THE RELATIONSHIP BETWEEN MONETARY POLICY AND GROSS DOMESTIC PRODUCT IN KENYA

BY

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DECLARATION

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

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This research project has been submitted for examination with my approval as supervisor on behalf of School of Business, University of Nairobi.

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ABBREVIATIONS

A.S – Average Supply

CBK – Central Bank of Kenya

CBR – Central Bank Rate

EXPO - Rate of Growth of Exports

GDP – Gross Domestic Product

GY - Ratio of Government Expenditure to GDP

IS - Investment Saving

IY - Ratio of Aggregate Investment to GDP

KNBS – Kenya National Bureau of Statistics

LM - Liquidity Preference Money Supply

M1 – Narrow Money (Coins and Notes in circulation in the economy)

M2 – Money Stock (M1 plus Short-term time deposits)

M3 – Broad Money (M2 plus Long-term time deposits)

M.P.C – Monetary Policy Committee

N.S.E - Nairobi Securities Exchange

OECD - Organization for Economic Co-operation and Development

U.S - United States

ABSTRACT

This study sought to establish the relationship between Monetary Policy and GDP in Kenya. GDP no doubt is affected by the Monetary Policy of the state. Among the monetary policies that the CBK adopts in intervening the Kenyan economy, Open Market Operation is the one which is most frequently used due to its easily observable effect and relatively low cost during operation. Via buying and selling treasuries the C.B.K adjusts the money supply in the market and manipulates the economy. In recent years, a modern practice of this policy is used by the CBK which targets the money market funds rate to control the money supply. The research papers of various authors have been studied in this regard to prove the Hypothesis and after in depth analysis by applying Regression Analysis technique it has been observed that the relationship between the two exists. The data of past 10 years of Kenya has been used for driving the conclusion. The study proved that the Growth in Money Supply greatly affects the GDP of an economy, obviously various unknown factors also affects the GDP.

This research shows that Monetary Policy has a Positive relationship with GDP although the relationship is not that significant. This positive relationship can be explained by the fact that the level of Money Supply in the economy influences the purchasing power of firms, Individuals and also the Expenditure of the Government. The research further shows that the Rate of Growth of Labour, EXPO, Government Expenditure and Aggregate Investment also do not have a significant determinant on the rate of growth of GDP. In addition, Money Supply the variable of interest was found not to be a significant determinant of GDP in Kenya this is because there are structural weaknesses in the financial sector such as weak legal framework, poor governance, and insufficient

infrastructure, which have contributed to high interest rate spreads, inadequate financial intermediation and heightened risks and therefore hamper the transmission mechanism of monetary policy. This is also because when the CBK is targeting a certain interest rate (repo rate) to control the money Supply it is the GDP that influences the level of Money Supply in circulation and not Money Supply affecting the output.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Growth in Money Supply has a huge impact on GDP. GDP is defined as the total value of goods and services produced within a country. Kenya's economy is market-based, with a few state-owned infrastructure enterprises, and maintains a liberalized external trade system. The country is generally perceived as Eastern and central Africa's hub for Financial, Communication and Transportation services. In the period (2006 to 2010) Kenya's GDP was looking up with the exception of the years 2008 and 2009 that were affected by the post election violence. The GDP has been looking up mainly due to expansion in tourism, telecommunications, transport, construction and a recovery in agriculture. These improvements are supported by a large pool of English speaking professional workers. There is a high level of computer literacy, especially among the youth. The government, generally perceived as investment friendly, has enacted several regulatory reforms to simplify both foreign and local investment. An increasingly significant portion of Kenya's foreign inflows is from remittances by non-resident Kenyans who work in the US, Middle East, Europe, Asia and Antarctica. Compared to its neighbors, Kenya has a well-developed social and physical infrastructure. It is considered the main alternative location to South Africa, for major corporations seeking entry into the African continent.

1.1.1 Monetary Policy

Monetary policy is the process by which the government, central bank, or monetary authority of a country controls; the supply of money, availability of money and the cost of money or rate of interest, in order to attain a set of objectives oriented towards the growth and stability of the economy. Monetary policy rests on the relationship between the rates of interest in an economy, that is the price at which money can be borrowed, and the total supply of money. Monetary policy uses a variety of tools to control one or both of these, to influence outcomes like economic growth, inflation, exchange rates with other currencies and unemployment.

Monetary policy is referred to as either being an expansionary policy, or a contractionary policy. An expansionary policy increases the total supply of money in the economy rapidly or decreases the interest rate. When the central bank wants to carry out an expansionary monetary policy, it goes to the security market to buy government bonds with money, thus increasing the money stock or the money in circulation in the economy. Expansionary policy is traditionally used to combat unemployment in a recession. A contractionary policy on the other hand decreases the total money supply or increases it only slowly, or raises the interest rate. When the central bank wants to implement a contractionary monetary policy, it goes to the security market to sell government bonds for money thus decreasing the money stock or the money in circulation in the economy. Contractionary policy is used to combat inflation. Furthermore, monetary policies are described as follows: Accommodative, if the interest rate set by the central monetary authority is intended to create economic growth; Neutral, if it is intended neither to create growth nor combat inflation; or tight if it is intended to reduce inflation.

Mallik (2001) examine the relationship between inflation and GDP growth for four South Asian countries i.e. Bangladesh, India, Pakistan and Sri Lanka. Their results provided the evidence of a long-run positive relationship between GDP growth rate and inflation for all four countries. They also concluded that moderate inflation is helpful to growth, but faster economic growth feeds back into inflation. Qayyum (2006) investigated the linkage between the excess money supply growth and inflation in Pakistan. He also examined whether inflation is a monetary phenomenon? His results from the correlation analysis indicated that there is a positive association between money growth and inflation. The money supply growth at first-round affects real GDP growth and at the second round it affects inflation in Pakistan. The important finding from the analysis is that the excess money supply growth has been an important contributor to the rise in inflation in Pakistan during the study period.

