THE RELATIONSHIP BETWEEN MONETARY POLICY AND ECONOMIC GROWTH IN KENYA

BY

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DECLARATION

This research project is my original work and has not been submitted or presented to any other institution of learning for any academic award.

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DEDICATION

This work is dedicated to the Almighty Allah who granted me the strength and the ability to come up with this idea and have enabled me for completion. I also dedicate it to my lovely parents, husband, brothers, sister and friends for their support and encouragement during the whole period of writing this research proposal.

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LIST OF ABBREVIATIONS

APT   -   Arbitrage Pricing Theory

CBK   -   Central Bank of Kenya

CBR   -   Central bank Rate

CPI   -   Consumer Price Index

CRR   -   Cash Reserves Ratio

GDP   -   Gross Domestic Product

MPC   -   Monetary Policy Committee

NSE   -   Nairobi Securities Exchange

OMO   -   Open Market Operations

QTM   -   Quantity Theory of Money

ABSTRACT

Monetary policies are some of the main drivers of the economic growth as it directly impacts on the key economic variables. Economic growth on the other hand plays a key role in improving citizens' standards of living by influencing key economic factors. Monetary policies have attracted a lot of interest in past from various scholars as they are significant subject under macroeconomic theory. The objective of the study was to determine the relationship between monetary policy and economic growth in Kenya. The neoclassical growth theory, the quantity theory of money, the liquidity preference theory and the new classical monetary tool formed the theoretical foundation of the study. The study employed a descriptive research design and used quarterly secondary data covered a 10-year period (2008-2017). The study used descriptive statistics to summarize the collected data into meaningful form. Further, the study employed correlation to establish the strength of association among the study variables and the multiple regression model to establish the association among the study variables. The result revealed a positive and not statistically significant relationship between the central bank rate and economic growth (GDP) and that the relationship between open market operations (OMO) and real GDP in Kenya was negative and significant. The findings also found that relationship between cash reserve ratio and real GDP was positive and significant while the relationship between exchange rate and real GDP was positive and statistically significant. Finally, the study found that the relationship between interest rates and real GDP was positive and not statistically significant. The study concluded that the open market operations, cash reserve ratio and exchange rates significantly influence economic growth in Kenya while the central bank rate and interest rates does not have a significant influence on economic growth in Kenya. The study recommended that the Central Bank of Kenya and the ministry of finance should use the open market operation mechanism to raise finance since the use of open market operation tools enhances economic growth and should set appropriate ratio of cash reserves requirement, which will in turn translate to economic growth in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Economic growth is a major determinant in improving citizens' living standards by influencing key economic factors (Agbonlahor, 2014). Most governments use monetary policies to control rate of inflation, find a balance between BOP, reduce unemployment rate and boost rate of economic growth. Price stability is vital to a country with regards to development as well as growth of the economy since it ensures financial markets are operating efficiently (Chipote & Makhetha-Kosi, 2014). Monetary policies are some of the main drivers of the growth of GDP as it directly impacts on the key economic variables. This phenomenon has gained popularity in the recent past hence forcing most governments around the world to embrace it (Akalpler & Duhok, 2018).

The theoretical linkage between the two variables under study has been advanced by a number of theories. The neoclassical growth theory by Solow and Swan (1956) is built on the concept that firms acquire capital up to a point where firm experience diminishing returns on the capital employed (Twinoburyo & Odhiambo, 2018). The quantity theory of money asserts that any variance with regards to the supply of money leads to the varying pricing levels by the same proportions ceteris paribus. The theory is founded on the assumption that the relationship between money supply and level of price changes is one dimensional (Nwoko, Ihemeje & Anumadu, 2016). The liquidity preference theory by Keynes, (1936) states that supply of money is an external factor and any increment results to an increase in the cash demand by an equal proportion (Laidler, 2013).

In Kenya, the Central Bank is mandated to ensure price stability in Kenyan economy through formulation of policies aimed at maintaining inflation is maintained at reasonable acceptable limits (Mutwiri, 2017). Ensuring minimal levels of inflation and controlling bank rates is a critical way of boosting the growth in the economy through inducing savings which equates to investments which in turn equates to the change in the stock of the capital boosts the speed of production by firms hence increasing production and reducing unemployment rate. It's usually known as an expansionary move which is a big boost in improving various sectors of this economy leading to economic growth which in long run leads to economic development (Nyamongo & Ndirangu, 2013). In addition, the monetary policy stance in Kenya ensures price stability through maintaining interest rates at desirable levels (Mohajan, 2013).

1.1.1 Monetary Policy

Monetary policy is described as the activities undertaken by the management to manage cash moving around (Toby & Peterside, 2014). The monetary policies are orchestrated by the bodies set through the constitution as in the case of Kenya it's carried out by central bank (Onakoya, Ogundajo & Johnson, 2017). Their main objective is to ensure the country achieves its set growth targets by maintaining the services' as well as the products' prices in the economy at acceptable levels that induce growth (Miao, 2016). This policy of money involves the proper management of money circulating in the economy to maintain economic stability which is vital for the country's GDP (Berlemann & Freese, 2013).

The monetary policy is an important concept around the globe as its used to bring stability to the financial markets hence avoiding the issue of global financial crunch as the one witnessed from 2008-2012 which led to the huge economic losses due to collapse of huge firms worldwide (Uma, Ogbonna & Obidike, 2015). The basic goal of monetary policy is the promotion of stable prices, sustainable output and employment. In macroeconomic theory, monetary policy is anticipated to have an effect on the economy through fluctuations of interest rates, which would affect the investments which equates to the change in capital stock in the productive sector (Auer, 2014). The main aim of monetary policy concept is to ensure stable macroeconomic variables through maintaining money supply in the economy at levels which trigger economic growth (Havi & Enu, 2014).

Monetary policy mainly influences the private sector through four routes; interest rate, demand and supply for money, cash reserve requirements and the open market operations (Xu & Chen, 2012). OMO refer to central bank activities of controlling money circulating in the economy by purchasing and selling securities depending on whether they are aimed for contractionary of expansionary moves (Kofoed-Pihl, 2009). The CBR is lending rate by the CBK to local banks and its set by the Monetary Policy Committee at an interval of two to three months (Mbusi, 2016). Cash reserves ratio is the percentage that must be deposited at the Central bank by commercial banks out of the total deposits received from the clients but they don't earn any interest as they act as a buffer in case of liquidity problem (Mbusi, 2016).

1.1.2 Economic Growth

Growth of the economy is described as the progression of growing the sizes of countries' economy, macro-economic indicators particularly GDP per capita, systematically and that results to a positive effect on the social-economic sector (Smith, 2014). It's also defined as the increment in country's production which it finally leads to the addition of the income generated nationally. It entails increase in levels of national output which reduces the levels of unemployment and in turn improving the living standards of the residents in a country (Ufoeze, 2018). Furthermore, economic growth ensures equal distribution of national resources hence reducing the gap in terms of wealth distribution (Roihjert & Åhlander, 2016).

The economic growth is an important issue in economics and is considered as one of the necessary conditions to achieve better outcomes on social welfare, which is the main objective of economic policy (Mauck & Price, 2017). Economic growth ensures equal distribution of resources in the economy (Xu & Chen, 2012). Economic growth is used to predict the future prospects of the economy and analyze the effectiveness of various policies implemented by the government to boost economic growth (Sax, 2014). The recent production of a country is compared to previous ones to reveal whether the country is progressing (Ufoeze, 2018).

The growth of an economy is usually measured using its GDP which measures the overall change in the country's productivity and is one of the main factors considered by the investor particularly foreign investors. GDP refers to the total worth of all the items as well as the services which have been generated in a particular economy annually (Sax,

2014). In addition, GDP is affected by some market fundamentals and changes in GDP imply a change in real economic growth, which may directly impact on the housing property market. In addition, economic certainty that arises from a rise in real GDP results in high business confidence (Mauck & Price, 2017).

1.1.3 Relationship Between Monetary Policy and Economic Growth

Monetary policy influences this economy through regulating money circulating in the economy (Chipote & Makhetha-Kosi, 2014). There exists a correlation linking the monetary policy and economic growth via the transmission mechanism (Sun, 2017). The transmissions include; rising account balances which generates portfolio disequilibrium. The other factor occurs through low interest rates, which influences economic growth through raising the demand for goods and services (Toby & Peterside, 2014). Monetary policies are aimed at maintaining inflation at desirable levels, maintaining BOP, increasing levels of employment thereby boosting economic growth (Agbonlahor, 2014).

Theoretically, the quantity theory of money argues that money supply, has indirect effect on the real GDP thereby implying that monetary policies are aimed at achieving long-term goals (Ufoeze, 2018). The neoclassical growth theory argues that taking velocity and output fixed increment in money supply leads to increment of price levels proportionately (Berg, 2016). The liquidity preference theory indicates an existence of a positive correlation linking GDP and interest rate, which is normally generated from monetary policy transmission mechanism (Twinoburyo & Odhiambo, 2018).

A study by Akalpler and Duhok (2018) investigated the relation lining monetary policy to the GDP of Malaysia and revealed that the study variables had positive correlation.

Sulaiman and Migiro (2014) examined the correlation linking economic growth of Nigeria to monetary policy covering a period of 20 years (1980-2010) and found a significant correlation among the study variables. According to their study, Chipote and Makhetha – Kosi (2014), analyzed the significance of the policies set for money on GDP of South Africa and found that that Ms, repo rate and exchange rate have weak correlation to monetary policy instruments in the country. Finally, Onyeiwu (2012) analyzed their impact of monetary policies on the GDP in among West African economies where he revealed that the two variables are directly correlated.

1.1.4 Monetary Policy and Economic Growth in Kenya

Locally, monetary policies are the actions and decisions that the central government takes to ensure that the supply of money is in accordance to the growth in the economy and the cost of items objectives that the government wants to achieve (Njiru, 2016). CBK is the institution entrusted with the authority of regulating the availability of money around the economy in a bid to maintain levels of inflation in the country at desirable rate. The institution is also tasked to control the operations of commercial which are vital in maintaining interest rates at levels aimed at boosting economic growth and development (Mutwiri, 2017). The key role of monetary policy is to control inflation in an effort of achieving set targets by national governments of achieving high performance of GDP which in long run translates to sustainable development (Mbusi, 2016).

The Kenya economy is one of the best performers in East and central Africa and is ranked third in the African continent. The GDP per capita at $1750 in term of PPP (Mohajan, 2013). The reported GDP growth rates reported after the 2002 general

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elections for the next three years were 3%, 4.5% and 6% (KNBS, 2005). The country has been posting high GDP growth rates even at times when the world was experiencing global financial crisis like in the case of 2011 when the economy grew at 4.4% (Kamaan & Nyamongo, 2014). The country's economy has remained resilient over time, with the growth of the economy rising from a percentage of 5.7 in 2015 to a percentage of 5.8 come 2016 largely due to a stable macroeconomic environment (Mutwiri, 2017).

