EFFECT OF MONETARY POLICY ON CREDIT SUPPLY IN KENYA

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DECLARATION

This research project is my original work and has not been presented for a degree in any other university or academic institution for academic credit other than the University of Nairobi.

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The research project has been submitted for examination with my approval as the University Supervisor

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DEDICATION

I wish to dedicate this project to my two brothers Robert and Eric, to my father Patrick and my mother Nazaria for bringing me into this world and giving me an education.

ABSTRACT

Governments use economic management tools such as monetary policy to shape the performance of the economy. Such tools include CRR, OMO and CBR. These are instruments of monetary policy that are implemented through the central banks. The objective of the research was to establish the effect of monetary policy on credit supply in Kenya. This study adopted a descriptive research design. Descriptive statistics such as mean, median, minimum, maximum and standard deviation were used to describe the trend of the variables. Breusch Godfrey serial correlation LM test was used to test correlation of the study variables. Stationarity tests on time series data was conducted using augmented dickey fuller test statistic. Regression analysis was used to establish the influence of monetary policy on credit supply. In this research secondary data for each variable was used. Credit Supply was measured in terms of the gross loans advanced by commercial banks while CBR, CRR, OMO and Inflation were used as instruments of monetary policy. Quarterly data was collected for a period of eleven years (2005 to 2015). The data was analyzed using Eviews data analysis software and Microsoft excel (version 2003) The study concluded that CRR, OMO and Inflation are significant and have a negative effect on credit supply. The model was also fit to explain the relationship as 76% (R^2= 0.761160) variation of the dependent variable (Credit supply) was explained by the independent variables (OMO, CRR, CBR and Inflation) in the long run. Adjusted R- square which provides adjustment to the R Square was73% (Adjusted R^2= 0.736664) indicating 73% variation in credit supply was explained by independent variables (OMO, CRR, CBR and Inflation). *F*- Statistic 31.07233 was significant at 1% level *P*=0.0000. The study recommends that the Central Bank of Kenya should come up with monitoring and evaluation programmes of monitoring how credit supply is influenced by various monetary policy instruments and should streamline the economic environment in which banks operate by ensuring CRR, OMO and Inflation are maintained at a constant. The study narrowed in scope to commercial banks and excluded the non-banking organizations. Additionally a study should be done on the impact of monetary policy on money supply to capture both banking and non-banking institutions. The research had a presumption that the relationship of the variables was linear therefore more studies should be carried out explore nonlinear relationship on the variables of study, additionally a further study that focus on the influence of both fiscal and monetary policies on credit supply should be carried out.

TABLE OF CONTENTS

DECLARATION..... ii
ACKNOWLEDGEMENT..... iii
DEDICATION..... iv
ABSTRACT.....v
LIST OF ABBREVIATIONS viii
LIST OF TABLES ix
LIST OF FIGURES x
CHAPTER ONE: INTRODUCTION.....1
1.1Back ground of the Study.....1
1.1.1 Monetary Policy 3
1.1.2 Credit Supply.....3
1.1.3 Monetary Policy and Credit Supply 4
1.1.4 Monetary Policy and Credit Supply in Kenya.....5
1.2 Research Problem.....6
1.3 Research Objectives 8
1.4 Value of the Study.....9
CHAPTER TWO: LITERATURE REVIEW.....10
2.1 Introduction 10
2.2 Theoretical Review 10
2.2.1Monetary Theory and Policy 10
2.2.2 Keynes's Theory.....11
2.2.3 Monetarism.....12
2.3Determinants of Credit supply 12
2.3.1 Rate of Return.....13
2.3.2 Capital Requirements 13
2.3.3 Liquidity Ratio.....14
2.4 Empirical Review.....14
2.4.1 International Evidence.....14
2.4.2 Local Evidence 16
2.5 Conceptual Framework.....17

2.5.1Reserve Requirement 18
2.5.2 Open Market Operations 18
2.5.3 Central Bank Rate 19
2.5.4 Inflation Rate 19
2.6 Summary of Literature Review 19
CHAPTER THREE: RESEARCH METHODOLOGY 21
3.1 Introduction 21
3.2Research Design 21
3.3 Data Collection 21
3.4 Data Analysis 21
3.5 Diagnostic Tests 23
3.5.1Inferential Statistics 23
CHAPTER FOUR: DATA ANALYIS, FINDINGS AND DISCUSSIONS 24
4.1 Introduction 24
4.2 Descriptive Statistics 24
4.4 Diagnostic Results 27
4.5 Unit Root Test Results 27
4.5.1 Regression Results 28
4.5.2 Granger Causality tests Results 29
4.5.3 Coefficients of Determination 30
4.6 Interpretation of the Findings 32
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 34
5.1 Introduction 34
5.2 Summary of Findings 34
5.3 Conclusions 35
5.4 Recommendations 36
5.5 Limitations of the Study 37
5.6 Suggestions for Future Studies 37
REFERENCES 39
APPENDICES 42

LIST OF ABBREVIATIONS

CBK : Central Bank of Kenya

CBR : Central Bank Rate

CEO : Chief Executive Officer

CPI : Consumer Price Index

CRR : Cash Reserve Ratio

GDP : Gross Domestic Product

KES : Kenya Shillings

KNBS : Kenya National Bureau of Statistics

MPC : Monetary Policy Committee

OLS : Ordinary Least Squares

OMO : Open Market Operations

TBR : Treasury Bill Rate

VAR : Vector Auto Regression

VECM: Vector Error Correction Mechanism

LIST OF TABLES

Table 3.1Operationalization of the study variables..... 22

Table 4.1: Descriptive Analysis 24

Table 4.2 Diagnostic Results..... 27

Table 4.3 Regression Results (Long run relationship)..... 28

Table 4.4 Granger causality test results 29

LIST OF FIGURES

Figure 1.1 Conceptual Frameworks. Source: Author (2016). 18

Figure 4.1: Credit Supply 25

Figure 4.2: Variables Trend 26

Figure 4.3: Inflation Rate 27

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Monetary Policy and Credit Supply analyzes the effect instruments of monetary policy have on the bank credit supply. Instruments of monetary policy influence both loan supply and demand. Poorer economic conditions and tighter monetary policy extensively distress loan granting (Jimenez, Ongena, Peydro and Saurina, 2012).When monetary policy tighten and economic conditions degenerate, credit supply decrease and agency problems between lowly capitalized banks and investors are intensified leading to an even harsher reduction in bank credit (Holmstrom & Tirole, 1997). The monetary Policy is an instrument of macroeconomics used by governments to manage the country's economy. It is used to manage the availability of credit in a country's economy. The CBK has the mandate of implementing monetary policy. When monetary policy contracts the interest rate raises thus reducing the availability of credit to credit dependent borrowers. Generally economists and policy makers say that monetary policy mostly implemented through interest rates. (Morris & Selleon1995). Monetary policy instruments remain essential in the demand and supply reserves held by banking institutions and subsequently on accessibility of credit. (Ayodele, 2014)

When monetary policy contracts unfavorable economic situations may increase agency costs for both banks and firms. Financial factors may influence the impact of monetary policy in two contemporary ways. One is the result theories of finance on business cycle that stresses the role of the obligor's balance sheet. These theories emphasize the impression that imperfections in capital market create spending of certain debtors be

contingent on their balance sheet positions. Monetary policies come into representation both directly and indirectly. When interest rates increase balance sheet weakens, cash flows net of interest lower and net worth of the collaterizable assets also lowers. This has a tendency to amplify the total influence of monetary policy on debtors' expenditure. Incidentally tight money shrinks expenditure; reductions in cash flows and assets values related to this drop in expenditure also lead to deterioration of the balance sheet (Gertler & Gilchrist, 1994).