Kuttner and Mosser (2002) indicated that monetary policy affects the economy through several transmission mechanisms such as the interest rate channel, the exchange rate channel, Tobin's q theory, the wealth effect, the monetarist channel, and the credit channels including the bank lending channel and the balance-sheet channel. But mainly monetary policy plays its role in controlling inflation through money supply and interest rate. Money Supply (M2) would affect real GDP positively because an increase in real quantity of money causes the nominal interest rate to decline and real output to rise (Hsing, 2005). Taylor (1995) emphasized the importance of the interest rate channel in this regard. Hsing (2005) examined an annual sample during 1959-2001 to find possible relationships between real GDP for Venezuela and selected macroeconomic variables. According to his

study more real M2, more government deficit spending, real depreciation, a higher expected inflation rate, and higher world oil price would help raise real GDP in Venezuela.

1.1.2 Gross Domestic Product (GDP)

GDP is defined as the value of all goods and services produced within the geographic territory of an economy in a given interval, such as a year. A well known formula for GDP has been stated as the total market value of all final goods and services produced in a country in a given year, equal to total consumer, investment and government spending, plus the value of exports, minus the value of imports.GDP is the most commonly known measure of national income, output, and growth. GDP is of two types. Nominal GDP is a measure of money spent. Real GDP corrects the gross nominal GDP figure for inflation, making real GDP more useful for historical comparison. Nominal GDP is sometimes called money GDP, and real GDP is sometimes called inflation- corrected GDP or constant price GDP.

1.1.3 Monetary Policy and GDP (The Expected Relationship)

Monetary policy plays a key role in determining inflation rates. Monetary policy rests on the relationship between the rates of interest in an economy, that is the price at which money can be borrowed, and the total supply of money. Monetary policy uses a variety of tools to control one or both of these, to influence outcomes like economic growth, inflation, exchange rates with other currencies and unemployment. Various studies provide the empirical evidence on the relationship between inflation and growth. Lucas (1973) held that inflation in any economy induces uncertainty in economy and increased economic

uncertainty negatively affect the output growth. Inflation overall affects the growth of the country, the financial sector development and the vulnerable poor segment of the population.

There is clear consensus that even moderate levels of inflation, damage real growth. Kremer' et al. (2008) examined the impact of inflation on long-term economic growth for a panel of 63 industrial and non-industrial countries. Their results revealed that inflation obstructs growth if it exceeds thresholds of 2% for industrial and 12% for non-industrial countries. However below these thresholds, effect of inflation on growth remained significantly positive.

Relationship between inflation, interest rate, and growth has been the consideration of researchers since very long. An examination of this relationship in USA shows that the U.S. inflation of the 1970s and 80s can be fully accounted for by the corresponding increase in M2 (or M1) growth rates, and the return to relatively low inflation rates in the 1990s can be explained by the correspondingly low average rate of money supply growth in that decade. Inflation in the 90s was about 3.5 percentage points lower than its average in the 70s and 80s, and the growth rate of M2 was about 5 percentage points lower (Alvarez, 2001).

All of the above discussion shows that there is a non-linear relationship between inflation and economic growth. However inflation does effect economic growth directly. Monetary Policy variables such as Money Supply M2 and Interest rates along with inflation also effect the economic growth in economy.

1.1.4 The Central Bank of Kenya

The Central Bank of Kenya principal objective is formulation and implementation of monetary policy directed towards achieving and maintaining stability in the general level of prices. Therefore its aim is to achieve stable prices – that is low inflation - and to sustain the value of the Kenya shilling. Monetary policy is conducted through monetary programming, with the broad money as the intermediate target. Reserve money, comprising bank deposits at CBK and currency outside bank, serves as the operating target.

The Central Bank of Kenya uses the following tools to implement monetary policy; Open Market Operations: Through open market operations, the Bank buys or sells securities in the secondary market in order to achieve a desired level of Bank reserves. Alternatively, the Bank injects money into the economy through buying securities in exchange for money stock. As the law of supply and demand takes effect to determine the cost of credit (interest rates) in the money market, money stock adjusts itself to the desired level. This process influences availability of money in the economy. Through discount window operations; The Bank as a lender of last resort provides secured short-term loans to commercial banks on overnight basis at punitive rates, thus restricting banks to seek funding in the market resorting to Central Bank funds only as a last solution. The discount rate is set by the Central Bank to reflect the monetary policy objectives. Through Reserve Requirements; The Central Bank is empowered by the law to retain a certain proportion of commercial banks' deposits to be held as non-interest bearing reserves at the Central Bank. An increase in reserve requirements restricts commercial banks ability to expand bank credit and the reverse is regarded as credit easing.

1.2 Statement of the Problem

The relationship between inflation and growth can be expected to depend on whether inflation is initially high or low. It is sometimes argued that the estimated negative correlation between inflation and growth is due to the inclusion of high inflation countries and that it is much harder to find such a negative relationship among countries with relatively low inflation. However, researches by Andrés and Hernando (1999), focusing on OECD countries, find that even in low or moderate inflation countries, there is evidence of a robust negative relationship between inflation and output in the long run.

Ghosh and Phillips (1998)) suggest that for very low inflation rates, and within a very narrow range, inflation and growth may be positively correlated. Yi Wen (2009) illustrates that if a relationship does exist between monetary policy and GDP it usually manifests itself after 3 years after an initial acceleration of base growth. Such a long lag suggests that an observed and expected increase in the monetary base may not have a very large effect on output growth.

Rotich et al (2006) review the conduct of monetary policy and the Central Bank rule-based behaviour in Kenya. Using both backward and forward-looking policy rules with appropriate modification to take into account the characteristics in developing countries, they test whether the Central Bank of Kenya (CBK) reacts to changes in inflation, GDP growth and the exchange rate in a consistent and predictable fashion. Their results indicate that during the period after liberalization (1997-2006), CBK used monetary aggregates as a main policy instrument in conducting monetary policy. The estimate of the coefficient on the inflation gap implies that a rise in expected annual inflation of one percent induces the CBK to lower the expansion of broad money (M3) by 4.2 percent. Similarly, the

coefficient of inflation with respect to repo rate is 2.4 which is consistent with Taylor's non-accommodative policy. The results indicate that CBK followed a rule to target inflation with some allowance for output stabilization.