Kenyan objective is to maintain the inflation rates at desirable rates (Kamaan & Nyamongo, 2014). The objective has been expanding over the years with the central bank continually advancing the objective to ensure the country achieve its objective of achieving high economic performance (Nyorekwa & Odhiambo, 2014). The process followed by the regulator: Central bank of Kenya (CBK) entails ensuring a balance between money for circulation and demand for money. This enables central bank to come up with the policies of setting the money supply levels (Nyamongo & Ndirangu, 2013). The following instruments are considered when setting the policies; reserve requirement, OMO, and lending by the central bank, moral suasion (Mbusi, 2016).

1.2 Research Problem

Monetary policies have attracted a lot of interest in past from various scholars as they are significant subject under macroeconomic theory (Havi & Enu, 2014). The basic goals of monetary policy are the promotion of stable prices, sustainable output and employment. In macroeconomic theory, monetary policy is expected to impact on the economic conditions prevailing through the changes in the rate of interest gotten which would result in a variance in the prices of investments as well as that of the capital in the productive

sector (Nwoko, Ihemeje & Anumadu, 2016). However, establishment of these policies on money and their objectives is recognized as a big factor and especially for the economists and the opinions of the general public as the integration of all the central banks since they are the ones charged with the responsibility of provision of the domestic currency to the economy as well as the application of these monetary policies set (Akalpler & Duhok, 2018). In addition, despite the implementation and frequent review of monetary policy transmission tools, the economic performance of some countries especially in the developing has been poor for years (Smith, 2014).

In Kenya, the long-term economic blueprint in vision 2030 sought to achieve high economic performance by targeting an annual growth of above 10% (Mbusi, 2016). As such, the policy makers aimed at achieving this through instituting a number of fiscal and monetary policies (Mutwiri, 2017). However, from the year 2012 the GDP growth rates have averaged less than 5% with the year 2012 posting GDP growth rate of 4.9%. This reveals that the country is lagging far behind from the targeted rate of 10% annually (Kamaan & Nyamongo, 2014). In addition, in spite the dominance of the country with largest economy in East and Central African region, its GDP growth is below average as compared to the neighboring countries in the East African region and in the African continent at large (Nyorekwa & Odhiambo, 2014).

A number of authors have investigated the correlation linking monetary policy to its effect on economic growth. A study by Sun (2017), analyzed the impact of these monetary policies on the enhancement of the economy where the study revealed macroeconomic variables have an inverse impact to GDP growth rate but the study measured monetary policy using money supply and did not incorporate other indicators

of monetary policy. In Iran, Nouri & Samimi (2011), studied the relationship linking the supply of cash to the GDP and found a strong direct correlation linking the study variables but the study used money supply as the only indicator for monetary policy.

Locally, a study by Mutwiri (2017) examined the relationship of monetary policies and inflation in Kenya and revealed an existence of a direct correlation among the study variables but the study focused on monetary policy and inflation. Cheruiyot (2012) examined the effectiveness of monetary policies in maintaining the levels of inflation at desirable levels and found that positive correlation exists among the study variables but the study dwelled on inflation and not economic growth. From the reviewed studies it's evident that the available studies on monetary policy and economic growth provide conflicting results and locally in Kenya such most studies examine monetary policy versus inflation hence a gap in the available literature. The research study therefore sets out to answer the question, what is the correlation between monetary policies with the growth of the economy in Kenya?

1.3 Research Objective

The objective of this research study was to determine the correlation between monetary policies with the growth of the economy in Kenya.

1.4 Value of the Study

The findings for the study will add value to the theoretical discussion by testing the correlation between monetary policies with the growth of the economy. In this, there will be a Kenyan concept in where demand outweighs supply. The study findings will be significant to investors who evaluate their return on investment using economic growth

indicators. The study findings will also be valuable to foreign investors who evaluate the monetary and economic growth of different counties which would greatly influence their decisions.

The Policy makers like the central bank of Kenya, the national treasury and other relevant bodies may use these research findings to implement new laws or maintain current policies affecting the economic growth of the country. The policy makers may also use the information to set up desirable interest rates in order to realize improved performance of economic growth in the country through monetary policies. The policy makers will use the information in setting the interest rates, OMO and cash reserve ratios.

This research will enrich the existing literature under the monetary policies and economic performance in Kenya which will be of great importance to those who wish to carry out a research on the topic under study. Furthermore, it stands in as a motivator to spur the desires for further research in this vital topic of study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The outline of this chapter is theoretical review of the existing literature, the determinants of real estate growth, and a review of international and local studies under the empirical review section, the conceptual model and finally a conclusion of reviewed literature.

2.2 Theoretical Review

Neoclassical growth theory by Solow and Swan (1950), The Quantity theorem of money, liquidity preference theorem and the new classical monetary tool will form the theoretical foundation of the study.

2.2.1 Neoclassical Growth Theory

The theory was initiated by Solow and Swan (1956). The neoclassical growth theory is a model of capital accumulation in a pure production economy. No prices are involved as we are interested in output as a measure of real income (Ugur, 2016). The theory is built on the concept that firms acquire capital up to a point where they get reducing returns on their capital employed. Due to the absence of labour units, those available utilize the extra units of capital available (Masoud, 2013). This leads to firms abandoning capital accumulation and depending on other factors like advancement of technology which is external to the firm hence it can influence it (Smith, 2014).

In this model, the assumption made is that the function of capital is (k), Labor (L) as well as the advancement in technology. Under this model, markets are assumed to be operating under perfect a condition which implies no under-utilization of available resources (Smith, 2014). According to the theory, firms produce output using capital and labor, where these inputs are turned into outputs through constant returns to scale production function (Ugur, 2016). The theory states that when suitable monetary policies are implemented they are complimented by interest rates, increased demand for goods and services, and grants from World Bank acts as a boost to GDP and sustainable development in long-term (Ufoeze, 2018). In this study, the theory will help highlight the role played by capital, labor and advancement in technology in national production.

2.2.2 The Quantity Theory of Money

The theorem began in the 16th century and is associated with lead economist Henry Thornton. The theory led to the emergence of classical monetary theories which dominated the 19th century on issues pertaining to monetary theories (Laidler, 2013). The theory asserts changes in money supply lead to the changes in the pricing levels by the same proportions ceteris paribus (Tsoulfidis, 2010). The theory is founded on the assumption that the relationship between money supply and level of price changes is one dimensional (Chuba, 2015).

The theory is analyzed using Fisherian equation of exchange, $MV = PY$ (Farooq, Hassan & Shahid, 2015). M is money supply which implies cash circulation in the economy; V represents money velocity which implies the times money changes hands; P stands for price levels in the economy. The left side of the equation is money supply side while the

right hand side is the money demand side hence the left side equates to the right hand side (Tsoulfidis, 2010). However, the theory has come under so much criticism with some arguing that money velocity changes from time to time thus it can only hold in the short term (Nwoko, Ihemeje & Anumadu, 2016).

The quantity theory of money sets basis for the association between monetary policies and policies to macroeconomic variables. In the fisher's theory, the assumption made is that money velocity is constant hence increment in money supply results to an increment in the price levels at the same proportion. This implies that money supply has effect in the short-term but doesn't have any effect in the long-term (Twinoburyo & Odhiambo, 2018). The theory is only relevant in conditions where money supply as well as government financing is not responding to public expenditures (Farooq, Hassan & Shahid, 2015). With relation to this study, the QTM expounds on the correlation linking money supply to economic growth where the amount and velocity of money in circulation influences GDP growth.

2.2.3 Liquidity Preference Theory

The theorem is linked to Keynes (1936). The Keynes asserted that holding liquid savings is influenced by the fact that people are unaware of what to expect in the future pertaining to the interest rates (Nwoko, Ihemeje & Anumadu, 2016). According to the theory, variations in the levels of liquidity were mainly influenced by people preferences at a particular time (Chuba, 2015). The theory reiterates that there are only two reasons for holding money which include; speculative and precautionary reasons. The former hold money and government bills depend on the anticipated interest rates. Expected rise in

interest rates induces many people to hold government bills while expected low interest rates will induce people to hold their wealth in form of cash (Tily, 2016).

The theory is mainly established on the basis of market forces which are the demand and the supply. The demand for assets points towards the need for balance between holding money and bonds (Tily, 2016). This theory is a combination of both sides of the demand for money as well as the money supply side which brings about equilibrium in the money market. The theory further asserts that interest rates impact on the economic growth through; low interests have positive relationship to GDP as capital is cheap which has a direct correlation to Production capacity (Twinoburyo & Odhiambo, 2018).

2.2.4 New Classical Monetary Model

The new classical theory is associated with Lucas (1972). The theory establishes a structure of backing the existence of a correlation linking inflation to economic growth assuming that there is no room to be exploited by the economist pertaining to the correlation between these two economic factors (Ufoeze, 2018). This theory assumes that markets operate under perfect conditions. It further assumes that the monetary policies have no impact on the real economic variables (Tsoulfidis, 2010).

The theory is based on various assumptions which include; rationality, natural rate hypothesis, market clearing, and information imperfection. The economic equilibrium is influenced by the technological advancement and has no correlation to monetary policies (Twinoburyo & Odhiambo, 2018). According to this theory, the monetary economists believe monetary policies are vital to the sustainable economic growth as it directly impacts on the productivity (Ufoeze, 2018).

2.3 Determinants of Economic Growth

2.3.1 Inflation

Inflation is described as a continuous increment in cost levels of products as well as that of services for a given time period (Sax, 2014). Inflation leads to the eroding power of money as it loses value due to increased prices of goods (Zaighum, 2014). The inflation levels are used by the stakeholders to show the capability of the institutions mandated to control inflation in managing it (Xu & Chen, 2012).

The changes in rate of inflation have huge impact on the purchasing power as well as the costs associated with firm production activities. Many scholars reiterate that high inflation rates have an inverse correlation to economic growth and in many cases many view economies with high rates of inflation as having failed (Xu & Chen, 2012). High rate of inflation is viewed as the main cause of high costs of goods and services but there are other factors like excess demand which outstrips supply (Mauck & Price, 2017).

2.3.2 Exchange Rates

This is the amount at which one currency (Domestic) trades for another currency (Foreign). This is vital to the country's BOP as well as the overall performance of GDP (Mallick, 2011). It has impact on various economic variables including; BOP, reserve ratios, Unemployment levels and national (Roihjert & Åhlander, 2016). Fluctuations are reflection of how the domestic economy is performing compared to the foreign economy which shows the amount to be invested in the country, appreciation means the domestic

currency has appreciated in value while depreciation means the value of domestic currency decline (Zaighum, 2014).

