

**THE ROLE OF CENTRAL BANK IN THE RELATIONSHIP
BETWEEN MONETARY POLICY AND ECONOMIC GROWTH**

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

NOVEMBER 2015

DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university for examination.

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ACKNOWLEDGMENT

I deeply appreciate the wide range of suggestions and comments provided by my colleagues, students, friends and lecturers. Some must be singled out for special Thanks because of the enormity of my indebtedness to them. I record my thanks to Dr. Luther Otieno, my project Supervisor, who read the entire project and offered many useful suggestions. I am also particularly grateful to my Employer, KeRRA, for her material and moral support, which seriously aided me in carrying out the research successfully.

Finally it would be ungentlemanly of me to omit to mention my beloved wife Spencer who not only typed the final version of this Research work, but also made some very useful suggestions about my writing style.

DEDICATION

The study is dedicated to my dear Wife Miss Spencer Oburu, My daughter Leah, son Liam and my entire family for their support, encouragement and wise counsel.

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ABBREVIATIONS AND ACRONYMS

CBK	Central Bank of Kenya
OMO	Open market operations
CBR	Central Bank Rate
CPI	Consumer price index
GDP	Gross Domestic Product
GNP	Gross National Product
NFA	Net foreign Assets
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KNBS	Kenya National Bureau of Statistics
REPO	Repurchase agreement
TBs	Treasury Bill(s)

ABSTRACT

The Central Bank of Kenya (CBK) shall be responsible for formulating monetary policy, promoting price stability, issuing currency and promoting other functions conferred on it by an act of parliament. Revised Constitution (2010). Achieving and maintaining a stable and appropriate inflation rate, exchange rate and interest rate facilitates higher levels of domestic savings and private investment and therefore leads to improved economic growth, higher real income and increased employment opportunities. CBK monetary policy is therefore designed to support the government's desired economic activity and growth as well as employment creation through achieving and maintaining a low and stable inflation, interest rate and exchange rate. (James et al. 2012). The study set to establish the Role of Central Bank in the relationship between monetary policy and Economic growth in Kenya. The study employed correlational research design. The study used time series empirical data on the variables to describe and examine the relationship between Central bank monetary policy tools and economic growth in Kenya by establishing correlation coefficients between the Economic growth and the monetary policy tools. The study used secondary data on the Consumer Price Index for inflation, 91-day Treasury bill rate, exchange rate, money supply (M3) and repo rate. The analyses entailed the computation of the various coefficients of correlation denoted as ' β ' in the model to determine the relationship of Central Bank's monetary policy tools to Economic growth in Kenya. The study established that Economic growth is correlated to monetary policy tools of Money supply, 91-day Treasury bill rate, Repo rates, and exchange rates. money supply over money demand. The study also established that exchange rate Policy has an important role in reducing or minimizing the risk of fluctuations in exchange rates, which will have an impact on the economy. Any changes in exchange rates will have a great impact on the economy. The study recommends that the policy makers need to keenly consider the levels of money supply in Kenya so as to ensure a stable retail price levels. The study also recommends that the Government evaluate the prevailing levels of retail prices and set the interest rates on the 91-day Treasury bills because they are majorly treated as risk free rate hence determine other interest rates and inflation levels in Kenya

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The central Bank of Kenya (CBK) shall be responsible for formulating monetary policy, promoting price stability, issuing currency and promoting other functions conferred on it by an act of parliament. Revised Constitution (2010). Achieving and maintaining a stable and appropriate inflation rate, exchange rate and interest rate facilitates higher levels of domestic savings and private investment and therefore leads to improved economic growth ,higher real income and increased employment opportunities.CBK monetary policy is therefore designed to support the government's desired economic activity and growth as well as employment creation through achieving and maintaining a low and stable inflation, interest rate and exchange rate.(James et al.2012).However CBK cannot influence its target variables(Inflation, exchange rate and interest rate) directly but it influences them indirectly using a number of monetary policy instruments such as open market operations(OMO),Central Bank Rate(CBR),standing facilities(as lender of last resort), reserve requirements, foreign market operations, licensing and supervision of commercial banks and communication of Bank's decisions(.James et al 2012)Some of the tools like changes in the reserve requirements and participation in the foreign exchange market are meant to specifically change reserve money and quantity of money available in the economy(Commercial bank interest rates like lending rates will change as a result) while other tools like changes in the CBR are meant to change the commercial bank interest rates but will not change the amount of liquidity held by commercial banks)-.James et al (2012).

According to the monetarists led by Friedman (1968) the money supply is the “dominate, though not exclusive” determinant of both the level of output and prices in the short run, and of the level of prices in the long run. The long- run level of output is not influenced by the money supply. Keynes(1940) argues that the Government should play a much bigger role in managing the economy using fiscal policies such as Government taxes, expenditure etc. Poole (1970),using his IS-LM framework demonstrates that Central Bank of any country should operate a monetary policy by fixing interest rates and not the money supply. This way it neutralizes automatically the effect of shifts in money demand using interest rate targets.

According to Kenya National Bureau of statistics Economic survey for July 2015,consumer price index (CPI) increased from 145.40 points in Jan 2014 to 160.57 points in July 2015.The overall rate of inflation contracted from 7.03% to 6.62% during the same period. In July 2015,the Kenyan shilling depreciated against all the major currencies and has steadily risen from 87.61 in June 2014 to 101.2 in July 2015.The average yield rate for the 91 day treasury bills, which is a benchmark for the general trend of interest rates, increased from 8.26% in June 2014 to 10.56% in July 2015.Similarly,the interbank rates increased from 9.26% in January 2014 to 13.37% in July 2015.

Monetary policy doesn't seem to effectively stabilize inflation, exchange rate or interest rate, hence the purpose of the research is to study the relationship between central bank monetary policies and economic growth in Kenya.

1.1.1. Monetary Policy

The first decade after independence can be characterized as passive in the conduct of monetary policy in Kenya, mainly because no interventions were necessary in an environment of 8% GDP growth and below 2% inflation rate,(Kinyua2001).The first major macro-Economic imbalance arose in the second decade in the form of 1973 oil crisis and the coffee boom of 1977/78.This came at a time when the fixed exchange rate system had just collapsed with the Britton Woods system in 1971.In these first two decades, monetary policy was conducted through direct tools which were cash reserve Ratio, liquidity Ratio, credit ceilings for commercial banks and interest rate controls.

The 1990's brought about the liberization of the economy where interest rate controls were removed and exchange rate made flexible, ushering in a new Era in monetary policy where open market operations(OMO) Was the main tool. This was a period characterized by high interest rates and widening interest spread, which inhibited the benefits of flexible interest rate policy such as increasing financial savings and reducing cost of capital competing against double digit inflation rate spurred on by excessive money supply and accommodation of troubled banks.CBK used indirect tools to tame inflation in an atmosphere of instability and extreme uncertainty,(Kinyua 2001)

CBK operates under a monetary policy programme framework that includes monetary aggregate (Liquidity and credit) targets that are consistent with a given level of inflation and economic growth,(KIPPRA 2006).For instance the bank's objective for the fiscal year 2005/2006 was to achieve inflation rate below 5% using quarterly reserve targets. To this end CBK set a ceiling for reserve money and a floor for the net foreign Asset(NFA).This was the mainstay of monetary policy at least until the introduction of

the Central Bank Rate (CBR). The use of monetary targeting as currently used by the CBK has also been criticized. Monetary aggregate targeting policy is more effective where there exists a stable demand for money relationship dependent on overall economic activity and price level, but this may not be the case in Kenya which has a financial sector which is at a period of growth, making demand for money unstable according to (KIPPRA 2006)

1.1.2 Economic Growth

Economic growth is an increase in the capacity of an economy to provide goods and services, compared from one period of time to another. Economic growth can be measured in nominal terms, which include inflation or in real terms which are adjusted for inflation for comparing one country's economic growth to another. GDP or GNP per capita should be used as these take into account the population difference between various countries. www.investopedia.com

According to the CBK Biannual Report of monetary policy committee for six months up to April 2015, the Key Indicators of Economic growth includes inflation, interest rate and exchange rate. Inflation is defined as a sustained increase in the general level of prices for goods and services. It's measured as an annual percentage increase. As inflation rises, every shilling you own buys a smaller percentage of goods or services. The value of a shilling doesn't stay constant when there is inflation (www.investopedia.com) Various measures of inflation displayed mixed trends during the six months to April 2015. Overall month-on-month inflation decreased from 6.43% in October 2014 to 5.53% in January 2015 mainly reflecting significant decline in prices of fuel and electricity. However it

rose to 5.61% in February and further to 7.08% in April 2015 mainly reflecting significant increase in food prices (CBK 2015)

Interest rate is the rate of return on investment and the cost of borrowing funds .It determined by the supply and demand for money,(Darryl 1969).The sustained liquidity management by the CBK through OMO, ensured stability in the interbank Market in the six months to April 2015.As a result the movements in short-term interest rates were closely aligned to the CBR. However ,the interbank rate rose above the CBR towards the end of April 2015 reflecting a build-up in Government deposits at the CBK and the CBK OMO activity to withdraw excess liquidity following the adoption of a tightening bias in its monetary policy to to anchor inflation expectations(CBK 2015).