Olweny and Mambo (2012) explore the relationship between monetary policy and private sector investment in Kenya by tracing the effects of monetary policy through the transmission mechanism to explain how investment responded to changes in monetary policy. They acknowledge that increasing the mobilization of domestic resources (in particular, savings) for investment can aid economic development and sustainable economic growth in Kenya.

Kevin (2006) examines the impact of a monetary policy shock on output, prices, and the nominal effective exchange rate for Kenya using data during 1997–2005. Based on techniques commonly used in the vector auto - regression literature, the main results suggest that an exogenous increase in the short-term interest rate tends to be followed by a decline in prices and appreciation in the nominal exchange rate, but has insignificant impact on output. Moreover, the paper finds that variations in the short-term interest rate account for significant fluctuations in the nominal exchange rate and prices, while accounting little for output fluctuations.

Nyamongo et al (2009) investigate the monetary-fiscal policy mix or interactions in Kenya during the period 1979 to 2007. From the study it is found that the fiscal and monetary policy displayed both procyclical and countercyclical behaviour. Tests on the fiscal-monetary policy mix reveal that the fiscal and monetary policies were coordinated on a number of years, however, there is also evidence of absence of coordination in some years during the same period. Further evidence show monetary policy dominance in Kenya over

the period which suggests that although there are a number of years when policies were not coordinated the situation is not potentially dangerous for the economy.

Although there have been several empirical studies on the relationship between monetary policy and growth Fischer (1991), there has been very little theoretical work in the area of Monetary Policy and GDP. In light of the above mentioned views, this study seeks to establish the relationship between Monetary policy and GDP because in previous researches they have been studied separately. The aforementioned views raise critical questions for this research; how does monetary policy impact GDP? What is the relationship between monetary policy and GDP?

1.3 The Objective of the Study

To establish the relationship between monetary policy and GDP in Kenya.

1.4 Significance of the Study

The Central Bank of Kenya being the principle authority for the country's financial matters will have an interest in the study. CBK's principal objective is formulation and implementation of monetary policy directed towards achieving and maintaining stability in the general level of prices, growth and employment, Promoting the stability of the country's financial system and managing the production and distribution of the nation's currency.

Local borrowers, they make borrowing decisions based on the prevailing interest rates on loans. If interest rates are high then there will be less borrowers and hence low development activities. Central banks' monetary policy decisions influence commercial

banks' refinancing costs; banks are inclined to pass the changes on to their customers. If financing costs diminish, investment and consumer spending rise, contributing to an acceleration of growth and inflation. However, following an increase in interest rates, the risk that some borrowers cannot pay back their loans in due course may increase so much that banks will not grant loans to these borrowers. As a result, borrowers would be forced to cut back on planned expenditure.

Investors in the Securities exchange are interested the level of money supply in the economy. Hence they will be interested in the type of monetary policy being implemented by the CBK. If CBK implements an expansionary monetary policy there is a directly impact on the interest rate. When the CBK buys securities in the open market, it causes the price of these securities to rise. The CBK's repo rate is an interest rate, so lowering it is essentially lowering interest rates. If the CBK instead decides to lower reserve requirements, this will cause banks to have an increase in the amount of money they can invest. This causes the price of investments such as bonds to rise and hence investors will be risk averse.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter undertakes to give a historical account of the relationship between monetary policy and GDP as enumerated by various studies. A relationship between monetary policy and GDP is fairly well recognized but over the years, economists have differed over the effectiveness of a country's monetary policy on its economy with some arguing that there is a positive relationship between monetary policy and GDP others however, state that a negative relationship exists whilst others are indifferent. This chapter attempts to look at the various views about this relationship. It also focuses on the various types of monetary policies that the CBK uses to tame inflation and also the various variables that influence GDP.

2.2 Review of Theories

2.2.1 Keynesian Theory

Tom (2003) indicates that Keynesian economists subscribe to the views of John Maynard Keynes, a famous economist of the twentieth century. They have a different view of the workings of the labour market, and would argue that it doesn't work perfectly. They believe that wages are 'sticky downwards'. This means that any unemployment may not lead to wages falling. This in turn means that the unemployed do not get re-employed. Getting rid of unemployment therefore means the government intervening to boost demand enough to get those people employed again. They argue that the long run and short run AS curves will be the same and that to reduce unemployment; the government must use

reflationary policies to boost the level of demand. The difference between Capitalists and Keynesians can be summed up therefore in their approach. The Capitalists argue for 'laissez-faire' or non-intervention, whereas Keynesians argue for active intervention by the government.

2.2.2 Capitalism Theory

Tom (2003) describes Adam Smith, as a Scot and a philosopher who lived from 1723 to 1790, and is considered the founder of modern economics. In Smith's time, philosophy was an all-encompassing study of human society in addition to an inquiry into the nature and meaning of existence. Deep examination of the world of business affairs led Smith to the conclusion that collectively the individuals in society, each acting in his or her own self-interest, manage to produce and purchase the goods and services that they as a society require. He called the mechanism by which this self-regulation occurs "the invisible hand," in his groundbreaking book, *The Wealth of Nations*, published in 1776, the year of America's Declaration of Independence. While Smith couldn't prove the existence of this "hand" (it was, after all, invisible) he presented many instances of its working in society. Essentially, the butcher, the baker, and the candlestick maker individually go about their business. Each produces the amount of meat, bread, and candlesticks he judges to be correct. Each buys the amount of meat, bread, and candlesticks that his household needs. And all of this happens without consulting each other. In other words, it's the free market economy in action.

Tom (2003) states that in Smith making this discovery he founded what is known as classical economics. The key doctrine of classical economics is that a *laissez-faire* attitude

by government toward the marketplace will allow the "invisible hand" to guide everyone in their economic endeavours, create the greatest good for the greatest number of people, and generate economic growth.