In Kenya Monetary Policy are the actions and decisions that the central government takes to ensure money supply is in line with the economic growth and the price objectives that the government wants to achieve. Comparing the CPI of a particular month with CPI of the same month in the previous period is used in the determination of month on month inflation rate. In this study we shall seek to establish the interaction of monetary policy and credit supply in Kenya by analyzing the fluctuations in the monetary policy instruments and the banks loans from the statement of financial position data. The following are monetary policy instruments used to implement monetary policy in Kenya. They include: CRR- This is the minimum percentage of the customers deposit that a deposit taking institution should hold with the central bank, OMO-This is the buying and selling of securities from the government so as to control the amount of money available in the banking system and Lending by CBK-This where the central bank lends to banks that are experiencing financial difficulty. By manipulating these instruments, CBK influence money supply, government security Prices, credit availability and creation of liquidity in commercial banks (central bank of Kenya statement, 2016).

1.1.1 Monetary Policy

Monetary policy entails resolutions done by the government to permit money supply in the country's economy is in line with the economic growth and price objectives set by the government. The aim of monetary policy is upholding price steadiness in the economy. Price steadiness denotes to preservation of low and steady inflation (Central Bank of Kenya policy statement September, 2016).

The simple creed of keeping the inflation low and stable by targeting the interest rates in the short term, supervising and regulating the financial institutions is the mantra for monetary policy (Arricia & Habermeier, 2014).Monetary policy main objective is to ensure price stability in an economy. The Central bank has the mandate of issuing bank notes and bank reserves, through monetary policy transmission the Central banks sets conditions by which commercial banks borrow and trade on the money markets. Central banks in many countries have alike monetary policy objectives particularly an obligation to achieve stability in prices. In spite of their shared objective conversely these institutions often implement monetary policy in diverse ways both when the economy is established or its in crisis (Amstad & Antoine, 2011). Some of these conditions include interest rates and required bank reserves, these affect the cost of money and the availability of credit.

1.1.2 Credit Supply

Credit supply is to the total amount of money that has been lent by banks in a country or region. In the traditional banking lending model, the bank undertake all facets of the credit process. Creating the loan, funding it and managing the credit risk associated with it. Decisions on whether to advance to a specific borrower and how much to loan and the

terms of credit may be made together with the decision on how to mitigate the risk of the credit. The first cost that a bank incurs in lending is called cost of funds, the bank also faces administrative costs in making the loan (Hirtle, 2008).

Monetary policy works to inspire more lending by bringing down the price of banks borrowing reserves this essentially brings down the cost of lending. On the other hand it's essential for potential borrowers to see prospects to invest the loans. In case they are of the opinion that probable future revenues are feeble, demand for loans decrease. In this case monetary policy plays a part too. Commercial banks are subject to restraint imposed by the regulators and markets (Carney, 2012).

1.1.3 Monetary Policy and Credit Supply

Supply and demand of loans is influenced by the monetary policy (Jimenez, Ongena, Peydro & Saurina, 2012). For example, an expansionary monetary policy upsurges bank reserves and subsequently bank deposits increase amount available for loans. Where many debtors are reliant on bank loans to finance their activities.

There is a connection on monetary policy transmission and credit supply by the commercial banks. In the money market, demand originates from individuals wanting to borrow and spend, whereas supply of money is influenced by the government's monetary policy. CBR is a monetary policy instrument that affects the banks' lending rate, Interest rate is cost of funds paid by a borrower. When the central bank tightens the CBR, the interest sensitive sectors of the economy like housing reduce spending. When interest rates are low the cost of funds is also low consequently encourages borrowing from commercial banks and this leads to higher investment activity (Satija, 2009).

CRR refers to the minimum fraction of the customer deposits and notes that each financial institution must hold as reserves. Reserves are generally inform of cash kept physically in the vault or deposits with central banks (Kimani,2013) altering the CRR for commercial banks is used as a monetary policy instrument that affects the amount of funds available for lending to economy.

OMO is another monetary policy instrument used by central bank. It entails selling and buying of Bonds and Bills in the open market. Monetary base of the economy is controlled by banks through OMO. Each time the central bank buys the security from commercial banks it increases the money supply conversely selling the security lowers the money supply. This consequently affects credit supply by the commercial banks (Muraleedharam, 2014).

1.1.4 Monetary Policy and Credit Supply in Kenya

The CBK has continuously refined monetary policy processes and procedures to improve their capability and usefulness in moving financial and economic situation in the country. In framing the monetary program, CBK begins by approximating the money required in line with the targeted inflation and GDP growth (Nyamongo & Ndirangu, 2013).

In 2007 MPC was formed after the amendment of the Central Bank Act. MPC is entrusted with the obligation for formulating the monetary policy. The committee meeting happens every 60 days except when the macroeconomic conditions require additional frequent consultations. MPC meets to evaluate the macroeconomic conditions on the basis of which a conclusion is made on the monetary policy position. This is done primarily by setting the CBR which is likely to predict and co-ordinates other rates in the market with the aim of making the economy stable (Nyamongo & Ndirangu, 2013).

The CBK has been effective in taming inflation in the last 3 years through the monetary policy, however recently limits to cap the lending rate have been introduced and this is likely to undermine the monetary policy signals. This implies that the MPC will need to revise the other monetary policy instruments to contain the inflation (Njini & Changole, 2016).

1.2 Research Problem

Monetary policy is the main financial governing tools for the governments to control the economy. It is believed that monetary policy is speedier in manipulating economic downturns. The main aim of monetary policy is controlling of the numerous financial goals which include stabilizing prices, promoting development, attaining total employment, levelling the business cycle, thwarting financial crunch, steadying long term interest rates and real exchange rates. The effectiveness of the monetary policy is still an intense debate (Kimani, 2013). This study should establish the association between the monetary policy conditions and credit supply in Kenya.

Studies and articles have been done by scholars around the world relating to monetary policy, examples include; Monetary policy, bank lending and inflation in Nigeria. The paper investigates whether bank lending behavior can provide convincing explanations for the effects of monetary policy on inflation over the period 1993-2009.The findings of the study revealed that monetary policy done through setting of interest rates does not have the intended effects on bank lending behavior more so bank lending has no significant effects on inflation (Essien, 2011). The research gap on the study was the researcher focused on interest rate alone as the monetary policy instrument to reach this conclusion.

On effects of monetary policy on commercial banks' lending in Nigeria. The conclusions showed that there happens to be a long term association between the variables, more precisely, results exposed exchange rates and interest considerably influenced commercial banks' lending. This study did not incorporate all the monetary policy instruments employed by central banks but exchange rate and interest rates (Ayodele, 2014). There is need to evaluate the impact of monetary policy mechanisms on commercial banks' lending.

International Bank Lending Channel of monetary policy rates and QE: Credit Supply, Reach for Yield and Real Effects. The research was ascertaining the channel for monetary policy in the international arena by reviewing all the company loans in Mexico coordinated with the business statement of financial position and by manipulating foreign monetary shocks, the findings revealed that moderating of monetary policy upsurges the supply of credit of foreign banks to Mexican banks Bernardo, Morais, Peydro & Ruiz, 2015). In this study the researcher did not analyze the effect of monetary policy rates on individual loans or micro credit facilities but on corporate loans.

Several studies have been done in Kenya relating to monetary policy for example, a study on the effects of monetary policy on inflation, the study concluded there was positive association between the rate of inflation and the independent variables, and that the 91 - day TBR is the main influencer of inflation in Kenya (Njiru, 2014). The research gap exists in this research since other monetary policy instruments other than the interest rates were not included in the model.

A study focusing on the effects of monetary policy on bank lending rate in Kenya and the signaling effect on the international investment community. The findings was that tight monetary policies raises the nominal interest rate and inflation and reduces long run output such as supply of bank loans, leading to raising lending rate thus discouraging bank dependent borrowers activities, in the condition of easing, more liquid money is available for banks, thus as the supply of money increases the interest rate decreases (Wanjiaya, 2010). In this study the researcher model did not include the other monetary policy instruments other than the interest rate.

A research on the effect of monetary policy on the financial performance of commercial banks, the study concludes that monetary policy tools employed by central bank of Kenya do not have a significant effect on the commercial banks of Kenya. This study is inconsistent with other studies that have been conducted, commercial banks are businesses driven by the profit motive and the monetary policy through the interest rates instrument affect the lending behavior of commercial banks (Kithuka, 2015). This research will seek to answer the following questions: How does the CRR affect the credit supply by commercial banks in Kenya? What is the influence of OMO to credit supply in Kenya? How does the CBR affect credit supply in Kenya? And to what extent does inflation affect credit supply in Kenya?