A decrease in exchange rates implies low returns from the country's' goods and high prices for their exports making their exports lose competitive advantage. It further affects other factors such as domestic financial securities, rate of inflation among others (Xu & Chen, 2012). Exchange rate has significant impact on the real estate industry owing to its information content to the investors (Zaighum, 2014).

2.3.3 Interest Rates

This is the rate at which the lenders advance capital to the borrowers. It aims at mobilizing resources for the borrowers who in turn invest them in productive economic activities (Mauck & Price, 2017). High rate of interest is a contractionary move which intends to reduce the excess supply of money in the economy by making capital more expensive (Zaighum, 2014).

Interest rates are the main factors used to control prices in a country by maintaining inflation at desirable levels (Mauck & Price, 2017). Low rates of interest on the other hand induces economic growth as capital is cheaper hence attracting investment. By availing capital at low interest rates also increases money supply in the economy. Low interests can also lead to currency devaluation which makes exports cheaper hence giving them a competitive (Obadeyi, 2016).

2.4 Empirical Review

Miao (2016) examined the impacts of monetary policies for the financial assets of North America. This research study carried out a co-integration test, linking securities to real estate covering a 25-year period (1988-2013). The co-integration tests results revealed that external factors in North America and that money supply have a strong impact to the variables under study.

Anowor and Okorie (2016) analyzed impact of monetary policies on the performance of GDP among West African Countries where the study collected secondary data from 1982 and 2013. The findings revealed an existence of a direct correlation linking CRR where one-unit increment in CRR caused a five unit increment in GDP. The study recommended a special attention to be given to the monetary policies due to the impact they have in maintaining economic stability.

Njiru (2016) studied impact of monetary policy on credit supply in Kenya through a descriptive research design where secondary data for ten years (2005-2015). Through the regression analysis, this research study found that CRR, OMO as well as inflation all had strong inverse correlation to capital costs. The study recommended that CBK should implement policies of monitoring how capital costs are impacted by different monetary policies and ensure the financial institutions that are critical in the economic growth operate under rules encouraging their growth.

Auer (2014) studied the effect of monetary policy shocks and FDIs among North American states using the Bayesian vector auto regression. The results revealed that monetary policies have a strong correlation to the inflow of FDIs. The study also revealed

that the correlation among the study variables vary according to the category of the asset in a given time period which implies that the countries trade denomination has a major influence with regards to the correlation of these monetary policies with the growth of the economy.

Agbonlahor (2014) analyzed the effect of monetary policies on GDP performance in England. The study employed secondary data which was collected over seventy-year period (1945-2015). The method for data analysis employed in the study was regression. Study results revealed an existence of a direct correlation linking the study variables. The study also found that the inflationary rate and money supply had major influence on GDP performance in England.

In Kenya, Kamaan and Nyamongo (2014) analyzed the impacts of bank rate on the GDP performance. The study revealed an existence of an inverse correlation between the two variables and weak correlation on the productivity for a short period but a strong direct correlation eventually. Conversely, the study revealed an existence of strong direct correlation linking interbank rate to price levels and a weak association within the first six months which changed to direct strong relation over twelve-year study period.

In their study, Havi and Enu (2014) looked into the significance of both the fiscal monetary policies in the performance of GDP in Nigeria for a thirty two year period (1985-2015) and the study adopted a descriptive technique in its analysis. The results revealed that monetary policy affects the Nigerian economy positively as well as the fiscal policies. It further established that monetary policies have more influence on the operations of the country's GDP. Recommendations revealed that for Nigeria to achieve

high levels of GDP performance, it should implement monetary policies which promote macroeconomic variables hence promoting the growth of GDP in the country.

In Kenya, Kimani (2013) investigated the effect of monetary policy among the lenders. This research study utilized descriptive technique for its analysis targeting ten commercial banks in the country. Using correlation as well as regression analysis to evaluate data, the research found that CBR, OMO and uncertain behavior of people have major impact on the performance of lending financial institutions in Kenya particularly commercial banks.

According to their study, Nyamongo & Ndirangu (2013) analyzed the impacts of innovation in financing and specifically for the banking industry on the application of policies on money from 1998 to 2012 in Kenya. Results from the study revealed that the innovations have enhanced the surroundings of monetary policies locally as some of the people who do not have bank accounts have lessened and a slow lowering of the cash outside the bank accounts is being experienced. The results also show that these innovations in the financial sector have brought about positive benefits and are likely to enhance the rate of interest accrued in the transmission of the monetary policies.

Amarasekara (2008) examined the impacts of macroeconomic factors for the performance of financial institutions in Middle East. The study adopted descriptive research design and used primary data methods in collecting data covering a thirty-year period (1980-2010). Using the multiple regression models, research revealed an existence of a strong direct correlation among the study variables. The study concluded that sound macroeconomic variable tremendously improved the operations success of these

institutions of finance along the region. This research study also summarized that interest rates are the major factors affecting the performance of financial institutions in Middle East.

2.5 Conceptual Framework

As for the conceptual framework of the study, it shall be Central bank rate, open market operations, and cash reserves as the independent variables while the economic growth will be the dependent variable. The study will incorporate inflation, exchange rate and interest rate as control variables. The study's conceptual framework is depicted under figure 2.1

Independent variable   **Dependent variable**

Monetary Policy
- Central bank rate (Quarterly CBR)
- Open market operations (T-bills rate)
- Cash reserves (CRR ratio)

Real estate investment
- Economic Growth (GDP)

Control variables
- Inflation (CPI)
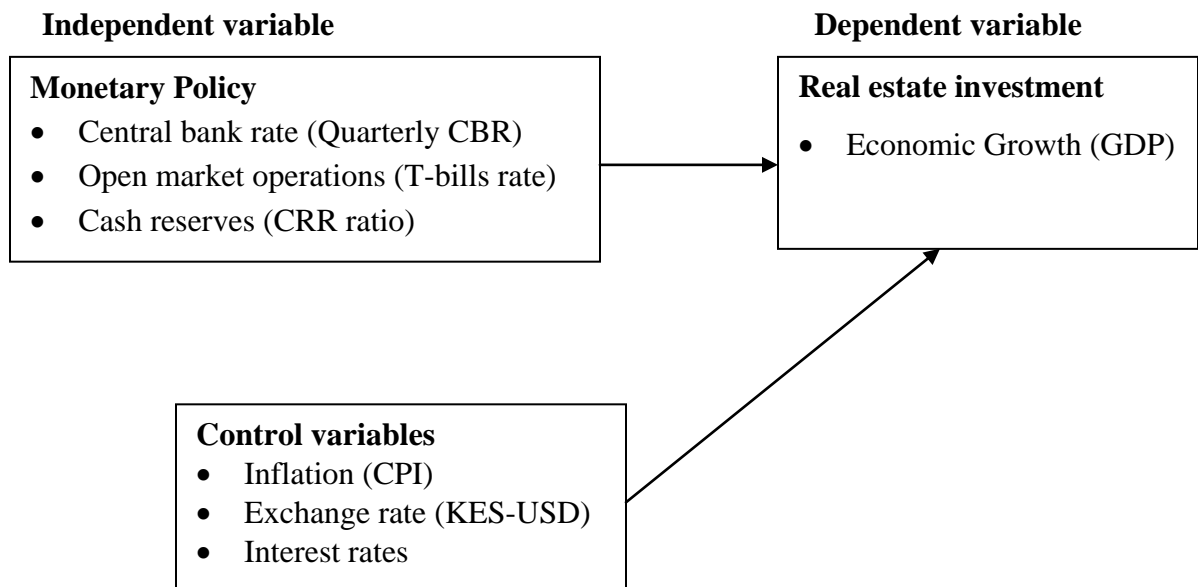- Exchange rate (KES-USD)
- Interest rates

Figure 2.1: Conceptual Framework

Source: Author (2018)

2.6 Summary of the Literature Review

The study reviewed works by Miao (2016) who focused on monetary policy and financial assets but the study did not focus on economic growth. Havi and Enu (2014) studied monetary policy and economic growth but the study measured monetary policy using money supply and did not incorporate the other indicators while Anowor and Okorie (2016) examined monetary policy and economic growth but monetary policy was measured by money supply. Agbonlahor (2014) & Havi and Enu (2014) examined monetary policies and performance of GDP with the studies using money supply as the indicator for monetary policy.

In Kenya, Kamaan and Nyamongo (2014) examined monetary policies and GDP but the study only used the CBR rate. Njiru (2016) examined monetary policy and credit supply but the study focused on credit supply and not economic growth. Kimani (2013) investigated the effect of monetary policies among the lenders in Kenya while Nyamongo and Ndirangu (2013) studied impact of technology on bank performance. The reviewed studies do not explicitly study correlation linking monetary policies to economic growth specifically studies carried out in Kenya do not combine the several monetary policy tools used by the CBK.

CHAPTER THREE

RESEARCH METHODOOGY

3.1 Introduction

The chapter depicts the design used for conducting the research, the techniques of gathering data, the testing of assumptions under diagnostic tests and finally the method of analyzing the collected data.

3.2 Research Design

The design of a research gives the generalized plan as well as the arrangement of this study so devised in the mind of the researcher as to secure convincing solution to research questions (Saunders & Thornhil, 2007). The research study utilized the research design which is descriptive in nature. This descriptive design is used to explain the current situation that exists and how it affects the study variables. Descriptive study was suitable for this study, because the researcher intends to gather detailed facts by means of descriptions and is important in establishing variables and logical conclusions.

3.3 Data Collection

The study employed secondary data. Secondary data on the monetary policy tools including the central bank rate (weighted quarterly CBR for the year), open market operations (quarterly 364-day T-Bill rates for the year) and cash reserves requirement (CRR ratio) (M3) was obtained from CBK. In addition, data on inflation, interest rates and exchange rates were obtained from KNBS. Secondary Data on economic growth was

obtained from the quarterly economic reports published by the KNBS. The study used quarterly secondary data covered a 10-year period (2008-2017).

3.4 Diagnostic Tests

Various tests which were diagnostic were undertaken in a bid to assess the assumptions of this regression model. Diagnostic tests ensure that the assumptions are not violated. The study therefore undertook the normality test, the multicollinearity test, the autocorrelation test, homoscedasticity test and the linearity test. The normalcy of data was tested via the skewness and the kurtosis and the Kolmogorov-Smirnov and Shapiro Wilk tests. In addition, the study assessed for multicollinearity, which arises due to very high inter-associations or inter correlations between the independent variables using the variance inflation factors where any of the VIF value that was greater than 10 was an indicator of multicollinearity.