2.2.3 Marx Theory

Tom (2003) describes Karl Marx, as a German economist and political scientist who lived from 1818 to 1883, and looked at capitalism from a more pessimistic and revolutionary viewpoint. Where Adam Smith saw harmony and growth, Marx saw instability, struggle, and decline. Marx believed that once the capitalist (the guy with the money and the organizational skills to build a factory) has set up the means of production, all value is created by the labour involved in producing whatever is being produced. In Marx's view, presented in his 1867 tome *Das Kapital* (*Capital*), a capitalist's profits come from exploiting labour—that is, from underpaying workers for the value that they are actually creating. For this reason, Marx couldn't abide the notion of a profit-oriented organization. This situation of management exploiting labour underlies the class struggle that Marx saw at the heart of capitalism, and he predicted that that struggle would ultimately destroy capitalism. To Marx, class struggle is not only inherent in the system—because of the tension between capitalists and workers—but also intensifies over time. The struggle intensifies as businesses eventually become larger and larger, due to the inherent efficiency of large outfits and their ability to withstand the cyclical crises that plague the system. Ultimately, in Marx's view, society moves to a two-class system of a few wealthy capitalists and a mass of underpaid, underprivileged workers.

Tom (2003) states that Marx predicted the fall of capitalism and movement of society toward communism, in which "the people" (that is, the workers) own the means of production and thus have no need to exploit labour for profit. Clearly, Marx's thinking had a tremendous impact on many societies, particularly on the USSR (Union of Soviet Socialist Republics) in the twentieth century. In practice, however, two events have undermined Marx's theories. First, in socialist, centrally planned economies have proven far less efficient at producing and delivering goods and services—that is, at creating the greatest good for the greatest number of people—than capitalist systems. Secondly, workers' incomes have actually risen over time, which undercuts the theory that labour is exploited in the name of profit. If workers' incomes are rising, they are clearly sharing in the growth of the economy. In a very real sense, they are sharing in the profits.

2.3 Review of Empirical Studies

Bruno and Easterly (1998) demonstrated that a number of economies have experienced sustained inflations of 20 percent to 30 percent without suffering any apparently major adverse consequences. However, once the rate of inflation exceeds some critical level (which Bruno and Easterly estimated to be about 40 percent), significant declines occur in the level of real activity.

Barro (1995) very precisely examined the five-year average data of 100 countries over the period of 1960-90. His result shows that an increase in average inflation by 10 percentage points per year would slow the growth rate of the real per capita GDP by 0.2-0.3 percentage points per year. He argued that although the adverse influence of inflation on growth appeared small, the long-term effects on standards of living were actually

substantial. Nevertheless, some other empirical and theoretical studies argued that the inflation-growth relationship is fragile. Maghyereh (2003) also reported that the effect of inflation rate on the economic growth is strongly negative and statistically significant.

Mundell (1965) and Tobin (1965) predict a positive relationship between the rate of inflation and the rate of capital accumulation, which in turn, implies a positive relationship to the rate of economic growth. They argue that since money and capital are substitutable, an increase in the rate of inflation increases capital accumulation by shifting portfolio from money to capital, and thereby, stimulating a higher rate of economic growth. Gregorio (1996).

Ahmed and Mortaza (2005) evaluated the concept that moderate and stable inflation rates promote the development process of a country, and hence economic growth. Using annual data set on real GDP and CPI of Bangladesh for the period of 1980 to 2005, they demonstrate statistically significant long-run negative relationship between inflation and economic growth for the country as indicated by a statistically significant long-run negative relationship between CPI and real GDP. Also as a threshold they suggested 6% of inflation above which inflation adversely affects economic growth.

However, Johanson (1967) found no conclusive empirical evidence for either a positive or a negative association between the two variables. Therefore, a popular view in the 1960s was that the effect of inflation on growth was not particularly important. Also Fischer and Modigliani (1978) suggest a negative and nonlinear relationship between the rate of inflation and economic growth through the new growth theory mechanisms (Malla, 1997). They mention that inflation restricts economic growth largely by reducing the efficiency of investment rather than its level. Fisher (1993) also found negative associations between

inflation and growth for a large set of countries. Dewan and Hussein (2001) found in a sample of 41 middle-income developing countries including Fiji, that inflation was negatively correlated to growth. While examining relationship of inflation and growth in Fiji, Dewan et al (1999) found that changes in the difference between actual GDP and potential GDP (output gap) had a bearing on Fiji's inflation outcome.

Faria and Carneiro (2001) investigated the relationship between inflation and economic growth in the context of Brazil which has been experiencing persistent high inflation until recent. Analyzing a bivariate time series model with annual data for the period between 1980 and 1995, they found that although there exist a negative relationship between inflation and economic growth in the short-run, inflation does not affect economic growth in the long-run.

Mallik (2001) examine the relationship between inflation and GDP growth for four South Asian countries i.e. Bangladesh, India, Pakistan and Sri Lanka. Their results provided the evidence of a long-run positive relationship between GDP growth rate and inflation for all four countries. They also concluded that moderate inflation is helpful to growth, but faster economic growth feeds back into inflation.

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quantity of money causes the nominal interest rate to decline and real output to rise (Hsing, 2005). Taylor (1995) emphasized the importance of the interest rate channel in this regard. Hsing (2005) examined an annual sample during 1959-2001 to find possible relationships between real GDP for Venezuela and selected macroeconomic variables. According to his study more real M2, more government deficit spending, real depreciation, a higher expected inflation rate, and higher world oil price would help raise real GDP in Venezuela. Qayyum (2006) investigated the linkage between the excess money supply growth and inflation in Pakistan. Also he examined that is inflation a monetary phenomenon? His results from the correlation analysis indicated that there is a positive association between money growth and inflation. The money supply growth at first-round affects real GDP growth and at the second round it affects inflation in Pakistan. The important finding from the analysis is that the excess money supply growth has been an important contributor to the rise in inflation in Pakistan during the study period. This supports the monetarist proposition that inflation in Pakistan is a monetary phenomenon.

Mohsin and Axel (2005) concluded an inverse relationship between inflation and real per capita GDP of Pakistan. When inflation was 8 percent on average during 1978-1991, per capita growth averaged 3 percent but when inflation rose to 11% during 1992 and 1997 real per capita growth averaged only 1 percent and it further recovered as inflation fell to 5 percent. Further this study concludes that the direct inflation-growth connection suggests a threshold in the range of 4 to percent, while the inflation-financial development connection suggests a lower threshold of 3–6 percent. Paul et al (1997) also report a negative relationship between economic growth and inflation for Pakistan.