Exchange rate is the price of a nation's currency in terms of another currency(www.investopedia.com).Despite short-term pressure arising from the global strengthening of the US Dollar, the exchange rate of the Kenya shilling maintained a stable depreciation trend against the US Dollar during most of the six months to April 2015.However the foreign exchange market came under significant pressure in April 2015 on Account of the seasonal dividend remittance by corporate,(CBK 2015)

1.1.3 Monetary Policy and Economic Growth

The Central Bank of Kenya will formulate and implement monetary policy directed towards achieving and maintaining stability in the general level of prices-Inflation. Such monetary policies should support the Economic policy of the Government including its objectives of growth and employment, CBK Act.

While Economists have largely agreed that money supply is the ultimate determinant of the general level of prices, therefore by extension, excess money supply is the ultimate cause of inflation. The monetary transmission mechanism, which is the sequence of events starting with a change in the value of monetary policy instrument and culminating in a change in real output and inflation, is not clear in many countries, (John 2012).

For most of the countries, Monetary policy transmission mechanism is like a “black box”,(Bernanke 2005).For Effective application of monetary tools, in the control of inflation in an economy, Central Banks need to know the elasticity of inflation with respect to monetary policy shocks in order to determine the amount of by which it could the value of the policy instruments so as to obtain a desired amount of change in inflation,(Keith et al 2009)

Exchange rate and monetary policies are key tools in Economic management and in the stabilization and adjustment process in developing countries. The choice of exchange rate regime is determined by various factors such as the objectives pursued by the policy makers, the sources of shocks hitting the economy and the structural characteristics of the economy. But once the choice is made, the authorities are presumed to adjust their macro-economic policies (especially monetary policies) to fit the chosen exchange rate policy. Despite the importance of the link between monetary and exchange rate policies in Economic management, Kenya’s policy makers have little information on which to base their decisions,(Njuguna 2000).

Interest rate are a price for use of funds and if rapid monetary expansion contributes to excessive demand and inflation, it also contributes to rising interest rates (Darryl 1969).CBK role under interest rate instrument is to set a short term official rate of interest

which indicates the price at which it will make liquidity available to the banking system as a lender of last resort. In Kenya this is called the CBR. A reduction in the official rate for instance encourages the commercial banks to borrow money from the CBK thereby increasing money supply in the economy. This increases consumption and output towards the desired output target, (James Gichuki, Jacob et al. 2012)

1.1.4 Role of Central Bank

The Central Bank of Kenya was established in 1966 through an act of parliament-the Central Bank of Kenya Act of 1966. The responsibility for determining the policy of the Central Bank is given by the Central Bank of Kenya Act to the Board of Directors who consist of the Governor, who is its chairman, Deputy Governor, who is deputy chairman, Principal Secretary from Treasury and five Non Executive Directors

The Central Bank plays a unique role in the Economy and performs various functions such as advising the government on Monetary policy matters. Currently, its main task as stipulated in the Central Bank of Kenya (Amendment Act 1966) is that of “Maintaining price stability and fostering liquidity, solvency and proper functioning of a stable market based financial system”. As such its responsible for formulating and executing Monetary policy, supervising and regulating depository institutions, assisting the government’s financing operations and serving as Kenya Government banker. This is very much in line with contemporary Central Banking practice the world over.

1.2 Research Problem

The Central Bank of Kenya’s key objective is formulation and implementation of monetary policy towards achieving and maintaining stability in General prices, exchange

rate and appropriate interest rates,(CBK ACT 1996)Despite CBK interventions the Kenya shillings has maintained a stable depreciation trend towards the US dollar, inflation target of 5% is consistently missed with actual inflation above the target inflation rate and lending rates has become equally unaffordable for the common mwananchi to afford.

During the period 1998-2012,the monetary policy rate(CBR) has been successful in influencing short term rates, but not retail rates such as lending rates. During the period 1997-2000,the average rate for the interbank 91 day Treasury Bill(TB) and lending rate were 14.04%,17.79% and 25.63% respectively. In the subsequent period between 2001 and 2004, the interbank rates reduced to 6.33% and the 91day TB rate reduced to 6.33% and the lending rate followed suit and declined to 16.77%.Between 2009 and 2011, the average of the CBR reduced to 7.64% triggering a reduction in the interbank rate to an average of 5.19% and the 91 day TBs average rate declined to 6.57%.In April 2015 the interbank rate rose above the CBR. The CBK retained the CBR at 8.50% during the period (According to April 2015 MPC Bi-annual Report).

Following this evidence, it appears that the role of monetary policy in influencing economic growth in Kenya is not clear. As such this study investigates the role of Central Bank on the relationship between monetary policies and economic growth in Kenya.

The need for this research is further supported by the fact that most studies conducted do not consider the impact of monetary policy on all the key economic indicators of exchange rate, inflation and interest rate.(Corazon 2014) studied the effect of monetary policy on economic growth, with focus on exchange rates, GDP and Inflation in Kenya.(Cheruiyot 2012) undertook a research on the effectiveness of monetary policy

tools in countering inflation in Kenya.(Njuguna 2010),undertook a research on Monetary and exchange rate policy in Kenya.

Non of these studies considers the impact of monetary policy on all the key economic growth variables of interest rate, exchange rate and inflation. Thus this study sought to determine the role of CBK in the relationship between monetary policy and Economic growth in Kenya and hence bridge the knowledge gap that existed in the literature

It answered the question “What is the role of CBK in the relationship between monetary policies and economic growth in Kenya?”

1.3 Research Objectives

To determine the role of central bank in the relationship between monetary policies and economic growth in Kenya

1.4 Value of the Study

To scholars and academicians, this study would increase body of knowledge on monetary policy implication on Kenya Economy. It would also suggest areas for further research so that future scholars can pick up these areas and study further.

The study is also of great significance to the society as the recommendations from this research could help reduce inflation in Kenya and improve the economic growth as the study is about how to manage the economy using monetary tools and enhance economic growth.

The study would be important to the government especially the ministry of finance and the central bank of Kenya for making policy decisions whose overall objective is to influence the level of economic activity and manage the monetary policy. It would help policy makers identify the ideal monetary policy tool to use to facilitate economic growth in Kenya according to the prevailing economic situation.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review. The first part reviews theories on monetary policies, the second part looks at the monetary policy tools while the third part presents an empirical literature on monetary policy and economic growth. Finally, the paper presents a conclusion of the chapter and a research gap.

2.2 Theoretical Review

The theoretical framework adopted in this study include monetary theory, Keynesian theory, IS-LM framework theory and balance of payment theory

2.2.1 Monetary Theory

Monetarism refers to the followers of Friedman (1968) who hold that “only money matters”, and as such monetary policy is a more potent instrument than fiscal policy in economic stabilization. According to the monetarists, the money supply is the “dominate, though not exclusive” determinant of both the level of output and prices in the short run, and of the level of prices in the long run. The long- run level of output is not influenced by the money supply.

The monetarists emphasized the role of money. Modern quantity theory led by Friedman(1968) holds that “inflation is always and everywhere a monetary phenomenon that arises from a more rapid expansion in the quantity of money than in total output. Its earliest explanation was to be found in the simple quantity theory of money. The monetarists employed the familiar identity of exchange equation of Fisher. The

monetarists theory states that when the money supply is increased in order to grow or increase production and employment, it creates an inflationary situation within an economy. A monetarist believes increases in the money supply will only influence or increase production and employment levels in the short run and not in the long run (Yergin and Stanislaw, 1998).

Accordingly, there will be a positive relationship between inflation levels and money supply. The monetarists explain this relationship using the theory of natural rate of unemployment. The theory of natural rate of unemployment suggests that there will be a level of equilibrium output, employment, and corresponding level of unemployment naturally decided based on features such as resources employment, technology used and the number of firms in the country, the unemployment level decided in this manner will be identified as natural rate of unemployment. In the short run, expansionary monetary policies will result in the decline in the natural rate of unemployment and increase the production but the effectiveness of the expansionary policies will be limited in the long run and lead to an inflationary situation (Yergin and Stanislaw, 1998).