1.3 Research Objectives

The research pursued to establish the effects of monetary policy on credit supply in Kenya.

1.3.1 Specific Objectives

1) To determine the effect of open market operations on credit supply in Kenya
2) To establish the impact of central bank rate on credit supply in Kenya
3) To determine the influence of cash reserve ration on credit supply in Kenya
4) To establish the impact of inflation on credit supply in Kenya

1.4 Value of the Study

It was useful to fellow scholars, banking industry and MPC

Fellow academicians were able to see a new perspective of assessing the effects of monetary policy on lending by the commercial banking institutions. This research has been prompted by the need to examine how effective the monetary policy transmission in regulating the availability of credit which consequently increase demand and thus growth in inflation. Information gaps exist as to how the monetary policy issued by the CBK from time to time affects credit supply of commercial banks.

The banking industry was able to benefit from this research by understanding how they can take advantage of the monetary policy instruments and increase their loanable funds in order to avail credit to those sectors of the economy that have potential for growth.

The MPC was able to use this research to evaluate the effectiveness of monetary policy transmission in taming inflation which is generally their primary objective.

CHAPTER TWO: LITERATURE REVIEW

2.1Introduction

This section presents published information on monetary policy; it reviews the studies from other scholars, Conceptual framework and a summary of literature review.

2.2Theoretical Review

Several macro-economic theories have been developed over the years, Theories aim at addressing economic problems like unemployment, inflation, credit crunch and stagnated economic growth. Most theories make a concentrated effort to address these problems.

2.2.1Monetary Theory and Policy

The theory studies about the elementary observed data on Inflation, money and Output, elementary facts on long term and short term interactions works as standards for judging hypothetical models. This theory discusses tactics monetary economists use to assess the effects of money monetary policy on the economy. The argument emphasizes greatly on indication on factors of vector auto regressions because they have worked as main instrument for finding the influence of monetary phenomena on the economy monetary economists emphasize on monetary aggregates, price behavior, nominal and real interest rates as basic correlations (Wash,1998).

A summary of long run monetary relationships is provided by investigating average rates of inflations, growth rates of several measures of money and output growth and over a long time in many different countries. Out of their analysis two key inferences developed, one was that the correlation between growth rate money supply and inflation and is more or less 1.The second deduction was that there is no correlation between either money

growth or inflation and the growth rate of real output. This deduction is not strong as the money growth and inflation. Mc Candles and weber described positive correlation between money growth and real growth but not inflation. (McCandleless and Weber, 1995)

2.2.2 Keynes's Theory

Keynesian economics is the concept of aggregate expenditure in the economy (called total demand) and its effect on inflation and output. The monetary policy according to Keynes has three concepts, specifically the marginal productivity of capital, investment multiplier and the rate of interest. Through examining how the three concepts relate in the short run, Keynes described why he is opposed to counter cyclical monetary policies. While through examining how the concepts relate in long rum Keynes expounds that the economy inclines to oscillate around a long period equilibrium position that is described by lack of employment.

In the great depression in the 1930s prevailing economic theory was incapable of clarifying the severe worldwide economic failure to offer sufficient public policy solution to propel the economy towards employment and production Jahan, Mahud & Papageorgiou, 2014).The British economist said that inadequate total demand might cause continued times of high unemployment. Output of goods and services in an economy is the totality of four components, investment, consumption, government purchases and net exports, rise in demand is influenced by these components but for the duration of recession strong forces reduce demand as spending goes down. This theory is relevant in this study since it explains components of an economies output that are influenced by availability of credit from the commercial banks.

2.2.3 Monetarism

This is an economic philosophy that emphasizes the impact of macroeconomics to the supply of money and central banking. This philosophy was formulated by Milton Friedman. It maintains that excessive increase of the money supply leads to inflation and the monetary authorities should ensure price stability. Monetarist calculation of exchange is stated as MV=PQ. The monetarist states that causality is from left to right in the equation that is as the money supply is influenced by a constant V and one can anticipate an increase from P or Q. Friedman contended that the government ought to pursue to uphold economic steadiness by monitoring the rate of growth of the money supply. Monetarism consequently suggested that the steady adequate growth of the money supply could in many cases guarantee a steady rate of low inflation and economic growth. This theory is relevant in this study since explains the role of central government in ensuring price stability in the economy.

2.3Determinants of Credit Supply

The main drivers of credit growth are stronger economic growth. Demand and supply factors determine credit growth in an economy. A stronger economic growth increases demand for loans and a strong banking sector inclines to lend more than a weak one. Increased lending results due to loose monetary conditions both globally and domestically (Jaeger, 2011).

Lending is positively related to economic growth, additionally banking and financial intermediation in addition to financial liberalization would motivate higher lending demand. Moreover lower cost of lending diminishes government domestic borrowing and further qualitative bank credit would generate additional lending incentives (Shijaku, 2013).

2.3.1 Rate of Return

A bank may allocate its resources in either credits or government securities. The rates of return in the banks' profits include:

Return in credit supply rc - rd

Return in T Bill investment rT - rd under the condition rc > rT>rd

Considering that Y1 is the bank resource allocation in credits and Y2 is the banks resource allocation in T Bills with 0<Y1+Y2<1 the function of bank rate of returns is given as follows

Profits =Y1 (rc-rd) +Y2 (rT-rd) = Y1rc+Y2rT-rd (Y1+Y2)

The credit supply C is expected to be positively related to its return (rc-rd) and negatively to profits which is the cost of controlling the default risk (Pham, 2015).

2.3.2 Capital Requirements

Bank capital requirement increases the incentive to monitor borrowers, thus reducing the likelihood of non-repayment and adequate capital reserves creates incentive for minimal regulatory inspection. The regulating of bank capital in the transmission of business cycles has led to much inquiry since the introduction of the Basel 1 accord in 1988. Implementation of Basel 11 accord entails using mark to market pricing rules and setting capital requirements on the base of asset quality rather than only the asset type. Financial crunch led to transformed attention by economists and policy makers.Basel 11 makes banks to hold to little capital in economic upturns and too much during recessions. Consequently it does not restrain lending adequately for the duration of boom times but restrains lending too much for the duration of recessions (Agenor, Alper & Silva, 2011).

2.3.3 Liquidity Ratio

This refers to the capability of banks to fund increases in loans and meet maturing obligations without suffering undesirable losses. Liquidity risk results from banks funding long term loans with short term maturing deposits. Liquidity risk can be divided into two kinds of risk. Funding liquidity risk and market liquidity risk Funding liquidity risk refers to the risk that banks will be incapable to meet efficiently both predictable and unpredictable present and imminent cash flows and collateral requirements devoid of affecting both operations and the financial circumstances of the firm. Market liquidity risk entails the risk that banks cannot definitely offset or reduce a position at the market price because of insufficient market depth or market disturbance (Vodova, 2013).

2.4Empirical Review

There are several documents studies on the determinants of credit supply globally, some of these studies fused several monetary tools in evaluating the outcome of macroeconomic variables in determining commercial banks' lending.

2.4.1 International Evidence

A study that empirically examined the influence of monetary policy on commercial lending in Nigeria between 1988 to 2008 by means of micro economic time series variables of interest rate, exchange rate, liquidity ratio, money supply and commercial bank loan and advances. The study used VECM of OLS econometric technique as the estimation method. The results indicated that exchange rate and interest influenced commercial banks' lending, liquidity ratio and money supply. The main inference drawn was that monetary policy instruments were ineffective to motivate commercial banks

loans and advances in the long run whereas banks total credit was more receptive to CRR. Thus monetary authority ought to make efforts to improve indirect monetary instruments and implement proper mechanism over the monetary sector (Ayodele, 2014).

A research to study the factors of bank credit in emerging market economies, the study used time series and cross section data to allow wider lessons likened to many existing scholars which emphasizes on exact set of developing market economies or on shorter term periods. The outcomes showed robust economic growth lead to higher inflation and high credit growth. They also found that globally or domestically loose monetary conditions lead to in increased lending and that robust banking system equally matters. This study was not specific in focus and the results of the study cannot be generally applied to Kenya (Guo & Stepanyan, 2011).

