MONETARY POLICY, FISCAL POLICY AND ECONOMIC GROWTH STIMULATION IN KENYA

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DECLARATION

This thesis is my original work and has not been presented elsewhere for a degree or any other award.

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DEDICATION

I dedicate this work to my mother Margaret Kibunge and to my sisters Judith, Frida and Janis. Your prayers, endless inspiration and firm support made it possible to complete this study.

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ABREVIATIONS AND ACRONYMS

ADF	Augmented Dickey Fuller
CUSUM	Cumulative Sum
CBK	Central Bank of Kenya
DF	Degrees of Freedom
DW	Durbin Watson
GDP	Gross Domestic Product
IRF	Impulse Response Functions
KES	Kenyan Shilling
KNBS	Kenya National Bureau of Statistics
OLS	Ordinary Least Squares
SVAR	Structural Vector Autoregressive model

DEFINITION OF TERMS

Economic Growth	Annual percentage change in gross domestic product.
Fiscal Policy	A deliberate effort by the central government through the treasury to influence output growth by means of changing government spending and taxes.
Fiscal Multiplier	The resultant change in economic growth due to fiscal policy implementation.
Monetary Policy	A deliberate effort by the central government through the central bank to influence output growth through variations in central bank rates, exchange rates, credit and liquidity.
Monetary Policy Multiplier	The resultant change in economic growth due to a change in monetary policy implementation.

ABSTRACT

Increased economic growth is a key objective that the Kenyan government strives to achieve in order to reap its welfare benefits. To achieve this, the government of Kenya incorporated the economic pillar in its Vision 2030 which aimed at realizing an annual economic growth rate of 10% by the year 2030. To date, this rate is yet to be achieved and the current economic growth of Kenya remains far below it. Prompted by this, this study set out to investigate whether fiscal and monetary strategies influence Kenyan economic growth and consequently determine which policy is more effective between the two in stimulating the growth of output in Kenya. To achieve the specified objectives, the study used a causal research design to train a Structural Vector Autoregressive model of order three (SVAR (3)) with time series data collected from the first quarter of 2006 through the fourth quarter of 2019.To ensure the model results were robust and reliable, a series of residual diagnostic tests including stationarity, normality, Granger causality, model stability and autocorrelation were performed. The diagnostic results showed that the estimated model was sound and robust for making inferences. The study findings revealed that both strategies had substantial stimulative influence on Kenya's economic growth rate. Specifically, considering the effect of fiscal plan on Kenya's economic growth rate, the analysis revealed that positive shocks on tax revenue decreased economic growth significantly for two quarters while a positive shock on debt increased economic growth significantly for two quarters after which the impact decayed to zero. A positive shock on government expenditure was observed to produce inconsequential influence on output growth. Turning to monetary policy, the study found that a positive innovation on the central bank rate and the nominal effective exchange rate, decreased growth significantly for three quarters after which the effect becomes positive and their impact dies overtime. On the other hand, an observation of insignificant effect on growth stimulation was noted when a positive innovation on money supply was introduced. Guided by the results of the comparative analysis on which policy was more potent than the other, fiscal strategy was noted to be more stimulative relative to the monetary policy. As such, this study advocates for the application of expansionary fiscal measures to spur growth in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Globally, economies are characterized by booms and busts. That is, phases of rapid economic expansion alternating with phases of sluggish economic growth. These economic fluctuations have welfare effects (Dinh, 2022). For instance, during booms, the increased economic growth results in poverty alleviation, sufficient provision of public goods, reduction of debt to gross domestic product ratio and employment creation (Gnahe & Huang, 2020). On the other hand, during downturns, all these gains are reversed. For this reason, policy makers are often keen to dampen economic fluctuations. Largely, policy makers use a mixture of monetary and fiscal strategies to stabilize the economy. Whether these policies are often effective in achieving the intended outcome remains a controversial issue.

The discourse intensified, particularly post the 2007–2008 global financial crisis, as nations across the globe employed a combination of monetary and fiscal tactics to reinvigorate their economies (Galic et al., 2022). In the wake of the 2008 financial crisis, numerous countries utilized monetary and fiscal strategies to mitigate the recession's fallout. For instance, many countries especially in developed economies expanded money supply ending up with near zero and for some negative interest rates in a bid to revive the shattered economies (Abadan, 2023). In addition, these economies extended quite generous welfare packages calculated to increase aggregate demand. Importantly, both monetary and fiscal policies were enacted simultaneously, yet the ongoing debate revolves around whether these actions were cooperative or contradictory in terms of achieving economic stability (Mengistu, 2022) .

In light of Covid-19 economic downturn, many economies including Kenya registered decreased growth globally (Kenya National Bureau of Statistics, 2020). Therefore, it is important to investigate which of the two policies is more effective in growth stimulation and to also unveil how different policy mixes can be used to trigger growth. However, because policies possess distinct mandates and objectives, the objectives of one policy may conflict with those of another. This conflict between policies could influence growth, underscoring the importance of assessing whether

fiscal policy reacts to monetary policy signals and vice versa in order to craft effective policy measures.

Interestingly, substantial empirical literature has not arrived at a conclusion concerning relative effectiveness of the two policies due to controversial results. The controversial results are attributed to variable choices, methodology and country specificity. As a result, there has been a surge in research primarily in developed countries, yet the empirical results exhibit variations from one nation to another (Pamba, 2022). Similarly, researchers from developing nations have also engaged in the discussion, augmenting the existing literature with empirical data on the comparative efficacy of these policies. For example, Al-kasasbeh (2022), Yuan et al. (2022), Tavakoli and Chatterjee (2022), Wang et al. (2022), Lee (2022), Bista and Sankhi (2022), Alami et al. (2022), and Nuru and Gereziher (2022) present contradictory results and therefore, no generalization has so far been reached concerning the effectiveness of the two policies in growth stimulation. There is still the lingering question: which of these policies proves more efficacious? Do they genuinely yield the desired results? Is there an optimal mix between the two policies that can stimulate growth? This will be the subject of this study.

1.1.1 Trend of Economic Growth Globally

The Kenya National Bureau of Statistics (KNBS, 2020) forecasted that most economies would not experience significant benefits from economic growth, as the global economy is on a contractionary path. According to the World Economic Outlook (2020), the Euro area saw a deceleration in real GDP growth to 1.2 percent in 2019, down from 1.9 percent in 2018, primarily due to weakening external demand. The U.S. economy also slowed down, with growth dropping to 2.3 percent in 2019 from 2.9 percent in 2018, largely because of a reduction in investments.

The UK's economic growth was hindered by decreased aggregate demand due to Brexit-related uncertainties, resulting in a growth rate of 1.2 percent in 2019 compared to 1.4 percent in 2018. Germany’s growth rate fell to 0.6 percent in 2019 from 1.5 percent in 2018, mainly due to significant stagnation in industrial production. The emerging economies of Brazil, Russia, India, Indonesia, China, and South Africa (BRIICS) experienced an average real GDP growth of 3.0 percent in

2019, down from 3.8 percent in 2018, attributed to weak aggregate demand. In Sub-Saharan Africa (SSA), real GDP growth was 3.1 percent in 2019, a slight decline from 3.3 percent in 2018, with inflation rising to 8.4 percent in 2019 from 8.3 percent in 2018. The East African Community (EAC) bloc's real GDP grew by 5.9 percent in 2019 compared to 6.6 percent in 2018. This slower growth was partially due to large current account deficits caused by increased imports and declining international prices of agricultural products at the beginning of 2019. Kenya's economic growth decreased to 2.9 percent in 2019 from 3.5 percent in 2018. Given this widespread contractionary trend in economic growth, robust policies are necessary to revive economies and restore normal growth trajectories.

1.1.2 Trend of Economic Growth in Kenya

Nonvolatile and consistent increase in economic growth in Kenya is a great challenge which calls for attention. Since the 1980s to date, GDP growth oscillatory movements from recession to normal trend, outweighs oscillatory movements from boom to normal. The crude effect of this is pushing the economy towards the contraction path as shown in Figure 1.1.

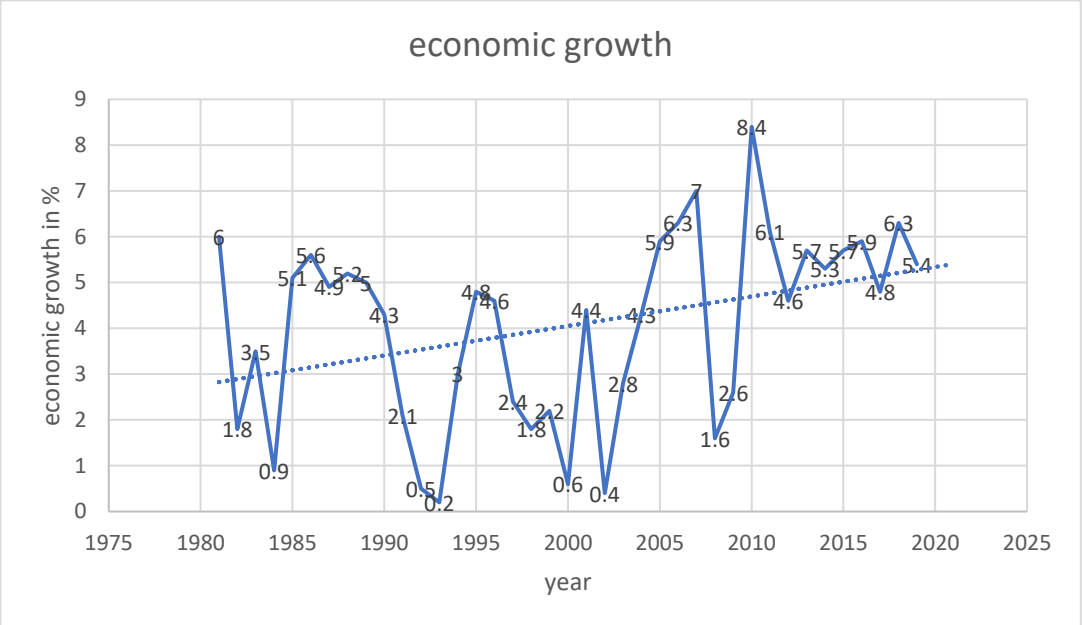

Figure 1.1 Trend of economic growth in Kenya

Source: Kenya National Bureau of Statistics Annual Economic Surveys 1960 to 2019

From Figure 1.1, economic growth rate has been fluctuating over the years and therefore growth of GDP is cyclical in Kenya. A heightened growth rate of 8.4% stemmed primarily from increased lending to the private sector, subdued inflationary pressures, and favorable weather conditions. Additionally, the country invested in essential infrastructure to spur nationwide public projects, aiming to bolster growth. To support this initiative, the Government pursued an expansionary fiscal policy, boosting government spending from KES 805.3 billion in 2009/10 to KES 998.3 billion in 2010/11, with the goal of facilitating economic recovery and advancing toward the Vision 2030 targets. However, economic growth in Kenya experienced a downturn, as evidenced in Figure 1.1. The economy contracted from 6.3% in 2018 to 5.4% in 2019, with further contraction expected to 5.2% by the second quarter of 2024 (KNBS, 2024). This decline was attributed to significant declines in agriculture and forestry growth by 6.4%, banking and insurance sectors by 4.2%, infrastructures and development 3.9%, healthcare provision 10.3%, government administration and property transactions by 2.2% and extraction and quarrying operations, by 10.0% all exacerbated by COVID-19 containment measures enforced during this period.

1.1.3 Developments in Monetary Plan and Kenya's Economic Growth, 2000-2019

A feasible combination of physical and human capital is needed for growth to occur in its present nature of endogeneity. The Central Bank Act (CAP 491), allows the government policy makers to pursue enabling macroeconomic policy for example monetary policy to influence growth depending on the prevailing economic conditions. Variations of economic components such as money supply, effective exchange rates, government debts and taxation, physical capital, human capital and aggregate demand are expected to cause variations in the pattern of GDP growth rate.

The effect of monetary policy on economic performance drives back to Friedman and Schwartz (1963) study which showed that variations in monetary policy transmission channels (exchange rates and interest rates) were followed by variations in real output (Batool, 2022). In Kenya, monetary policy is used to control growth mainly in the short run (Kim et al., 2021). Between the years 2000 to 2007, Kenya embarked on tight monetary policy aimed at stabilizing prices and maintain required liquidity in

the economy to avoid undesired levels of inflation which could hamper growth (Olayiwola et al., 2022).

During this period, the aim was to sustain the specified benchmarks of 6.5% for money supply, 5.0% for inflation, and 20% for liquidity (KNBS, 2008). The Central Bank of Kenya (CBK) in the year 2008 employed a range of instruments to execute its monetary policy, including open market operations (OMO) such as repurchase agreements (REPO), reserve ratios, and discount facilities. Despite implementation of these policies, inflation rates during the period remained above 5% but GDP growth diverged and reached a high of 6.9% in 2007 as compared to -0.3% in year 2000. This raises a question as to why GDP grew yet the main objective of monetary policy had failed during the period under consideration.

Following the occurrence of 2007 - 2008 global financial crisis, the CBK loosened monetary policy and started invoking expansionary monetary policies. To recover the economy, CBK consistently lowered bank rate from 9.00% in 2008 to 8.50 % in 2009 and 6.75% by year 2010. This monetary policy action, availed 5 billion credit to local investors. During this period, GDP growth rate shifted from a growth rate of 1.6 % in 2008 to 8.4 % in 2010 (Mutuku, 2021). Though interest rates channel seemed to influence growth from year 2008 to 2010, current data suggests otherwise. Despite the successive decline of the central bank rate (CBR) from 9.00 % in July 2018 to 8.50 percent in 2019, 7.13 percent in 2020, and 7.0 percent in 2021, GDP evolution decreased from a growth rate of 6.3 % in 2018 to a growth rate of 5.4 % in 2019 and currently GDP growth stands at 5.6 % in 2024.