Fry (1988) and Gleb (1989) find, from pooled cross-economy time series data, a consistently positive and significant relationship between economic growth and the real rate of interest. In order to separate the effects of inflation and real interest rates on growth, World Bank conducted a study. This study provides evidence from a sample of twenty countries, for the impact of the real interest rate and the inflation rate on the growth rate. The real interest rate has a statistically significant and positive impact on growth. But when inflation is included, the coefficient for the real interest rate is no longer statistically significant, while the negative coefficient on the rate of inflation is. This suggests that the positive relation between real rate of interest and growth was actually reflecting a negative relation between inflation and growth in financially repressed regimes, where nominal interest rates are kept fixed (World Bank, 1993).

M1: "Narrow money includes bills and checkable deposits with high liquidity. These are held by the people for frequent exchanges with cash. M2 and M3 refer to "broad money" as termed deposits with the financial institutions. Shoaibk (2010). Increase in money supply leads to inflation. The currency loses its worth against the goods and services produced and lower the purchasing power. Contractionary monetary policy though controls the inflation but also dampens the economic activity. The investment slows down by individuals and firms. An insight into monetary policy allows making investment decisions considering the cost of capital. (Shoaibk, 2010).

The other tools of monetary policy like open market operation and discount rates are widely used by the central bank. Minimum reserve requirement conditions also help control the money supply. Shoaibk (2010). Monetary policy may be inflationary or deflationary depending upon the economic condition of the country. Contractionary policy

is enforced to squeeze down the money supply to curb inflation and expansionary policy is to stimulate economic activity to combat unemployment in recession (Hall, 2010).

In conclusion, the above studies show that Monetary Policy variables such as Money Supply M2 and Interest rates along with inflation affect the economic growth in a country. This study therefore seeks to find out if there is a relationship between Monetary Policy and GDP since other studies such (Rotich et al, 2006 and Oduor J et al, 2010) have only focused on either Monetary Policy or GDP in Kenya and have not established a relationship between the two variables of interest.

2.4 Monetary Policies

2.4.1 Inflation Targeting

Coy (2005) defines Inflation targeting as an economic policy in which the central bank estimates and makes public a projected, or "target", inflation rate and then attempts to steer actual inflation towards the target through the use of interest rate changes and other monetary tools. Under this policy approach the target is to keep inflation, under a particular definition such as Consumer Price Index, within a desired range. The inflation target is achieved through periodic adjustments to the Central Bank interest rate target. The interest rate used is generally the interbank rate at which banks lend to each other overnight for cash flow purposes. Depending on the country this particular interest rate might be called the cash rate or something similar.

The interest rate target is maintained for a specific duration using open market operations. Typically the duration that the interest rate target is kept constant will vary between months and years. This interest rate target is usually reviewed on a quarterly basis by the

M.P.C. Changes to the interest rate target are made in response to various market indicators in an attempt to forecast economic trends and in so doing keep the market on track towards achieving the defined inflation target. For example, one simple method of inflation targeting called the Taylor rule adjusts the interest rate in response to changes in the inflation rate and the output gap (Taylor, 1993).

2.4.2 Price Level Targeting

Fischer (1995) states that under price-level targeting, the central bank announces a constant or a slowly evolving target for the price level. The distinguishing feature of price level targeting is that the policymaker is obliged to offset past shocks to the price level to achieve the target level in every period. Implementing price level targeting causes high volatility in inflation in the short run but ensures a great deal of certainty about the behaviour of the price level in the long run.

According to Fleming (1962) and Mundell (1963), with perfect capital mobility, a fixed exchange rate prevents a government from using domestic monetary policy in order to achieve macroeconomic stability. However, uncertainty in price levels can create uncertainty around price and wage setting activity for firms and workers, and undermines any information that can be gained from relative prices, as it is more difficult for firms to determine if a change in the price of a good or service is because of inflation or other factors, such as an increase in the efficiency of factors of production, if inflation is high and volatile. An increase in inflation also leads to a decrease in the demand for money, as it reduces the incentive to hold money and increases transaction costs.

2.4.3 Monetary Aggregates

According to Walter (1989) monetary aggregates are measures of the nation's money stock. The most narrowly defined monetary aggregate, M1, is the sum of the currency and non bank travellers cheques in circulation, plus checkable deposits. M2 includes M1 plus overnight repurchase agreements, general purpose and broker/ dealer money market fund balances, money market deposit accounts, and savings and small time deposits. M3 is the sum of M2 and large time deposits, term repurchase agreements and balances in money market funds employed solely by institutional investors. This approach is focused on monetary quantities.

2.4.4 Fixed Exchange Rate

A fixed exchange-rate system (also known as pegged exchange rate system) is a currency system in which governments try to keep the value of their currencies constant against one another. Sullivan and Arthur (2003) state that in a fixed exchange-rate system, a country's government decides the worth of its currency in terms of either a fixed weight of gold, a fixed amount of another currency or a basket of other currencies. The central bank of a country remains committed at all times to buy and sell its currency at a fixed price. Startz & Richard (2011) state that the central bank provides foreign currency needed to finance payments imbalances.

2.5 Determinants of GDP

2.5.1 Money Supply

According to Johnson (1994) money supply or money stock, is the total amount of monetary assets available in an economy at a specific time. The quantity theory of money emphasizes that money supply is the main determinant of nominal GDP. The quantity theory of money is explained by referring to the equation of exchange. The equation of exchange shows the relationship between the money supply, the income velocity of money, the GDP deflator, and real GDP. The income velocity of money is the number of times the money supply is used to purchase final goods and services during a year.

The equation of exchange states that the money supply times the income velocity of money is equal to the GDP deflator times real GDP. The quantity theory of money assumes that the velocity of money is constant. If velocity is constant, its growth rate is zero and the growth rate in the money supply will equal the inflation rate (the growth rate of the GDP deflator) plus the growth rate in real GDP. This also means that the inflation rate is equal to the growth rate of the money supply minus the growth rate of output. If the money supply grows at the same rate as output, the price level will be stable. If the money supply grows faster than output, the economy will experience inflation.