A discussion paper on finding and assessing the long run factors of bank credit to the private sector in the case of Albania, the study used VECM approach based on demand and supply indicators. The approximations revealed that an adjustment mechanism exists to bring bank credit back to equilibrium. The outcomes showed that loaning is positively related to economic growth, additionally banking and financial intermediation in addition to financial intermediation would motivate higher lending demand. In addition low cost of lending, diminishing government domestic borrowing and a more qualitative bank credit would generate more lending incentives (Shijaku, 2013). This research was specific and focused on Albania

2.4.2 Local Evidence

A study on the effects of monetary policy on bank lending rate in Kenya and the signaling effect on the international investment community. The study conducted a causal comparative research design and used secondary quarterly series data for the time period 2000 to 2014. The result of the study showed that CBR and the TBR were significant monetary policy instruments in explaining the bank lending rate and the signaling effect to the international investment community. Reserve requirement was found to be negative and insignificant monetary policy tool in impacting the bank lending rate and signaling the international investor community. This study recommended that the central bank should adopt more of the TBR and CBR in implementing the monetary policy decisions (Wanjaiya, 2015).

A research on the effect of monetary policies on the lending behavior of commercial banks in Kenya. It established that CRR, CBR, OMO and uncertainty brought by likely outcomes shaped by monetary policy variations encouraged lending behavior by commercial banks in Kenya (Kimani, 2013). The result of the study did not cover the entire sector but concentrated on the tier one banks.

A study that sought to investigate whether commercial banks were actually responsive to monetary policy. The study used Error Correlation model to estimate a relationship where lending rates were treated as dependent variables while the independent variables were the monetary policies. Specifically monetary transmission channels. These included the credit channel which was represented by credit to the private sector, exchange rate channel represented as nominal exchange rate and asset price channel. Inflation and economic growth were included in the model because these are targets to the monetary

policies. The study findings showed that there was long run relationship between lending rates and central bank rates, exchange rates asset price, credit to the private sector, economic growth and inflation rates. The results also indicated that CBR and Inflation cause lending rates to decrease in the short run. A statistically significant relationship was also established between lending rates and exchange rates, CBR, credit private sector and Inflation rates. The study also showed insignificant relationship between lending rates and asset prices as well as economic growth in short run (Njiru, 2014).

2.5 Conceptual Framework

This is used to assist someone understand the association between the independent variables and the dependent variables. This section confers the conceptual framework by studying the instruments of monetary policy on credit supply.

This section confers the conceptual framework for examining the effects of various monetary policy instruments on credit supply. The conceptual framework encompasses four independent variables that will influence the credit supply in Kenya according to the monetary policy theories and literature review. They include; Reserve Requirement, Open Market Operations, Central Bank Rate (CBR) and Inflation.

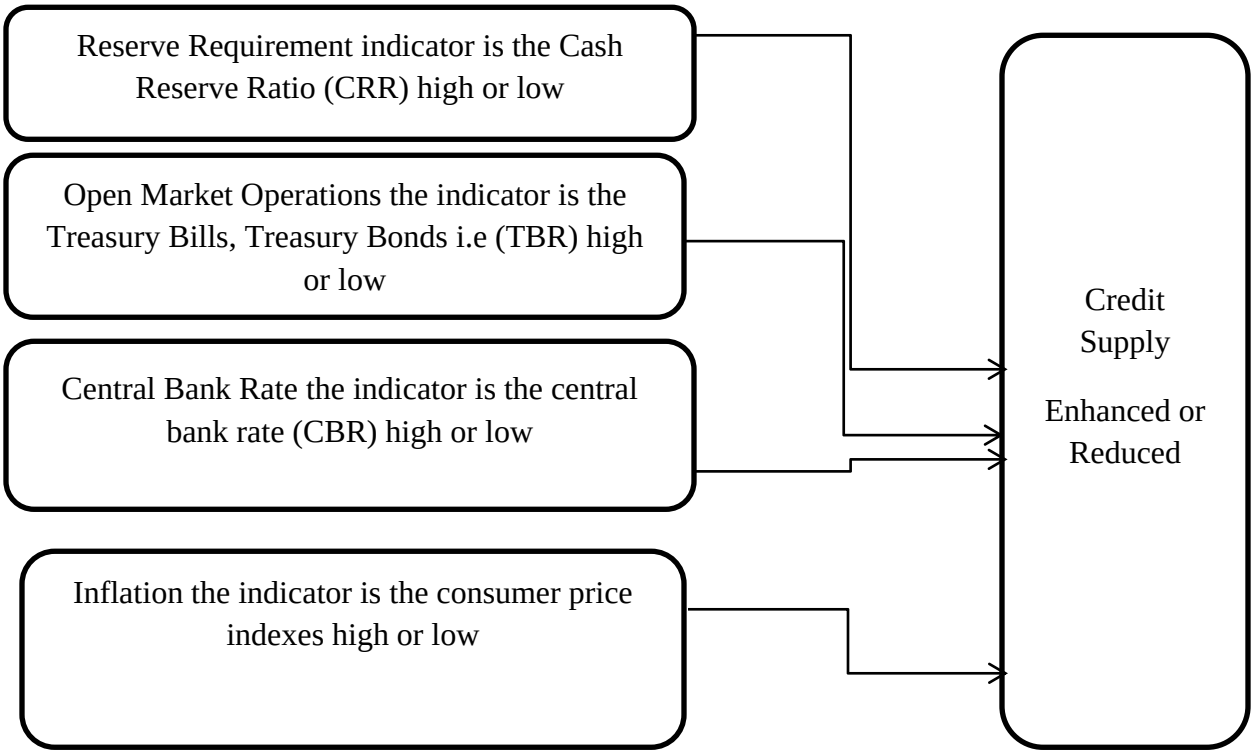


Figure 1.1 Conceptual Frameworks. Source: Author (2016).

2.5.1Reserve Requirement

CRR this is the percentage of customer deposits that should be held with the CBK. A rise in this percentage decreases the amount of money available for lending while a reduction in this percentage increases the amount of money available for lending by the banking institutions The CRR will be measured as high or low

2.5.2 Open Market Operations

In order to have a preferred level of money in circulation, the CBK through the money markets bus and sell government securities (Treasury bills and Bonds)

Commercial banks participate in buying of government securities. When the CBK buys securities it increases the supply of money in the market, when it sells securities it reduces the supply of money in economy.

2.5.3 Central Bank Rate

This refers to the rate of interest CBK charges the commercial banks. This rate consequently influences the rate of interest banks charge on loans. When the CBR increases this makes borrowing undesirable to the interest sensitive segments of the economy and when the CBR is low it makes borrowing attractive to the interest sensitive segments of the economy. This will be measured as high or low.

2.5.4 Inflation Rate

This refers to the continued increase in the overall price levels of goods and services in the economy over a period of time. Increase in inflations affects the cost of borrowing money

2.6 Summary of Literature Review

From the empirical review there is inconclusive evidence on the factors that determine credit supply by commercial banks. While researchers seem to agree on internal variables that affect credit supply by commercial banks, there is no consensus on the relationship between the macroeconomic variables and credit supply by banks. Some studies have concluded there is no relationship between credit supply and macroeconomic variables and others have concluded the evidence of relationship between the credit supply and Macroeconomic variables. A paper that empirically examined the effect of monetary policy on commercial lending in Nigeria between 1988 to 2008 using time series

variables of interest rate, exchange rate, liquidity ratio, money supply and commercial bank loan and advances and study objective was examine whether commercial banks were essentially receptive to monetary policy. This study will seek to establish the effect of monetary policy instruments on credit supply in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter entails research design, data collection, diagnostic tests and data analysis. It includes the blueprint of collection, measurement and analysis of data.