Another monetary strategy that raises questions on the effectiveness of monetary policy was the implementation of interest rate capping in the year 2016 with the aim of protecting borrowers from high interest rates charged by commercial banks. The rate was capped at 4% above the central bank rate, which was at 10% (Kavwele, 2019). The consequential effect of this policy only served to be contrary to what was expected. Although credit growth expanded by 0.2% from 0.8% in the year 2016 to 1% in the year 2017, this growth was so negligible that it failed to influence overall growth in the economy. Economic growth was seen declining from 5.07% in the fourth quarter of the year 2016 to 4.8% in the first quarter of the year 2017. The policy proved to be unfeasible and was dropped by the year 2019 (Kiseu, 2019). The

observable effects of the policy were a significant reduction in credit growth in the country as banks became more reluctant to lend to customers, especially small and medium-sized enterprises, as the reduced interest rates had eaten into their profit margins. This gives more insight to ascertain whether the policy is still effective for growth stimulation.

In small, open economies, uncovered interest rate parity theory (UIP) shows that a monetary policy authority can influence growth through exchange rate channel (Gnahe & Huang, 2020). For instance, reducing the monetary policy rate would diminish the appeal of domestic deposits relative to foreign deposits, thereby reducing the demand for domestic currency. Consequently, the domestic currency would devalue, making domestic products more affordable compared to foreign goods, resulting in a rise in net exports and overall production. In Kenya, the work of Kamaan (2018) on effects of monetary policy on economic growth showed that between year 2004 to 2006, domestic currency appreciation was always accompanied with increased economic growth.

On the contrary, Arora (2018) found that between period 2009 and 2010, the Kenyan currency gradually depreciated from KES 77.33 per US dollar in 2009 to KES 80.17 per US dollar in 2010. Over this period, GDP grew from 2.6% in 2009 to 8.4 % in 2010. According to KNBS (2020), the Kenyan currency had depreciated on average from KES 80 per US dollar in the last decade (1999- 2009) to KES 101 per US dollar in the subsequent decade (2009 - 2019). Albeit this depreciation in 1999-2009 decade, GDP grew on average by 4% annually while in 2009–2019 decade, GDP growth on average stood at 5% annually. This unpredictable relation between GDP and exchange rates trends, triggers a study to be done to ascertain whether exchange rates really affect growth.

1.1.4 Developments in Fiscal Policy and Economic Growth in Kenya, 2000-2019

Fiscal policy in Kenya is applied on long term national development plans which aims at influencing investment and development (Bista, 2023). Generally, fiscal policy entails changing government spending and taxes so as to spur and stabilize the economy. In order for growth to occur, appropriate tax policy is necessary. On one hand, economic theory stipulates that the structure of a tax policy may harm or

otherwise foster growth. In their view, when policy distorts investment of a private agent, then a probable expectation is for growth to retard and investment to fall.

On the other hand, if tax policy leads to internalization of externalities by private agents and reduces cost of capital, efficiency in resource allocation is achieved and this fosters investments and growth of the economy (Tavakoli & Chatterjee, 2022). Empirical studies show that indeed, tax revenue affects growth. In Kenya, a study by Mukui and Onjala (2020) showed that between year 2000 and 2014, increase in tax revenue was accompanied by an increase in economic growth while as tax revenue declined economic growth also declined. Similarly, a study by Abdulkadir et al. (2021) also pronounced the existence of a positive causal link in output growth and tax burden in Kenya.

On the flip side, the efficiency of fiscal policy in fostering economic expansion is contingent upon whether public spending displaces private investment and consumption. For instance, if the government increases its expenditure without a corresponding boost in public revenue, it leads to a deficit budget (Amalu et al., 2020). Consequently, financing this deficit through domestic borrowing could have adverse repercussions on economic growth, driven by the escalation of domestic interest rates, thereby displacing private sector expenditure (Arestis et al., 2021). This results in a temporary slowdown in economic activities and hampers long-term capital accumulation, ultimately resulting in a significant decline in economic growth. Kenya, being a developing economy, could be suffering this fate since she is a heavy borrower and her GDP growth has constantly been decreasing since year 2018 to 2021 (Ali & Dalmar, 2018). Nevertheless, the government of Kenya has always tried to use fiscal interventionist policies in terms of debt financed government spending during economic crisis.

Following the economic recession in 2002, which caused Kenya's economic growth to decline for two consecutive quarters, reflected in a modest GDP growth rate of 0.4%, the state administration secured a loan of KES 54,423.79 million in 2004. This debt was designated for infrastructural enhancements with the expectation of elevating aggregate demand by generating job opportunities (Aila, 2017). Likewise, during the 2008-2009 financial crisis, which led to a modest GDP growth rate of 1.6% in Kenya, state administration introduced a loan-funded economic incentive bundle

valued at KES 22 billion. This initiative was aimed at fostering employment and financing labor-intensive projects in rural regions, such as the "Kazi kwa Vijana" program. Objectively, consumption levels were expected to bolster and in so doing, increased demand levels could facilitate production within the economy (Daisy & Eno, 2016). Additionally, in 2020, amidst the economic repercussions of the Covid-19 pandemic, Kenya received a debt infusion of KES 73.9 billion from the International Bank of Reconstruction and Development (World Bank). The government then allocated KES 10 billion to the "Kazi-Mtaani" scheme, objectively to fuel development by promoting youth employment (KNBS, 2020). Whether growth stimulation can occur upon implementation of such policies still remains a question that invites more empirical research to add on the subject.

1.2 Statement of the Problem

Negative economic shocks caused by financial crises, pandemics, and natural disasters lead to a decline in aggregate demand and investments, which are crucial for economic growth. To counteract these effects, expansionary monetary policies lower interest rates, reducing the cost of capital and encouraging investment. Similarly, expansionary fiscal policies increase government spending and reduce taxes, leading to job creation, higher incomes, and increased demand. This rise in demand, in turn, stimulates further investment and economic growth (Durong, 2022).

In Kenya, the effectiveness of fiscal and monetary policies in driving growth remains uncertain. Despite the implementation of tight monetary policies from 2000 to 2007 aimed at maintaining inflation below 5%, inflation remained above this threshold while economic growth still increased. Following the 2008–2009 financial crisis, the CBK lowered interest rates, resulting in significant growth from 1.6% in 2008 to 8.4% in 2010. However, a similar reduction in interest rates between 2018 and 2020 did not produce the same growth effect, as GDP growth declined from 6.3% in 2018 to 5.2% in 2020. Additionally, the failure to achieve the targeted 10% growth set by Kenya's Vision 2030 raises concerns about the effectiveness of fiscal policies.

Empirical studies are yet to reach a consensus on the relative effectiveness of fiscal and monetary policies in stimulating growth, with conflicting findings across both developed and developing economies. These studies include the work of Adeleke and

Sule (2020), Mrabet et al. (2023), Inchauspe (2021), Ardanaz et al. (2020), Yang et al. (2022) and Voda et al. (2022). Given the ongoing debate, this study seeks to analyze the impact of these policies on economic growth in Kenya. By examining their relative effectiveness, the research aims at contributing to the broader understanding of how fiscal and monetary strategies influence economic performance.

1.3 Research Objectives

This study was guided by both the general and specific objectives.

1.3.1 General Objective

The general objective of this study was to determine the relative effectiveness of fiscal and monetary policies in stimulating Kenya's economic growth.

1.3.2 Specific Objectives

The following specific objectives guided this study:

(i). To examine the effect of monetary policy on economic growth in Kenya.

(ii). To evaluate the effect of fiscal policy on economic growth in Kenya.

(iii). To assess the relative effectiveness of monetary and fiscal policies in stimulating economic growth in Kenya.

1.4 Research Questions

The research questions that guided this study were:

(i). What is the effect of monetary policy on economic growth in Kenya?

(ii). What is the effect of fiscal policy on economic growth in Kenya?

(iii). What is the relative effectiveness of monetary and fiscal policies in stimulating economic growth in Kenya?

1.5 Significance of the Study

Increased economic growth leads to; poverty reduction, reduced unemployment, adequate provision of public goods and a reduced debt to GDP ratio (Ali, 2022). To date, Kenya has enjoyed these benefits partially explained by its slowed economic growth contributed partially by lack of proper implementation of growth oriented macro-economic policies. Further, following a consistent decrease in output growth

in Kenya since year 2018 as shown in the trend, this study was justified to be conducted since it revealed appropriate macroeconomic policy which can be used to stimulate growth in Kenya. Academically, this study is of essence to researchers and scholars who will find it necessary in constructing similar studies around it, to criticize its findings or augment on its findings.

1.6 Scope of the Study

Kenya was chosen as the geographical scope for this study since being a developing country, there is a need for appropriate macroeconomic policy which can foster her growth by addressing rising inflation, weak aggregate demand, increased exchange rate volatility, rising debt levels, and high levels of unemployment. Secondary time series data from year 2006 quarter one to year 2019 quarter four was used. This sample period was selected on the basis of quality data availability.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Review of selected theories and relevant empirical literature related to this study are covered in this chapter. The chapter also presents the summary of literature reviewed and the research gaps identified.

2.2 Theoretical Literature

Investment-savings (IS) and liquidity preference-money supply (LM), the monetarist view and the endogenous growth theories were relied on in this study.

2.2.1 Investment-Savings (IS) and Liquidity Preference-Money Supply (LM) Theory

The IS- LM model is a Keynesian theory built on the assumption of fixed prices and wages. The theory shows the nexus between GDP and interest rates by breaking down the economy into goods market (IS) and money market (LM). The IS shows a locus of points between GDP and interest rates in which investments equals savings and on the other hand the LM curve shows a locus of points between GDP and interest rates in which demand for money is equal to money supply. The economy is said to be at equilibrium when the two curves intersect and therefore optimal levels of GDP, interest rates, money supply and investments is obtained. According to the Keynesians, since the IS curve shows a locus of points between GDP and interest rates in which investments equals savings, fluctuations in economic output are purely affected in varying government spending and tax rates which in turn shifts the IS curve accordingly. The reduced taxes increase disposable income as well as investment levels which in turn scale up growth. Despite this contribution which seems to trigger growth the model fails to explain how tax and spending policies should be formulated with specificity.

2.2.2 Monetarist View Theory

Monetarists argue that the LM curve gradients upwards and therefore reject the existence of a liquidity trap that is associated with a horizontal LM curve as postulated by the Keynesians. Since the LM curve carries along with it the relation between GDP, interest rates and money supply, monetarists suggest that fluctuations

in output level can only be brought about through variations in its constituents. A connection between monetary strategy and fiscal strategy is therefore highlighted in that case. Mathematically, monetarists employed Irving Fisher's (1930) exchange equation to illustrate how output progression and monetary plan are linked. They present their exchange equation structured as in Equation 2.1:

$$MV=PY \quad 2.1$$

In this case money supply is carried by M controlled by monetary policy, price level is represented by P, level of output designed to be Y, and the speed of currency circulation denoted by V. An assumption is made by the monetarist that the currency circulation velocity is always constant and therefore does not change. If this assumption is considered, then V does not change and Equation (2.1) therefore captures an association between variation in the supply of money and the resultant deviations in national output as a consequence. To illustrate this relationship in explicit manner, Equation (2.1) is restructured with some constant number k as in Equation 2.2:

$$M=kPY \quad 2.2$$

Relying on the above association, it is noted that Y is solely influenced by the money supply. This suggests that when constant velocity in currency holds, then allowance is given for establishing how a real economic sector is linked to the monetary controlled sector. This serves as the main explanation as to why monetarist suggest that monetary plan variations have an effect on growth. Nevertheless, monetarist theory fails to unveil why velocity of money is assumed constant and changes on money supply only affects prices but not any other variable.

2.2.3 The Endogenous Growth Theory

The capacity in which fiscal plan influences growth both in the shorter time frame and in longer periods is outlined in endogenous growth theory as developed by Romer (1994). Following this theory, a process on how this occurs is therefore established in the studies of Barro and Al-kasasbeh (2022). To expound on the same, Gallic et al. (2022) modifies the usual Cobb-Douglas production function with the goods and the services provided by the government (p) to show how state spending funded by discretionary taxes affects output growth. Guided by their idea a modification on the

Cobb Douglas production model in the position of per capita was established as Equation 2.3:

$$y = Åk^{1-\alpha}p^{\alpha} \quad 2.3$$

As per equation 2.3, output is captured by y, the factor of productivity is denoted by Å, private capital per individual is represented by k, the services and goods provided by the state is captured by p, and the changes on output is represented by α. The primary assumption is made on government funding its activities using a proportional tax rate (Γ) and a portion of the produced-out y named as lump sum tax (L). With this assumption, the budget constraint under which the government operates is established as Equation 2.4:

$$Mp + C_g = L + \Gamma my \quad 2.4$$

The number of productive producers in Equation (2.4) is captured by m while Cg represents the expenditure that the government makes on consumption. In theory the motivation to invest by private agents is catalyzed by a proportionate tax on output while lump sum taxes are assumed to have zero effects on the investor's motive to invest. With this concept and considering the government expenditure in Equation (2.4), Galic et al. (2022) developed a model showing how growth occurs in the long run as in Equation (2.5):

$$n = \varphi(1-\Gamma)(1-\alpha)Å^{1/(1-\alpha)}(p/y)^{1/(1-\alpha)} - e \quad 2.5$$

Introduced in equation (2.5) are φ and e serving as the new factors of the utility model. Analysis of equation (2.5) reveals that an increase in the rate of taxation (Γ) results into a corresponding fall in output. On the other hand, when government makes a productive expenditure (p), growth is bound to increase. It is worth noting that exclusion of lump-sum taxes (L) and government expenditures (C_g) is made on the model, indicating their negligible impact on the output growth rate and thus warranting their exclusion. The assumption of a balanced budget in Equation (2.5) does not hold true, especially in developing economies like Kenya. To better align with reality, the study adjusted the model proposed by Al-kasasbeh (2022) to accommodate the fact that the constrained budget by the government is not always at

balance every period. When this is considered a revision is made on Equation (2.5) to have Equation 2.6:

$$mp + C_g + w = L + \Gamma my \quad 2.6$$

Equation (2.6) represents the surplus and deficits of the government budget by variable w with a proper anticipation that its influence on output growth being zero if and only if a consideration is made on the Ricardian equivalence being true and otherwise significant. In addition, the dynamic nature of (p) suggests a positive impact, while the distortionary nature of (Γ) indicates a negative impact. Given the neutral growth effects of C_g and L, a model is made parsimonious in their removal. Driving from the model of Al-kasasbeh (2022), a model that encompasses both fiscal and monetary elements is extracted as in Equation (2.7):

$$y_t = \beta + \sum_{i=1}^{q} \delta_i V_{it} + \quad 2.7$$

Denoted by (V) and (η) in Equation (2.7) is a collection of extraneous and fiscal items, while (ω) represents a collection of random anomalies. In theoretical expectation, if the government maintains spending and balances its budget, then $\sum_{i=1}^{q} V_{it}$= 0. In avoidance of this instance occurring, one variable is exclude from V_{it}that was presumed to have a negligible impact on growth, such as (V_q).To facilitate the exclusion of this neutral variable, Equation (2.5) is reorganized to come up with Equation (2.8):

$$y_t = \beta + \sum_{i=1}^{q} \delta_i V_{it} + \delta_q V_{qt} + \sum_{j=1}^{l} \lambda_j \eta_{jt} + \omega_{it} \quad 2.8$$

Therefore omitting (V_q) from equation (2.8) leads to Equation (2.9):

$$y_t = \beta + \sum_{i=1}^{q-1} (\delta_i - \delta_q) V_{it} + \sum_{j=1}^{l} \lambda_j \eta_{jt} + \omega_{it} \quad 2.9$$

Equation (2.9) now serves as a model that can be estimated to understand how the fiscal and non-fiscal insights bring about growth variations. Importantly, to note is the difference $(\delta - \delta_q)$ that demonstrates the magnitude of growth variation that is bound to occur on GDP when the fiscal element is increased by a single unit. The effect of non-fiscal elements contained in the model on GDP growth is further captured by (λ_j).