2.2.2 Keynesian Theory

The Keynesian view on inflation was introduced in a book titled *The General Theory of Employment, Interest and Money* published in 1940. According to Keynes, an increase in general price levels or inflation is created by an increase in the aggregate demand which is over and above the increase in aggregate supply. If a given economy is at its full employment output level, an increase in government expenditure (G), an increase in private consumption (C) and an increase in private investment (I) will create an increase in aggregate demand; Leading towards an increase in general price levels. Such an

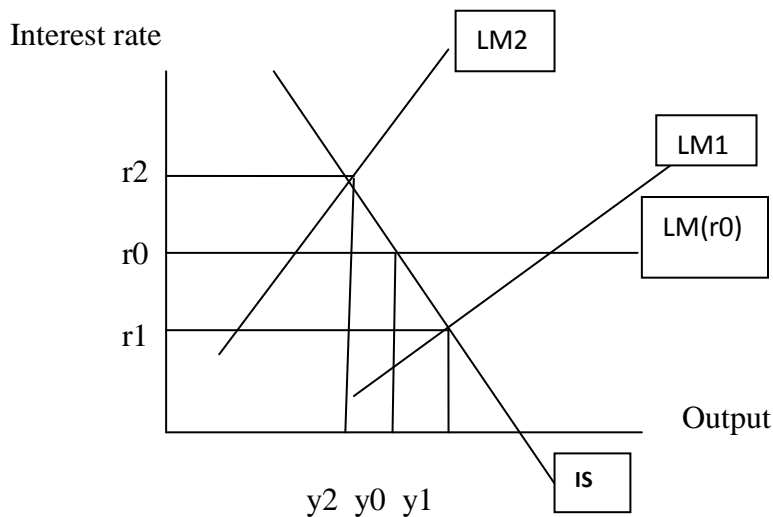
inflationary situation is created due to the fact that at optimum or full employment of output with maximum utilization of scarce resources, a given economy is unable to increase its output or aggregate supply in response to an increase in aggregate demand. Keynes intended government to play a much larger role in the economy. His vision was one of reformed capitalism, managed capitalism—capitalism saved both from socialism and from itself. Fiscal policy would enable wise managers to stabilize the economy without resorting to actual controls. The bulk of decision making would remain with the decentralized market rather than with the central planner. Keynes provided both a specific rationale for government's taking a bigger role in the economy and a more general confidence in the ability of government to intervene and manage effectively. Despite Keynes's fascination with uncertainty and his speculative talents in the marketplace, Keynesians deemed "government knowledge" to be superior to that of the marketplace.

2.2.3 IS-LM Framework Theory

Using the IS-LM framework, Poole (1970) showed that interest rates are best suited as a policy instrument when there are variations in the LM function i.e. if the money demand is randomly shocked since fixing a money target only serves to increase the variation in output. Among the strengths attributed to the interest rate instrument are that it is observable with accurate data available, it is controllable, and it is key in influencing investment and spending behavior making it key in the transmission mechanism through which monetary policy affects the economy. The long and short of the interest rate instrument is to allow interest rates to rise gradually when it is necessary to slow the economy's rate of expansion and to let rates fall when stimulation is needed.

Using the IS-LM approach demonstrated that if output deviates from its equilibrium mainly due to demand for money function shifting, Central Bank should operate monetary policy by fixing the interest rates and not the money supply. This way, it neutralizes automatically the effect of shifts in money demand using interest rate targets. If the IS function is stable and money demand function is random, the instrument choice problem can be illustrated as shown in the diagram below;

Figure 2.1: Choosing a Monetary Policy Instrument with Monetary Shocks



Source-Quarterly Journal of Economics volume 84 No. 2

In the diagram above, the real goods sector is assumed to be stable and thus uncertainty in monetary policy arises from shifts in policy money demand represented by the LM functions. Central bank still has control of the money supply and the LM curve shifts since the money demand shifts. Central bank does not know what the interest rate will be when it sets the money stock. Assume that the LM curves are either LM1 or LM2. If central bank fixes the interest rate at r_0 , this would ensure that the level of output is y_0 . If money stock is fixed, output will lie between y_1 and y_2 . A positive shock in money demand shifts the

LM function to the left from LM1 to LM2 raising the interest rates to r_2 and reducing investment and hence output to y_2 away from the target output y_0 . A negative shock would reduce interest rates to r_1 and increase investment hence output to y_1 away from y_0 . This means that if output deviates from equilibrium since money demand shifts, then central bank should fix the interest rates. This neutralizes the effects of money demand shifts. In this case the interest rates are the proper instrument.

According to Poole (1970), the choice of instrument, more generally, depends on the relative importance of real versus monetary disturbances and therefore the choice of the instrument depends on the relative importance of the random disturbances and on the slopes of the IS and LM functions that is on the structural parameters of the system

2.2.4 The Balance of Payments Theory

The balance of payments theory developed by John Keynes is the modern and most satisfactory theory of the determination of the exchange rate. It is also called the demand and supply theory of exchange rate. According to this theory, the rate of exchange in the foreign exchange market is determined by the balance of payments in the sense of demand and supply of foreign exchange in the market. Here the term 'balance of payments' is used in the sense of a market balance. If the demand for a country's currency falls at a given rate of exchange, we can speak of a deficit in its balance of payments. Similarly, if the demand for a country's currency rises at a given rate of exchange, we can speak of surplus in its balance of payments. A deficit balance of payments leads to a fall or depreciation in the external value of the country's currency. A surplus balance of payments leads to an increase or appreciation in the external value of the country's currency (Galí, and Monacelli, 2005).

2.3 Monetary Policy Tools

In the monetary policy process, variables play important roles, namely as instruments, goals, indicators and targets. The formulation of monetary policy by the monetary authorities requires appropriate variables on which it can focus as indicators of the need for such a policy (Handa, 2005). Such variables should provide information on the current and future state of the economy, especially of goal variables, also known as policy guides. A monetary policy indicator, since it reflects the state of the economy, its value must also change if a policy changes that state so that the indicators are directly or indirectly functions of the policy instruments.

The set of tools available to monetary authorities may differ from one country to another, according to differences in political systems, economic structures, statutory and institutional procedures, development of money and capital markets and other considerations. In most advanced capitalist countries, monetary authorities use one or more of the following key instruments: changes in the legal reserve ratio, changes in the discount rate or the official key bank rate, exchange rates and open market operations. In many in-stances, supplementary instruments are used, known as instruments of direct supervision or qualitative instruments. Although the developing countries use one or more of these instruments, taking into consideration the difference in their economic growth levels, the dissimilarity in the patterns of their production structures and the degree of their of their link with the outside world, many resort to the method of qualitative supervision, particularly those countries which face problems arising from the nature of their economic structures. Although the effectiveness of monetary policy does not necessarily depend on using a wide range of instruments, coordinated use of various

instruments is essential to the application of a rational monetary policy. Open Market Operations (OMO) is where the CBK buys and sells Government securities in the money market in order to achieve a desired level of money in circulation. When the Central Bank sells securities, it reduces the supply of money and when it buys securities it increases the supply of money in the market (CBK, 2012).

2.3.1 Open Market Operations

Open market operations are the Central Bank's principal tool for implementing monetary policy, (Sergent and Smith 1987). These purchases and sales of government Treasury and government agency securities largely determine the Central Bank rate (CBR) which is the interest rate at which depository institutions lend balances at the Central Bank rate to other depository institutions overnight. CBR in turn affects monetary and financial conditions, which ultimately influence employment, output, and the overall level of prices.

Central banks in most industrial countries conduct monetary policy mainly via open market operations, where money is supplied in exchange for securities discounted with a short run nominal interest rate, (Wallace 1981). Hence, the costs of money acquisition depend on the current discount rate and the availability of collateral. In macroeconomic theory, however, it has often been claimed that open market operations are irrelevant in the sense that they are equivalent to lump-sum money transfers, (Eggerston and Woodford 2003). The Central Bank buys or sells (on behalf of the Fiscal Authorities (the Treasury) securities to the banking and non-banking public (that is in the open market). One such security is Treasury Bills. When the Central Bank sells securities, it reduces the

supply of reserves and when it buys (back) securities-by redeeming them-it increases the supply of reserves to the Deposit Money Banks, thus affecting the supply of money.

2.3.2 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). 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 (Hördahi 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).

2.3.3 Interest Rates

Modigliani and Cohn (1979) presented the money illusion effect in which markets tend to be depressed when nominal interest rates are high even though the real interest rate is not high. They argued that stock markets react inappropriately to inflation due to investors' ignorance that interest rate rise is to compensate for the rise in inflation.

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.

2.3.4 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).

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.