This study also assessed for autocorrelation, which arises when random error components or disturbances are not independently distributed using the Durbin Watson statistics where a value of 1.5 and 2.5 was considered to indicate the absence of serial correlation. The study assessed for homoscedasticity which indicate that different samples have the same variance, even if they came from different populations through plotting a residual graph. Finally, linearity was assessed using through plotting of scatter plots

3.5 Data Analysis

This research study applied descriptive statistics like mean, standard deviation, maximum and minimum value to summarize the collected data into meaningful form. Further, the study employed correlation to establish the strength of association between the study

factors and the several regression models to establish the association among the study factors.

3.5.1 Analytical Model

This multiple linear regression was adopted as the analytical model for the study. The equation was formulated as illustrated below;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$$

Where

Y = Economic growth measured using quarterly real GDP

X_1 = Quarterly central bank rate (CBR)

X_2 = Open market operations measured using the quarterly rate of the 364-day T-bills

X_3 = Cash reserves measured using the quarterly cash reserve ratio

X_4 = Interest rate measured using the quarterly weighted lending interest rates.

X_5 = Inflation measured using the quarterly consumer price index (CPI)

X_6 = Rate of exchange measure using quarterly rate of the USD-KES

β_0 = Constant

β_1 - β_6 = Regression coefficients

ε = Error term

3.5.2 Tests of Significance

To determine significance, p-value of each independent factor was applied to confirm whether every coefficient was statistically significant, where p value was less than the significance value of 0.05. The model significance was assessed using the F-statistics where the p-value of the F-statistics was lesser as compared to the 0.05 significance value so the model was deemed significant and fit to assess the relationship between the variables.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

The chapter comprises of descriptive summary results, as well as the test for assumptions under the diagnostic tests, correlation analysis, regression analysis and finally a discussion of the study results.

4.2 Descriptive Statistics

The descriptive statistic results which comprises of the mean, the standard deviation, the minimum and maximum values, the number of observations (N), skewness and kurtosis are shown by table 4.1.

Table 4.1: Descriptive Statistics

	N	Min	Max	Mean	Std. Dev	Skewness	Kurtosis
Real GDP (Ln)	40	13.43	13.95	13.6635	.16956	.193	-1.202
CBR (rate)	40	6.00	18.00	9.5688	2.93027	1.710	1.321
OMO (rate)	40	3.06	20.96	10.2132	3.36895	.435	1.528
CRR (ratio)	40	4.50	6.00	5.1188	.39625	.048	.427
CPI (index)	40	87.18	185.39	135.823	29.52345	.075	-1.179
EXCH (rate)	40	62.65	103.89	87.2642	11.59829	-.264	-.479
INTR (rate)	40	13.61	20.34	15.8303	2.01588	.830	-.218

Source: Author (2018)

This results on table 4.1 show that the mean value of real GDP was 13.6635 with the minimum and maximum values of 13.43 and 13.95 whereas the mean value of the central bank rate (CBR) was 9.5688 with the minimum and the maximum values being 6.00 as well as 18.11 respectively. According to these results, the average values for the open

market operations (OMO) and the cash reserve ratio (CRR) were 10.2132 and 5.1188 while the minimum were 3.06 and 4.50 and the maximum values were 20.96 and 6.00 respectively. These results indicate that inflation (CPI) had the average of 135.823 with minimum and maximum values 87.18 and 185.39 while exchange rate (EXCH) had an average value of 87.2642 and the minimum as well as the maximum values as 62.65 and 103.89 respectively. The results further indicate that interest rate had a mean value of 15.8303 and the minimum as well as the maximum values as 13.61 and 20.34 respectively. The skewness values of .193, 1.710, 0.435, 0.048, 0.075, -0.264, 0.830 and kurtosis values of -1.202, 1.321, 1.528, 0.427, -1.179, -0.479, -0.218 are with the range of 2 and -2 thus an indication that the data is normally distributed.

4.3 Trend Analysis

The part shows the trend analysis for the factors under consideration in this study to observe the movement of the variables of over the considered period of study.

4.3.1 Real GDP Trend

Figure 4.1 show the trend for real gross domestic product.
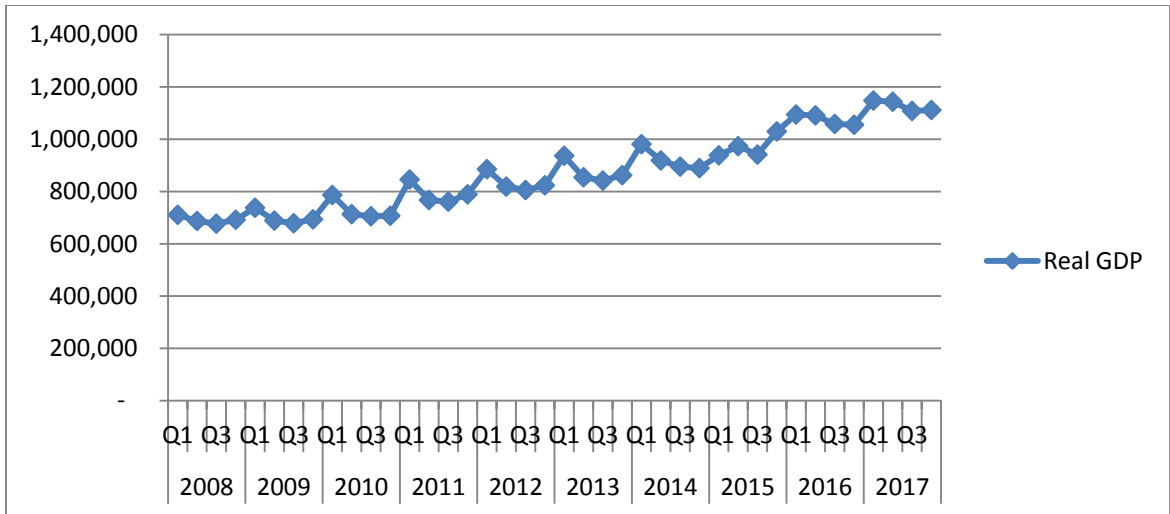
Figure 4.1: Real GDP Trend
Source: Author (2018)

Figure 4.1 indicates that real GDP had been increasing gradually over the considered period of study. However, some declines were recorded in some quarters of specific years like quarter 3 of 2011 and 2012, quarter 4 in 2014 and 2016.
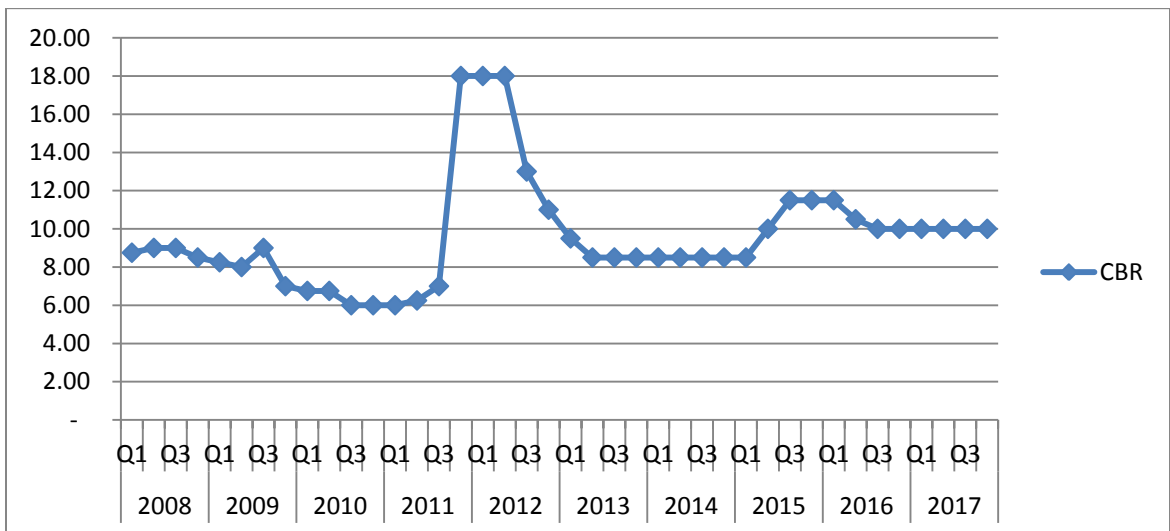
4.3.2 Central Bank Rate Trend

Figure 4.2: Central Bank Rate Trend
Source: Author (2018)

Figure 4.2 indicates that the central bank rate recorded a decline from 2008 up to the 3rd quarter of 2011 followed by a sharp increase in the last quarter of 2011. From the third quarter of 2012, the rates declined sharply up to the second quarter of 2013 where they remained constant up to the second quarter of 2015. Thereafter the rates gradually increase in the first four months in 2015, had a decline in the last four months in 2016 and they remained constant all the way to the fourth quarter of 2017.

4.3.3 Open Market Operations Trend

The 364-day Treasury bill rate was used as the proxy for open market operations on quarterly basis. Figure 4.3 shows the trend.
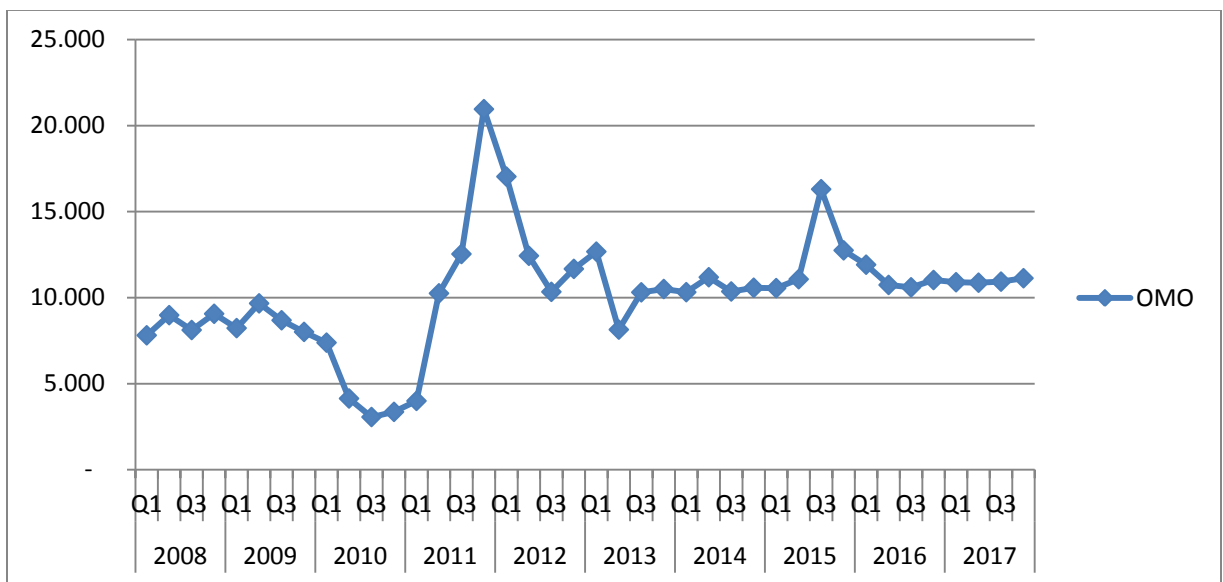

Figure 4.3: Open Market Operations Trend

Source: Author (2018)

These results on figure 4.3 indicates that the rate in the 364-day Treasury bill declined from the first six months in 2009 all the way to the first three months in 2011 followed by a sharp increase all the way up to the last quarter of 2011. After that, the rates declined

sharply up to the third quarter of 2012 and high and low fluctuations were recorded there after all the way to 2017.