2.3 Empirical Literature

In this section, presented is the fundamental literature on various studies relating to monetary strategy and growth of output, fiscal policy and economic growth and a comparative literature of the two policies in relation to growth stimulation.

2.3.1 Monetary Policy and Economic Growth

Variations in evidence regarding the transmission mechanism of monetary policy are notable, particularly among countries with diverse economic structures. Theoretical assumptions face complications, especially in less market-oriented economies that demonstrate lower sensitivity to policy interventions, where monetary authorities lack sufficient independence, or when both market-based and administrative policy instruments are employed simultaneously. Therefore, grasping the distinct dynamics of the transmission mechanism in each jurisdiction is vital for understanding and potentially forecasting the macroeconomic power of monetary rule on output.

Empirically, extensive studies are present in determination of the impacts of monetary strategy on the growth of output, so far with great disputes in their findings. The studies capture developed, emerging as well as developing economies. For example, in developed economies, Abaida (2023) used VAR approach to do a validation of whether monetary policy (Federal reserve rates) was stimulative in the US economy. They assert that a strategy imposed in the nature of monetary was akin to spurring US output. On the contrary, a study by Abango et al. (2019) used Dynamic Stochastic General Equilibrium framework (DSGE) to get assurance on whether unanticipated innovations in US monetary elements produce growth changes or not. The study found that a negligible and short living influence was witnessed on growth upon installing the policy.

Still in the realms of developed economies, Lee and Werner (2018), investigated causal effect outcome on what is expected of GDP if interest rates are varied in four developed countries (US, Japan, Germany and UK). Using two-way granger causality, their finding showed that within the four countries, no bidirectional association is in existence in shorter periods and to some extent of longer periods when nominal GDP growth rate is associated in causation with interest rate. An interesting feature was that nominal GDP was caused by interest rates in Germany only. Their empirical findings contradicted the undisputed opinion that interest rates

caused output and not the vice versa. In the context of emerging economies monetary policy seems to influence growth. A study by Idris (2019) on how Nigeria can recuperate her economy using a change in its monetary plan, found that monetary plan dispensed through exchange and interest rates was relevant in influencing the Nigerian economy. In the emerging economy of China, Fernald (2014) used FAVAR approach in observing the progression changes that could occur in the Chinese economy when a change in her monetary plan was objectively made. The study found that China's activities contributing to her growth increased when intentional increase in her bank reserves was made. Arora (2018) studied on how objective monetary strategies affected the Indian economy. The study found that interest rates were inversely related to output growth, a suggestion that monetary policy authorities should use tight monetary policy to spur growth in India.

Davodi and Sims (2018) used three variant structural VAR to validate stimulative effects of strategies in favor of monetary elements on growth in four East African developing economies of Kenya, Uganda, Tanzania and Burundi. The study found that, in Burundi, Kenya and Uganda a realization of growth upsurge was seen when intentional increase in money reservation was made. Moreover, their study also revealed that a decrease in interest rates surged Burundian output and Kenyan output. Acheampong et al. (2021), examined changes caused by elements of monetary plan on Kenya's output progression using a bivariate VAR model. The study reported that a unit upsurge in the money supply as percentage of GDP yields a 0.2 decline in GDP growth in longer time frames. Their study finally recommended tightening of the monetary policy in Kenya should the government intend to experience prolonged growth.

Using a six variable VAR model, Ronald (2021) evaluated in Malawi how the favors of monetary strategy allocates growth effects in its economy. Subject variables capturing monetary policy were the constant reserve ratio and the banking rate. The remaining variables which included the exchange rate, broad money and the world commodity price signaled intermediate targets. Data series in monthly frequency from January 1994 to March 2019 were employed in the analysis. In view of monetarism dimensions, their study provided an evidence of zero influence on Malawi GDP upon introduction of the monetary strategy.

Abbadi (2020) examined stimulating influences of interest rates coupled with money supply in the Nigerian economy. The study, based on data spanning from 1981 to 2018, employed a vector error correction model. The findings suggest that objectives in favor of monetary rule in the nature of increase in money supply and interest rates, effectively stabilizes Nigeria's economy only when price stability is achieved. Additionally, the study indicated that the impact of interest rates on capital investment diminishes as inflation rates rise, indicating that tools like the monetary policy rate (MPR) are effective during periods of decreasing inflation but lose relevance during inflationary periods. The study concluded by recommending that Nigerian policymakers enhance the effectiveness of open market operations by encouraging broader participation with minimal transaction costs and ensuring the availability of diverse financial instruments.

In Kenya, Abdul et al. (2020) recommends that invoking a policy that sides with monetary is feasible for economic stabilization. Nevertheless, its implication power depends on whether prices are stable or not if its transmission channel appears to be interest rates and money supply. Thus, its efficiency depends on its ability to achieve price stability. Implication of their work is that Kenya achieves growth when monetary policy lowers the amount of money in circulation and interest rates.

Applying panel time series data from three Asian countries (Malaysia, Singapore, and Thailand), Tan et al. (2020) examined how economic growth in the three states would respond when expansive monetary policy, in terms of lower interest rates and increased money supply, is introduced. In pursuit of this objective, data from the first month of 1980 through the last month of 2017 was used. Using the Autoregressive Distributed Lag model, the study found that changes in interest rates affect growth in a decreasing manner in the three countries, while an increase in the rate of money circulation causes negative variations in Malaysian and Singaporean GDP.

Examining the efficiency of increasing money circulation and changing the rate of foreign currency exchange of two African countries, Nigeria and Ghana, Omodero (2019) trained a lag two auto regressive distributed structure model with a panel time

data structure spanning from the year 2009 to the year 2018. The study in isolation served to establish on one end the individual effects of the two variables on growth and on the other end the joint effect of the two variables on growth. From the study, money supply was found to be negative and significantly affecting growth in Nigeria. On the other end, interest rates were found significant and negatively affected growth in both countries. The joint effect of the two variables was found insignificant in the two countries.

Undeniably, scholars have always associated monetary policy with the growth of total output of an economy. It could be argued that the extent of the impact caused on growth heavily hinges on the guidance issued by different conduits used by central bank in the implementation process of monetary plan. With this in mind, Idris (2019) establishes, how changes in interest rates affects the evolution of Nigerian economy in a data structure that ranged from1980 to 2017. Further, the study used various tests such as cointegration to ensure zero biasness in the outcome. The study found a persistent positive association for a longer period between indicators of monetary rule and growth. Specifically, the study found that monetary policy had beneficial influence on output.

In their study, Tiamiyu et al. (2021) applied self-exciting Markov regime models to examine time series data spanning from January 1980 to December 2017 to investigate the relationship between monetary policy and growth in Nigeria. The study found a negative nexus between growth and the exchange rates in Nigeria. This finding, suggests lower exchange rates for GDP growth increase in Nigeria. Still on whether exchange rate is reliable in influencing growth remains a critical question for scholars like Hatmanu and Cautisanu (2020) who in the state of Romania involved autoregressive distributed lag model to access the influence of exchange rates and interest rates on the Romanian economy. Their findings revealed that in the short term, economic growth was negatively impacted by interest rates but positively influenced by exchange rates.

Badiea (2020) investigated the mechanism through which real interest rates detrimentally affected economic growth in transitioning economies. Their research utilized dynamic panel data analysis employing the Generalized Method of Moments

with ten seemingly unrelated equations with a time series data dated 1996 to 2015 of thirty-eight countries having diverse changeover stages. The findings were of the view that multiple diversified and negative links existed between real interest rate and economic growth. A conclusion on their study was that interest rate having a nature of exogenous determination in transiting economies may have a dire effect of constraining an economy to endure its intermediate level and achieving higher growth. A suggestion was made by their study that lower interest rates are vital for transition sustenance and augmented growth.

The work of Mesagan (2019) involved eight largest African countries in a data span ranging between 1970 and 2019 to evaluate the effect of exchange rate irregularities on GDP growth. The NARDL model employed suggested that long-run linkage existed amid exchange rate, trade and output growth. Further, their study found that currency price rise enhances short-run trade and output in South Africa while the same decreases in Angola. Concerning Egypt and Morocco which were also considered in the study, currency price rise had positive effects on both trade and growth in the short term but negative effects in the long run. The study finding indicated that for most African nations, exchange rate fluctuation, has largely deleterious effects on the long-term equilibrium in trade and economic expansion.

In Bangladesh, Hossin (2020) employed a tri-variate causality model with a time series data covering between year 1980 to 2014 to reveal whether money supply and interest rates influences growth significantly or not. Findings on the cointegration and error correction models showed that increase in interest rates in the short term had beneficial impacts on growth, but over the long term, these effects turned negative. Money supply on the other hand, despite the fact that it had positive influence on growth initially, in the long term, the effect become adverse and hampered growth. Still in the same country, Vasylieva et al. (2018) empirically inspected whether monetary policy was growth stimulative by invoking data covering the period between 1980 to 2019 using an autoregressive distributed lag model. The study found that in the long term, money supply had a favorable effect on economic growth which was a major deviation from the findings of Hossin (2020).

2.3.2 Fiscal Policy and Economic Growth

Investigating effectiveness of fiscal policy in influencing growth has attracted the attention of scholars. The studies appear in both developing and developed economies. In their research, Zhang et al. (2021) used a VAR estimation technique to study the influence of public debt and government spending on economic growth in the United States. The analysis covered data from 1990 to 2001.The study found a strong positive effect of higher public debt on economic growth. Zeynalova (2024) examined possible correlations between tax revenue and economic growth in three European countries: France, Germany, and Greece for the period 1996-2009. The study found that tax rebate is the most important short-term policy that can be applied at macroeconomic level to stimulate growth in European countries.

Wang et al.(2022) determined the impact of fiscal instruments (taxes and public debts) on economic growth of sub-Saharan African countries. The findings implied that investing public debts on productive expenditures has significant effect on Sub–Saharan African economies. In particular their findings appear consistent to the work of Munongo (2019) which investigated effectiveness of government consumption expenditure and income tax in spurring economic growth in Zimbabwe. The error-correction model which was used to take care of short-run dynamics indicated that government consumption expenditure and income tax positively impacted growth in Zimbabwe.

Voda et al.(2022) studied the effects of public debt on private investment and economic growth in Kenya. The study used a two-stage instrumental variable estimation method and found that public debt impacts on investment and investment plays a major role in the determination of growth in Kenya. Based on their findings the study recommended reexamination of government spending to eventually make it complementary to investment which spurs growth.

Ding et al.(2018) utilized structural VAR to ascertain if fiscal policy transmission in China through government expenditure and taxes is potent in accelerating the economy of China. The study involved the utilization of data series from 2001 to 2019. The finding shows that, government expenditure in China is effective in stimulating China's economy. Taxes too were found relevant in influencing growth

in China but not as much as government expenditure did. The study by Viphindrartin et al.(2023) employed a SVAR method that filters out the business cycle and monetary policy to capture realistic estimates of fiscal reactions and their multipliers for the Australian economy. The study found government expenditure and tax multipliers reach an optimal level of 0.73 and 0.54. The study concluded that a macro strategy that simultaneous augments expenditure and taxes can serve as a booster for economic growth in Australia.

Amar et al.(2020) explored the impracticality of fiscal policy in rebuilding the economy of Syria. The study invoked ARDL framework to evaluate the reaction of real GDP to government expenditure and tax revenue innovations in the analogous market. The study in addition employed other extraneous variables such as the supply of money and prices of oil. The study found that government spending as a fiscal tool is effective in accelerating economic recovery of Syria. Alshawabkeh and Warrad (2024) explored the influence of fiscal policy on the economic growth of Anglophone ECOWAS nations. The study used annual panel data from 2005 to 2018, applying the Structural Vector Autoregressive (SVAR) approach to separate fiscal policy changes. The study revealed that government expenditure had a significant impact on the economic performance of these countries, both in short-term and long-term.

Omodero (2019) examined the dynamic effect of external debt on GDP growth of Nigeria. The study made use of structural vector auto regression model on a time series data from 1970 to 2014. Through the resultant impulse response functions and variance decompositions, the negative impact of external debt shocks on growth persisted over a longer period. The findings in their work does not show any deviation from the work of Alshawabkeh and Warrad (2024). However, this study did not consider the influence of tax revenue on growth which is a critical fiscal item.

Whether a link existed between external public borrowing and growth of African countries was the subject of the study by Bahaddi and Karim (2019). The study involved forty-three African countries and the application of generalized method of moment framework to establish the causality between growth and external borrowing. The span of the data was for from 2001 to 2018. The study findings objectively direct African policy makers to stick to solicitation of borrowed funds on

undertakings that would result into continuous long-term profitable enactments. Additionally, the administration and growth associates should establish a framework that ensures proficient use of borrowed funds.