2.3.5 Exchange Rates

Basically stock exchange market serves as a channel through which surplus funds are moved from Lender-Savers to Borrower-Spenders who have shortages of funds (Mishkin 2000). Based on this premise, volatility in stock prices can significantly affect the performance of the financial sector as well as the entire economy. The financial position of an economy that is mainly determined by the capital market is susceptible to its foreign exchange volatility. Hence, this makes foreign exchange market developments to have cost implications for all the economic agents. Empirical evidence on the influence of foreign exchange market volatility on stock market is largely inconsistent. Mishra (2004) admitted that there is no theoretical consensus on the interaction between stock prices and exchange rate. For instance, Solnik (1987) is of the opinion that there is a negative correlation between stock market and local currency.

2.4 Empirical Studies

Several studies have been conducted on monetary policy and inflation rates. Abakah(2009) studied the impact of monetary policy on stock prices in Ghana. Abaksh examined the long and short-run relationships between monetary policy and stock prices as well as some selected macroeconomic variables as inflation and exchange rates in Ghana for the period 1990-2006 by means of time series analysis. This study used time series monthly data on all the variables and employed the Johansen's multivariate Cointegration technique (Johansen and Juselius, 1990) in conjunction with the Granger causality test to examine the possible long and short-run effects among the investigated series as well as the direction of these effects. The stationarity or otherwise of the series were determined by means of the augmented Dickey-Fuller (ADF) test

Totonchi (2011) studied macroeconomic theories of inflation by attempting to review and analyze the competing and complementary theories of inflation. The theoretical survey in this research work yielded a six-blocked schematization of origins of inflation; monetary shocks, Demand side, supply-side (or real) shocks, structural and political factors (or the role of institutions). It appeared that inflation is the net result of sophisticated dynamic interactions of these six groups of explanatory factors. That is to say, inflation is always and everywhere a macroeconomic and institutional phenomenon

There have been numerous studies on inflation, interest rates and exchange rates, but studies on the interrelationship between these three variables have been scanty. A study by Pattnaik, and Mitra (2001) indicates that interest rates, inflation rates and exchange rates are all highly correlated. By manipulating interest rates, central banks exert

influence over both inflation and exchange rates, and changing interest rates impact inflation and currency values.

A study by Bhole and Dash, (2002) sought to understand the relationship between interest rate and exchange rate in India. In their analysis, the scholars found the empirical relationship between the interest rate and exchange rate has been a debatable issue among the economists.

According to Mundell-Fleming model, an increase in interest rate is necessary to stabilize the exchange rate depreciation and to curb the inflationary pressure and thereby helps to avoid many adverse economic consequences. The high interest rate policy is considered important for several reasons.

Firstly, it provides the information to the market about the authorities' resolve not to allow the sharp exchange rate movement that the market expects given the state of the economy and thereby reduce the inflationary expectations and prevent the vicious cycle of inflation and exchange rate depreciation. Secondly, it raises the attractiveness of domestic financial assets as a result of which capital inflow takes place and thereby limiting the exchange rate depreciation (Morón, and Winkelried, 2003).

Thirdly, it not only reduces the level of domestic aggregate demand but also improves the balance of payment position by reducing the level of imports. But the East Asian currency crisis and the failure of high interest rates policy to stabilize the exchange rate at its desirable level during 1997-1998 have challenged the credibility of raising interest rates to defend the exchange rate. Critics argue that the high interest rates imperil the ability of the domestic firms and banks to pay back the external debt and thereby reduce

the probability of repayment. As a result, high interest rates lead to capital outflows and thereby depreciation of the currency (Mohanty, and Klau, 2004).

In another study by Edwards, and Yeyati (2005) tried to establish the relationship between exchange rates and inflation in Latin America. The research established that generally, the inflation rate is used to measure the price stability in the economy. The study by Kiptoo (2007), focused on Real Exchange Rate (RER) volatility and misalignment on international trade and investment. The study used Generalized Autoregressive Condition Heteroscedasticity (GARCH) and unconditional standard deviation. The study found out that RER volatility has a negative and significance impact on trade and investment during the study period 1993 to 2003.

Finally, the study by Sifunjo (2011) examined chaos and nonlinear dynamical approaches to predicting exchange rates in Kenya. The study used GARCH foreign rate volatility. The results suggest presence of nonlinearity in the returns, high volatility in the market with a maximum duration of 6 months. Foreign exchange market was found not to be efficient in the weak form. The two study findings are similar on the current study findings on the high volatility of the real exchange rate in Kenya.

Niemann et al (2010) using an optimal discretionary fiscal and monetary policy cast as a dynamic game between the Central Bank, the fiscal authority and the private sector, found out that as long as there is a conflict of interest between the two policy-makers, the central bank's monetary instrument choice critically affects the Markov-perfect Nash equilibrium of this game. Focusing on a scenario where the fiscal authority is impatient relative to the monetary authority, they showed that the equilibrium allocation is typically characterized by a public spending bias if the Central Bank uses the nominal money

supply as its instrument. If it instead uses the nominal interest rate, the Central Bank can prevent distortions due to fiscal impatience and implement the same equilibrium allocation that would obtain under cooperation of two benevolent policy authorities. Despite this property, the welfare maximizing choice of instrument depends on the economic environment under consideration. In particular, the money growth instrument is preferred whenever fiscal impatience has positive welfare effects, which is easily possible under lack of commitment.

2.5 Summary

The theoretical literature on the effect of interest rate on economic growth is inconclusive. Given that interest rates determine the cost of capital (finance) the variability of interest rate will therefore intuitively impact on the overall financing of the economy. Although some of the empirical studies appreciate the importance of interest rate on economic growth, others have tended to focus more on other factors eg inflation, monetary policies and demand and supply of money.

From the above discussion, it is evident that limited studies if any have been conducted on the effectiveness of monetary policy tools in countering inflation in Kenya. This study therefore seeks to fill this research gap by investigating the effectiveness of monetary policy instruments in countering inflation in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the procedures and methodologies that were undertaken in conducting the study to arrive at conclusions regarding the relationship between the monetary policy and inflation rates in Kenya. Specifically, the chapter covers: research design; data collection, data analysis and model specification.

3.2 Research Design

The study will employ correlational research design. Correlational research design study is a quantitative method of research in which you have two or more quantitative variables from the same group of subjects, & you are trying to determine if there is a relationship (or covariation) between the two. www.capilanou.ca. Correlational research allows researchers to collect much more data than experiments. Furthermore, because correlational research usually takes place outside of the lab, the results tend to be more applicable to everyday life. Another benefit of correlational research is that it opens up a great deal of further research to other scholars. When researchers begin investigating a phenomenon or relationship for the first time, correlational research provides a good starting position. It allows researchers to determine the strength and direction of a relationship so that later studies can narrow the findings down and, if possible, determine causation experimentally

The study will use time series empirical data on the variables to describe and examine the effectiveness of monetary policy tools in impacting on economic growth in Kenya by

establishing correlation coefficients between monetary policy tools and Economic growth indicators.

3.3 Data Collection

The study will use secondary data on the Consumer Price Index for inflation, 91-day Treasury bill rate, exchange rate, money supply (M3) and REPO rate,. The data on inflation (CPI) will be obtained from KNBS while data on 91-day Treasury bill rate, exchange rate, money supply (M3) and REPO rate will be obtained from the CBK. For the exchange rate, the study will focus on the US dollar rate since it is the most commonly used currency to settle international financial obligations. The data is public data as it is published in the websites of the relevant government agencies including CBK and KNBS.

3.4 Data Analysis

Once data from the secondary sources is obtained, the researcher will edit and code the data into the SPSS. Both descriptive and inferential statistics will be used to analyze the data. In descriptive statistics, the researcher will use mean and standard deviation; while in inferential statistics multivariate regression analysis will be used to determine the relationship between variables (the dependent and independent variables). The study findings will be presented by the use of tables. In the analysis process, relationships or differences that hold or differ from the expected relationship will be subjected to tests of significance to determine with what validity data can be said to indicate any conclusions. Where there are differences, statistical tests will help to find out whether the differences are real or as a result of random fluctuations

3.5 Model Specification

The variables of the study will comprise Economic growth indicators of inflation, exchange rate and CBR which shall be computed as average of GDP. The 91-day Treasury bill, exchange rate, REPO rate and Money Supply as the independent variables. The regression model as a multivariate model stating the Economic growth as a function of the stated monetary policy tools is as follows:

Thus, the regression equation will appear as:

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

Economic growth = $\beta_0 + \beta_1$ 91-T-billrate + β_2 exchange rate + β_4 reporate + β_5 Money supply + error term.

To simplify, Let:

Y =Economic growth(GDP)

X1= 91-day Treasury bill rate;

X2= exchange rate (US dollar);

X3= repo rate;

X4= Money Supply (M3),

ε =be error term.