3.2 Research Design

This study took a descriptive case study approach in collecting data, this is useful because it uses both quantitative and qualitative elements research methodology and it determines the cause and effect. The main focus of this study is quantitative however there are some qualitative aspects that will be used in order to gain better understanding of the causal effect. The main objective of the study was to determine the effect of monetary policy on credit supply in Kenya

3.3 Data Collection

Secondary data was used in this study which includes published financial statements by banks, published reports by CBK and Monetary policy statements. The data to be collected on credit supply will be the gross loans and advances from central bank publications. The specific data was collected from book values of the commercial banks 2005 to 2015, Inflation, weighted average Central Bank Rate, weighted Cash Reserve Ratio and weighted Average 364 Treasury Bill Rates for each year under review.

3.4 Data Analysis

The data was analyzed using descriptive measurements such as standard deviation, mean, Median, minimum and maximum were used to study the data. The quantitative data on credit supply measured in real values. Results were presented in tables and graphs for

further analysis and to assist in evaluation. The descriptive statistical tools were used to describe the data.

The research used regression method for its capability to assess the nature of variation of the independent variable on the dependent variable. Regression is able approximate the coefficients of a linear equation, comprising of more than one independent variables

The study used inferential analysis; an error correlation model will be used to determine accurate predictions. The following model was stated in effort to examine the effectiveness of monetary policy on credit supply in Kenya.

The study used the following regression model

$Y= \alpha + \beta_1 X1 + \beta_2 X2 + \beta_3 X3 + \beta_4 X4 + \varepsilon$

Where;

Y= credit supply

α = Constant Term.

$\beta 1$, $\beta 2$, $\beta 3$ and $\beta 4$ = beta coefficients

ε = Error Term

Table 3.1Operationalization of the study variables

Symbol	**Definition**	**Measurement**
Y	Credit supply	Total loans advances by commercial banks for the year
CBR	Central Bank Rate	Weighted average CBR for the year
CRR	Cash Reserve Ratio	Weighted average CRR for the Year
OMO	Open Market Operations	Average 364 T-Bill rates for the Year
CPI	Inflation(Consumer Price Index)	Quarterly Variables for the year

3.5 Diagnostic Tests

The study used the residual plot method to investigate whether there is variation of the residuals across all the observations of the study. The presence of heteroscedasticity is a main concern for regression analysis because it can undermine the statistical tests of significance. Linearity another assumption of OLS was tested.

3.5.1Inferential Statistics

Inferences about the population using data drawn from the population were done using Correlation analysis and Coefficient of determination

3.5.1.1 Correlation Analysis

Breusch Godfrey LM test was used to test serial Correlation in the model structure and regression analysis to evaluate the relationship among the variables while multiple regressions were used to establish the projecting power of effects of monetary policy on credit supply in Kenya.

3.5.1.2 Regression Analysis

The study used multiple regression analysis so as to examine the relationship among variables (independent) on credit supply. The study used Eviews data analysis software for social sciences that codes and computes the measurements of multiple regressions for the study.

3.5.1.3 Coefficient of Determination

The multiple regressions were conducted taking into account all factors (CBR, CRR, OMO and Inflation) if the model has negative coefficients indicating that a rise in the independent variables leads to decline in the dependent variable.

CHAPTER FOUR: DATA ANALYIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

In this chapter analysis of collected secondary data was done. The software used to analyze the data were Eviews data analysis software and Microsoft's Excel (2003). The trend of credit supply and monetary policy instruments was achieved through the use of descriptive statistics such as standard deviation and mean. Stationarity of the data was tested and regression analysis was used to determine the effect of monetary policy on credit supply.

4.2 Descriptive Statistics

The study further sought to know the trend of credit supply, CBR, CRR, OMO and inflation rate for the study period 2005-2015. The results of the study are shown in Table 4.1 below

Table 4.1: Descriptive Analysis

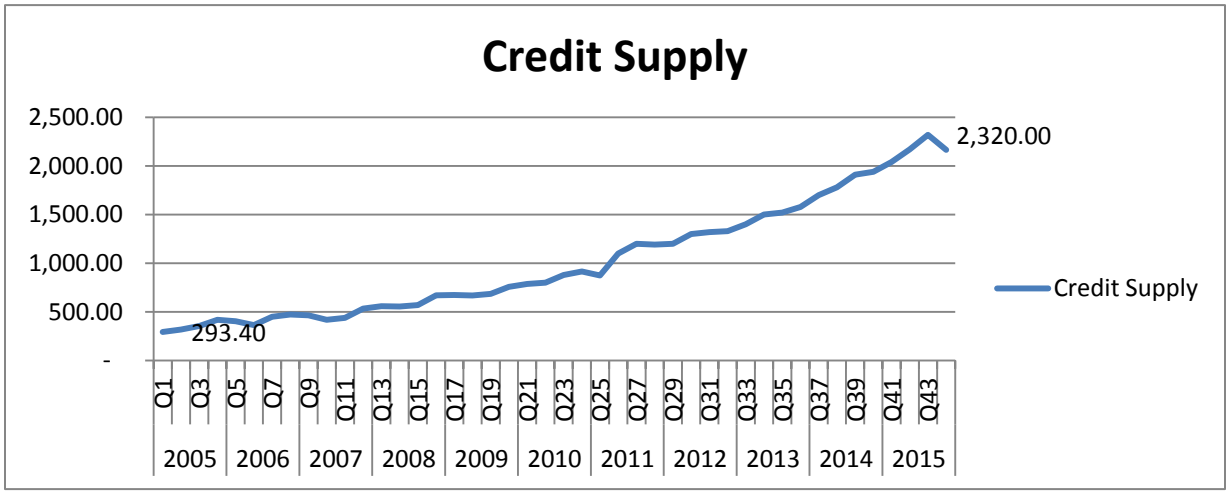
	Credit Supply	Open Market Operations	Cash Reserve Ratio	Central Bank Rate	Inflation
Mean	6.756443	1.035985	-2.933820	-2.319953	1.992463
Median	6.727945	1.272600	-2.946942	-2.465104	1.945195
Maximum	7.749322	1.924103	-2.813411	1.9108283	2.953868
Minimum	5.681537	1.482805	-3.101093	-2.813411	0.966984
Std Dev	0.607381	0.708460	0.102684	0.699983	0.537232
Skewness	-0.017220	-1.343676	-0.222235	5.192369	0.246684
Kurtosis	1.756783	5.087562	1.927739	31.81033	2.153099
Jarque-Bera	2.835751	21.22960	2.470045	1719.442	1.761197
Probability	0.242228	0.000025	0.290828	0.00000	0.414535
Observations	44	44	44	44	44

Source: Research Findings (2016)

Credit supply had a mean of 6.756443 with a standard deviation of 0.607381, Inflation had a mean of 1.992463 with a standard deviation of 0.537232, Central Bank Rate had mean of 2.319953 with a standard deviation of 0.6999983, Cash Reserve Ratio had a mean of - 2.933820 and a standard deviation of 0.102684 while Open Market Operations had a mean of 1.035985 and a standard deviation of 0.708460.

Credit Supply was measured using gross loans advanced by commercial banks. The study findings revealed that credit supply had been on a steady growth over the study period (2005-2015). The end of Quarter 1, 2005 recorded the lowest credit supply of Kes. 293.4 billion while the highest credit supply of Kes. 2,320.00 billion was recorded in quarter 3 2015. The standard deviations indicated fluctuations in credit supply over the study period. The trend of the credit supply over the study period is as depicted on Figure 4.1 below.