2.5.2 Labour

According to the Centre for the Study of Living Standards report (2008) GDP per capita is the product of labour productivity (real output per hour worked), average hours worked per

employed person, and the employment/population rate (proportion of the population that is employed).

2.5.3 Exports

The relationship between exports and growth is an important one in economics, particularly for developing nations that seek to improve the livelihoods of their citizens through economic reform. The relationship between trade and exports is one that is agreed upon by economists from many different schools of thought, and the areas of contention are usually those dealing with the causality issues or the extent of the role that exports play in the economy growth. Thirwall (2000) states that, export growth is the only component of demand that provides the foreign exchange to allow other components of demand in an economy to grow faster.

2.5.4 Government Expenditure

According to Robert and Vittorio (1994), government expenditure or government spending includes all government consumption and investment but excludes transfer payments made by a state. Dr. Mwafaq (2011) found that government expenditure does cause the growth of GDP, which is compatible with the Keynesian theory.

2.5.5 Aggregate Investment

Investment includes, purchasing of new equipment by a business, but it does not include exchanges of existing assets. Examples include construction of a new mine, purchase of software, or purchase of machinery and equipment for a factory. Spending by households

(not government) on new houses is also an investment. Bob (1978) summarized much of his work on investment by stating that first; investment contributes to future output and net investment to economic growth. Secondly, investment contributes to current demand and current employment.

2.6 Chapter Summary

Monetary policy impacts GDP with an aim of fulfilling many objectives as highlighted by previous papers and researches. One of the common objectives is the attainment of growth and stability of the economy and another being able to use many of it tools to control the interest rates in order to influence outcomes like growth, inflation, exchange rates with other currencies and unemployment. In Kenya, these two objectives were targeted by CBK which has undertaken control of the monetary policy. Monetary policy for any country plays a key role in its overall economic growth. The institutional framework for monetary policy in Kenya is set out in the Central Bank of Kenya Act and its subsequent amendments. The Act specifies that the Central Bank of Kenya (CBK) shall "secure monetary stability and the soundness of the financial system". Monetary policy of Kenya now for some years has been largely supportive of the dual objective of promoting economic growth and price stability. It achieves this goal by targeting monetary aggregates (broad money supply growth as an intermediate target and reserve money as an operational target) in accordance with real GDP growth and inflation targets set by the Government. In this scenario, present study is an attempt to discover how much money supply, interest rate and inflation impact the overall growth of GDP in Kenya.

The CBK having a motive of attracting stability in the economy has insisted on listed tools to use in order to reduce the general prices at which money can be borrowed and the supply of money hence making the interest rates attractive to investors. This in effect causes the economy to be more stable and hence expand. This study seeks to find out if the monetary policy has been able to attain its objectives mainly that of attaining growth and stability and address the questions of whether there exists a relationship between monetary policy and GDP. This is because monetary policy is being used as a means of attaining growth and stability thus the need to know if they work or not.

CHAPTER THREE

RESEARCH METHODOLGY

3.1 Introduction

This chapter describes the procedure and methods which were employed in the study in order to satisfy the objectives. These include; the research design, target population and sampling method, data collection procedures and tools used and finally the data analysis.

3.2 Research Design

This can be defined as methodical investigation into a subject in order to discover facts, to establish or revise a theory, or to develop a plan of action based on the facts discovered to make a detailed plan of the form or structure of something, emphasizing features such as its appearance, convenience, and efficient functioning. From previous GDP researches Oduor et al (2010) showed that GDP was measured mainly through income and money supply since they are the best variables.

A Descriptive Study was undertaken in order to ascertain and describe the characteristics of the variables of interest which are monetary policy and GDP. A correlational study which is an inquiry to know the important variables associated with the problem was also carried out. This was done in order to establish if there exists a relationship between monetary policy and GDP.

3.3 Population and Sample Size

Population target is a group of individuals or items that share one or more characteristics from which data can be gathered and analyzed. This being a case study no population was

applied. The sample used was the GDP growth rates and the various determinants of GDP between the years 2002 to 2011.

3.4 Data Collection Methods

Data collection methods are ways of getting information, often in the form of facts or figures obtained from experiments or surveys, used as a basis for making calculations or drawing conclusions. The data was collected from secondary source considering the nature of the information needed. The data collected mainly concerned G.D.P values, Money Supply and the other determinants of GDP. This method was used taking into account that Kenya National Bureau of Statistics (KNBS) and the Central Bank of Kenya (CBK) were the primary source of the information.

3.5 Data Analysis

Data analysis is the examination of something in detail in order to understand it better or draw conclusions from it which in this case was the data that was collected. Data collected was stored in spread sheet where different operations were conducted. The presentation of the data was through trend analysis and summary statistics. Regression analysis was also carried out using statistical package for social sciences version (SPSS 16).

On the basis of literature review, the following hypothesis was devised for the purpose of the study:

H0: Monetary Policy has no relationship with GDP.

H1: Monetary Policy has a relationship with GDP.

There being no public model to economic growth, Levine & Renelt (1992) proposed the following growth model; G^DP = $\beta_0 + \beta_1 M_2 + \beta_2$ L + β_3 EXPO + β_4 GY + β_5IY + ϵ which was applied later in many studies such as Barro (1994) and Hoover and Perez (2004). In this model, G^DP is the rate of growth of gross domestic Product, M_2 is the growth rate of our interest variable over time namely, money supply, L is the rate of growth of labour, EXPO is the rate of exports, GY is the ratio of government expenditures to GDP, IY is the ratio of the aggregate investment to GDP and ϵ is the error term. This model was applied because it showed that GDP is dependent on M2 (Money Supply), where the level of money supply indicates the type of Monetary Policy being implemented by the CBK. The model also linked GDP and the other variables that affect it.