The 91-day Treasury bill rate will be measured by applying the average monthly 91-day Treasury bill rate at which the government borrows from the public. The exchange rate will be measured by taking the average applicable exchange figures for the United States Dollar because it is the most common currency. For REPO rate, the study will apply figures available from the Central bank of Kenya for the period 2010-2014. For the Money Supply (M3), the study will take into consideration the money supply figures by the Central bank of Kenya. The error term stands for the effect of other factors other than monetary policy tools on the Economic growth and helps in stabilizing the model.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents analysis and findings of the study as set forth in the research objective and research methodology. The study findings are presented on the role of central bank in the relationship between monetary policies and economic growth in Kenya. The data was gathered fully from the secondary source which included the records at Central Bank of Kenya (CBK) and Kenya National Bureau of Statistics (KNBS).

4.2 .Repo rates

The study collected data on repo rates and conducted descriptive analysis on the data as shown in the table 4.1 below

Table 4.1 Repo rates

Year	N	N*	Mean	SE Mean	St Dev	Minimum	Q1	Median	Q3
2011	12	0	9.37	2.00	6.92	1.40	2.33	7.38	17.25
2012	12	0	9.517	0.622	2.154	5.700	8.225	9.400	11.525
2013	12	0	7.129	0.416	1.443	5.200	5.727	7.025	8.425
2014	12	0	7.577	0.264	0.916	5.870	6.675	7.875	8.400
2015	12	0	8.420	0.252	0.618	5.870	8.020	8.230	8.775

Source: Research data (2015)

From the findings, in 2011, the analysis revealed a large mean of 9.3, SE mean of 2.00, standard deviation of 6.92, a minimum of 1.4, lower quartile of 2.33, a median of 7.38 and an upper quartile of 17.25.

In 2012, There was mean of 9.517, SE mean of 0.622, standard deviation of 2.154, a minimum of 5.7 up from 1.4 in 2011, lower quartile of 8.225, a median of 9.4 and an upper quartile of 11.525.

In 2013, There was a mean of 7.129, SE mean of 0.416, standard deviation of 1.433, a minimum of 5.727, lower quartile of 7.025, a median of 9.4 and an upper quartile of 8.425. In 2014, There was mean of 7.577, SE mean of 0.264, standard deviation of 0.916, a minimum of 5.87, lower quartile of 6.675, a median of 7.875 and an upper quartile of 8.4.

In 2015 There was mean of 8.420, SE mean of 0.252, standard deviation of 0.618, a minimum of 5.87, lower quartile of 8.020, a median of 9.230 and an upper quartile of 8.775.

Interpretation

This can only be interpreted the distribution was uniform having minimal changes yearly however the gap between the distribution could be seen in 2011 a large gap was seen in which means that some months received there were sky rocketing repo rates as compared to others. However, these gap were seen reducing as the years progressed until in 2015, when we had the lowest standard deviations of 0.618.

4.3 91 day Treasury bills Rates

The study further collected data on the prevailing rates on the 91 day Treasury bills for the study period.

Table 4.2 91 Day Treasury Bills Rates

Year	N	N*	Mean	SE Mean	St Dev	Minimum	Q1	Median	Q3
2011	12	0	8.73	1.62	5.62	2.46	2.89	8.97	14.08
2012	12	0	9.517	0.622	2.154	5.700	8.225	9.400	11.525
2013	12	0	8.885	0.423	1.466	5.917	8.144	9.542	9.844
2014	12	0	8.930	0.142	0.493	8.291	8.596	8.812	9.234
2015	12	0	8.4198	0.0708	0.1733	8.1510	8.2635	8.4364	8.5931

Source: Research data (2015)

From the findings, in 2011, the analysis revealed a mean of 8.73, SE mean of 1.62, standard deviation of 5.62, a minimum of 2.46, lower quartile of 2.89, a median of 8.97 and an upper quartile of 14.08.

In 2012, There was mean of 9.517, SE mean of 0.622, standard deviation of 2.154, a minimum of 5.7 up from 1.4 in 2011, lower quartile of 8.225, a median of 9.4 and an upper quartile of 11.525.

In 2013, There was a mean of 8.885, SE mean of 0.423, standard deviation of 1.466, a minimum of 5.917, lower quartile of 8.596, a median of 9.542 and upper quartile of 9.844.

In 2014, There was mean of 8.930, SE mean of 0.142, standard deviation of 0.493, a minimum of 8.291, lower quartile of 8.596, a median of 8.812 and a upper quartile of 9.234.

In 2015 There was mean of 8.4198, SE mean of 0.0708, standard deviation of 0.1733, a minimum of 8.1510, lower quartile of 8.2635, a median of 8.4364 and a upper quartile of 8.5931.

These findings can only be interpreted that in the period of 2011-2015, as can be revealed there was a high mean of 8.7 which improved in 2012 to 9.157

Interpretation

The results on the analysis of repo rates just mean that in 2011 the repo rates were a little lower at with a small mean 8.73, However as the period progressed, the lending to the commercial improved and then remained constant with the standard deviation of between 2.154 in 2012 and 0.1733 in 2015. Therefore, the lending to the commercial banks by central banks did not deviate so much between 2012 and 2015

4.4 Consumer Price Index

The study further collected data on consumer price index and conducted descriptive statistics as shown in the table 4.3.

Table 4.3 Consumer Price Index

Variable	N	N*	Mean	SE Mean	Sdev	Minimum	Q1	Median	Q3
Maximum									
2011	12	0	5.550	0.802	2.778	3.600	3.950	4.600	5.475
2012	12	0	5.017	0.347	1.202	4.010	4.313	4.460	5.838
2013	12	0	5.715	0.483	1.674	3.670	4.118	5.465	7.308
2014	12	0	6.847	0.210	0.726	6.020	6.305	6.515	7.367
2015	6	0	6.405	0.287	0.703	5.530	5.590	6.590	7.043

Source: Research data (2015)

From the findings on Consumer Price Index , in 2011, the analysis revealed a mean of 5.550, SE mean of 0.802, standard deviation of 2.778, a minimum of 3.600, lower quartile of 3.950, a median of 4.6 and a upper quartile of 5.475.

In 2012, There was mean of 5.017, SE mean of 0.347, standard deviation of 1.202, a minimum of 4.01 up , lower quartile of 4.313, a median of 4.460 and a upper quartile of 5.838.

In 2013, There was a mean of 5.715, SE mean of 0.483, standard deviation of 1.674, a minimum of 3.670, lower quartile of 8.596, a median of 9.542 and upper quartile of 9.844.

In 2014, There was mean of 8.930, SE mean of 0.142, standard deviation of 0.493, a

minimum of 8.291, lower quartile of 4.118, a median of 5.465 and an upper quartile of 7.308.

In 2015 There was mean of 6.405, SE mean of 0.287, standard deviation of 0.703, a minimum of 5.530, lower quartile of 5.590, a median of 6.590 and an upper quartile of 7.043.

Interpretation

From the findings it only means that in 2012 and 2013 the deviation of consumer price index was not also big as the indexes ranged between the mean of 5.017 and 5.715 with their deviation ranging between 1.202 and 1.674 respectively. This just means that as much as there was an increase in consumer price index in those years, the change was very minimal.

Consumer price index shot highest in 2014 and 2015 with a large mean of 6.847 and 6.45. However the length between 2015 and 2014 was not big as its standard deviation ranged between 0.703 and 0.726. Could only be interpreted that economic growth as the high cost of living led to these increases.

4.5 Exchange Rates

The study further collected data of exchange rates and conducted descriptive statistics analysis as shown on table 4.4.

Table 4.4 Exchange Rates

Variable	N	N*	Mean	SE	Sdev	Minimum	Q1	Median	Q3
Maximum				Mean					
2011	12	0	88.69	1.84	6.37	81.27	83.55	87.71	92.41
2012	12	0	84.869	0.767	2.657	82.760	83.103	84.370	85.182
2013	12	0	86.577	0.272	0.943	84.960	85.865	86.810	87.410
2014	12	0	88.079	0.430	1.491	86.320	86.547	87.795	89.330
2015	6	0	94.48	1.33	3.26	91.42	91.61	93.47	98.33

From the findings on Exchange rates, in 2011, the analysis revealed a mean of 88.69, SE mean of 1.84, standard deviation of 6.37, a minimum of 81.27, lower quartile of 83.55, a median of 87.71 and an upper quartile of 92.41.

In 2012, There was a mean of 84.869, SE mean of 0.767, standard deviation of 2.657, a minimum of 82.760, lower quartile of 83.103, a median of 84.37 and an upper quartile of 85.182.

In 2013, There was a mean of 86.577, SE mean of 0.272, standard deviation of 0.943, a minimum of 84.96, lower quartile of 85.865, a median of 86.810 and an upper quartile of 87.410.