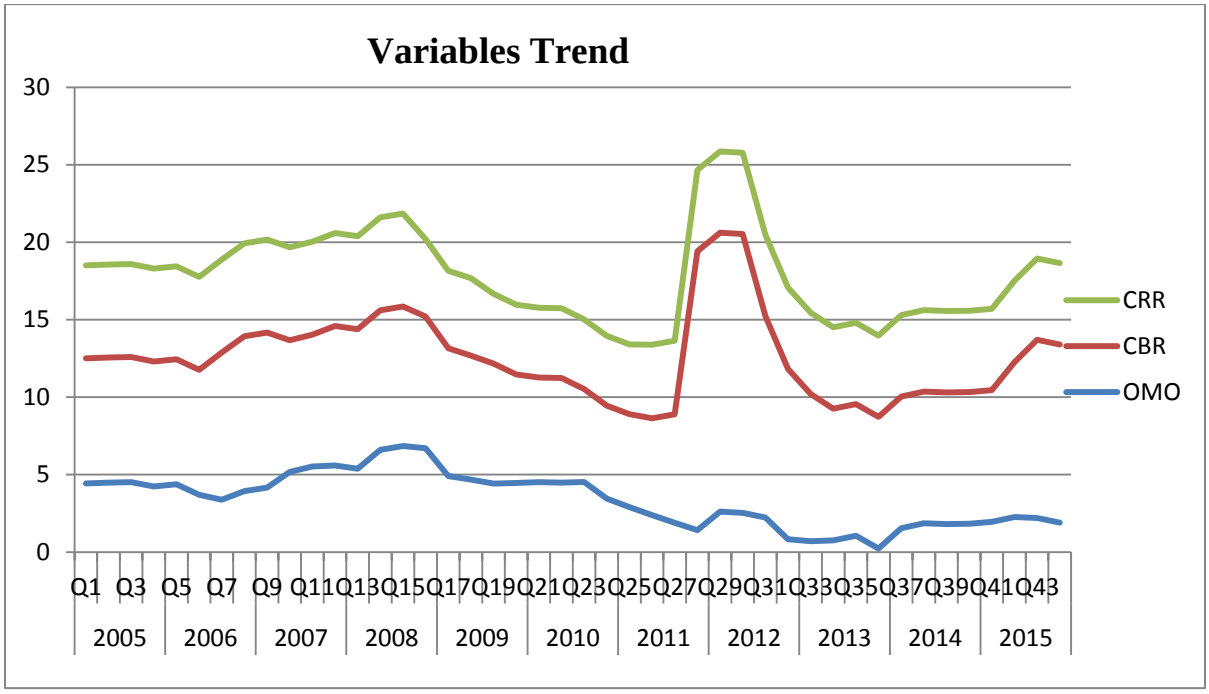
Figure 4.1: Credit Supply



Source: Research Findings (2016)

Open Market Operations, Central Bank Rate, Cash Reserve Ratio and Inflation had been fluctuating over the study period. Open Market Operations recorded a high of 0.06849 in 2008 and a low of 0.00227 in 2013. Central Bank Rate also recorded a high of 0.18 in 2012 and a low of 0.06 in 2011. Cash Reserve Ratio recorded relatively stable results over the study period. While Cash Reserve Ratio recorded a low of 0.045 in 2010 & 2011 and a flat of 0.06 for the years 2005-2008. The trends of the variables over the study period are as shown in Figure 4.2.

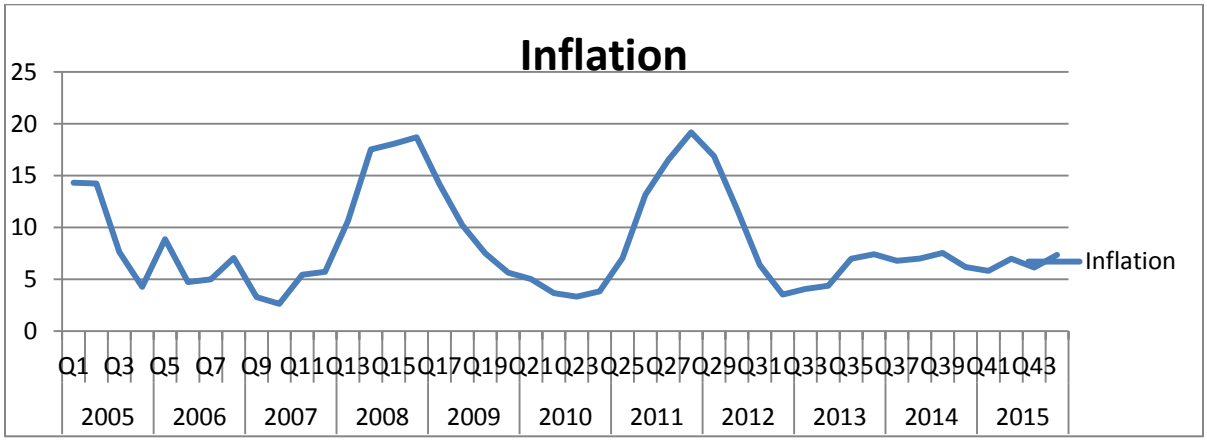
Figure 4.2: Variables Trend



Source: Research Findings (2016)

Inflation rate recorded variations during the study period (2005–2015). The inflation rate ranged between a high inflationary pressure of 19.18 in 2011 and a low inflationary pressure of 2.63 in 2007. The trend of inflation rate for the study period is as shown in Figure 4.3.3 below

Figure 4.3: Inflation Rate



Source: Research Findings (2016)

4.4 Diagnostic Results

Breusch Godfrey serial correlation analysis was done to test whether the study variables were correlated in any way. Serial correlation test was done and as per the results it is clear that there is no correlation. This ensures the OLS estimates are not biased. The diagnostic results are found on Table 4.2 below

Table 4.2 Diagnostic Results

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	9.774461	Prob. F(2,35)	0.0004
Obs*R-squared	15.41009	Prob. Chi-Square(2)	0.0005

4.5 Unit Root Test Results

The stationarity tests on the time series data collected was conducted using augmented dickey fuller test statistic. The null hypothesis was CBR has a unit root while the alternative hypothesis was CBR does not have a unit root. The stationary test revealed that CBR was stationary at level. On credit supply the null hypothesis was credit supply has a unit root while the alternative hypothesis was credit supply does not have a unit

root, Credit supply was found to be non-stationary at level but stationary at first difference. CRR and OMO were found to be stationary at level while inflation was found to be non-stationary at level but stationary at first difference.

4.5.1 Regression Results

The research sought to establish the effects of monetary policy on credit supply in Kenya. Gross loans advanced by commercial banks were used as the proxy for credit supply and was regressed against the proxies of monetary policy (CBR, CRR, OMO and inflation).Regression analysis was conducted using Eviews data analysis software. The general findings of the study are as shown in the Regression Results in Table 4.3 below

Table 4.3 Regression Results (Long run relationship)

Variables	Coefficients	t-statistic	Prob
Constant	9.664689	19.11270	0.0000
CBR	3.438005	1.556426	0.1277
CRR	-44.05214	-4.371199	0.0001
Inflation	-0.012895	-0.135931	0.8926
OMO	-0.785850	-7.312327	0.0000
R-squared	0.761160		
Adjusted R-squared	0.736664		
Prob(F-statistic)	0.000000		
Durbin-Watson stat	0.335663		

Source: Research Findings (2016)

The regression results show that CRR and OMO are significant variables in explaining the variation in the credit supply. A unit increase in CRR leads to 44 units decline in credit supply while a unit increase in OMO leads to 0.78 units decline in credit supply. The adjusted R-squared of 73 percent implies that 73 percent of the variation in credit supply can be explained by CBR, CRR, Inflation and OMO. The Prob (F-statistic) is also significant which implies that the model is fit (the variables are jointly significant in explaining the variation in credit supply).