4.3.4 Cash Reserves Ratio Trend

Figure 4.4 shows the results.
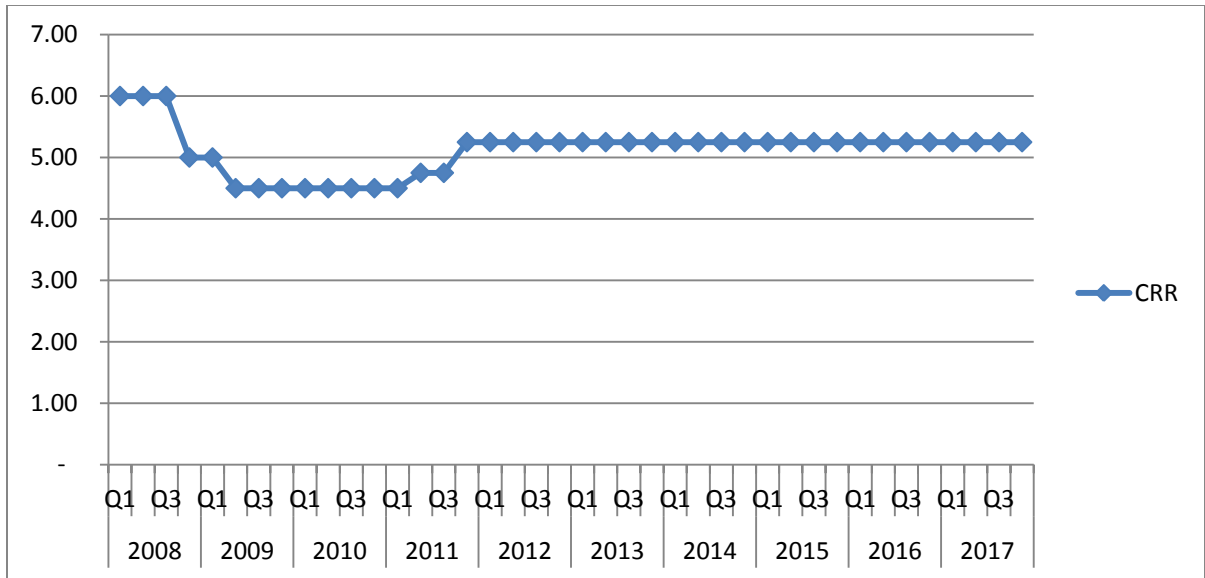
Figure 4.4: Cash Reserves Ratio Trend

Source: Author (2018)

Figure 4.4 indicates that the cash reserves ratio steadily declines all the way as from the nine months in 2008 to the first six months in 2009 thereafter the ratio remained constant up to the first quarter of 2011. The rates steadily increased from the second quarter of 2011 all the way up to third quarter of 2011 and thereafter remained constant up to 2017.

4.3.5 Consumer Price Index Trend

Figure 4.5 show the CPI trend.

Figure 4.5: Consumer Price Index Trend

Source: Author (2018)

Figure 4.5 indicates that prices of goods and services as indicated by the consumer price index in Kenya have been gradually increasing over the period of the study.
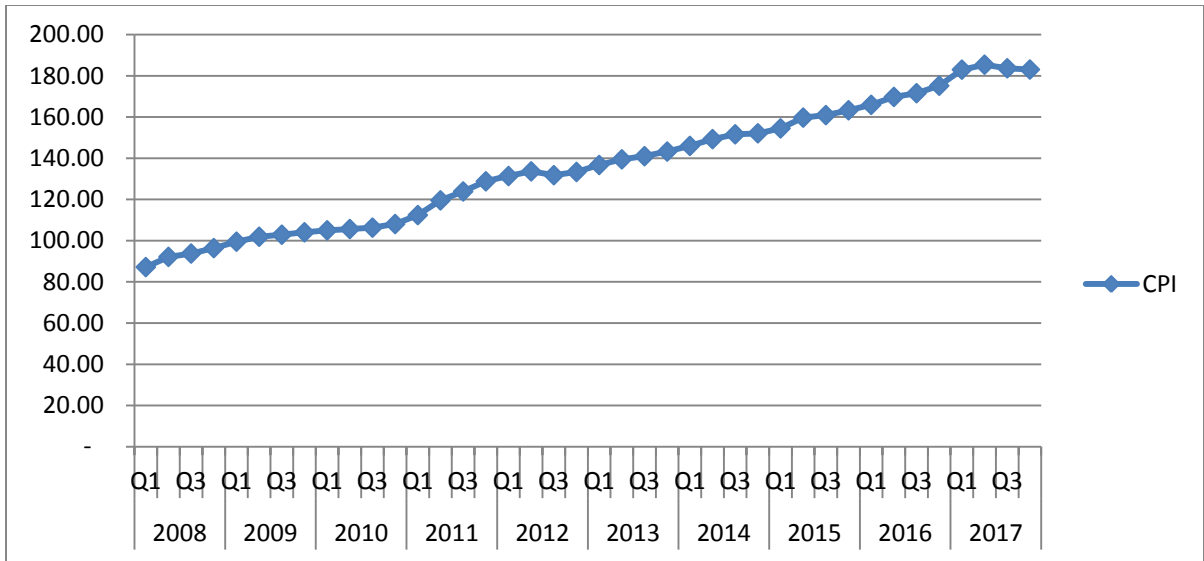
4.3.6 Exchange Rates Trend
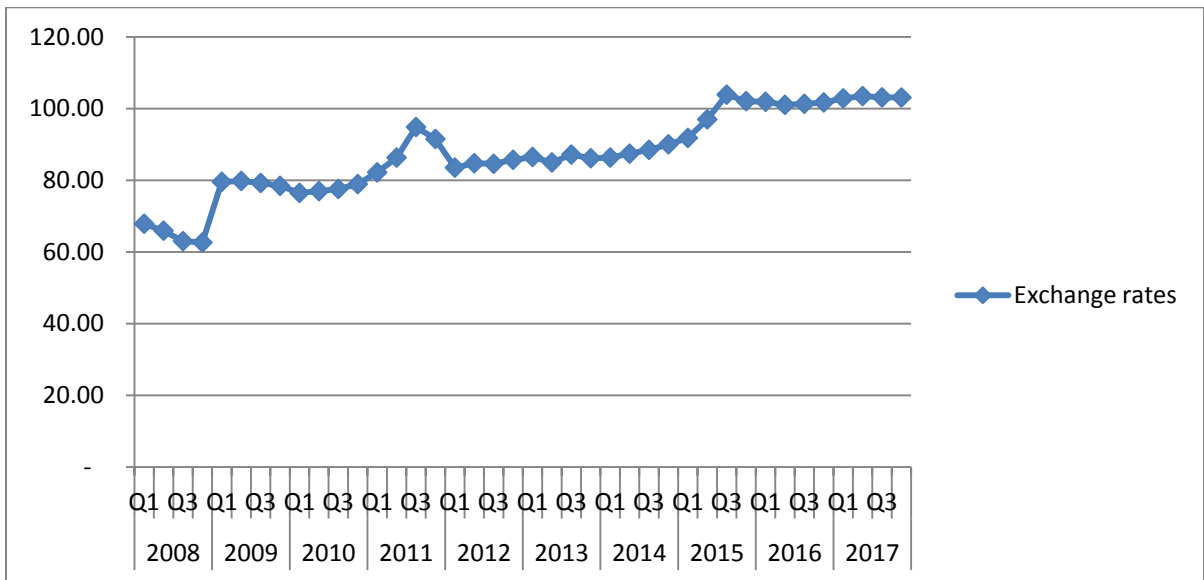
Figure 4.6: Exchange Rates Trend

Source: Author (2018)

Figure 4.6 indicates that exchange rates had been steadily increasing over the period of the research though a decline was recorded in the last four months in 2008 and in the first six months in 2012.

4.3.7 Interest Rates Trend

The trend of average lending rates is shown by figure 4.7.
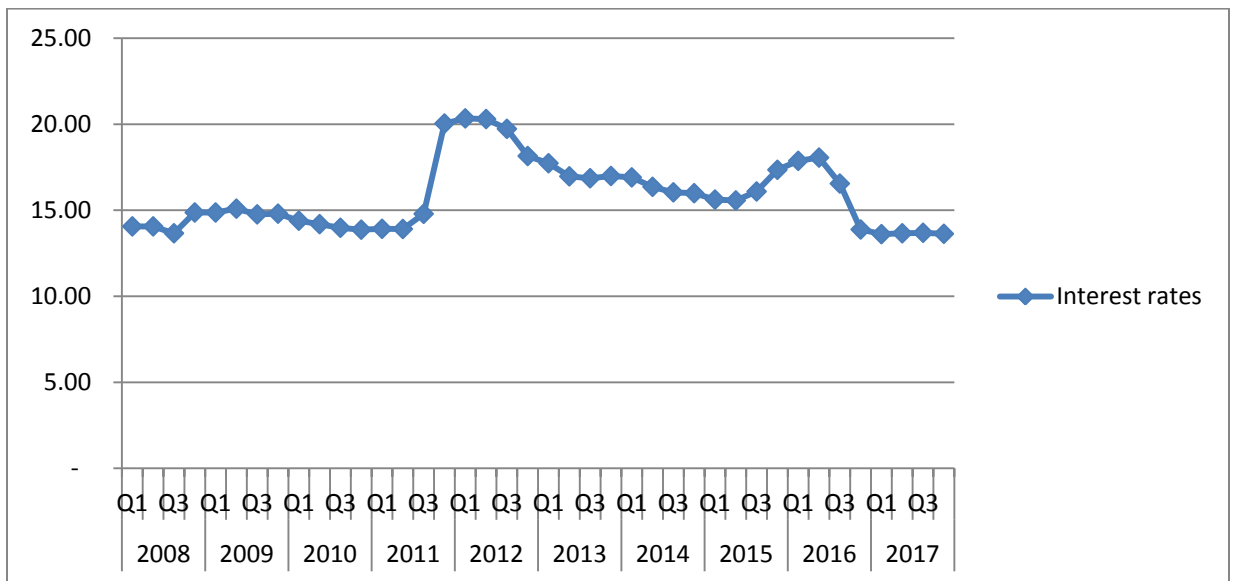
Figure 4.7: Interest Rates Trend

Source: Author (2018)

Figure 4.7 indicate that the average lending rates of interest recorded a gradual decline; the last three months in 2008 up to the nine months in 2011. Thereafter, rates steadily increased up to the first quarter of 2011 followed by a gradual decline all the way to the third quarter of 2015 then a steady increase thereafter between the last four months in 2015 and decline from the first six months in 2016.