In their study, Tavakoli and Chatterjee (2022) explored the influence of tax and debt-financed government expenditure on economic growth in Kenya, utilizing time series data spanning from 1980 to 2014. They employed the Vector Error Correction Model (VECM) for data analysis. The results reveal that investment expenditure financed through debt issuance positively impacts economic growth, while financing government consumption expenditure through debt has a negative effect. Additionally, the findings suggest that tax-funded public consumption spending has a detrimental effect on economic growth, whereas financing government investment expenditure with tax revenue stimulates economic growth. To note in their work is that government development expenditure had positive effects which contradicts the findings of the work of Veiga and Pinho (2016).

Kimani and Maingi (2021) evaluated whether government expenditure had any influence on GDP growth in Kenya. Their work made use of the restricted Vector autoregressive model with time series data spanning from the year 2001 to 2019. The study found that government expenditure significantly affects Kenyan GDP growth. Sanyang and Bah (2024) investigated the effect of public debt on economic growth in Nigeria. The study used a structural vector autoregressive model with data series ranging from 1982 to 2018. The submissions of their study found that external borrowing has adverse effect on growth in both the short term and the long term. The findings in their work shows a great deviation from the work conducted by Norris et al. (2015) which showed government spending has indeed positive effect on economic growth.

Shah and Khattak (2024) assessed whether public expenditure made a difference to Nigeria's economic progress. Their study decomposed government expenditure into both capital expenditure and recurrent expenditure. Pesaran ARDL model was employed in their study using 1981 to 2017 data. The study finding supported the presence of a level association amongst public spending pointers and GDP growth of Nigeria. In specific, recurrent expenditure was established to have a negative

significant influence on economic growth whereas public capital expenditure was found to have positive but insignificant effect on economic growth.

Mukelabai and Haabazoka (2024) investigated the effect of government expenditure on economic growth of 22 low to middle-income countries and 37 high-income countries for the period 1993 to 2012. The study used the fixed effects and the GMM frameworks to assert that a shift of government expenditure from non-productive to productive spurs growth in both the high income and the middle-income states.

Mammadov and Ahmadov (2021) investigated the short- and long-term effects of public debt on economic growth in selected Asian countries for the period 1980 to 2012. The dynamic fixed effect model that was employed showed that augmented government debt stock has contractionary effects on growth both in the long and short run. The study by likewise Shaaibith and Mahfoudh (2024), assessed the causal link between external borrowing and economic growth in the Southern Asia region. Applying quintile regression and robust output regression to data from 2000 to 2018, the study found that external debt had a negative and significant impact on the growth of South Asian countries of Afghanistan, Bangladesh, Bhutan, India, Pakistan, Sri Lanka, the Maldives, and Nepal.

Similar to numerous other nations striving for advancement, Tanzania confronts several challenges, including the pursuit of sustainable economic growth. In this context, investigating Tanzania's economic growth, Somme (2024) utilized an ARDL model to analyze the effects of taxation. The study concluded that taxes imposed on domestic goods and services positively influence GDP growth. However, it also pointed out that income taxes negatively affect Tanzania's economic growth in a significant manner.

In the study by Fang's (2024), the impact of income tax on economic growth was investigated within the context of global economic trends. The research revealed opposing correspondence exists between income tax rates and economic progression, highlighting the influence of factors like consumption, investment, and employment rates on GDP fluctuations. Additionally, reduction in taxation was found to stimulate GDP growth by encouraging consumption and investment while providing governments with more funding. This shows a great departure from the work done by Anthony and Arikpo, (2016) which found that tax revenue has zero effects on

growth. The study recommended policymakers consider the delayed effects of taxation policies and suggested timely adjustments to tax structures to promote economic growth. Erum's (2024) study delved into the impact of fiscal spending on the economic development of the USA, considering factors like governance quality, natural resources, and information communication technologies (ICT). In order to fulfill this aim, the study utilized a Cross-Sectional Augmented Autoregressive Distributed Lags (CS-ARDL) approach to analyze panel time series data between 1984 and 2019. The study's results indicated that over the long haul, fiscal spending acts as an impediment to economic growth.

The primary aim of Mustafa's (2024) investigation was to analyze the interrelationship between public outlays, foreign investments, and the advancement of gross national income within the Western Balkans (BB6) and Croatia over the period 2002 to 2021. The methodology employed in the study entailed a detailed scrutiny of public expenditures and their effect on GDP. The findings supported economic theories asserting that an upsurge in government spending correlates with GDP expansion.

The study by Soto (2024) delved into the exploration of the drivers behind Peru's economic growth spanning from 2007 to 2018. This analysis encompassed an evaluation of private consumption and governmental spending within the context of Peru's economic liberalization. The findings suggested that public investments, notably in infrastructure and legal enhancements, did not positively influence Peru's economic growth in the recent past.

Somalia grapples with extensive dollarization, limiting the effectiveness of traditional monetary policies. Consequently, fiscal strategy has become the government's primary economic management tool. Osman's (2023) study delved into the different impacts of fiscal strategy on Somalia's economic growth. Analyzing annual time series data from 1970 to 2019 with the Nonlinear Autoregressive Distributed Lag (NARDL) model, the study revealed co-integration among the variables. Over the long term, both increasing and decreasing government spending lead to positive economic growth, with spending reductions having a more pronounced effect. In the short term, changes in both spending directions contribute to growth, but increased government expenditure shows a stronger impact than spending cuts.

A study by Gara (2024) investigated the influence of fiscal plan on the economic development of Southeast European nations. Analyzing data spanning from 2010 to 2021 across 11 countries, the study utilized various statistical models, including OLS Robust fixed and random effects models, as well as GMM. The findings revealed a progressive correlation between fiscal plan and economic evolution in Southeast Europe, underscoring the importance of implementing effective fiscal strategies to stimulate growth in these countries.

2.3.3 Relative Potency of Fiscal and Monetary Policies in Stimulating Growth

Jolaiya (2024) explored how monetary and fiscal plans influenced real output in the USA, using data collected quarterly from 1959 through 2010. The study outcomes disclosed monetary policy as the most effective policy than fiscal policy in stirring real output in USA. Fayou and Daali (2024) scrutinized the absolute impact of fiscal and monetary rules on Pakistan's real output, examining annual data from 1981 to 2009. The findings revealed that although both policies play a role in developing economic growth, monetary policy exhibited a more pronounced consequence compared to fiscal policy.

Jacob's (2019) study investigated the consequences of fiscal and monetary strategies on the output growth of African nations between 1996 and 2016, employing dynamic panel General Method of Moment (GMM) techniques. The results highlighted a beneficial influence of both fiscal and monetary rules on economic growth in the region but assessment of the two policies showed that fiscal plan had larger scale outcome than monetary course of action in improving economic evolution in sub-Saharan Africa. In contrast, Eromosele and Umoru's (2019) study indicated that employing monetary policy tools and adjusting interest rates yielded greater impact compared to utilizing government spending and taxation as means to achieve higher economic development in Sub-Saharan African economies.

Through the use of sign restricted VAR model, Berg et al. (2013) explored how monetary and fiscal policies influence growth in Kenya, Uganda, and Tanzania. The study highlighted the effectiveness of deficit spending for Tanzania and the

advantages of maintaining a balanced budget for Uganda. Conversely, fiscal procedure was confirmed to be less operative in Kenya. On the other hand, monetary policy demonstrated efficacy across all three East African nations.

In a study conducted by Mutuku (2014) on monetary and fiscal plan surprises and their implications for output evolution in Kenyan economy using VAR structure, it was observed that monetary policy had negligible effects on real output in the country. Conversely, fiscal policy shocks were found to significantly alter real output for a duration extending to nearly eight quarters following their implementation. A similar study by Mathu (2019) found that that monetary policy plays a large role than fiscal policy in catalyzing growth of the Kenyan economy. These contradictory findings provoke curiosity of the current to conduct intense research on this area to fully unveil the relative performance of these policies.

Ogege and Shiro (2023) investigated the dynamics of Nigeria‟s monetary and fiscal policies on the country's economic growth. The study, which specifically focused on the effects of both on the growth of Nigerian economy, revealed that both monetary and fiscal policy contributed positively to the growth of Nigerian economy. Similarly, Sanni, et al (2025) found that none of the policies can be said to be superior to another and that a proper mix of the policies may enhance a better economic growth. Effiong et al (2020) investigated the accounting implications of fiscal and monetary policies on the development of the Nigerian stock market. It was discovered that only a mixture of monetary and fiscal policy exerted a significant impact on the development of Nigerian stock market.

Enahoroet al (2020) reported that fiscal and monetary policies had enhanced operational efficiency in the Nigerian financial institutions, by reducing financial indiscipline in the financial and fiscal systems. The paper concluded that fiscal and monetary policies had galvanized government to commit budgetary management which would also address anomalies in the financial system.

Nwosa and Saibu (2012) investigated the transmission channels of monetary policy impulses on sectoral output growth in Nigeria for the period 1986 to 2009. Secondary quarterly data were used for the study while granger causality and Vector Auto-regressive Method of analysis was utilized. The results showed that interest rate channel was most effective in transmitting monetary policy to Agriculture and

Manufacturing sectors while exchange rate channel was most effective for transmitting monetary policy to Building/Construction, Mining, Service and Wholesale and retail sectors. The study concluded that interest rate and exchange rate policies were the most effective monetary policy measures in stimulating sectoral output growth in Nigeria.

Still in Kenya, the evaluation conducted by Chen et al. (2020) focused on the long-term economic sustainability in Kenya, gauging the properties of coordinated monetary and fiscal guidelines over the period from 1963 to 2014 using time series data. The study employed the Markov switching model to establish the coordination. The study found that on one hand fiscal policy regime in Kenya was passive, negative and significant. Moreover, the study found fiscal regime as unsustainable since an upsurge in debt levels led into fiscal imbalance. However, the study pointed out that an active monetary policy mirrored the outcomes of a contractionary monetary policy, with real interest rates showing a positive response to inflationary upticks.

2.4 Summary of Literature Review

The study reviewed and applied the IS-LM, the Monetarist view and the endogenous growth theories.

In respect to the reviewed empirical literature, there is a great concern among scholars in determination of the most effective policy between fiscal and monetary in stimulating output development. From the literature, tax revenues, government expenditures, public debts, exchange rates, money supply and interest rates are key variables which influences growth. The reviewed studies mainly used VAR and ARDL econometric technique and generally produced contradicting findings with no single generalization on comparative usefulness of fiscal and monetary plans in stimulating growth.

2.5 Research Gaps

From the reviewed literature, Jolaiya (2024) , Fayou and Daali (2024), Jacob (2019), Eromosele and Umoru (2019), Berg et al. (2013), Mutuku (2014), Mathu (2019), Chen et al.(2020) produced conflicting results. This calls for a study to ascertain whether these findings are replicable. The study by Shihab (2020) employed time

series data of thirty observations a case which may violate the central limit theorem. This motivated this study to use wide time series data from year 2006 quarter one to year 2019 quarter four, a period which yields fifty-six observations and therefore adding to the probability of producing consistent population parameters. Scope in terms of geographical area where the study is conducted, is a limiting factor in research (Arora, 2018). In Kenya, determination of comparative usefulness of fiscal and monetary plans has attracted less attention amongst scholars. Specifically, studies by Mathu (2019) and Mutuku (2014) used VAR model and produced conflicting results. This study addresses the same problem using an advanced model called structural vector autoregressive model since it captures economic dynamics across prolonged and immediate timeframes therefore making it superior than basic VAR framework. Appendix II presents the research gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the research design, theoretical framework, data collection, data processing and analysis, and the operationalization and measurement of study variables are presented.

3.2 Research Design

A research design shows the methods of data collection, the setting under which data was collected and the way data is analyzed. This study employed causal- research design. Causal research design was used since it allows a researcher to induce a shock on a variable (independent) and through a response function produced by the other variable (dependent), a researcher is able to tell the value of the explanatory variable on the explained variables. Therefore, this research design allowed the study to achieve the first and the second objective by allowing the study to induce a shock on each variable in the monetary-fiscal policy models so as to observe their causal effect on economic growth. This study design also allowed the researcher to vary fiscal and monetary policies so as to observe their resultant effects on growth and therefore their relative effectiveness could be determined based on the magnitude of multiplier effect associated with either fiscal or monetary policy and hence the achievement of the general objective. The study relied on secondary time series data that had been reviewed and sourced from KNBS and the Central Bank of Kenya. The research examined the connections between the variables with the help of a Structural Vector Auto regression (SVAR) model.

3.3 Theoretical Framework

Monetarists and Keynesians believed that fiscal and monetary policies can impact growth immediately and to some extent for a prolonged period (Adegoriola, 2018). Deliberation on how these policy plans affect growth, is captured in the basic neo-Keynesian models known as interest rates and savings (IS) and the liquidity preference money supply model (LM). The IS-LM model shows how equilibrium is attained simultaneously in the money and goods markets. Mathematically, the LM model is expressed as in Equation (3.1):

$\frac{M}{P}$ = L (r, y) 3.1

$dl/dr < 0$ and $dl/dy > 0$ Within this framework, *r* includes interest rates and exchange rates, acting as channels through which monetary policy is transmitted. *Y* represents output, *l* represents money demand, and m/p signifies real money stock.

The expression dl/dr illustrates the response of money demand to a one-unit change in any aspect of monetary policy, while dl/dy denotes the rate at which money demand changes in reaction to alterations in national income. On the other hand, the IS- model is expressed as in Equation (3.2):

$Y = K(r, y, g)$ 3.2

$dk/dr < 0$, $dk/dy > 0$, $dk/dg > 0$

In this context, *K* represents the demand for goods, *r* signifies the real interest rate, *y* stands for output, and *g* encompasses tax revenues and public debts, which are elements of fiscal policy. Based on the derivatives provided, it is inferred that demand for goods decreases as the real interest rate rises, since higher interest rates dampen investment demand while boosting savings. Conversely, demand for goods rises with income due to its influence on consumption and investment.

From Equation (3.2), it can be observed that, the IS- model is a growth model of output augmented with r which is a catch-all variable for monetary items in Equation (3.1). An explicit form of Equation (3.2) can be used to depict the association amid monetary policy, fiscal policy and economic growth. Therefore, writing Equation (3.2) in explicit form gives Equation (3.3):

$$y_t = \delta_0 + \gamma_t r_t + \beta_t g_t + \varepsilon_t \quad 3.3$$

Where y_t is output, $r_t$is a vector of monetary policy items, g_t is a vector of all fiscal policy items and $\varepsilon_t$is a disturbance term capturing any other variable omitted in the model.