4.5.2 Granger Causality tests Results

Granger causality tests was conducted on the times series data to determine if the time series was useful in forecasting another. The granger causality test results are in Table 4.4 below

Table 4.4 Granger causality test results

Pairwise Granger Causality Tests
Date: 10/20/16 Time: 20:03
Sample: 1 44
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
CBR does not Granger Cause CREDS	42	0.43890	0.6481
CREDS does not Granger Cause CBR		0.47865	0.6234
CRR does not Granger Cause CREDS	42	0.14818	0.8628
CREDS does not Granger Cause CRR		0.12908	0.8793
INFLATION does not Granger Cause CREDS	42	0.13073	0.8779
CREDS does not Granger Cause INFLATION		0.59623	0.5561
OMO does not Granger Cause CREDS	42	0.17166	0.8429
CREDS does not Granger Cause OMO		2.44708	0.1004
CRR does not Granger Cause CBR	42	0.03280	0.9678
CBR does not Granger Cause CRR		0.04424	0.9568
INFLATION does not Granger Cause CBR	42	1.58297	0.2190
CBR does not Granger Cause INFLATION		1.17097	0.3213
OMO does not Granger Cause CBR	42	1.17257	0.3208
CBR does not Granger Cause OMO		8.37772	0.0010
INFLATION does not Granger Cause CRR	42	1.24366	0.3001
CRR does not Granger Cause INFLATION		0.07689	0.9261
OMO does not Granger Cause CRR	42	1.62361	0.2109
CRR does not Granger Cause OMO		4.22422	0.0223
OMO does not Granger Cause INFLATION	42	0.50263	0.6090
INFLATION does not Granger Cause OMO		0.08946	0.9146

Source: Research Findings (2016)

According to the results if the p value is greater than 5 percent we accept the null hypothesis and if the P-value is less than 5 percent we reject the null hypothesis. According to the results we accept the null hypothesis that CBR does not cause credit supply cause CBR neither does credit supply cause CBR, CRR doesn't cause credit supply neither does credit supply cause CRR, Inflation does not cause credit neither does credit supply cause inflation, OMO does not cause credit supply neither does credit supply cause OMO, Inflation does not cause CBR neither does CBR cause inflation. OMO does not cause CBR however CBR do cause OMO. Inflation does not cause CRR neither does CRR cause Inflation, OMO does not cause CRR however CRR cause OMO.

There from the results CBR and CRR cause OMO. This implies that the past values of CRR and CBR can be used for the prediction of future values of OMO. Therefore CBR and CRR values can be used to predict future values of OMO.

4.5.3 Coefficients of Determination

Coefficient of determination R^2 is a portion of how much of the variability of one variable can be "explained by" the variation of the other. Standardized coefficients of determination are approximations resulting from regression analysis that have been standardized so that the variances of the dependent and independent variables are 1.

Table 4.5: Coefficients of Determination

Variables	Coefficients		t-Statistic	Prob
	B	Standard Error		
(Constant)	9.664689	0.505668	19.11270	0.0000
Central Bank Rate	3.438005	2.208909	1.556426	0.1277
Cash Reserve Ratio	-44.05214	10.07782	-3.3074	0.0021
Open Market Operations	-0.785850	0.107469	-6.4198	0.0000
Inflation Rate	-0.012895	0.094861	1.2698	0.2122
Dependent Variable: Credit Supply				

Source: Research Findings (2016).

Cash Reserve Ratio (t= -3.3074, p= 0.0021) and Open Market Operations (t= -6.4198, p= 0.0000) had a negative effect on credit supply and are statistically significant while Inflation Rate (t= 1.2698, p= 0.2122) and Central Bank Rate (t=0.793913 , p=0.4323) had a positive effect on credit supply but this effect was statistically insignificant.

The equation for the regression model is expressed as:

$$\mathbf{Y = \alpha + \beta\,1X1 + \beta\,2X2 + \beta\,3X3 + \beta\,4X4 + \varepsilon}$$

$$\mathbf{Y = 9.664689 + 3.438005X_1 - 44.05214X_2 - 0.785850X_3 - 0.012895X_4}$$

Where;

Y= Credit supply

X1= Central Bank Rate

X2= Cash Reserve Ratio

X3= Open Market Operations

X4= Inflation

The constant value of 9.664689 implies that credit supply would be 9.664689 if there was no monetary policy in place. Increase in Central Bank Rate by one unit would result to increase in credit supply by 3.438005. One unit increase in Cash Reserve Ratio, Open Market Operations and Inflation would result to decrease in credit supply by 44.05214, 0.785850 and 0.012895 respectively. For the purpose of estimating the regression equation, the researcher estimated the error term to be zero.

4.6 Interpretation of the Findings

The objective of the research was to establish the effects of monetary policy on credit supply in Kenya. Credit supply was measured using the gross loans advanced by commercial banks. Monetary policy was measured using determinant variables such as CBR, inflation rate, CRR and OMO. The model established that 76% (R^2= 0.761160) variation of the dependent variable (Credit supply) was explained by the independent variables (OMO, CBR, CRR and Inflation) in the long run. The study also recorded an adjusted R-Square value of 0.736664 implying that monetary policy accounts for 73.66% of the total changes in credit supply in the long run .The study established that CRR, OMO and Inflation has a negative effect on the credit supply while Central Bank Rate had a positive effect.

These findings both corroborate and contradict existing literature. Wanjaiya (2015) sought to establish the effects of monetary policy on bank lending rate in Kenya and found out that CBR and the TBR were significant monetary policy instruments in explaining the bank lending rate. Cash reserve requirement was found to have a negative but insignificant effect on banks' lending rate. Kimani (2013) carried out a study on the effect of monetary policies on the lending behavior of commercial banks in Kenya and

established that CBR, CRR, OMO and uncertainty caused by likely results produced by monetary policy variations guides the lending behavior. Njiru (2014) investigated whether commercial banks were actually responsive to monetary policy and found out that there was long run relationship between lending rates and central bank rates and inflation rates. Inflation rates were found to be inversely related lending rates to decrease in the short run. A statistically significant relationship was also established between lending rates and exchange rates.

The research findings corroborate with the existing theory of monetary theory and policy which states that in the long run monetary relationships is provided by investigating average rates of inflations , output growth and growth rates of many measures of money over a long period of time in different countries. From this theory 2 deductions developed , the first being that the correlation between inflation and growth rate of money supply is approximately 1, the second conclusion was there is no correlation between either inflation and the rate of growth rate of real output.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter outlines a summary of the study findings, discussions and conclusions established on the study objectives. The study then discusses the main limitations of the study and then the recommendations for both the research and for policy and practice.

5.2 Summary of Findings

The objective of the research was to establish the effect of monetary policy on credit supply in Kenya. The secondary data collected based on eleven year period (2005-2015). Eviews data analysis software and Microsoft's Excel (2003) were used to do the analysis. Descriptive statistics such as standard deviation and mean were used to define the trend of the variables. Stationarity and Unit root testing was also conducted on the study variables. Breusch Godfrey Serial Correlation LM test and regression analysis was used to establish the effect of monetary policy on credit supply in Kenya.

Credit supply was measured in terms of the gross loans advanced by commercial banks while CBR, CRR, OMO and inflation were used as instruments of monetary policy. The study established that 76% (R^2= 0.761160) variation of the dependent variable (Credit supply) was explained by variations in the independent variables (OMO, CBR, CRR and Inflation) in the long run. The study also recorded an adjusted R-Square value of 0.736664 implying that monetary policy accounts for 73.66% of the total changes in credit supply in the long run. The study established that central bank rate had a positive effect on the credit supply while cash reserve ratio, open market operations and Inflation had a negative effect.

The study also established that the findings of the study both supports and contradicts existing literature. For instance, Wanjaiya (2015) found out that CBR and the TBR were significant monetary policy instruments in explaining the bank lending rate and cash reserve requirement was found to have a negative but insignificant effect on banks' lending rate. Kimani (2013) on the other hand established that CBR, CRR, OMO and uncertainty caused by possible outcomes caused by monetary policy changes impacts lending behavior Njiru (2014) found out that there was long run relationship between lending rates and central bank rates and inflation rates.

The study corroborates with the monetary theory and Policy which states that monetary relationship are provided by observing average rates of inflation, output growth and growth rates of many measures of money over a long period of time in many countries. Out of their analysis two key inferences developed, one was that the correlation between growth rate money supply and inflation and is more or less 1.The second deduction was that there is no correlation between either money growth or inflation and the growth rate of real output.

5.3 Conclusions

The conclusion in this study is that there is a strong relationship between monetary policy and credit supply. The study also concludes that central bank rate had a positive effect on credit supply while CRR, OMO and Inflation had a negative effect. Further, the study also concludes that the monetary policy instruments used in this study collectively accounts for 73.66% of the total changes in gross loans advanced by commercial banks in Kenya.

It was found out that monetary policy is tightened by increasing the CRR and OMO.This affects credit supply by a greater extent, reserve requirements cause enhanced liquidity problems for commercial banks. While increase in the Treasury bill rates (OMO) cause banks to purchase securities thus reducing the liquidity.