4.4 Diagnostic Tests

The study undertook the normality test, multicollinearity test, linearity test, the homogeneity of variances and the test of autocorrelation presented in the model summary.

4.4.1 Normality Test

The Kolmogorov-Smirnov and Shapiro-Wilk were used to test for normality in the study. Table 4.2 tabulates the findings.

Table 4.2: Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Ln real GDP	.113	40	.200[*]	.933	40	.201
CBR	.216	40	.072	.808	40	.100
OMO	.161	40	.110	.903	40	.302
CRR	.330	40	.090	.770	40	.510
CPI	.126	40	.107	.949	40	.068
EXCH	.133	40	.074	.937	40	.057
INTR	.158	40	.053	.891	40	.061

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Source: Author (2018)

The normality test results on table 4.2 indicate that the factors under consideration for this study are normally distributed as shown by the all the p values in both the Kolmogorov-Smirnov and Shapiro-Wilk are lesser as compared to the key values which is 0.05. This is a sign that the data is well spread.

4.4.2 Multicolinearity Test

The variance inflation factors (VIF) were used to assess for multicollinearity. The results of multicollinearity test are shown by table 4.3 and 4.4 respectively.

Table 4.3: Multicolinearity Test for all Variables

Variable	Tolerance	VIF	Interpretation
CBR	.255	3.924	No multicolinearity
OMO	.272	3.679	No multicolinearity
CRR	.489	2.044	No multicolinearity
CPI	.080	12.487	Multicolinearity
EXCH	.088	11.365	Multicollinearity
INTR	.391	2.559	No multicollinearity

Source: Author (2018)

The multicollinearity results on table 4.3 indicate that there was no multicollinearity for the central bank rate (CBR), Open market operations (OMO), cash reserve ratio (CRR) and interest rate (INTR) as the variables had VIFs of less than 10. Based on the results, consumer price index (CPI) had a VIF value of 12.487 while exchange rate had a VIF value of 11.365, which were more than the recommended values of 10 hence an indication of multicollinearity. The study therefore dropped CPI, which had the highest VIF and the corresponding results in table 4.4 show that there was no multicollinearity among the remaining variables.

Table 4.4: Multicolinearity Test after dropping CPI

Variable	Tolerance	VIF	Interpretation
CBR	.255	3.918	No multicolinearity
OMO	.302	3.317	No multicolinearity
CRR	.775	1.290	No multicolinearity
EXCH	.709	1.410	No multicolinearity
INTR	.394	2.536	No multicolinearity

Source: Author (2018)

4.4.3 Test for Linearity

A standardized residual plot was used to assess for linearity of the study variables. Figure 4.8 indicates the results.
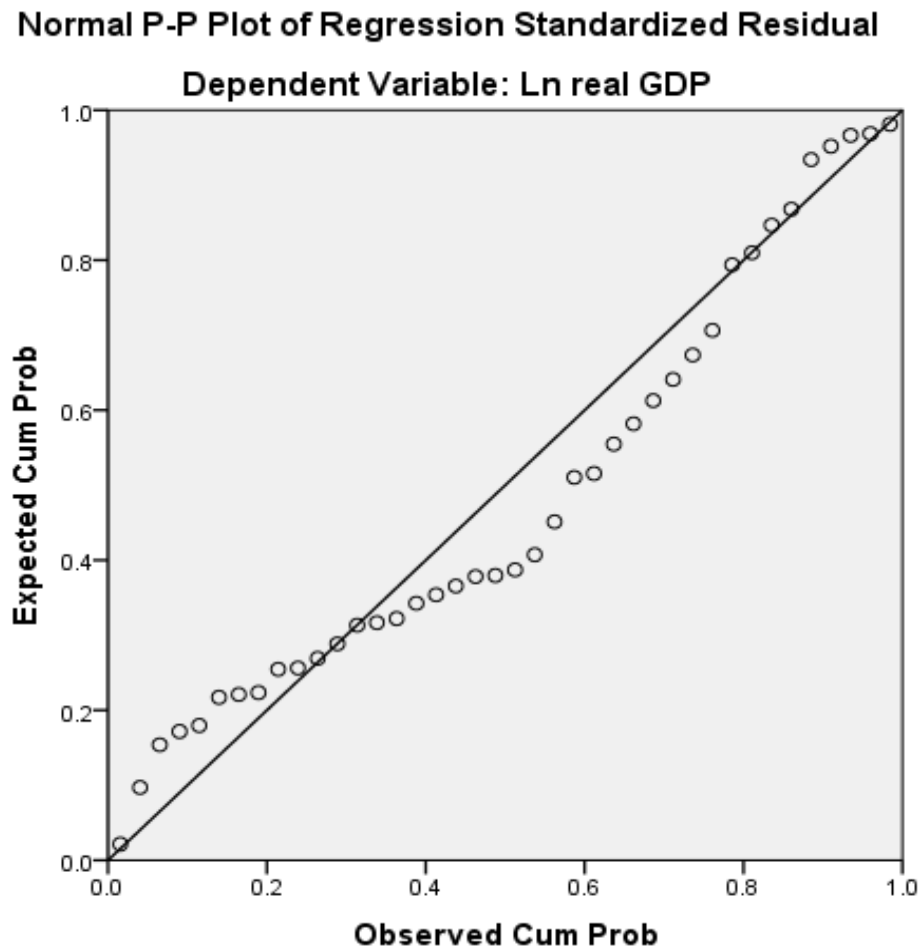
Figure 4.8: Test for Linearity

Source: Author (2018)

The standardized residual plot on figure 4.8 proves the existence of a linear correlation among the study factors as indicated by the line of best fit in the figure.

4.4.4 Test for Homogeneity of Variances

A standardized scatter plot was also used to assess for the homogeneity of variances.

Figure 4.9 indicates the results.
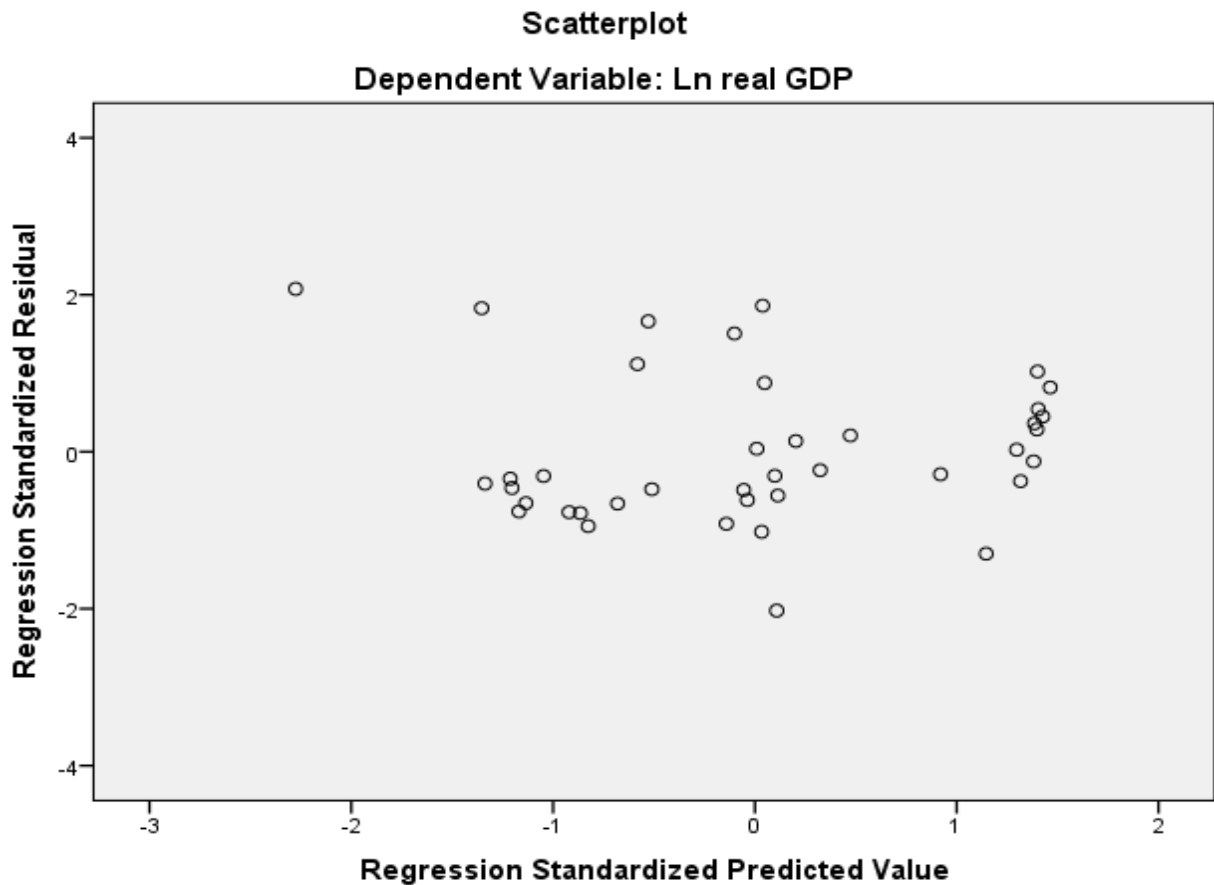
Figure 4.9: Test for Homogeneity of Variances

Source: Author (2018)

Figure 4.9 indicate that the plotted points converge at specific points, which indicates the absence of heteroscedasticity, and that the assumption of the similarity of factors has not been violated.

4.5 Correlation Analysis

Table 4.5 indicates the findings of correlations analysis, that shows the strength of the correlation among the study factors.

Table 4.5: Correlation Analysis

|	Ln real GDP	CBR	OMO	CRR	CPI	EXCH	INTR
Ln real GDP	1						
CBR (rate)	.268	1					
OMO(rate)	.397*	.773**	1				
CRR(ratio)	.280	.394*	.391*	1			
CPI(index)	.961**	.286	.442**	.246	1		
EXCH (rate)	.880**	.268	.481**	.041	.925**	1	
INTR(rate)	.149	.764**	.618**	.206	.164	.161	1

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

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

Source: Author (2018)

The correlation findings on table 4.5 shows presence of a weak and positive relationship among the central bank rate (0.268), open market operations (0.397) cash reserve ratio (0.280), interest rate (0.149) and the real GDP. The results also show presence of strong and positive relationship between the consumer price index (0.961), exchange rates (0.880) and the real GDP respectively.