From Equation (3.3), $\frac{\partial y_t}{\partial r_t} = \gamma_t$, represents monetary policy multiplier. A monetary policy multiplier shows by how much output y_t changes following deviations in monetary plan items. $\frac{\partial y_t}{\partial g_t} = \beta_t$, represents a fiscal policy multiplier. A fiscal policy

multiplier shows by how much output y_t changes following alterations in fiscal strategy instruments.

3.4 Empirical Model

To achieve the study objectives seven endogenous variables were utilized. Real GDP, public debt, government expenditure, tax revenue, money supply, central bank rate, and nominal exchange rate. Structural vector autoregressive model (SVAR) was adopted in the study. The rationale for employing the SVAR model lies in its structural nature, which enables the prediction of how an interventionist policy innovation correlates with changes in specific components of the model. Unlike standard VAR and vector error correction models (VECM), which exclusively impose long-run restrictions, the SVAR model allows for the imposition of both short- and long-run restrictions consistent with theory. Moreover, it requires only a minimal number of restrictions. Similar to the standard VAR model, the SVAR model offers two valuable tools: impulse-response functions and variance decompositions. These tools offer additional insights into the effects and transmission of macroeconomic shocks and policy innovations (Aarle et al., 2003).

In order to determine the influence of monetary plan in stimulating economic growth in Kenya, the study follows Cyrus (2014) SVAR model in its structural form as in Equation (3.4):

$$\begin{bmatrix} GD\mathrm{t} = \alpha_{10} - \alpha_{12}ms_t - \alpha_{13}RI_T - \alpha_{14}EX_t + \varphi_{11}GD_{t-1} + \varphi_{12}MS_{t-1} + \varphi_{13}RI_{t-1} + \varphi_{14}EX_{t-1} + \varepsilon_{GD\mathrm{t}} \\ MS_t = \alpha_{20} - \alpha_{21}GD\mathrm{t} - \alpha_{23}RI_T - \alpha_{24}EX_t + \varphi_{21}GD_{t-1} + \varphi_{22}MS_{t-1} + \varphi_{23}RI_{t-1} + \varphi_{24}EX_{t-1} + \varepsilon_{ms_t} \\ RI_T = \alpha_{30} - \alpha_{31}GD\mathrm{t} - \alpha_{32}MS_t - \alpha_{34}EX_t + \varphi_{31}GD_{t-1} + \varphi_{32}MS_{t-1} + \varphi_{33}RI_{t-1} + \varphi_{34}EX_{t-1} + \varepsilon_{RI_T} \\ EX_t = \alpha_{40} - \alpha_{41}GD\mathrm{t} - \alpha_{42}MS_t - \alpha_{43}RI_T + \varphi_{41}GD_{t-1} + \varphi_{42}MS_{t-1} + \varphi_{43}RI_{t-1} + \varphi_{44}EX_{t-1} + \varepsilon_{EX_t} \end{bmatrix} \quad 3.4$$

Where GD_{t}, MS_t, RI_T and EX_t is GDP growth, broad money supply, real interest rates and nominal effective exchange rates respectively. $\varepsilon_{GD\mathrm{t}}$, ε_{ms_t}, ε_{RI_T} and ε_{EX_t} are white noise uncorrelated error terms. Simultaneous Equations (3.4) are not in their reduced form. This is noted by the contemporaneous effect represented by coefficients on the right-hand side with a negative sign. As VAR models are estimated in their reduced form, the set of equations is rephrased as in Equation (3.5):

$$\begin{bmatrix} GDt + \alpha_{12}ms_t + \alpha_{13}RI_T + \alpha_{14}EX_t = \alpha_{10} + \varphi_{12}MS_{t-1} + \varphi_{13}RI_{t-1} + \varphi_{14}EX_{t-1} + \varepsilon_{GDt} \\ MS_t + \alpha_{21}GDt + \alpha_{23}RI_T + \alpha_{24}EX_t + \varphi_{21} = \alpha_{20} + \varphi_{21}GD_{t-1} + \varphi_{22}MS_{t-1} + \varphi_{23}RI_{t-1} + \varphi_{24}EX_{t-1} + \varepsilon_{ms_t} \\ RI_T + \alpha_{31}GDt + \alpha_{32}MS_t + \alpha_{34}EX_t = \alpha_{30} + \varphi_{31}GD_{t-1} + \varphi_{32}MS_{t-1} + \varphi_{33}RI_{t-1} + \varphi_{34}EX_{t-1} + \varepsilon_{RI_T} \\ EX_t + \alpha_{41}GDt + \alpha_{42}MS_t + \alpha_{43}RI_T = \alpha_{40} + \varphi_{41}GD_{t-1} + \varphi_{42}MS_{t-1} + \varphi_{43}RI_{t-1} + \varphi_{44}EX_{t-1} + \varepsilon_{EX_t} \end{bmatrix} \quad 3.5$$

In matrix notation, Equation set (3.5) can be written as in Equation (3.6):

$$\begin{bmatrix} 1 & \alpha_{12} & \alpha_{13} & \alpha_{14} \\ \alpha_{21} & 1 & \alpha_{23} & \alpha_{24} \\ \alpha_{31} & \alpha_{32} & 1 & \alpha_{34} \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & 1 \end{bmatrix} \begin{bmatrix} GD_t \\ MS_t \\ RI_t \\ EX_t \end{bmatrix} = \begin{bmatrix} \alpha_{10} \\ \alpha_{20} \\ \alpha_{30} \\ \alpha_{40} \end{bmatrix} + \begin{bmatrix} \varphi_{11} & \varphi_{12} & \varphi_{13} & \varphi_{14} \\ \varphi_{21} & \varphi_{22} & \varphi_{23} & \varphi_{24} \\ \varphi_{31} & \varphi_{32} & \varphi_{33} & \varphi_{34} \\ \varphi_{41} & \varphi_{42} & \varphi_{43} & \varphi_{44} \end{bmatrix} \begin{bmatrix} GD_{t-1} \\ MS_{t-1} \\ RI_{t-1} \\ EX_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{DG} \\ \varepsilon_{MS} \\ \varepsilon_{RI} \\ \varepsilon_{EX} \end{bmatrix} \quad 3.6$$

The matrices in Equation (3.6) can simplified as in Equation (3.7).

$$\rho M_t = \tau_0 + \tau_1 M_{t-1} + \varepsilon_t \quad 3.7$$

Assuming that the inverse of ρ exist, pre-multiplying every term in Equation (3.7) with ρ^{-1} we have:

$$M_t = \rho^{-1}\tau_0 + \rho^{-1}\tau_1 M_{t-1} + \rho^{-1}\varepsilon_t \quad 3.8$$

Simplifying Equation (3.8) we have:

$$M_t = \mathrm{F}_0 + \mathcal{L}_1 M_{t-1} + \mathrm{e}_t \quad 3.9$$

Where, $\mathrm{F}_0 = \rho^{-1}\,\tau_0$, $\mathcal{L}_1 = \rho^{-1}\tau_1$, $\mathrm{e}_t = \rho^{-1}\varepsilon_t$ and $\rho^{-1}\,\rho = 1$

Equation (3.9) is a condensed VAR model of order 1. However, the problem with model (3.9) is that the reduced error terms e_t are serially correlated. To make them uncorrelated, we pre-multiply equation (3.9) by a $M \times M$ non – singular Matrix ω_0 to get:

$$\omega_0 M_t = \omega_0 \mathrm{F}_0 + \omega_0 \mathcal{L}_1 M_{t-1} + \omega_0 \mathrm{e}_t \quad 310$$

But $\mathrm{e}_t = \rho^{-1}\varepsilon_t$ and therefore $\rho \mathrm{e}_t = \omega_0 \varepsilon_t$

One of the fundamental requirements before estimation of a structural VAR model is that it should be identified. To identify model (3.10), recursive ordering is used to restrict ρ to an $M \times M$ identity matrix and through Cholesky decomposition, ω_0 is converted into a triangular matrix with all elements above the main diagonal set to

zero and the diagonal elements set to one. Once equation (3.10) is identified, the elements in the model are recursively ordered grounded on their concurrent influence on each other. This study will follow the causality order in monetary policy VAR model: real GDP, real money supply, real interest rates and effective exchange rates. The reason behind this is that real GDP doesn't exhibit an immediate response to shocks from other variables in the system. Money supply doesn't react concurrently to changes in real interest rates and nominal effective exchange rates, yet it promptly reacts to alterations in real GDP. Real interest rates react to disturbances from all other variables in the system except nominal effective exchange rates. Lastly, nominal effective exchange rates are immediately influenced by all variables in the system (Cyrus, 2014). The relation between reduced errors ε_t and structural errors e_t in matrix form now becomes:

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ \alpha_{21} & 1 & 0 & 0 \\ \alpha_{31} & \alpha_{32} & 1 & 0 \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_{DG} \\ \varepsilon_{MS} \\ \varepsilon_{RI} \\ \varepsilon_{EX} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \mathrm{e}_{DG} \\ \mathrm{e}_{MS} \\ \mathrm{e}_{RI} \\ \mathrm{e}_{EX} \end{bmatrix} \quad 3.11$$

Following the matrix structure in Equation (3.11), to determine the effect of fiscal policy in stimulating Kenya's GDP growth, fiscal policy structural VAR model is presented by Equation (3.12). Guided by Estivao and Samake (2013), the study presumed no contemporaneous effect exist amongst real GDP, public debts, tax revenue and government expenditure shocks.

However, public debt is expected to respond immediately to real GDP but not to tax revenue and government expenditure shocks. Tax revenue is expected to respond instantly to both public debt and GDP innovations but not to government expenditure shocks. Government expenditure is expected to respond immediately to every other shock in the fiscal policy SVAR system. Therefore, the structural fiscal policy VAR variables are ordered recursively as follows: GDP, public debt, tax revenue and public debt. In matrix notation, the system becomes:

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ \alpha_{21} & 1 & 0 & 0 \\ \alpha_{31} & \alpha_{32} & 1 & 0 \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_{DG} \\ \varepsilon_{PD} \\ \varepsilon_{TR} \\ \varepsilon_{GE} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \mathrm{e}_{DG} \\ \mathrm{e}_{PD} \\ \mathrm{e}_{TR} \\ \mathrm{e}_{GE} \end{bmatrix} \quad 3.12$$

The question of relative effectiveness between the two policies is addressed by running a single SVAR model which is a combination of both monetary and fiscal

policy SVAR models and interpreting the resultant impulse response functions from structural shocks and the forecast error variance decompositions. Following the recursive ordering of the variables together with their explained reasons from both fiscal and monetary SVAR systems, the variables in the combined SVAR model assume the following recursive order: GDP, government debt, money supply, real interest rates, nominal effective exchange rates and tax revenue. Tax revenue, public debt and government expenditure represents fiscal policy while money supply, interest rates and exchange rates represent monetary policy. The combined policies SVAR model for reduced and structural disturbances, therefore becomes:

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ \alpha_{21} & 1 & 0 & 0 & 0 & 0 & 0 \\ \alpha_{31} & \alpha_{32} & 1 & 0 & 0 & 0 & 0 \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & 1 & 0 & 0 & 0 \\ \alpha_{51} & \alpha_{52} & \alpha_{53} & \alpha_{54} & 1 & 0 & 0 \\ \alpha_{61} & \alpha_{62} & \alpha_{63} & \alpha_{64} & \alpha_{65} & 1 & 0 \\ \alpha_{71} & \alpha_{72} & \alpha_{73} & \alpha_{74} & \alpha_{75} & \alpha_{76} & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_{DG} \\ \varepsilon_{PD} \\ \varepsilon_{MS} \\ \varepsilon_{RI} \\ \varepsilon_{EX} \\ \varepsilon_{TR} \\ \varepsilon_{GE} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \mathrm{e}_{DG} \\ \mathrm{e}_{PD} \\ \mathrm{e}_{MS} \\ \mathrm{e}_{RI} \\ \mathrm{e}_{EX} \\ \mathrm{e}_{TR} \\ \mathrm{e}_{GE} \end{bmatrix} \quad 3.13$$

3.4 Data Collection

Secondary time series data from the initial quarter of 2006 to the final quarter of 2019 was employed in this study. This yields a sample size of fifty-six observations a case which is in harmony with the central limit theorem since a sample size of more than twenty-nine observations is considered large and the estimated population parameters are expected to converge in probability to the actual population parameters (Johansen, 2004). The Central Bank of Kenya (CBK) provided data for monetary policy (Central bank rate, money supply and effective exchange rates) and the Kenya National Bureau of Statistics (KNBS) provided the data for Fiscal policy (Government expenditure, public debt, and tax revenue), with reviewing serving as the main approach for data collection.

3.5 Data Analysis and Processing

Since the study used SVAR model, stationarity test and optimal lag selection tests were carried out to avoid spurious results. Stationarity test was done using the Philips-Perron unit root test and the Zivot-Andrew (1982) test. All the non-stationary series were used in their first difference. Optimal lag length in the model was chosen using the Akaike Information Criterion (AIC). To distinguish the special effects of monetary and fiscal strategy shocks on GDP in the SVAR system, twenty-one

identifying restrictions were imposed on the model following the study by Sen and Kaya (2015). Moreover, to enhance model reliability and robustness, resultant residuals were subjected to Jarque-Bera test, LM test for residual correlation and the AR root table to ensure the errors conformed to normality, were serially uncorrelated and the model was stable. Analysis was performed using Stata statistical software.

3.6 Operationalization and Measurement of Study Variables

In Table 3.1, the study variables are described in terms of their operationalization and measurement.