In 2014, There was a mean of 88.079, SE mean of 0.430, standard deviation of 1.491, a minimum of 86.320, lower quartile of 86.547, a median of 87.795 and an upper quartile of 89.330. In 2015 There was a mean of 94.48, SE mean of 1.33, standard deviation of 3.26, a minimum of 91.42, lower quartile of 91.61, a median of 93.47 and an upper

quartile of 98.33.

Interpretation

From the findings, the highest mean is experienced in 2015, However, the deviation witnessed 2011 of 6.37 dropped drastically 2.657 and then maintained the range between 3.26 in 2015 and 0.943 deviation. As can be seen from these findings, the exchange rates started at a mean of 88.69 but with the fiscal policies put in place by central bank maintained it moved down to 84.869 in 2012. However, it maintained the range between 88.079 and 88.69 until 2014. In 2015 it shot to its highest and this only means that the country is experiencing a lot economic sabotage and that GDP is at its lowest. The gap between imports and export is big meaning that the country is importing too much as compared to less export.

4.6 Money Supply

The study further collected data on exchange rates and conducted descriptive statistics analysis as shown in the table 4.5 below.

Table 4.5 Money Supply

Variable Maximum	N	N*	Mean	SE Mean	Sdev	Minimum	Q1	Median	Q3
2011	12	0	1403151	24126	83574	1285452	1327238	1396717	1488363
2012	12	0	1292513	17625	61056	1207508	1241952	1287520	1343937
2013	12	0	1480895	19698	68235	1382166	1439439	1456086	1529895
2014	12	0	1745711	25193	87272	1622707	1667056	1740501	1832669
2015	6	0	1984393	36604	89661	1878660	1910559	1967497	2069899

Source: research data (2015)

From the findings on Exchange rates, in 2011, the analysis revealed a mean of 1403151, SE mean of 24126, standard deviation of 83574, a minimum of 1285452, lower quartile of 1327238, a median of 1396717 and upper quartile of 1488363.

In 2012, There was a mean of 1292513, SE mean of 17625, standard deviation of 61056, a minimum of 1207508, lower quartile of 1241952, a median of 1287520 and a upper quartile of 1343937. In 2013, There was a mean of 1480895, SE mean of 19698, standard deviation of 68235, a minimum of 1382166, lower quartile of 1439439, a median of 1456086 and upper quartile of 1529895.

In 2014, There was mean of 1745711, SE mean of 25193, standard deviation 87272, a minimum of 1622707, lower quartile of 1667056, a median of 1740501 and a upper quartile of 1832669.

In 2015 There was mean of 1984393, SE mean of 36604, standard deviation of 89661, a minimum of 1878660, lower quartile of 1910559, a median of 1967497 and a upper quartile of 2069899.

4.7 Correlation Analysis

Correlation: GDP, Reporates, ExchRates, MoneySup, CPIIndex, 91DayTBr

The study sought to investigate the relationship between variable as shown in the table bellow

Table 4.6 Correlation: GDP, Repo Rates, Exch Rates, MoneySup, CPIIndex, 91DayTBr

	GDP	RepRates	ExchRates	MoneySup	CPIIndex
RepRates	-0.227 0.099				
ExchRates	0.021 0.879	0.408 0.002			
MoneySup	-0.105 0.451	0.001 0.996	0.627 0.000		
CPIIndex	0.014 0.026	0.298 0.029	0.303 0.919	0.425 0.001	
91DayTBr	-0.301 0.027	0.661 0.000	0.009 0.951	-0.209 0.130	0.256 0.062

Source: Research data (2015)

The study reveals that there is a negative relationship between GDP and Repo rates with a pearson coefficient of $r=-.227$ and 0.099 level of significance. On exchange rate and GDP, there is strong positive relationship between exchange rate and GDP with Pearson coefficient with $r= 0.021$ with level of significance of 0.879 . On exchange rates and repo rates, there is strong positive relationship with $r=0.408$ at a level of significance of 0.002 . On money supply and GDP there is strong negative relationship with $r=0.105$ at a level of significance of 0.451 on money supply and repo rates there is positive relationship between the two variables with pearson coefficient of $r=0.001$ at the level of significance of 0.996 . On CP index and GDP there is strong positive relationship with Pearson coefficient of $r=0.014$ at a level of significance of 0.027 . On CPIindex and repo rates, there is strong positive relationship with a pearson coefficient $r=0.298$ at a level of significance of 0.029 . On CP Index and Exchange rates, there is strong positive relationship with $r=0.303$ at a level of significance of 0.919 . On CP Index and money supply, there is strong positive relationship with $r=0.425$ at a level of significance of

0.001

91DayTBr and GDP there is a negative relationship with a Pearson coefficient of $r = -0.301$ at a level of significance of 0.027 and therefore, they are significantly related. On 91DayTBr and Repo rates, there is a strong positive relationship with a Pearson coefficient of 0.661 at a level of 0.000. On 91DayTBr and exchange rates, there is a positive relationship with a Pearson coefficient of $r = 0.009$ at a level of significance of 0.951.

On 91DayTBr and money supply, there is a negative relationship between the variables with a Pearson coefficient of $r = -0.209$ at a level of significance of 0.130.

Finally there is a positive relationship between the consumer price index and 91 day treasury bills with a Pearson coefficient of $r = 0.256$ at a level of significance of 0.062.

4.8 Regression Analysis: GDP versus RepRates, ExchRates, CPIIndex, 91DayTBr, LgMoSupply

Model Summary

Table 4.7 Model Summary

Model	S	R-Sq	R-sq(adj)	R-Sq(pred)
1	0.835281	19.74%	11.38%	0.00%

Source: Research data (2015)

In the model summary, the adjusted R square shows that the independent variables repo rates, exchange rates, consumer price index, 91 day treasury bills and money supply explain 11.38% of the variance on GDP. The results suggest that only a few variables in the model are significant predictors of economic GDP at (95% confidence level).

Table 4.8 Regression Coefficient

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	40.3	14.9	2.71	0.009	
RepRates	-0.0553	0.0528	-1.05	0.300	2.66
ExchRates	0.0664	0.0410	1.62	0.112	2.43
CPIndex	0.1386	0.0802	1.73	0.090	1.51
91DayTBr	-0.0782	0.0451	-1.73	0.089	2.19
LgMoSupply	-2.81	1.19	-2.37	0.022	2.38

Using the values of coefficient from the regression coefficient table, the established regression equation takes the form of: $GDP = 40.3 - 0.0553 \text{ RepRates} + 0.0664 \text{ ExchRates} + 0.1386 \text{ CPIndex} - 0.0782 \text{ 91DayTBr} - 2.81 \text{ LgMoSupply}$

The study shows that Repo rates, 91 day treasury bills and money supply have negative relationship with the dependent variable GDP and Exchange rates consumer price index have positive relationship with the dependent variable GDP.

Repo rates results into a -0.0553, this implies that repo rates negatively influence GDP, 91 day treasury bills results into -0.0782 change in GDP. The finding implies that repo rates negatively influence GDP and finally money supply results into a change in GDP of -2.841. This implies that money supply negatively influence the independent variable GDP.

Exchange rates results into a positive change in GDP of 0.0664 and consumer price index results into a positive change in GDP of 0.1386. These findings imply that exchange rates and consumer price index positively influence GDP. From the results shows that

consumer price index money supply, Repo rates, exchange rates, consumer Price index and 91day treasury bills are not statistically significant as the P values are more than 0.05 and significant as they are above P values of 0.05. However GDP is 0.009 therefore, statistically significant.

4.9 Summary and Interpretation of Findings

The entire world both developed and developing countries are working towards improving their economic growth. In dealing with this, central bank of a country has been in the fore front in ensuring that monetary policies put in place contribute a lot in the economic growth. The Central Bank of Kenya formulates and implement monetary policy directed towards achieving and maintaining stability in the general level of economic growth. Such monetary policies should support the Economic policy of the Government including its objectives of growth and employment, CBK ACT. According to John (2012, while Economists have largely agreed that money supply is the ultimate determinant of the general level of prices, therefore by extension, excess money supply is the ultimate cause of stunted economic growth.

The monetary transmission mechanism, which is the sequence of events starting with a change in the value of monetary policy instrument and culminating in a change in real output and GDP, is not clear in many countries. Therefore, The Central Bank plays a unique role in the Economy and performs various functions such as advising the government on monetary policy matters that helps in maintaining stability and growing the economy. Correlation analysis was conducted to determine the relationship between the dependent and independent variables. From the findings, a repo rate is negatively correlated to the GDP, Exchange rates and GDP have positive relationship. Money

supply and GDP have negative relationship, CPI and GDP have positive relationship and 91 day treasury bills and GDP have positive correlation.