In the Long Run 76% variation in credit supply is influenced by monetary policy instruments (OMO, CBR, CRR and Inflation). The study also showed that banks are greatly involved in OMO. This influence the total liquidity available to the banks hence affects lending behavior.

5.4 Recommendations

The study found that CRR, OMO and inflation had a negative effect on the gross loans advanced by commercial banks in Kenya. The research recommends that the CBK should come up with monitoring and evaluation programmes of monitoring how credit supply is influenced by various monetary policy instruments.

Central bank should streamline the economic environment in which banks operate in by ensuring the Cash reserve ratio, Open Market Operation and Inflation are constant so as enable the borrower's access credit for economic growth, since these variables (CRR, OMO and Inflation) have a negative effect on credit supply.

The existing theory of monetary theory and policy had two conclusions that the long run monetary relationship was explained by inflation output growth and growth rates of many measures of money over a long period in many countries, this theory should be expanded to cover the effects of monetary policy instruments on money for different countries .

5.5 Limitations of the Study

The study narrowed its scope to commercial banks operating in Kenya. This implies that the findings of this study are limited to the commercial banks and cannot be adequately extrapolated to non-banking institutions or banking institutions in other countries since the business environment differ additionally there was a presumption that the relationship of the variables is linear.

Further, the study heavily relied on the impact of monetary policy instruments such as CBR, CRR, OMO and inflation. These variables could only account for 73.66% of the credit. These findings are therefore skewed towards monetary policy instruments and how they affect credit supply.

Lastly, the study was limited to an eleven year study period (2005-2015). This period of time might not be adequate to evaluate the actual effect of monetary policy instruments on the supply of credit in the economy. The results might be different if a longer period of time was considered.

5.6 Suggestions for Future Studies

More studies should be carried out to examine the effect of monetary policy on money supply to capture non-banking institutions and banking institutions. The research had a presumption that the relationship of the variables was linear therefore more studies should carried out explore nonlinear relationship on the variables of study.

The monetary instruments used in this study (inflation rate, cash reserve ratio and open market operations) could only account for 73.66% of the total variance in credit supply in the Kenyan economy. A future study on the factors accounting for the remaining 26.34%

of credit supply in Kenya should be initiated. A further research can focus on the effect of both fiscal and monetary policy on credit supply.

Lastly, the study should be replicated in future but considering a longer period of time such 40 years as this might greatly influence the conclusions drawn and the recommendations made for policy change. The variables used were proxies which are bound to change with time. This will also make the findings more reliable.

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APPENDICES

APPENDIX I: Commercial banks in Kenya as at 31st December 2015

1	African Banking Corporation Ltd.
2	Bank of Africa (K) Ltd.
3	Bank of Baroda (K) Ltd.
4	Bank of India
5	Barclays Bank of Kenya Ltd.
6	CFC Stanbic Bank Ltd.
7	Charterhouse Bank Ltd.
8	Chase Bank (K) Ltd.
9	Citibank N.A. Kenya
10	Commercial Bank of Africa Ltd.
11	Consolidated Bank of Kenya Ltd.
12	Co-operative Bank of Kenya Ltd.
13	Credit Bank Ltd.
14	Development Bank of Kenya Ltd.
15	Diamond Trust Bank Kenya Ltd.
16	Dubai Bank Kenya Ltd
17	Ecobank Ltd
18	Equatorial Commercial Bank Ltd.
19	Equity Bank Ltd.
20	Family Bank Ltd.
21	Fidelity Commercial Bank Ltd.
22	Fina Bank Ltd. (Acquired by GT Bank Kenya in 2013)
23	First Community Bank
24	Giro Commercial Bank Ltd.
25	Guardian Bank Ltd.
26	Gulf Africa Bank (K) Ltd
27	Habib Bank A.G. Zurich
28	Habib Bank Ltd.
29	Imperial Bank Ltd.
30	Investment & Mortgages Bank Ltd.
31	Jamii Bora Bank Ltd.

32	Kenya Commercial Bank Ltd.
33	K-Rep Bank Ltd.
34	Middle East Bank (K) Ltd.
35	National Bank of Kenya Ltd.
36	NIC Bank Ltd.
37	Oriental Commercial Bank Ltd.
38	Paramount Universal Bank Ltd.
39	Prime Bank Ltd.
40	Standard Chartered Bank (K) Ltd.
41	Trans-National Bank Ltd.
42	UBA Kenya Bank Limited
43	Victoria Commercial Bank Ltd.

Source: Central Bank of Kenya (2015)

APPENDIX II: RAW DATA

		Credit Supply	Inflation	OMO	CBR	CRR
2005	Quarter 1	293.40	14.32	4.4342	0.0807	0.0600
	Quarter 2	317.91	14.24	4.485	0.0807	0.0600
	Quarter 3	354.00	7.63	4.5145	0.0807	0.0600
	Quarter 4	417.30	4.27	4.2324	0.0807	0.0600
2006	Quarter 1	403.40	8.87	4.375	0.0807	0.0600
	Quarter 2	363.68	4.73	3.6955	0.0807	0.0600
	Quarter 3	448.70	5	3.3739	0.0950	0.0600
	Quarter 4	473.10	7.06	3.9332	0.1000	0.0600
2007	Quarter 1	464.45	3.28	4.165	0.1000	0.0600
	Quarter 2	417.49	2.63	5.174	0.0850	0.0600
	Quarter 3	437.50	5.44	5.53	0.0850	0.0600
	Quarter 4	533.80	5.72	5.589	0.0900	0.0600
2008	Quarter 1	558.30	10.63	5.384	0.0900	0.0600
	Quarter 2	555.06	17.53	6.6	0.0900	0.0600
	Quarter 3	570.00	18.06	6.849	0.0900	0.0600
	Quarter 4	670.30	18.7	6.698	0.0850	0.0500
2009	Quarter 1	673.80	14.17	4.903	0.0825	0.0500
	Quarter 2	668.58	10.21	4.677	0.0800	0.0500
	Quarter 3	684.00	7.51	4.417	0.0775	0.0450
	Quarter 4	757.70	5.65	4.464	0.0700	0.0450
2010	Quarter 1	786.59	5.03	4.516	0.0675	0.0450
	Quarter 2	799.20	3.67	4.485	0.0675	0.0450
	Quarter 3	879.00	3.33	4.52	0.0600	0.0450
	Quarter 4	914.90	3.84	3.449	0.0600	0.0450
2011	Quarter 1	873.30	7.05	2.906	0.0600	0.0450
	Quarter 2	1,100.00	13.16	2.382	0.0625	0.0475
	Quarter 3	1,200.00	16.5	1.894	0.0700	0.0475

	Quarter 4	1,191.00	19.18	1.415	0.1800	0.0525
2012	Quarter 1	1,200.00	16.87	2.611	0.1800	0.0525
	Quarter 2	1,300.00	11.78	2.531	0.1800	0.0525
	Quarter 3	1,320.00	6.38	2.228	0.1300	0.0525
	Quarter 4	1,330.40	3.53	0.827	0.1100	0.0525
2013	Quarter 1	1,400.00	4.07	0.7	0.0950	0.0525
	Quarter 2	1,500.00	4.37	0.755	0.0850	0.0525
	Quarter 3	1,520.00	6.99	1.049	0.0850	0.0525
	Quarter 4	1,578.80	7.42	0.227	0.0850	0.0525
2014	Quarter 1	1,700.00	6.78	1.54	0.0850	0.0525
	Quarter 2	1,780.00	7	1.863	0.0850	0.0525
	Quarter 3	1,910.00	7.54	1.809	0.0850	0.0525
	Quarter 4	1,940.78	6.18	1.825	0.0850	0.0525
2015	Quarter 1	2,040.00	5.82	1.948	0.0850	0.0525
	Quarter 2	2,170.00	6.99	2.263	0.1000	0.0525
	Quarter 3	2,320.00	6.14	2.2	0.1150	0.0525
	Quarter 4	2,165.30	7.35	1.897	0.1150	0.0525

Source: Central Bank of Kenya Publications