Table 3.1: Operationalization and Measurement of Study Variables

VARIABLE		TYPE	INDICATOR	MEASUREMENT
Fiscal policy	Tax revenue	Endogenous	Overall tax income used to finance government spending	Measured as a percentage of GDP (%)
	Government expenditure	Endogenous	Public finance spent on recurrent and developmental economic activities	Measured as a percentage of GDP (%)
	Public debts	Endogenous	Total debts secured by government to finance government spending	Measured as a percentage of GDP (%)
Monetary policy	Central Bank Rate	Endogenous	Lending rates determined by the Central Bank of Kenya	Measured in terms of a percentage (%)
	Money supply(M2)	Endogenous	Currency deposits in commercial banks and currency in the public	Measured as a percentage of GDP (%)
	Nominal Exchange rates	Endogenous	The average value, weighted by importance, of the Kenyan shilling currency against all major traded currencies	Measured in terms of a number (KES) per USD
GDP growth		Endogenous	Annual percentage change in GDP.	Measured in terms of percentage (%)

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

Discussions of the descriptive statistics, research variables time plots, and the stationarity test are presented in this chapter. It also covers the optimal lag length selection criterion test, residuals normality test, residuals autocorrelation test, and the model stability test. Additionally, the chapter analyzes the monetary policy impulse response functions, the reaction patterns of fiscal policy impulses, and the breakdown of forecast error variance in economic growth.

4.2 Descriptive Statistics

The main motive for carrying out descriptive analysis in this study was to summarize the data characteristics and to establish how the variables were trending over time. Table 4.1 displays the statistical overview for the variables examined in the study.

Table 4.1 Statistical summary of the variables under study.

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP	56	5.386	1.68	0.50	11.6
EXP	56	32.99	3.28	25.41	39.01
TAX	56	19.33	1.57	16.56	22.28
DEBT	56	40.64	6.30	31.08	54.43
CBR	56	9.513	2.76	5.83	18
MS	56	33.94	1.93	29.82	36.68
EXRATE	56	95.23	2.94	88.45	103.76

NB: In the entire document GDP, EXP, TAX, DEBT, CBR, MS AND EXRATE represents economic growth, government expenditure, public debt, central bank rate, money supply and the nominal effective exchange rate respectively.

As per Table 4.1, economic growth averaged 5.386% during the study period, with a standard deviation of 1.675%. Kenya's highest output growth was 11.6%, while the lowest was 0.5%. The mean government expenditures as a percentage of GDP stood at 32.99%, with a standard deviation of 3.28. The highest government expenditure percentage was 39.01%, and the lowest was 25.41%. Tax revenues, as a percentage of GDP, had an average of 19.33%, with a standard deviation of 1.57. The highest tax revenue percentage recorded was 22.28%, and the lowest was 16.56%. Public debts averaged 40.64% of GDP, with a standard deviation of 6.30. The highest borrowing percentage was 54.43%, while the lowest was 31.08%, the central bank

rates showed lowest variability around their mean. The largest central bank rate during the study period was 18% and the lowest was 5.83 %. Money supply had a mean of 33.94% of GDP and a standard deviation of 1.93. The highest amount of currency under circulation as percentage of GDP was 36.68% and the smallest was 29.82%. Nominal effective exchange rates had a mean of KES 95.234 and a standard deviation of KES 2.942. This indicated little variability around their mean. The highest nominal effective exchange rate was KES 103.76 and the smallest was KES 88.467.

Further, to reveal how the study variables were trending over time during the study period, the study plotted their time plots. The time plots are presented in Figure 4.1.

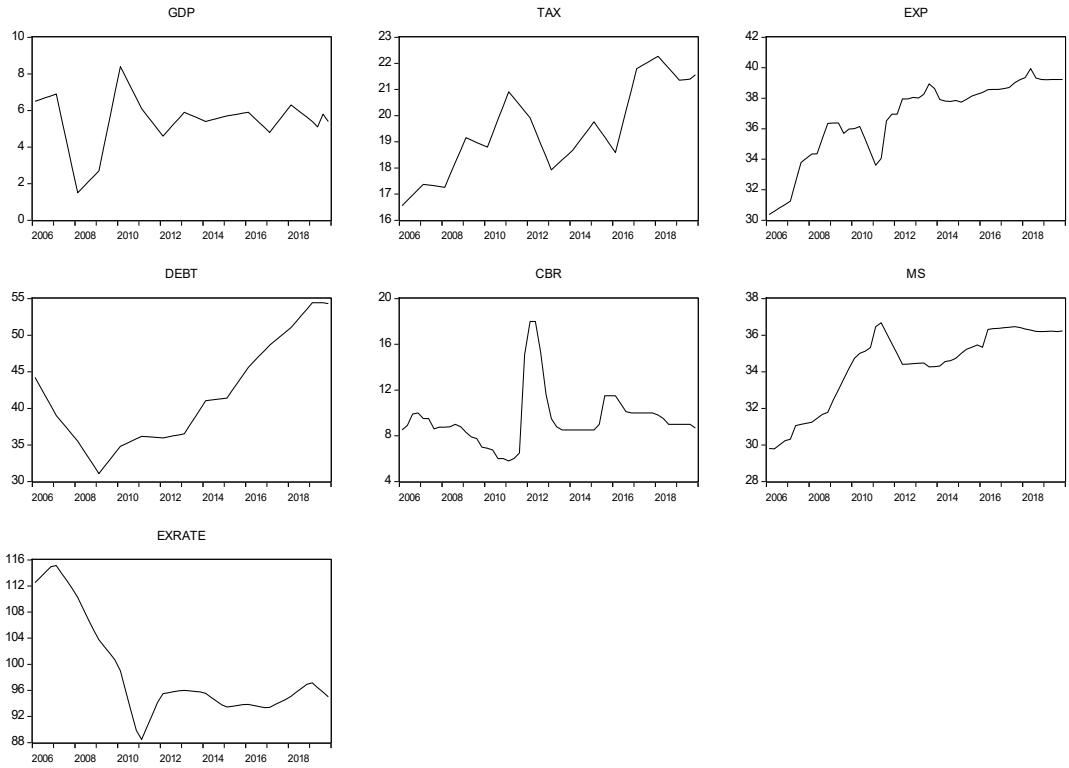

Figure 4.1: Study Variables Time Plots

As shown in Figure 4.1, the time plot of economic growth shows that Kenya experienced highest economic growth between 2009 and 2010. This was attributed to low inflationary rates of 4.1% in 2010 as compared to a rate of 10.5% in 2009, developments in key infrastructural facilities and public works for example, "*Kazi kwa Vijana",* enhanced prices of primary exports and heightened funds from overseas population due to global economic recovery. After 2010, the time plot shows that economic growth oscillated around 5% on average. Government expenditure, total

tax revenue, public debt and money supply as a proportion of GDP showed an increasing trend. The upward trend in government expenditure, total tax revenue, public debt and money supply, was a clear indication that government expenditure, total tax revenue, public debt and money supply increased overtime during the study period.

Between 2006q1 to 2011q3, the central bank rate showed a decreasing trend. This decreasing trend was attributable to the necessity for liquidity creation and increase in money supply as a strategy to revive the economy after the 2008-2009 financial crisis. Beyond 2011q3, the trend breaks and the rate increased drastically with the curve remaining above 10% between 2011q3 and 2012q4. In the remaining time horizon, the curve remained below 10%. Nominal effective exchange rate showed a decreasing trend, from year 2006q1 to 2011q4. This decreasing trend indicated Kenyan currency appreciated between 2006q1 and 2011q4. Beyond year 2011q4, the trend breaks and the exchange rate assumed a gradual increasing trend which was an indication of the Kenyan currency depreciation.

4.3 Model Diagnostic Tests, Robustness Checks and Inferential Analysis

This section presents model diagnostic tests, model robustness checks and the inferential results.

4.3.1 Unit Root Test

Estimation of a SVAR (p) model, requires the utilization of a unit root free series to evade spurious findings. The study employed both Zivot –Andrew (1992) and the Philips-Perron unit root tests to ensure robustness. The hypothesis tested was that the series contained a unit root at the level, indicating non-stationarity at level. The unit root test results are presented in Table 4.2.

Table 4.2: Study Variables Unit Root Test

Test variable	Zivot- Andrews (1992) Test statistic z(t)	5% critical value	p-value for z(t)	Decision	Phillips- Perron Test statistic z(t)	5% critical value	p-value for z(t)	Decision
GDP	-2.532	-1.123	0.003	I (0)	-3.943	-2.928	0.0017	I (0)
CBR	-1.342	-3.347	0.096	I (1)	-2.826	-2.926	0.0547	I (1)
EXRATE	-2.562	-3.736	0.235	I (1)	-1.798	-2.926	0.3816	I (1)
MS	-2.728	-3.256	0.356	I (1)	-1.106	-2.926	0.7125	I (1)
EXP	-3.236	-3.997	0.256	I (1)	-7.561	-2.926	0.0000	I (0)
TAX	-2.250	-3.128	0.341	I (1)	-1.076	-2.926	0.5467	I (1)
DEBT	-2.945	-3.867	0.569	I (1)	-1.729	-2.926	0.4162	I (1)

H_0: Series has a unit root

Table 4.2 outcome shows that, at 5% significance level, the null hypothesis for unit root on *CBR, TAX, DEBT, EXRATE* and *MS* could not be rejected if Philips- Perron test was considered. The implication of this finding was that at level, with exception of GDP and EXP which were integrated of order zero, all the remaining study variables were integrated of order one. The Zivot- Andrews results showed that apart from GDP all the rest of the variables had unit root at level. The SVAR model was therefore estimated using the first difference of *I (1)* variables and the remaining study variables.

4.3.2 Optimal Lag-Length Selection

Since SVAR (P) model utilizes present values of the dependent variables together with their lags, it was vital to determine maximum lags to include in the model, so as to avoid model misspecification. The study employed Akaike Information Criterion (AIC) to select the best length for lags in the model since it produced the smallest likelihood ratios relative to other criterions used. The outcomes related to the selection of the best lag length are illustrated in Table 4.3.

Table 4.3: Best Lag-Length Selection

Lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	306.769		0.000	-14.989	-14.882	-14.882	-11.9709	
1	432.229	227.46	49	0.000	0.000	0.000	-13.1002	-17.957
2	479.799	123.86	49	0.000	0.000	0.000	-12.071	-17.137
3	586.651	262.13*	49	0.000	2.5e-18*	-21.6326*	-13.9225*	-19.2816*

From Table 4.3, AIC chose the optimal lag -length to be three. Therefore, SVAR (3) model was used to achieve the study objectives.

4.3.3 Residuals Normality Test

Since SVAR models are estimated using ordinary least squares which assumes normal distribution in errors for estimates to be consistent, the Jarque-Bera test was employed to assess whether the residuals conformed to a normal distribution at a significance level of 5%. The results of the Jarque-Bera test for assessing normality are presented in Table 4.4.

Table 4.4: Test for Residuals Normality Test

Equation	chi2	Df	Prob>Chi2
GDP	0.073	2	0.964
EXP	7.373	2	0.025
TAX	3.901	2	0.142
DEBT	1.816	2	0.403
CBR	1.369	2	0.504
MS	0.563	2	0.755
EXRATE	1.439	2	0.487
ALL	16.534	14	0.282

H_0: Residuals are multivariate normal

The results in Table 4.4 showed that at 5% significance level, there was no evidence that challenged the null hypothesis for all the variables apart from EXP, indicating

that all errors adhered to a normal distribution apart from that of government expenditure. However, jointly all the errors followed a normal distribution.

4.3.4 Residuals Serial Correlation Test

Existence of serially correlated disturbances makes a model inefficient and inconsistent. To check if SVAR (3) was efficient and consistent, employing a significance level of 5%, the Lagrange-Multiplier test for autocorrelation was applied to evaluate the null hypothesis of no autocorrelation at lag (3). The results are presented in Table 4.5.

Table 4.5: Test for Serially Correlated Errors (LM)

lag	chi2	Df	Prob>Chi2
1	59.019	49	0.155
2	44.997	49	0.636
3	53.590	49	0.303
4	52.264	49	0.348

H0: Errors are not serially correlated at lag order (h)

The results in Table 4.5, showed no evidence for rejecting the null. This justified the absence of serial correlation in the residuals produced by SVAR (3). Therefore, SVAR (3) estimates were unbiased, efficient and consistent.

4.3.5 One- Way Granger Causality Test

Since the research set out to investigate which policy between fiscal and monetary was more effective in stimulating output growth in Kenya, it was vital to pre-test whether policy instruments Granger caused output growth. The null hypothesis tested was that no single variable Granger caused output growth. Examination of the null hypothesis at a significance level of 5% produced the results presented in Table 4.6.

Table 4.6: One-way Granger Causality Test for Economic growth

Equation	Excluded	chi2	Df	Prob>Chi2
GDP	EXP	9.838	3	0.020
GDP	TAX	22.212	3	0.000
GDP	DEBT	4.170	3	0.024
GDP	CBR	9.878	3	0.020
GDP	MS	1.042	3	0.791
GDP	EXRATE	23.408	3	0.000

H0: no single variable Granger causes GDP

Using the probability values of the Chi-Square in Table 4.6, the null hypothesis for government expenditure, tax, debt, central bank rates, and nominal effective exchange rate was rejected. This implied that, apart from money supply all the other variables Granger-caused economic growth.

4.3.6 Model Stability

To check the stability conditions for SVAR (3), AR roots test was used. The decision rule was that when all the roots of the companion matrix were situated within the unit circle, the model was regarded as stable; if not, it was deemed unstable. The stability condition for SVAR (3) is shown in Figure 4.2.

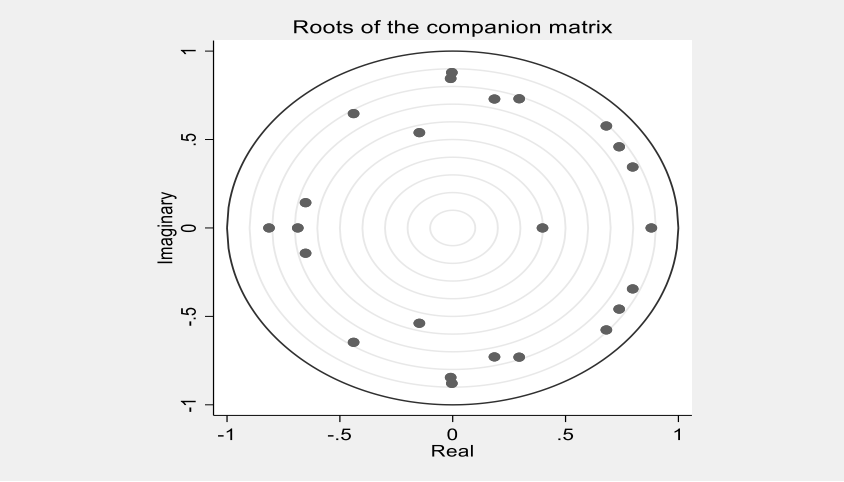

Figure 4.2: AR-Roots Test for Model Stability

Figure 4.2 showed that no single root of the companion matrix lied outside the unit circle and therefore SVAR (3) was stable.