Linear regression analysis, it is revealed that an increase Exchange rates results into a positive change in GDP of 0.0664 and consumer price index results into a positive change in GDP of 0.1386. These findings imply that exchange rates and consumer price index positively influence GDP. From the results shows that consumer price index and money supply are statistically significant as the P values are less than 0.05 and Repo rates, exchange rates, consumer Price index and 91day treasury bills are not statistically significant as the P values are above 0.05 (P values of 0.05)

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presented the summary of important data findings, conclusions drawn from the finding highlighted and policy recommendations that were made. The conclusions and recommendations drawn were in quest of addressing research objectives of establishing the role of central bank in the relationship between monetary policies and economic growth in Kenya.

5.2 Summary

The study established that Repo rates negatively affects GDP, this means that with the increase in lending to commercial bank by central bank, there is a decrease in economic growth and with a decrease in lending to commercial banks by central bank there is an increase in economic growth (GDP) .

The study also reveals that there is strong positive relationship between exchange rate and GDP this could only mean that with a decrease in exchange rates, there is a decrease in economic growth GDP. Therefore, an increase in exchange rates is accompanied by increase in economic growth.

On money supply and GDP there is negative relationship between the GDP and money supply. This could only mean that with an increase in money supply in an economy, there is a decrease in Economic growth (GDP). Therefore there is need for the central bank to put in place policies that controls money supply in the economy.

On 91DayTBr and GDP there is a negative relationship this could only mean that with an increase in treasury bills, there is a decrease in economic growth GDP. This could only mean that with the increasing inflation economic growth is hindered and so the need for more treasury bills to the public.

5.3 Conclusion

From the data presentation above and summary of findings, it is the role of central bank to ensure manageable money is supplied to the economy. However from the study money supply is one of the factors that can either enhance or hinder economic growth. It is clear that money supply has been increasing in the Kenyan economy this is as a result of the government overspending and therefore, the need for the treasury to minimize government spending's.

The study further concluded that there is need to encourage Repo rates as they have little effects on the economy but is a good step for the central bank in controlling money that is getting into the economy. It help the policy makers in ensuring that whenever there is excess money with commercial banks they are deposited to the central bank, and with the deficit, they are lent by central bank.

According to the presentation and findings, exchange rates also have minimal effects on the economic growth. It important that the foreign exchange rates stability is maintained to maintain the general retail prices in Kenya. It is very clear that Kenya import a lot of its products and this could only be better when central bank with its fiscal policies maintains the currency stability.

Through the 91-Day Treasury Bills, the Government of Kenya is able to borrow money from the public thus reducing the amount money in the hands of its citizens for expenditure. To the end, with manageable supply of money in the economy, there is reduced cost of goods and service. The issuance of the 91day treasury bills is a step towards stabilizing and improving economic growth.

5.4 Recommendations

This study recommended that money supply is one of the important factors in the economy and that the central bank must work towards ensuring that manageable amount is what is circulated in the economy. This can only be done by ensuring that government spending from the treasury is controlled and that the controller of budget is privy to all the government expenditure.

This research further recommended that repo rates be encouraged within as state's economy to a reasonable. This ensures that the central bank does not lend the commercial banks money in excess but ensures that they have enough money that is manageable in the economy this helps in growing the economy of a state.

Finally the research recommended that the 91 day treasury bills rates be encouraged this gives an opportunity to all the citizen to reduce their expenditure give loans to the government and earn interest this in turn reduces spending and cost of goods and service hence economic growth.

5.5 Limitation

Secondary data can be general and vague and may not really help in giving the exact picture of economic growth of a country

If primary data could have been collected, the researcher could have achieved different response as compared to the secondary and so the researcher could not get adequate data as the data used were not meant for this purpose but for other banking purposes

The slow economic growth existing in the country has forced the country to review the basket of goods making up the consumer price index computations. This may have lead to large variation between dependent and independent variable rendering the study very inconclusive

5.6 Suggestion For future Study

Economic growth of a state cannot just be inclined to monetary policies, but there are other factors that ensure conclusively of the study on economic growth. Therefore, this study suggests that economic growth be studied using factors like level of import and export activities and also international sanctions.

The study further suggest that another study be conducted in Kenya on How change of central bank leadership influence economic growth, so as to ascertain, how different changed leaderships since independence have always affected economic growth of a state.

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APPENDICES

Appendix 1: Raw Data Collected

Year	Month	GDP	RepRates	ExchRates	MoneySup	CPIndex	91DayTBr	LgMoSupply
2011	Jan	6.2	1.40	81.27	1,285,452.00	4.70	2.46	14.07
2011	feb	6.67	1.50	82.36	1,306,395.00	4.10	2.59	14.08
2011	March	7.13	1.60	83.55	1,324,685.00	3.60	2.77	14.10
2011	April	7.6	4.50	83.55	1,334,898.00	4.20	3.26	14.10
2011	May	7.38	5.70	85.70	1,354,059.00	3.90	5.35	14.12
2011	June	7.15	5.73	89.89	1,380,732.00	4.70	8.95	14.14
2011	July	6.93	9.02	91.10	1,412,702.00	4.50	8.99	14.16
2011	August	6.7	12.32	92.85	1,436,877.00	3.80	9.23	14.18
2011	Sept	6.48	15.61	99.83	1,484,198.00	5.40	11.93	14.21
2011	Oct	6.25	18.90	99.78	1,513,656.00	9.20	14.80	14.23
2011	Nov	6.03	18.35	89.72	1,489,751.00	13.00	16.14	14.21
2011	Dec	5.8	17.80	84.67	1,514,412.00	5.50	18.30	14.23
2012	Jan	5.53	10.00	85.03	1,207,508.00	4.31	20.72	14.00
2012	feb	5.25	11.90	82.76	1,219,826.00	4.40	19.70	14.01
2012	March	4.98	8.80	83.02	1,240,965.00	6.50	17.80	14.03
2012	April	4.7	5.70	83.04	1,244,913.00	6.11	16.01	14.03
2012	May	4.6	11.70	83.29	1,268,450.00	7.91	11.18	14.05
2012	June	4.5	11.00	84.37	1,273,283.00	4.32	10.09	14.06
2012	July	4.4	13.00	84.37	1,301,757.00	4.50	11.95	14.08
2012	August	4.3	9.00	84.07	1,310,079.00	4.01	10.93	14.09

2012	Sept	4.35	8.30	84.57	1,319,344.00	4.42	7.77	14.09
2012	Oct	4.4	9.80	85.23	1,352,134.00	4.01	8.98	14.12
2012	Nov	4.45	8.20	92.70	1,370,203.00	4.70	9.80	14.13
2012	Dec	4.5	6.80	85.98	1,401,693.00	5.02	8.25	14.15
2013	Jan	4.88	6.50	87.58	1,382,166.00	3.67	8.06	14.14
2013	feb	5.25	8.60	87.31	1,419,656.00	4.45	8.38	14.17
2013	March	5.63	9.30	87.21	1,436,188.00	4.11	9.56	14.18
2013	April	6	9.10	85.81	1,449,714.00	4.14	10.38	14.19
2013	May	6.25	7.90	85.12	1,449,191.00	4.05	9.46	14.19
2013	June	6.5	7.90	86.03	1,459,654.00	4.91	6.21	14.19
2013	July	6.75	7.40	87.41	1,452,518.00	6.02	5.92	14.19
2013	August	7	6.65	87.41	1,473,657.00	6.67	9.89	14.20
2013	Sept	6.8	5.90	87.41	1,512,985.00	8.29	9.58	14.23
2013	Oct	6.6	5.67	84.96	1,535,531.00	7.76	9.72	14.24
2013	Nov	6.4	5.43	86.41	1,590,531.00	7.36	9.94	14.28
2013	Dec	6.2	5.20	86.26	1,608,950.00	7.15	9.53	14.29
2014	Jan	5.83	5.87	86.34	1,636,929.00	7.21	9.26	14.31
2014	feb	5.45	6.53	86.32	1,659,486.00	6.41	9.16	14.32
2014	March	5.08	7.20	86.44	1,689,764.00	6.27	8.98	14.34
2014	April	4.7	8.30	86.87	1,708,992.00	6.41	8.80	14.35
2014	May	5.03	8.40	87.79	1,784,076.00	7.30	8.82	14.39
2014	June	5.35	6.46	87.62	1,622,707.00	7.39	9.81	14.30
2014	July	5.68	7.11	87.80	1,701,012.00	7.67	9.78	14.35