The Pearson product-moment correlation coefficient was used to test the strength and significance of the relationship between Money Supply and GDP.

$$r = \frac{n\sum xy - \left(\sum x\right)\left(\sum y\right)}{\sqrt{n\left(\sum x^2\right) - \left(\sum x\right)^2}\sqrt{n\left(\sum y^2\right) - \left(\sum y\right)^2}}$$

Where $-1 \leq r \leq +1$, n = Number of Observations, x = Money supply variable and y = GDP growth rate variable. The value obtained of r was compared to the t statistic value to determine the level of significance.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter describes the process of data analysis, presents results and draws discussion on information collected. The objective of the study was to determine the relationship between Monetary Policy and GDP in Kenya.

4.2 Data Presentation

Data was analyzed using the Statistical packages of social sciences (SPSS) version 16. Descriptive and inferential statistics such as percentages and correlation tests were used in the data analysis and presentation. The data was collected by the researcher from the KNBS, CBK and The World Bank's World Development Indicators.

4.2.1 Hypothesis Testing

Hypothesis 1: Ho = There was no relationship between Monetary Policy and GDP in Kenya.

In order to determine whether a relationship exists between Monetary Policy and GDP, the data on various variables that have an effect on GDP were subjected to Anova testing using statistical package for social science to help test the hypothesis that there was no relationship between Monetary Policy and GDP. The calculated values were compared with critical value to establish whether to reject or accept the hypothesis. The Anova results are summarized in the Table below

Table 4.1: Anova Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.003	5	0.001	0.985	.541[a]
Residual	0.002	3	0.001		
Total	0.004	8			

Source: Research Findings

Ho: There was no relationship between Monetary Policy and GDP in Kenya.

H1: There was a relationship between Monetary Policy and GDP in Kenya.

Critical value from the t - student distribution table is 1.86

From the results the calculated value was greater than the critical value ($F_o = 0.985 > F_c = 1.86$; and $\alpha_o = .0541 > \alpha_o = .05$. This means that Monetary Policy that is Money Supply has an influence on GDP. The hypothesis that there was no relationship between Monetary Policy and GDP in Kenya was therefore rejected.

4.2.2 Regression Analysis

There is research linking Monetary Policy and G.D.P according to Tobin (1965). A dataset was used in determining whether this finding is robust and if it holds true. To do so, we used multivariate regression analysis to relate the determinants of GDP. The sample was restricted to GDP growth rate metrics. In this study GDP was regressed against five independent variables. These were money supply, rate of growth of labour, EXPO, GY and IY.

Table 4.2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.660[a]	0.435	-0.27	0.0247031	1.340262

Source: Research Findings

Adjusted R^2 is called the coefficient of determination and it shows the change in the dependent variable due to changes in the independent variable, from the table above on model summary, the value of adjusted R square was -0.27, which is an indication that there is a 27% decrease in GDP dues to changes in the growth rate of Money Supply, Rate of Growth of Labour, EXPO, GY and IY, this depict that the 27% decrease in GDP could be accounted for by changes in Money Supply, Rate of Growth of Labour, EXPO, GY and IY. From the R the study found that there was a positive moderate relationship between G.D.P and Money Supply, Rate of Growth of Labour, EXPO, GY and IY as shown by the correlation coefficient of 0.66 (66%). The Coefficient of Determination (R^2) was **0.435** which means that the **43.5** percent of the model was explained & the remaining was explained by unknown factors. So we reject null hypothesis and the relationship among the variables exists. Durbin-Watson test value was **1.34** which was less than **2** which means that the relationship among the observations does not exist.

Table 4.3: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.405	0.268		1.51	0.228
Rate of Growth of Money Supply	1.702	0.931	3.211	1.827	0.165
Rate of Growth of Labour	-13.95	10.54	-2.988	-1.323	0.277
EXPO	-0.809	0.611	-1.345	-1.324	0.277
GY	-0.298	0.244	-0.768	-1.222	0.309
IY	0.155	0.688	0.233	0.225	0.836

Source: Research Findings

The established regression equation for the relationship between Monetary Policy and GDP was GD^P = 0.405 + 1.702 M_2 - 13.95 L – 0.809 EXPO -0.298GY + 0.155 IY.

4.3 Summary and Interpretation of Findings

From the above regression model, If; Rate of Growth Money Supply, Rate of Growth of Labour, EXPO, GY and IY were at a constant zero, Kenya's GDP growth rate would be 0.405, it is established that a unit increase in the level of Money Supply would cause an increase in the Rate of Growth of GDP by 1.702 this is an indication that the Growth Rate of Money Supply was positively associated with Rate of Growth of GDP. Other findings are: a unit increase in Rate of Growth of Labour would cause a decrease in the level of GDP by a factor of 13.95; a unit increase in the level of Exports would cause a decrease of GDP by a factor of 0.809; a unit increase in the level of GY would cause a decrease of GDP by a factor of 0.298 and finally a unit increase in the level of IY would cause an increase of GDP by a factor of 0.155. In conclusion, it was found out that a relationship

between Monetary Policy does exist however the relationship is not significant this may be explained by the reasoning that if there is a high level of Money Supply then inflation tends to creep in and therefore the purchasing power of Money reduces and the prices of goods and services rises resulting in low economic growth because more funds will be used in purchasing a single product compared to the time when the level of inflation is low implying that the level of money of supply in the economy is moderate.

Data analysis shows that the calculated values for Money Supply, Rate of Growth of Labour, EXPO, GY and IY were slightly higher than the critical test for the sample reviewed. This indicates that indeed Money Supply Growth has had a positive impact to the Economic Growth of the country although the relationship is not that significant. The non- significance is supported by the fact that inflation causes uncertainty which impairs the efficiency of market mechanisms and adversely affects real investment, capital formation and growth. Moreover, the distributional wealth and income effects of unanticipated inflation amongst social groups have undesirable consequences for social welfare and adversely influence savings and growth.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter concludes this research study. It presents the findings, recommendations and conclusions. It briefly discusses research findings which are based on the objective of determining the relationship between Monetary Policy and GDP in Kenya. It further highlights the limitations of the study and finally suggests recommendations for practical and further research.