4.3.7 Fiscal Policy Impulse Response Functions

This study used government expenditure (EXP), tax revenue (TAX) and public debt (DEBT) as the key channels through which fiscal policy could be utilized by the government to trigger output growth (GDP). Their effect on output growth is presented in form of impulse response functions in Figure 4.3.

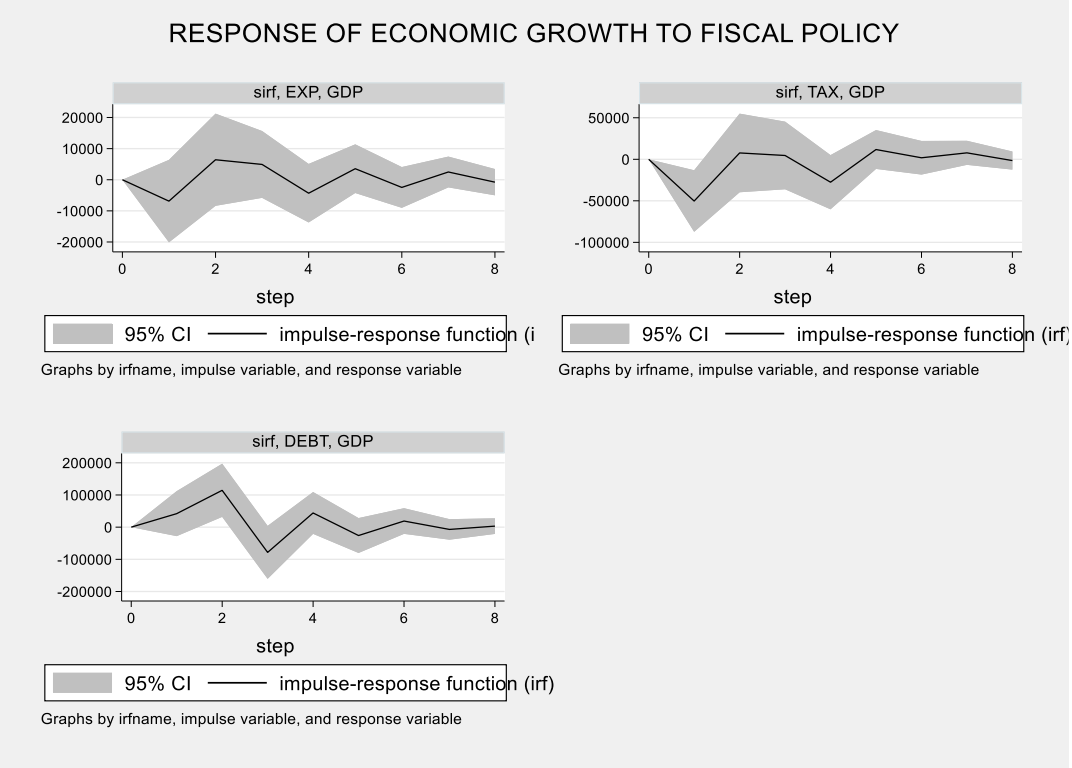

Figure 4.3: Fiscal Policy Impulse Response functions

The results in Figure 4.3 showed that, when a surprise increase in government expenditure was made, economic growth decreased insignificantly for the first two quarters and increased insignificantly between the third and the fourth quarter. Additionally, output was clearly observed to remain positive between the third and the sixth quarter. Beyond the sixth quarter, the impact decayed gradually and at the end of the projected timeframe the impact was not distinguishable from zero.

These results do not contradict the Keynesian theory since as government injects funds towards development projects and generous economic stimulus package, growth is not expected instantly. However, overtime, aggregate demand is stimulated since households through labor provision earn some disposable income which they can consume which in turn attract investments leading to expanded growth. It can be observed that, beyond the sixth quarter, decay in output growth begins. This is a clear

indication that government expenditure output multiplier dies out over time. This finding is consistent with the work of Nuru and Gereziher (2020), Politikasının (2019) and Morina (2017).

Figure 4.3 also shows that a surprise increase in tax revenues had a negative effect on economic growth for the first three quarters. Specifically, a positive shock on total tax revenue was observed to cause a decrease in output growth for the first three quarters. Beyond the third quarter, output growth insignificantly increased up to the fifth quarter and became positive. Beyond the fifth quarter, the impact decayed and by the end of the forecast horizon no noticeable impact was traced. This is so because Kenya being heavily dependent on tax revenues to fund its expenditures increased tax revenue is expected mainly from increased tax rates which reduce disposable income held by households. On the other hand, increased tax rates also discourage firms from investing more since higher tax rates truncate their profit. Additionally, higher tax rates propagate cost push inflation which levels up production costs, a case which reduces output production index in the country. This finding is consistent with the work of Amalu et al.(2020) and contradicts the work of Abbadi et al. (2021).

Figure 4.3 also indicates that unexpected increase in public debt increased output growth significantly for two quarters after the shock was introduced. Beyond the third quarter, output growth responds negatively between the second and the third quarter and settles at zero in the remaining forecast period. This finding implies that debt acquired for the purpose of stimulating growth through investment, is expected to trigger growth positively in the short run. However, in the long run as the debt stock grows, economic growth responds negatively probably as a result of crowding out effect. This scenario, triggers capital lending institutions to increase lending rates and the value of loan securities. This policy action consequently locks out potential investors from accessing capital and therefore output growth decreases. The decrease in economic growth is further exacerbated by a deliberate increase in tax rates required to earn more revenues for debt servicing. Higher tax rates reduce consumer purchasing power which scales down aggregate demand and investment levels. This result confirms the work of Mukui et al. (2020) and Arestis (2021).

4.3.7 Monetary Policy Impulse Response Functions

In this study, the central bank rate (CBR), the nominal effective exchange rate (EXRATE) and the money supply (MS) were proxied to be the channels through which economic growth (GDP) could be stimulated using monetary policy. The effect of monetary policy on economic growth is presented in form of impulse response functions in Figure 4.4.

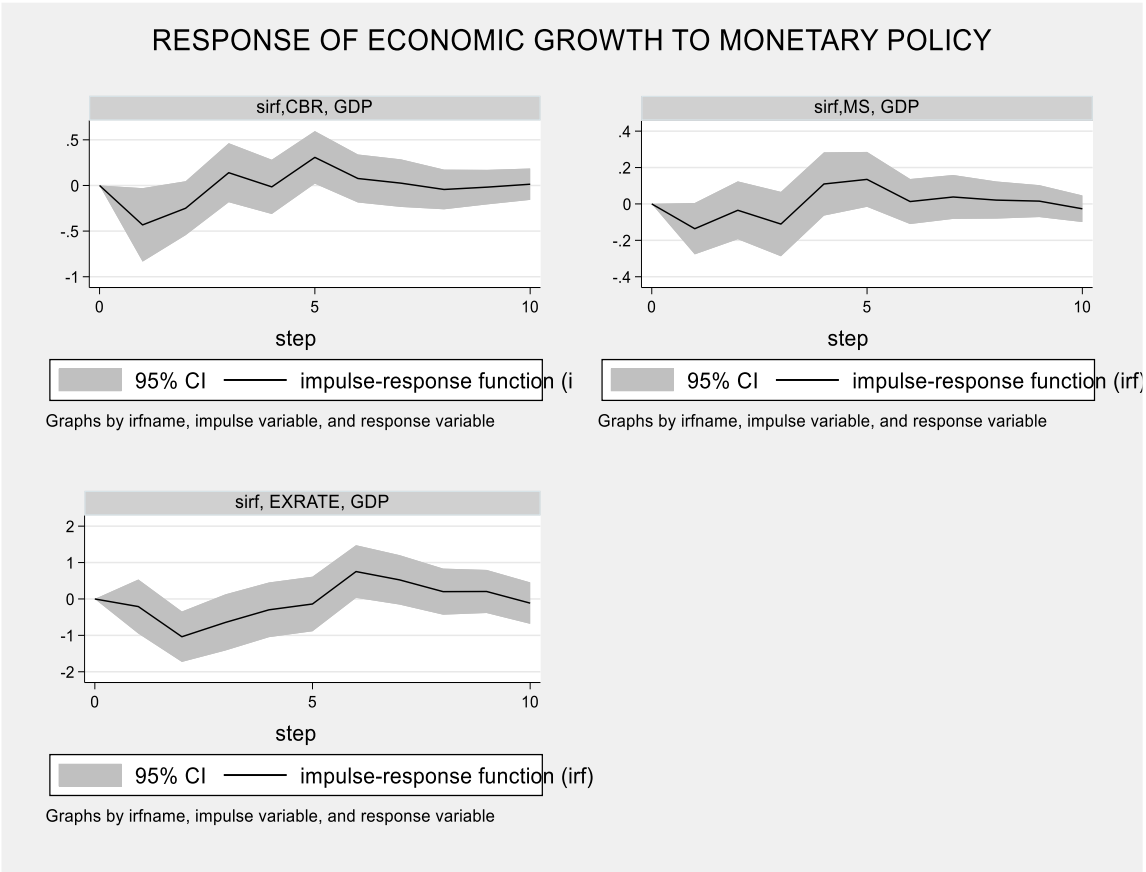

Figure 4.4: Monetary Policy Impulse Response functions

The results in Figure 4.4 showed that unexpected increase in the central bank rate, significantly affected output growth in a negative way for the first three quarters. Beyond the third quarter, output growth responded positively up to the fifth quarter. Moreover, beyond the fifth quarter, output growth responded negatively and rested at zero in the remaining forecast horizon. This is expected to occur since increase in central bank rate makes capital acquisition expensive and therefore investments fall. Falling investments consequently decrease output in the economy. This finding is consistent with the work of Abbadi et al. (2021), Daoui et al. (2021), Safiullah et al. (2021) and Bédi & Hervé (2017).

Growth stimulation through money supply channel in Kenya is not effective. Figure 4.4 showed that a sudden increase in money supply in Kenya has almost zero impact on economic growth in the entire forecast horizon. Specifically, it was observed that the shock only affected growth positively between the fourth and the fifth quarter though the impact was insignificant. This finding is in order since a surprise increase in monetary stock is expected to increase aggregate demand suddenly. The rising demand attracts demand push inflation which reduces consumer purchasing power which in turn scales down investment leading to decreased economic growth. This finding confirms the work of Akalpler (2018), Lan (2018) and Syed (2019) . However, the finding contradicts the work of Chaitip (2015), Patricia and Izuchukwu (2016), and Dingela (2017).

Finally, Figure 4.4 shows that unexpected increase in the nominal effective exchange rate had a negative impact on economic growth for the first three quarters. Beyond the third quarter, economic growth responded positively as the impact dies out over time. This finding was in order since Kenya being an agro-based economy, a substantial export value consists of agricultural produce. Therefore, it is expected that as the economy grows agricultural exports increase inflow of foreign currency making the Kenyan currency to appreciate. This appreciation makes imports attractive and cheaper. This in turn withdraws income out of the country. Moreover, the increased demand sire demand-pull inflation, a scenario that leads to growth convergence. This finding is consistent with the work of Idris (2019), Hodaj (2020) and Daoui et al. (2021)and contradicts the study of Ribeiro (2020).

4.3.8 Economic Growth Forecast Error Variance Decompositions (FEVDS)

Table 4.7 shows variance decomposition for economic growth in Kenya using a forecast horizon of twelve quarters.

Table 4.7: Variance Decompositions for Economic Growth

Period	S. E	GDP	EXP	TAX	DEBT	CBR	MS	EXRATE
1	1.052	100	0	0	0	0	0	0
2	1.252	76.64	7.50	2.69	5.08	4.23	0.27	3.60
3	1.410	69.37	7.95	2.15	11.52	6.39	0.23	9.38
4	1.457	65.07	7.73	4.10	15.72	6.59	0.21	11.56
5	1.548	65.36	6.85	5.06	15.26	5.85	1.33	11.29
6	1.602	62.80	8.45	5.23	15.14	6.98	1.84	10.55
7	1.652	59.15	10.71	5.68	15.32	8.06	1.96	10.13
8	1.672	58.78	10.66	5.64	15.40	8.00	1.92	10.59
9	1.690	57.67	10.44	5.74	16.40	7.90	1.89	11.95
10	1.715	57.84	10.68	5.63	16.28	7.97	1.84	11.75
11	1.732	57.01	10.94	5.53	16.25	8.63	1.83	11.81
12	1.744	56.28	10.79	5.47	16.28	8.89	1.94	12.34

From Table 4.7, the variance decomposition for economic growth (GDP) indicates that economic growth is a powerful predictor of itself in the future since more than 50% of economic growth variation was predicted by its own shocks in the entire forecast horizon even though its forecasting power decayed overtime. Considering fiscal policy shocks (EXP, TAX and DEBT), public debt (DEBT) seemed the most effective fiscal policy channel through which the Kenyan government could use to stimulate growth relative to government expenditure and tax revenue. This is because; starting from the second quarter, more than 11% of economic growth variation into the future was predicted by public debt with its forecasting ability increasing overtime. On the other hand, focusing on monetary policy surprises (CBR, MS and NEEX), nominal effective exchange rate (NEEX) emerged the most effective monetary policy channel through which the Kenyan government could stimulate growth since more than 10 % of economic growth variations into the future were predicted by nominal effective exchange rate. Moreover, its proportionate forecast power increased overtime in the entire forecast horizon. A comparison of the forecast error variance decompositions from the most effective fiscal policy channel (public debt) and the most effective monetary policy channel (ominal effective exchange rate), leads to a conclusion that fiscal policy had greater ability of predicting economic growth into the future than monetary policy.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY IMPLICATION

5.1 Introduction

Covered in this chapter is summary of the findings, the conclusions made, the policy recommendations and suggested area of further research.