2014	August	6	7.75	88.39	1,772,009.00	8.36	8.29	14.39
2014	Sept	5.88	8.40	89.27	1,805,269.00	6.60	8.38	14.41
2014	Oct	5.75	8.40	89.35	1,841,802.00	6.43	8.65	14.43
2014	Nov	5.63	8.00	90.17	1,876,160.00	6.09	8.64	14.44
2014	Dec	5.5	8.50	90.59	1,850,325.00	6.02	8.58	14.43
2015	Jan	5.35	8.09	91.67	1,878,660.00	5.53	8.60	14.45
2015	feb	5.2	7.90	91.42	1,921,192.00	5.61	8.59	14.47
2015	March	5.05	8.06	92.33	1,936,754.00	6.31	8.45	14.48
2015	April	4.9	8.37	94.60	1,998,240.00	7.08	8.42	14.51
2015	May	5.03	8.50	98.23	2,054,042.00	6.87	8.15	14.54
2015	June	5.15	9.60	98.63	2,117,471.00	7.03	8.30	14.57

Appendix II: Interpretation of Regression Results

Correlation: Verbal, Math, GPA

	Verbal	Math
Math	<u>0.275</u>	
	0.000	
GPA	<u>0.322</u>	<u>0.194</u>
	0.000	0.006

Cell Contents: Pearson correlation

P-Value

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	3	12833.9	4278.0	57.87	0.000
East	1	226.3	226.3	3.06	0.092
South	1	2255.1	2255.1	30.51	0.000
North	1	12330.6	12330.6	166.80	0.000
Error	25	1848.1	73.9		
Total	28	14681.9			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
8.59782	87.41%	85.90%	78.96%

Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	389.2	66.1	5.89	0.000	
East	2.12	1.21	1.75	0.092	1.12
South	5.318	0.963	5.52	0.000	1.21
North	-24.13	1.87	-12.92	0.000	1.09

Regression Equation

$$\text{HeatFlux} = 389.2 + 2.12 \text{ East} + 5.318 \text{ South} - 24.13 \text{ North}$$

Fits and Diagnostics for Unusual Observations

Std

Obs	HeatFlux	Fit	Resid	Resid
4	230.70	210.20	20.50	2.94 R
22	254.50	237.16	17.34	2.32 R

R Large residual

Appendix III: Results of The Regression Model

Results for: gdp

Descriptive Statistics: GDP, RepRates, ExchRates, MoneySup, CPIIndex, 91DayTBr, LgMoSupply

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
GDP	54	0	5.687	0.121	0.887	4.300	5.018	5.630	6.420	7.600
RepRates	54	0	8.400	0.482	3.543	1.400	6.490	8.145	9.150	18.900
ExchRates	54	0	87.879	0.594	4.364	81.272	84.887	87.040	89.957	99.832
MoneySup	54	0	1536548	32305	237389	1207508	1347825	1466656	1703007	2117471
CPIIndex	54	0	5.851	0.239	1.755	3.600	4.380	5.815	7.043	13.000
91DayTBr	54	0	9.671	0.513	3.768	2.460	8.360	8.987	9.980	20.720
LgMoSupply	54	0	14.234	0.0203	0.149	14.004	14.114	14.198	14.348	14.566

Descriptive Statistics: RepRates, ExchRates, MoneySup, CPIIndex, 91DayTBr, LgMoSupply

Variable	Year	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
RepRates	2011	12	0	9.37	2.00	6.92	1.40	2.33	7.38	17.25
	2012	12	0	9.517	0.622	2.154	5.700	8.225	9.400	11.525
	2013	12	0	7.129	0.416	1.443	5.200	5.727	7.025	8.425
	2014	12	0	7.577	0.264	0.916	5.870	6.675	7.875	8.400
	2015	6	0	8.420	0.252	0.618	7.900	8.020	8.230	8.775
ExchRates	2011	12	0	88.69	1.84	6.37	81.27	83.55	87.71	92.41
	2012	12	0	84.869	0.767	2.657	82.760	83.103	84.370	85.182
	2013	12	0	86.577	0.272	0.943	84.960	85.865	86.810	87.410
	2014	12	0	88.079	0.430	1.491	86.320	86.547	87.795	89.330
	2015	6	0	94.48	1.33	3.26	91.42	91.61	93.47	98.33
MoneySup	2011	12	0	1403151	24126	83574	1285452	1327238	1396717	1488363
	2012	12	0	1292513	17625	61056	1207508	1241952	1287520	1343937
	2013	12	0	1480895	19698	68235	1382166	1439439	1456086	1529895
	2014	12	0	1745711	25193	87272	1622707	1667056	1740501	1832669
	2015	6	0	1984393	36604	89661	1878660	1910559	1967497	2069899

CPIIndex	2011	12	0	5.550	0.802	2.778	3.600	3.950	4.600	5.475
	2012	12	0	5.017	0.347	1.202	4.010	4.313	4.460	5.838
	2013	12	0	5.715	0.483	1.674	3.670	4.118	5.465	7.308
	2014	12	0	6.847	0.210	0.726	6.020	6.305	6.515	7.367
	2015	6	0	6.405	0.287	0.703	5.530	5.590	6.590	7.043
91DayTBr	2011	12	0	8.73	1.62	5.62	2.46	2.89	8.97	14.08
	2012	12	0	12.76	1.32	4.57	7.77	9.18	11.05	17.35
	2013	12	0	8.885	0.423	1.466	5.917	8.144	9.542	9.844
	2014	12	0	8.930	0.142	0.493	8.291	8.596	8.812	9.234
	2015	6	0	8.4198	0.0708	0.1733	8.1510	8.2635	8.4364	8.5931
LgMoSupply	2011	12	0	14.153	0.0172	0.0595	14.067	14.099	14.150	14.213
	2012	12	0	14.071	0.0136	0.0470	14.004	14.032	14.068	14.111
	2013	12	0	14.207	0.0131	0.0455	14.139	14.180	14.191	14.241
	2014	12	0	14.372	0.0144	0.0500	14.300	14.327	14.370	14.421
	2015	6	0	14.500	0.0183	0.0449	14.446	14.463	14.492	14.543
Variable	Year	Maximum								
RepRates	2011	18.90								
	2012	13.000								
	2013	9.300								
	2014	8.500								
	2015	9.600								
ExchRates	2011	99.83								
	2012	92.700								
	2013	87.580								
	2014	90.590								
	2015	98.63								
MoneySup	2011	1514412								
	2012	1401693								
	2013	1608950								
	2014	1876160								
	2015	2117471								
CPIIndex	2011	13.000								
	2012	7.910								
	2013	8.290								
	2014	8.360								
	2015	7.080								
91DayTBr	2011	18.30								
	2012	20.72								

	2013	10.379
	2014	9.810
	2015	8.6047
LgMoSupply	2011	14.231
	2012	14.153
	2013	14.291
	2014	14.445
	2015	14.566

Correlation: GDP, RepRates, ExchRates, MoneySup, CPIIndex, 91DayTBr

	GDP	Rep Rates	ExchRates	MoneySup	CPIIndex
RepRates		-0.227	0.099		
ExchRates		0.021	0.408		
		0.879	0.002		
MoneySup		-0.105	0.001	0.627	
		0.451	0.996	0.000	
CPIIndex		0.014	0.298	0.303	0.425
		0.919	0.029	0.026	0.001
91DayTBr		-0.301	0.661	0.009	-0.209
		0.027	0.000	0.951	0.130
					0.062

Cell Contents: Pearson correlation
P-Value

Regression Analysis: GDP versus RepRates, ExchRates, CPIIndex, 91DayTBr, LgMoSupply

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	5	8.2364	1.6473	2.36	0.054
RepRates	1	0.7668	0.7668	1.10	0.300
ExchRates	1	1.8310	1.8310	2.62	0.112
CPIIndex	1	2.0835	2.0835	2.99	0.090
91DayTBr	1	2.0998	2.0998	3.01	0.089
LgMoSupply	1	3.9209	3.9209	5.62	0.022
Error	48	33.4893	0.6977		

Total 53 41.7257

Model Summary

S R-sq R-sq(adj) R-sq(pred)
0.835281 19.74% 11.38% 0.00%

Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	40.3	14.9	2.71	0.009	
RepRates	-0.0553	0.0528	-1.05	0.300	2.66
ExchRates	0.0664	0.0410	1.62	0.112	2.43
CPIndex	0.1386	0.0802	1.73	0.090	1.51
91DayTBr	-0.0782	0.0451	-1.73	0.089	2.19
LgMoSupply	-2.81	1.19	-2.37	0.022	2.38

Regression Equation

GDP = 40.3 - 0.0553 RepRates + 0.0664 ExchRates + 0.1386 CPIndex -
0.0782 91DayTBr
- 2.81 LgMoSupply

Fits and Diagnostics for Unusual Observations

Obs	GDP	Fit	Resid	Std Resid
10	6.250	5.969	0.281	0.41 X
11	6.030	5.799	0.231	0.39 X
12	5.800	4.239	1.561	2.30 R X
23	4.450	6.139	-1.689	-2.18 R

R Large residual

X Unusual X