4.6 Regression Analysis

The regression model was utilized to find out the correlation among the factors of the study; that is the independent variables versus the dependent variable.

4.6.1 Model Summary

Table 4.6 shows the model summary results.

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.927[a]	.859	.839	.06814	1.858

a. Predictors: (Constant), INTR, EXCH, CRR, OMO, CBR

b. Dependent Variable: Ln real GDP

Source: Author (2018)

The model summary findings on table 4.6 shows that R square (coefficient of determination) is 0.859, which determines that independent factors (Interest rates, Exchange rates, Cash reserves ration, Open market operations and Central bank rate) accounts for 85.9% of the changes in the dependent factor (real GDP). The other 14.1% of the variation is explained by other factors which were not considered in the study and the error term. The overall correlation coefficient (R) value of 0.927 indicates that presence of a strong correlation among variables of the study. The Durbin Watson Statistics of 1.858 lies between the recommended value of 1.5 and 2.5 thus an indication that there was no presence of autocorrelation among the study variables.

4.6.2 Analysis of Variance

Table 4.7 shows the analysis of variance results.

Table 4.7: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.963	5	.193	41.506	.000[b]
	Residual	.158	34	.005		
	Total	1.121	39			

a. Dependent Variable: Ln real GDP

b. Predictors: (Constant), INTR, EXCH, CRR, OMO, CBR

Source: Author (2018)

The Analysis of Variance (ANOVA) results on table 4.7 indicates that regression model is important and fit to foretell the correlation among the study variables. This is shown by the F value of 41.506 that is significant at 95% level of confidence as shown by the p value of 0.000<0.05.

4.6.3 Regression Coefficients

Table 4.8: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.768	.220		53.490	.000
	CBR	.002	.007	.038	.286	.765
	OMO	-.013	.006	-.259	-2.167	.034
	CRR	.135	.031	.315	4.355	.000
	EXCH	.014	.001	.972	14.00	.000
	INTR	.005	.009	.059	.556	.570

a. Dependent Variable: Ln real GDP

Source: Author (2018)

The results on table 4.8 led to the following model

$$Y = 11.768 - 0.013X_2 + 0.135X_3 + 0.014X_5$$

From the regression equation, the results show presence of a positive and not statistically significant correlation among the central bank rate with the growth of the economy (GDP) in Kenya. The result shows that the correlation of open market operations (OMO) and real GDP in Kenya was negative and significant. According to the results, the relationship between cash reserve ratio and real GDP in Kenya was positive and significant. The result additionally indicates that the relationship between exchange rate and real GDP was positive and significant. Finally, according to the results, the relationship between interest rates and real GDP was positive and not statistically significant.

4.7 Discussion of the Findings

The results revealed not statistically significant and positive relationship of the central bank rate and the real GDP in Kenya. The results indicate that the rate given by the central bank does not significantly affect the Kenyan economic growth. This study by Njiru (2016) found that central bank rate had strong correlation to credit supply. Kamaan and Nyamongo (2014) revealed an existence of strong direct correlation linking interbank rate to price levels and a weak association within the first six months which changed to direct strong relation over twelve-year study period. The differences with other results may be due to time considered for the study as most of the previous studies considered a short period of time.

The results established presence of a significant as well a negative correlation of open market operations with the real GDP in Kenya. The finding indicates that open market

operations significantly influence economic growth in Kenya. Kimani (2013) found that CBR, OMO and uncertain behavior of people have major impact on the performance of lending financial institutions in Kenya particularly commercial banks. A study by Anowor and Okorie (2016) found that monetary policies influences GDP among West African Countries Agbonlahor (2014) found that monetary policy had major influence on GDP performance in England.

The study results also established a positive and significant relationship of the cash reserve ratio with the real GDP in Kenya. The findings thus indicate that the cash reserve ratio has a bigger impact on the growth of the economy in Kenya. A study by Havi and Enu (2014) revealed that monetary policy impacts the Nigerian economy with monetary policies have more effect on the operation of GDP in the country.

Further, based on the result, there is presence of a significant and positive correlation of exchange rates and real GDP in Kenya. This is an indication that exchange rates significantly influence growth of the economy in Kenya. Xu and Chen (2012) concluded that a decrease in exchange rates implies low returns from the country's' goods and high prices for their exports making their exports lose competitive advantage and further affects other factors such as domestic financial securities, rate of inflation among others.

Finally, the study found not statistically significant and positive correlation of the rate of interest with the real GDP in Kenya. The results indicate no presence of important correlation between interest rates and economic development in Kenya. However, Zaighum (2014) found that high rates of interest are a contractionary move which intends to reduce the excess supply of money in the economy by making capital more expensive.

According to Obadeyi, (2016) low rates of interest on the other hand induces economic growth as capital is cheaper hence attracting investment. The results are different from other studies since the previous studies use different measures of interest rates and economic growth.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Chapter five comprises of the study summary, the conclusions of the research as per the findings and recommendations. This chapter finally indicates the limitation of study and recommendation of areas that require more investigation.

5.2 Summary

The research study aimed at established the relationship between monetary policy and economic development in Kenya. The neoclassical growth theory by Solow and Swan (1950), the quantity theory of money, the liquidity preference theory and the new classical monetary tool formed the theoretical foundation of the study. The study employed a descriptive research design and used quarterly secondary data covered a 10-year period (2008-2017). The study used descriptive statistics like the mean, standard deviation, maximum and minimum value to summarize the collected data into meaningful form. Further, the study employed correlation to establish the strength of association among the factors under consideration and the multiple regression models to determine the association of the factors under consideration.

The descriptive results established that real GDP had a mean value of 13.6635 and the central bank rate (CBR) had a value of averagely 9.5688 respectively. These results also established that the average values for open market operations (OMO) and cash reserve ratio (CRR) were 10.2132 and 5.1188 respectively. In addition, the findings revealed that

inflation (CPI) had values averaged to 135.823 while exchange rate (EXCH) had averaged values as 87.2642 whereas interest rate had a mean value of 15.8303 respectively.

The correlation results revealed a weak and positive correlation between the central bank rate, open market operations, cash reserve ratio, interest rate with the real GDP. The results also revealed presence of a strong and positive relationship of the consumer price index, exchange rates with the real GDP respectively.

The regression results established that the independent variables (Interest rates, Exchange rates, Cash reserves ration, Open market operations and Central bank rate) accounted for 85.9% of the changes in the dependent factors (real GDP). The results also revealed that regression model is important and fit to foretell the correlation of the study factors as represented by p value of 0.000<0.05.

The coefficient result revealed a positive and not statistically significant correlation of the central bank rate with growth of the economy (GDP) and that the relationship of open market operations (OMO) and real GDP in Kenya was negative and significant. The results also found that relationship of cash reserve ratio and real GDP was positive and significant while the correlation of exchange rate and real GDP was positive and significant. Finally, the study found that relationship of interest rates and real GDP was positive and not statistically significant.

5.3 Conclusions

The study results established not statistically significant and positive correlation of the central bank rate with the real GDP in Kenya. This study concludes that the central bank rate does not have a significant influence on the Kenyan economic growth.

The findings of the study established a significant and negative correlation between open market operations with the real GDP in Kenya. The study therefore concludes that open market operations significantly influence economic growth in Kenya.

Additionally, the findings of this study stablished a positive and significant correlation of the cash reserve ratio and the real GDP in Kenya. The study based on this finding concludes the cash reserve ratio has a great impact on the rate of growth in Kenya.

The study also discovered presence of a significant and positive relationship of exchange rates and the GDP in Kenya. As per this finding, the study summaries that exchange rates significantly impact growth of the economy in Kenya.

The study finally found that there was not statistically significant and positive relationship between interest rates and real GDP in Kenya. Based on this research, the study summarises that there is no significant relationship between interest rates and economic growth in Kenya.

5.4 Recommendations

The researcher concluded that the central bank rate does not have a significant influence on the Kenyan economic growth. Hence, the study however recommends that the central

bank of Kenya should set the appropriate central bank rate, which does not affect the lending rates of interest in Kenya.

The researcher made the conclusion that open market operations significantly influence economic development in Kenya. This study therefore recommends that the Central Bank of Kenya and the ministry of finance should use the open market operation mechanism to raise finance since the use of open market operation tools enhances economic growth.

The study also concluded the cash reserve ratio had a significant impact on economic development in Kenya. According to this conclusion, the study recommends that the central bank of Kenya should set appropriate ratio of cash reserves requirement, which will in turn translate to economic growth in Kenya.

The findings of the study led to the conclusion that exchange rates significantly influence growth of the economy in Kenya. The study based on this conclusion recommends that the central bank of Kenya should adopt effective policies on exchange rates to ensure that exchange rate volatility is minimized to enhance economic growth.

Finally, the study concluded lack of a significant relationship between interest rates and economic development in Kenya. The study however recommends that the Central Bank of Kenya should ensure that banks set up effective rates of interest to ensure that investor the lending rate does not prevent investors from borrowing.

5.5 Limitations of the Study

This study used quarterly secondary data for a period of 10 year from 2008 to 2017 hence the findings are limited to the study period and may not be generalized to other time

period. In addition, secondary data, which was used for the study, was historic in nature hence it may not reflect the current situation of the considered variables.

The study also covered Kenya and the various monetary policy tools used in Kenya thus the findings are limited to Kenya. The findings are also limited to the considered research variables, which include the central bank rate, the open market operations, the cash reserve ratio, inflation, exchange rates and interest rates and their respective measures adopted to measure the variables.

The study also measured monetary policy using the central bank rate, the open market operations and the cash reserve ratio. However, there are other measures of monetary policy like money supply, regulation of foreign exchange market operations and the discount window period which the study did not consider. Economic growth on the other measured using real GDP but they are measures like GDP growth rate, GDP per capita and the gross national income.

5.6 Suggestion for Further Research

The study found that the central bank rate, the open market operations, the cash reserve ratio reserves, inflation, exchange rates and interest rates accounted for 85.9% of the variation in economic growth while 14.1%was accounted for other factors. The study therefore recommends an additional study on the other factors that may affect economic growth in Kenya apart from the considered research variables.

The measures of monetary policy tools used for the study were central bank rate, the open market operations and the cash reserve ratio while economic growth was measured using the real GDP. The study recommends a similar study but using other measures like

money supply, regulation of foreign exchange market operations and the discount window period as monetary policy tools and GDP per capita, GDP growth rate and gross national income as measures for economic growth.

The research study can further be extended to assess the impact of monetary policy on the developing projects planned for improvement of the economy, quality, items production, lower economy, life expectancy and healthy citizens, environment, immunity in politics and finally justice ethnically.

