
	Oct	6.62	11.42
	Nov	5	10.24
	Dec	5.32	9.24
2010	Jan	5.95	8.64
	Feb	5.18	7.88
	Mar	3.97	7.03
	Apr	3.66	6.32
	May	3.88	5.85
	Jun	3.49	5.43
	Jul	3.57	5.03
	Aug	3.22	4.69
	Sept	3.21	4.4
	Oct	3.18	4.12
	Nov	3.84	4.02
	Dec	4.51	3.96
2011	Jan	5.42	3.93
	Feb	6.54	4.05
	Mar	9.19	4.49
	Apr	12.05	5.2
	May	12.95	5.96
	Jun	14.48	6.88
	Jul	15.53	7.88
	Aug	16.67	9
	Sep	17.32	10.18
	Oct	18.91	11.49
	Nov	19.72	12.82
	Dec	18.93	14.02
2012	Jan	18.31	15.1
	Feb	16.69	15.93



	Mar	15.61	16.45
	Apr	13.06	16.5
	May	12.22	16.4
	June	10.05	15.97
	Jul	7.74	15.27
	Aug	6.09	14.33
	Sep	5.32	13.29
	Oct	4.14	12.04
	Nov	3.25	10.67
	Dec	3.2	9.38
2013	Jan	3.67	8.2
	Feb	4.45	7.24
	Mar	4.11	6.33
	Apr	4.14	5.61
	May	4.05	4.96
	Jun	4.91	4.56
	Jul	6.03	4.44
	Aug	6.67	4.5
	Sep	8.29	4.75
	Oct	7.76	5.05
	Nov	7.36	5.39
	Dec	7.15	5.72
2014	Jan	7.21	6.01

**Source: (Kenya National Bureau of Statistics, 2014)**

**APPENDIX IV: AVERAGE REPO RATE**

<b>Average Repo Rate</b>						
	2009	2010	2011	2012	2013	Average
Jan	8.50	7.00	5.75	18.00	9.50	9.75
Feb	8.50	7.00	5.75	18.00	9.50	9.75
Mar	8.25	6.75	6.00	18.00	9.50	9.70
April	8.25	6.75	6.00	18.00	9.50	9.70
May	8.00	6.75	6.25	18.00	8.50	9.50
Jun	8.00	6.75	6.25	18.00	8.50	9.50
Jul	7.75	6.00	6.25	16.5	8.50	9.00
Aug	7.75	6.00	6.25	16.5	8.50	9.00
Sep	7.75	6.75	7.00	13.00	8.50	8.600
Oct	7.75	6.75	11	13.00	8.50	9.40
Nov	7.00	6.00	16.5	11.00	8.50	9.80
Dec	7.00	6.00	18	11.00	8.50	10.10

**APPENDIX V: 91-DAY TREASURY BILL RATE**

	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>JAN</b>	8.464	6.557	2.461	20.557	8.079
<b>FEB</b>	7.549	6.213	2.586	19.699	8.384
<b>MARCH</b>	7.308	5.977	2.769	17.799	9.883
<b>APRIL</b>	7.337	5.167	3.283	16.014	10.357
<b>MAY</b>	7.449	4.213	5.348	11.176	9.462
<b>JUN</b>	7.332	2.982	8.954	10.087	6.206
<b>JUL</b>	7.221	1.598	8.986	11.954	5.681
<b>AUG</b>	7.249	1.831	9.227	10.929	10.03
<b>SEP</b>	7.288	2.035	11.932	7.772	9.694
<b>OCT</b>	7.2875	2.121	14.796	8.975	9.717
<b>NOV</b>	7.215	2.211	16.136	9.798	9.945
<b>DEC</b>	6.824	2.276	17.898	8.248	9.526

Source: (Central Bank of Kenya, 2014)