5.2 Summary

The research discusses the relationship between money supply and GDP in the Kenya. The CBK controls the economy through its monetary policies and fiscal policies. Among its monetary policies, the most effective policy is to control the money supply via interest rate (*C.B.R*) in its Open Market Operations. By targeting a C.B.R in the money market, CBK controls the amount of fund circulating in the money market and further controls the economic performance.

To further study this relationship between money supply and economy, the researcher conducts a regression analysis by adopting M2 measuring money supply and GDP measuring economic performance. The theoretical analysis indicates that the change of M2 will lead to a change of GDP. Traditionally, IS-LM, and AD-AS results shows that the change of money supply in money market will lead to the change of interest rate and a shift of LM curve. Consequently, the new intersect of IS and LM curves indicates the new equilibrium of output. In goods market, this change in output results in a shift of AD curve

which changes the price level in the long term, but the price stays constant in the short run due to its stickiness in the short term. Hence, theoretically, it is obvious that the change of money supply leads to the change in output in the same direction. In reality, by applying its tight and loose monetary policies, CBK controls the money supply and achieving the target interest rates by buying and selling Treasuries and other government bonds in the money market, and then controls the whole economy.

5.3 Conclusion

From the findings on the testing of hypothesis there was a positive relationship between Money Supply and GDP the data of the various variables that have an impact on GDP were subjected to Anova testing using statistical package for social science to help test the hypothesis that there was no relationship between Monetary Policy and GDP. The calculated values were compared with critical values to establish whether to reject or accept hypothesis. The study found that the calculated value was greater than the critical value. The hypothesis that there was no relationship between Monetary Policy and GDP was therefore rejected. Thus the study found that there was a positive relationship between the level of Money Supply and the Rate of Growth of GDP. From the regression analysis it was revealed that there was a greater improvement on the level of the GDP this could be attributed to increases in the level of the Money Supply in the economy, this is an indication that Monetary Policy had a positive relationship with GDP although the relationship is not that significant. This is because when the CBK is targeting a certain interest rate (repo rate) to control the money Supply it is the GDP that influences the level of Money Supply in circulation and not Money Supply affecting the output.

5.4 Limitations of the Study

The researcher experienced a number of constraints while undertaking the research. The major limitation was the limited literature available on similar work done in Kenya. Most of the literature references were from western countries such as the US, Pakistan, Fiji and European countries that had carried out various studies related to this one.

Besides Money Supply, Rate of Growth Labour, EXPO, Government Expenditure and Aggregate Investment, the growth rate of GDP can also be influenced by other factors which were not considered during the study. The level of Taxes received by the government, imports and inflation could have increased or lowered the level of GDP.

Secondary data was collected from KNBS, CBK and World Bank's World Development Indicators. The study was also limited to the degree of precision of the data obtained from the secondary source. While the data was verifiable since it came from the CBK, KNBS and World Bank publications, it nonetheless could still be prone to these shortcomings.

Due to time constraints the study was restricted to a period of 10 Years from 2002 to 2011. A longer period say, 20 Years would have painted a clearer picture in analyzing the relationship of Monetary Policy and GDP in Kenya.

5.5 Policy Recommendation

C.B.K should implement Monetary Policies before the occurrence of economic shocks that is it should be active and not reactive. C.B.K should not be reacting once economic shocks have occurred rather it should continuously monitor the economy to ensure its stability.

M.P.C should closely monitor the economy because various macro economic variables may have a significant effect on the GDP. This is to ensure that the general level of prices of goods and services is maintained. M.P.C should also ensure that a stable level of money supply is maintained so that low rates of inflation are experienced that will encourage constant growth of the economy. M.P.C should also ensure that the level of Money Supply in the economy is normalized so as to control inflation and hence ensure that the currency does not lose its value.

The overriding objective of monetary policy is to maintain low inflation. Kenyan authorities therefore, should continue to undertake structural reforms aimed at addressing the weaknesses in the financial sector, strengthening regulatory framework at the CBK and enhancing the legal framework, with a view to improving the monetary transmission mechanism to the real sector.

The government should also endeavour to make the financial sector less volatile and more viable as it is in developed countries. This will allow for smooth execution of the Central Bank monetary policies. Law relating to the operation of the financial institutions could be made a bit less stringent and more favourable for the operators to have room to operate more freely.

5.6 Suggestions for Further Research

The study can be narrowed down to assess the impact of CBK's Monetary Policy on the N.S.E or the Banking industry because the level of Money Supply in the economy also affects how investors and banks make their investments.

A study on the implementation of both the Monetary Policy & Fiscal Policy by the CBK and their impact on GDP in Kenya should also be carried out in order to compare results.

The present study can further be investigated over a larger time period say Twenty Years this could have given the data more validity since it would have been for a wider scope and also could have also generated different results. The sample size should also be increased to get a more representative sample and make better conclusions.

The Research study can further be extended to assess the impact of Monetary Policy on developmental projects for the Growth of Economy, Quality improvements, Household production, the underground economy, Health and life expectancy, the environment, Political immunity and ethnic justice.

The same study should be carried out but now using a different methodology such as Vector Analysis Regression Model (V.A.R) in order to compare results.

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APPENDIX

Appendix 1: A Tabulation of values of GDP & the Determinants of GDP

YEAR	DEPENDENT VARIABLE	INDEPENDENT VARIABLES				
	Rate of Growth of GDP	Growth Rate of Money Supply	Rate of Growth of Labour	EXPO	GY	IY
2002	0.0050	0.1000	0.0225	0.0710	0.6859	0.1676
2003	0.0290	0.1180	0.0218	0.0720	0.7527	0.1200
2004	0.0510	0.1350	0.0220	0.1260	0.6712	0.1313
2005	0.0590	0.0990	0.0220	0.0940	0.6096	0.1691
2006	0.0630	0.1700	0.0316	0.0310	0.6480	0.1795
2007	0.0700	0.2040	0.0319	0.0660	0.7595	0.1908
2008	0.0150	0.1550	0.0313	0.0730	0.5983	0.2034
2009	0.0260	0.1650	0.0312	0.0910	0.6525	0.2089
2010	0.0560	0.2240	0.0316	0.1650	0.6049	0.2259
2011	0.0450	0.1920	0.0317	0.0360	0.4944	0.2523