5.2 Summary

The objective of this study was to assess whether the Kenyan government should adopt monetary or fiscal policy to drive economic growth. Specifically, the research focused on evaluating how these policies influence economic growth in Kenya. To meet these objectives, the study utilized quarterly time series data covering the period from the first quarter of 2006 to the fourth quarter of 2019. A structural vector autoregressive (SVAR) time series model was employed using a causal research design to analyze the impact of both policies. To ensure reliable results, the Phillips-Perron and Zivot-Andrews (1992) tests were applied to check for stationarity. The Akaike Information Criterion (AIC) was used to determine the appropriate lag length, and the AR roots graph was examined to verify that the model remained structurally stable throughout the study period. The results indicated that both fiscal and monetary policies played significant roles in influencing Kenya's economic growth. However, fiscal policy proved to be more effective in stimulating growth than monetary policy.

5.3 Conclusions

This study examined whether Kenya's government should rely on monetary or fiscal policy to stimulate economic growth. It analysed quarterly time series data from 2006 to 2019 using a structural vector autoregressive (SVAR) model. To ensure reliability of the study results, robust and sound statistical diagnostic tests indicated in section 5.2 of this chapter were employed. Regarding the study's findings on the effects of fiscal policy on economic growth, the Impulse Response Function (IRF) results indicated that unexpected increases in total tax revenues had a significant negative effect on economic growth in the short run. Additionally, a sudden rise in total government expenditure led to an insignificant decline in economic growth for the first two quarters, followed by a significant increase in output in the third and fourth

quarters. Moreover, an unexpected increase in public debt stock in Kenya significantly boosted output growth in the short run.

Forecast error variance decomposition results further revealed that public debt was the primary predictor of economic growth, suggesting that public debt had a greater stimulative effect on growth than government expenditure and tax revenue. On the other hand, concerning the effects of monetary policy on economic growth stimulation in Kenya, IRF results showed that unexpected increases in the Kenyan Central Bank rate significantly reduced output growth in the short run. Furthermore, an unanticipated increase in money supply had an insignificant effect on growth in the short run. Additionally, the study found that when nominal effective exchange rates increased unexpectedly, output growth in Kenya declined significantly in the short run but rose substantially in the long run.

An analysis of forecast error variance decomposition of economic growth revealed that the nominal effective exchange rate was the key predictor of economic growth, indicating that it was the most effective monetary policy channel for stimulating growth in Kenya. Comparing the most effective fiscal policy channel with the most effective monetary policy channel, the study concluded that fiscal policy was more effective than monetary policy in stimulating growth in Kenya.

Comparing the findings of this study with previous research, the results align with some studies while contradicting others. For instance, this study found that both fiscal and monetary policies significantly affected economic growth in Kenya. However, studies by Mutuku (2014), Havi and Enu (2014), Munongo (2012), Ugwuanyi and Ugwunta (2017), Taylor et al. (2012), and Shihab (2012) concluded that only fiscal policy had a significant impact on economic growth in Kenya, Zimbabwe, Sub-Saharan Africa, the USA, France, Germany, and Greece, respectively.

Moreover, since this study found that monetary policy significantly affects economic growth in Kenya, this finding aligns with research by Senbet (2011), Milani and Treadwell (2012), Lee and Werner (2018), Fernald (2014), Arora (2018), and Davodi and Sims (2018) in countries such as the US, Japan, Germany, the UK, China, India, Burundi, Rwanda, Kenya, and Uganda. Additionally, the finding that fiscal policy is more effective than monetary policy in stimulating economic growth is consistent

with studies by Sen and Kaya (2015), Ugwuanyi and Ugwunta (2017), Makhoba et al. (2019), and Abu and Tarawalie (2020). However, this finding contradicts the work of Obeid (2017), Malika and Madhurapperuma (2018), Moolio (2019), Mugableh (2019), and Safiullah (2021).

5.4 Policy Implications

The results of this study suggest that fiscal policy is more effective than monetary policy in promoting economic growth in Kenya. Specifically, public debt was identified as the most effective fiscal channel for predicting growth. Therefore, it is recommended that the Kenyan government utilize expansionary fiscal policy, such as increasing debt levels, during periods of economic stagnation and recession to stimulate growth.

By increasing debt levels, the government can boost aggregate demand by increasing disposable income for households. This increase in demand will lead to more investments, ultimately accelerating output growth. Additionally, it was found that unexpected increases in the Kenyan central bank rates have a negative impact on output growth. Therefore, it is advised that the government implement expansionary monetary policy, such as reducing the Central Bank Rate (CBR), to stimulate growth during economic slowdowns.

Lowering central bank rates makes capital acquisition more affordable, attracting investments and increasing output. Furthermore, the study highlighted the importance of the nominal effective exchange rate in long-term output growth. To capitalize on this, the Kenyan government should focus on maintaining a floating exchange rate system to enhance the competitiveness of exports. This strategy will increase income from exports, ultimately boosting economic growth.

5.5 Suggestion for Further Research

Since the findings of this study contradicted some previous studies and confirmed others, this study did not arrive at a final conclusion regarding which policy between fiscal and monetary is more effective than the other in stimulating economic growth in other countries. The work is also limited in country specificity. Therefore, further research can be conducted in this area in other countries using a different econometric model for policy analysis such as structural vector autoregressive models with sign restrictions.

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APPENDICES

Appendix I: Study Data 1

YEAR	DEBT	EXP	TAX	CBR	EXRATE	MS	GDP
2006q1	44.23	30.38	16.56	8.5	112.5	29.81	6.5
2006q2	42.93	30.59	16.76	8.9	113.32	29.78	6.6
2006q3	41.62	30.81	16.96	9.9	114.14	30.01	6.7
2006q4	40.32	31.03	17.17	10	114.97	30.23	6.8
2007q1	39.02	31.25	17.37	9.5	115.12	30.31	6.9
2007q2	38.14	32.52	17.35	9.5	113.94	31.05	5.55
2007q3	37.26	33.79	17.32	8.6	112.76	31.12	4.2
2007q4	36.39	34.06	17.29	8.75	111.59	31.18	2.85
2008q1	35.51	34.34	17.26	8.75	110.24	31.24	1.5
2008q2	34.4	34.35	17.74	8.8	108.57	31.45	1.8
2008q3	33.29	35.36	18.21	9	106.85	31.67	2.1
2008q4	32.18	36.35	18.68	8.8	105.22	31.78	2.4
2009q1	31.07	36.37	19.16	8.3	103.76	32.43	2.7
2009q2	32.01	36.38	19.07	7.9	102.73	33.02	4.125
2009q3	32.94	35.69	18.97	7.75	101.7	33.61	5.55
2009q4	33.87	35.98	18.89	7	100.68	34.18	6.975
2010q1	34.8	36.01	18.8	6.9	98.98	34.73	8.4
2010q2	35.14	36.15	19.32	6.75	95.94	35.01	7.825
2010q3	35.48	35.31	19.86	6	92.9	35.12	7.25
2010q4	35.82	34.45	20.38	6	89.86	35.32	6.675
2011q1	36.16	33.61	20.91	5.8	88.47	36.47	6.1
2011q2	36.11	34.05	20.67	6	90.37	36.68	5.725
2011q3	36.06	36.52	20.42	6.5	92.27	36.11	5.35
2011q4	36.01	36.95	20.17	15.1	94.17	35.54	4.975
2012q1	35.96	36.96	19.92	18	95.49	34.98	4.6
2012q2	36.1	37.95	19.42	18	95.64	34.41	4.925
2012q3	36.24	37.95	18.92	15.3	95.78	34.42	5.25
2012q4	36.37	38.05	18.43	11.6	95.93	34.44	5.575
2013q1	36.51	38.01	17.92	9.5	96	34.47	5.9
2013q2	37.64	38.27	18.11	8.8	95.92	34.48	5.775
2013q3	38.77	38.95	18.31	8.5	95.84	34.27	5.65
2013q4	39.91	38.63	18.48	8.5	95.76	34.28	5.525
2014q1	41.04	37.91	18.68	8.5	95.52	34.31	5.4
2014q2	41.13	37.81	18.95	8.5	94.94	34.56	5.475
2014q3	41.21	37.79	19.22	8.5	94.37	34.61	5.55
2014q4	41.3	37.85	19.49	8.5	93.79	34.73	5.625
2015q1	41.39	37.75	19.77	8.5	93.44	35.01	5.7
2015q2	42.45	37.93	19.47	9	93.57	35.23	5.75
2015q3	43.5	38.14	19.18	11.5	93.69	35.34	5.8
2015q4	44.55	38.26	18.89	11.5	93.82	35.46	5.85
2016q1	45.61	38.38	18.59	11.5	93.84	35.33	5.9
2016q2	46.36	38.56	19.39	10.8	93.68	36.31	5.625

2016q3	47.12	38.57	20.19	10.1	93.52	36.36	5.35
2016q4	47.87	38.58	20.99	10	93.36	36.37	5.075
2017q1	48.63	38.63	21.79	10	93.39	36.41	4.8
2017q2	49.23	38.71	21.92	10	93.8	36.43	5.175
2017q3	49.83	39.01	22.03	10	94.21	36.47	5.55
2017q4	50.43	39.21	22.16	10	94.62	36.42	5.925
2018q1	51.02	39.35	22.27	9.8	95.1	36.33	6.3
2018q2	51.87	39.94	22.04	9.5	95.72	36.28	6.075
2018q3	52.72	39.33	21.82	9	96.34	36.21	5.85
2018q4	53.57	39.23	21.59	9	96.96	36.19	5.625
2019q1	54.42	39.21	21.36	9	97.14	36.21	5.4
2019q2	54.44	39.22	21.37	9	96.43	36.22	5.1
2019q3	54.43	39.23	21.4	9	95.72	36.2	5.8
2019q4	54.31	39.22	21.56	8.67	95.02	36.23	5.4

Source: The Central Bank of Kenya and the Kenya National Bureau of Statistics

Appendix II: Research Gaps 1

Author(s)	Focus of the Study	Methodology Used	Findings	Knowledge Gap	Focus of the current Study
Abaida (2023)	Assessing the sustainability of fiscal policy in Morocco	VAR Framework with secondary time series data.	monetary policy was akin to spurring US output	The study never used SVAR approach	Current study uses SVAR approach
Abango, M. A., Yusif, H., & Issifu, A. (2019)	Monetary Aggregates Targeting , In fl ation Targeting and In fl ation Stabilization in Ghana	DSGE with secondary time series data	negligible and short living influence was witnessed on growth	study never used SVAR model	Study used SVAR
Abdul, S., Khan, R., Streimikiene, D., Kumar, A., & Zavadskas, E. (2020)	Measuring the impact of renewable energy , public health expenditure , logistics , and environmental performance on sustainable economic growth	SVAR framework with Secondary time series data	Tight monetary policy stimulates growth in Kenya	Its focus was mainly on central bank rates and ignored the use of effective exchange rate	Current study uses both effective exchange rates and the central bank of Kenya rates.
Amar et al.(2020)	Efficacy of Fiscal policy in Syria	ARDL with secondary time series data	Government spending was effective in influencing Syrian economy	The study showed no focus on tax revenues as a tool for fiscal policy.	The study uses both tax revenue and government expenditures as tools for fiscal policy
. Alshawabkeh and Warrad (2024)	Fiscal policy and economic growth of Anglophone ECOWAS	SVAR with secondary time series data	Fiscal policy was effective in stimulating economic growth of Anglophone (ECOWAS)	The study did not consider since it was not a member of ECOWAS.	Current study was done in Kenya

Davodi and Sims (2018)	The Efficacy of Monetary and Fiscal Policies in East Africa: an Empirical Investigation.	Panel SVAR with secondary time series data	The study found monetary policy as effective in influencing growth in all the countries considered.	The study failed to do an isolated study on the effects of monetary policy on growth	The study focus es in specific in determining the effect of monetary policy on Kenya's Economic growth
Ronald (2021)	Effects on monetary policy on Economic growth in Malawi	VAR framework with secondary time series data	Monetary policy has zero effects on Malawi economic growth	The study focused on VAR and never used SVAR	Current study uses VAR model
Tamiya et al. (2021)	Effects of Monetary policy on Economic growth in Nigeria	Markov regime switching models with time series data	Monetary policy negatively affects growth in Nigeria	The study centered on money Supply as the core channel for monetary transmission and ignored central bank rates and effective exchange rates	Current study uses all the three variables as a tool for monetary policy transmission.
Hodaj, A. (2020)	The fiscal policy and economic growth of Kosovo	ARDL model with time series data	The Study found government expenditure has a tool for fiscal policy had positive effects on growth	The study never used public debt as a tool for fiscal policy	Current study uses government expenditure, public debts and tax revenue as the tools for fiscal policy
Mammadov and Ahmadov (2021)	Effects of puclic debt on selected Asian countries	Quintile regression model with secondary time series data	Augmented government debt stock has contractionary effects on growth both in the long and short run.	The study focused only on Public debts and never considered government expenditures and tax revenue	Current study used both tax revenue and government expenditure

Somme (2024)	The Effect of tax revenue on Economic Growth of Tanzania	ARDL model with time series data	Taxes imposed on domestic goods and services positively influence GDP growth	The focus of the study was on taxes and never captured public debts	Current study uses public debt in establishing the effects of public debt on economic growth in Kenya.
Fang's (2024)	Effect of income tax on global economic trends	SVAR framework with time series data	The research revealed adverse correspondence exists between income tax rates and economic progression	The study focused on income tax and ignored the general global tax revenue	Current study considers both government expenditure and public debts in assessing the influence of fiscal policy on growth.
Mustafa's (2024)	Interrelationship between public outlays, foreign investments, and the advancement of gross national income within the Western Balkans (BB6) and Croatia	ARDL model with time series data	upsurge in government spending correlates with GDP expansion	The study was conducted within the geographical scopes of Balkans and Croatia	Current study assessment on the effectiveness of fiscal policy is done in Kenya
Soto (2024)	Drivers behind Peru's economic growth	VAR model with time series data	Government spending does not influence growth in Peru	The study failed to consider the influence of public debts and tax revenue on growth	Current study uses both in assessing the influence of fiscal policy on economic growth of Kenya
Osman's (2023)	Effect of fiscal policy on Economic growth in Somalia	NARDL model with time series data	Government spending has positive effects on Economic growth in Somalia	In their Study public debt was not considered	Current study uses public debt as one of the key variables for fiscal policy