The study can be narrowed down to examine the effect of CBK's Monetary Policy on the N.S.E or the Banking industry because the state of Money Supply in the economy also affects how investors and banks make their investments. Future researchers and academicians should conduct further studies on the same variables outside Kenya for example in the East African Region to establish the correlation of monetary policy with growth of the economy in Kenya. Findings and conclusions can then be made on concrete facts.

REFERENCES

Agbonlahor, O. (2014). The impact of monetary policy on the economy of the United Kingdom: A Vector Error Correction Model (VECM). *European Scientific Journal,* 10(16), 19-42.

Akalpler, E., & Duhok, D. (2018). Does monetary policy affect economic growth: evidence from Malaysia? *Journal of Economic and Administrative Sciences,* 34(1), 2-20.

Amarasekara, C. (2008). The impact of monetary policy on economic growth and inflation in Sri Lanka. *Discussion paper Series No 7/08.*Munich Personal RePEc Archive.

Anowor, O. F., & Okorie, G. C. (2016). A reassessment of the impact of monetary policy on economic growth: Study of Nigeria. *International Journal of Developing and Emerging Economies*, 4(1), 82-90.

Auer, S. (2014). Monetary policy shocks and foreign investment income: evidence from a large Bayesian VAR. *Working paper no 02.* Swiss National Bank.

Berg, H. (2016). *Economic growth and development.* World Scientific Publishing Company.

Cheruiyot, J. K. (2012). Effectiveness of monetary policy tools in countering inflation in Kenya. *Unpublished MBA Project,* University of Nairobi.

Chipote, C., & Makhetha-Kosi, P. (2014). Impact of monetary policy on economic growth: A case Study of South Africa. *Mediterranean Journal of Social Sciences,* 5(15), 76-84.

Chuba, M. A. (2015). Quantity theory of money: The empirical evidence in Nigeria. *European Journal of Business and Social Sciences*, 4(6), 13-29.

Farooq, O., Hassan, Q. S. U., & Shahid, M. (2015). The applicability of quantity theory of money in case of Pakistan: A time series analysis. *Journal of Economics and Sustainable Development,* 6(3), 157-166.

Havi, E. D. K., & Enu, P. (2014). The effect of fiscal policy and monetary policy on Ghana's economic growth: Which policy is more potent?. *International Journal of Empirical Finance*, 3(2), 61-75.

Kamaan, C. K., & Nyamongo, E. M. (2014). The relationship between monetary policy and economic growth in Kenya. *International Journal of Business and Commerce*, 3(8), 11-24.

Keynes, J. M. (1936). *The general theory of employment, interest and money.* Reprinted in Keynes. Collected wittings.

Kimani, J. (2013). Assessment of effects of monetary policies on lending behaviour of commercial banks in Kenya. *Unpublished MBA Project*, Kenyatta University.

Laidler, D. (2013). Professor Fisher and the quantity theory–a significant encounter. *The European Journal of the History of Economic Thought,* 20(2), 174-205.

Lucas, R. (1972). Hayek on neutral money and the cycle. *UWO Department of Economics Working Papers*. The University of Western Ontario.

Mallick, H. (2011). Monetary policy, construction sector output and housing prices in India: an emerging economy perspective. *Applied Econometrics and International Development,* 11(1), 195-207.

Masoud, N. (2013). Neoclassical economic growth theory: an empirical approach. *Far East Journal of Psychology and Business,* 11(2), 10-33.

Mauck, N., & Price, S. M. (2017). Determinants of foreign versus domestic real estate investment: Property level evidence from listed real estate investment firms. *The Journal of Real Estate Finance and Economics,* 54(1), 17-57.

Mbusi, E. K. (2016). Influence of monetary and fiscal policies on construction output levels in Kenya. *Unpublished Project,* Jomo Kenyatta University of Agriculture and Technology.

Miao, J. (2016). The long-run effects of the fed's monetary policy on the dynamics among major asset classes. *International Journal of Management and Economics,* 51(1), 9-19.

Mohajan, H. (2013). Poverty and economic development of Kenya. *International Journal of Information Technology and Business Management,* 18(1), 72-82.

Mutwiri, N. M. (2017). Monetary policy tools and inflation in Kenya. *International Journal of Academic Research in Accounting, Finance and Management Sciences,* 7(1), 86-97.

Njiru, F. A. K. (2016). Effect of monetary policy on credit supply in Kenya. *Unpublished MBA Project,* University of Nairobi.

Nouri, M., & Samimi, A. J. (2011). The impact of monetary policy on economic growth in Iran. *Middle-East Journal of Scientific Research,* 9(6), 740-743.

Nyamongo, E., & Ndirangu, L. N. (2013). Financial innovations and monetary policy in Kenya. *Draft Paper for Comments,* Central Bank of Kenya.

Nyorekwa, E. T. & Odhiambo, N. M. (2014). Monetary policy regimes and economic performance in Kenya. *Problems and Perspectives in Management,* 12(4), 495-502.

Obadeyi, J. A. (2016). Evaluating the Impact of Monetary Policy on the Growth of Emerging Economy: Nigerian Experience. *American Journal of Economics,* 6(5), 241-249.

Onyeiwu, C. (2012). Monetary policy and economic growth of Nigeria. *Journal of Economics and Sustainable Development,* 3(7), 62-70.

Sax, K. P. (2014). Tobin's Q theory and regional housing investment: Empirical analysis on Swedish data. *Unpublished Economics Project.* Uppsala University.

Smith, C. (2014). The long-run effects of monetary policy on output growth. *Reserve Bank of New Zealand Bulletin,* 67(3), 6-18.

Sulaiman, L. A., & Migiro, S. O. (2014). The nexus between monetary policy and economic growth in Nigeria. *Public and Municipal Finance*, 3(2), 35-40.

Toby, A. J., & Peterside, D. (2014). Monetary policy, bank management and real sector finance in Nigeria: Who is to Blame? Proceedings of the First Middle East Conference on Global Business, Economics, Finance and Banking (ME14 DUBAI Conference) Dubai, 10-12 October 2014.

Tsoulfidis, L. (2010). *Competing schools of economic thought.* Springer Science.

Twinoburyo, E. N., & Odhiambo, N. M. (2018). Monetary policy and economic growth: A review of international literature. *Journal of Central Banking Theory and Practice,* 7(2), 123-137.

Ufoeze, L. O. (2018). Relationship between monetary policy and economic growth in Nigeria: An empirical investigation. *Annals of Spiru Haret University, Economic Series,* 9(1), 123-140.

Ugur, M. (2016). Modeling growth: exogenous, endogenous and Schumpeterian growth models.*Discussion Paper No 37.* University of Greenwich Business School.

Uma, K. E., Ogbonna, B. M., & Obidike, P. C. (2015). Monetary policy transmission mechanism in Nigeria: An overview. *International Journal of Economics, Commerce and Management,* 3(8), 363-377.

Xu, X. E., & Chen, T. (2012). The effect of monetary policy on real estate price growth in China. *Pacific-Basin Finance Journal*, 20(1), 62-77.

Zaighum R. (2014). Impact of Macroeconomics factors on Non –financial firms stock Returns. *Journal of Accounting and Taxation,* 4(2), 19-28.

APPENDICES

Appendix I: Data Collection Sheet

Year	Q	Real GDP	CBR	364 day-T bill	Cash reserves ratio	Inflation (CPI)	Exchange rate	Interest rates
2008	Q1	710,887.00	8.75	7.810	6.00	87.18	67.88	14.06
	Q2	687,316.00	9.00	8.981	6.00	92.14	65.93	14.06
	Q3	677,124.00	9.00	8.117	6.00	93.75	63.03	13.66
	Q4	691,916.00	8.50	9.061	5.00	96.38	62.65	14.87
2009	Q1	737,906.34	8.25	8.228	5.00	99.50	79.58	14.87
	Q2	688,912.00	8.00	9.666	4.50	101.91	79.81	15.09
	Q3	678,697.00	9.00	8.683	4.50	102.90	79.25	14.76
	Q4	693,523.00	7.00	8.008	4.50	104.07	78.45	14.80
2010	Q1	786,481.00	6.75	7.383	4.50	105.01	76.49	14.39
	Q2	713,363.99	6.75	4.138	4.50	105.65	76.98	14.19
	Q3	705,260.19	6.00	3.060	4.50	106.32	77.58	13.98
	Q4	707,158.87	6.00	3.360	4.50	108.07	78.94	13.87
2011	Q1	845,860.78	6.00	3.996	4.50	112.41	82.21	13.92
	Q2	767,418.00	6.25	10.249	4.75	119.56	86.33	13.91
	Q3	761,159.00	7.00	12.536	4.75	123.88	94.85	14.79
	Q4	789,245.00	18.00	20.955	5.25	128.81	91.52	20.04
2012	Q1	885,368.19	18.00	17.035	5.25	131.36	83.54	20.34
	Q2	818,825.41	18.00	12.431	5.25	133.63	84.76	20.30
	Q3	805,573.48	13.00	10.336	5.25	131.78	84.61	19.73

	Q4	823,766.04	11.00	11.670	5.25	133.35	85.71	18.15
2013	Q1	936,746.19	9.50	12.674	5.25	136.72	86.50	17.73
	Q2	854,348.30	8.50	8.141	5.25	139.46	84.98	16.97
	Q3	841,814.39	8.50	10.308	5.25	140.99	87.17	16.86
	Q4	862,535.49	8.50	10.500	5.25	143.25	86.15	16.99
2014	Q1	981,001.70	8.50	10.317	5.25	145.99	86.33	16.91
	Q2	918,833.17	8.50	11.186	5.25	149.27	87.43	16.36
	Q3	895,161.45	8.50	10.357	5.25	151.62	88.49	16.04
	Q4	889,416.35	8.50	10.575	5.25	152.09	90.04	15.99
2015	Q1	938,452.24	8.50	10.553	5.25	154.48	91.81	15.62
	Q2	973,401.23	10.00	11.071	5.25	159.71	97.01	15.57
	Q3	941,388.53	11.50	16.301	5.25	160.93	103.89	16.09
	Q4	1,029,804.84	11.50	12.747	5.25	163.27	102.08	17.35
2016	Q1	1,094,567.00	11.50	11.914	5.25	165.92	101.90	17.87
	Q2	1,091,008.00	10.50	10.737	5.25	169.76	101.04	18.06
	Q3	1,058,375.00	10.00	10.599	5.25	171.56	101.34	16.55
	Q4	1,055,138.00	10.00	11.024	5.25	175.18	101.73	13.88
2017	Q1	1,147,736.00	10.00	10.895	5.25	182.98	102.85	13.61
	Q2	1,143,183.00	10.00	10.868	5.25	185.39	103.50	13.66
	Q3	1,108,133.00	10.00	10.930	5.25	183.66	103.13	13.69
	Q4	1,111,532.00	10.00	11.128	5.25	183.05	103.10	13.63

Source: Author (2018)