Fiscal Policy and Macroeconomic Stability in Nigeria: A Structural Vector Autoregression Model (SVAR) Approach

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Abstract

*This study examines the effect of fiscal policy on macroeconomic stability in Nigeria using Structural Vector Autoregression Model **(SVAR)**. The Augmented Dickey Fuller and Phillips Perron unit root tests indicates that real gross domestic product, government expenditure, tax revenue and unemployment are stationery at first difference while inflation rate is stationary at level. The result of impulse response function shows that the shock effect of government expenditure has a positive shock effect on the real gross domestic product in Nigeria. Tax revenue has a negative shock effect on the real gross domestic product in Nigeria. Inflation rate and Unemployment have a negative shock effect on the real gross domestic product in Nigeria. The study recommends that government should increase its expenditure, tame corruption that leads to expenditure leakages, reducing unemployment and stabilizing the price level. Government should improve its role in the economic management by stepping up her capital expenditure and reducing recurrent expenditure in order to boost infrastructural development and create the enabling environment for increased private investment in the economy.*

Keywords: Tax revenue, Government expenditure, Economic growth

JEL Classification H20, H50, O40

1 Introduction

Fiscal policies are macroeconomic instruments used by the government to stabilize the economy (Maheswaranathan and Jeewanthi, 2021). They are government's policy instruments that are primarily targeted to alter aggregate demand and level of economic activities. Elaborately, fiscal policy connotes the utilisation of policy instruments such as budget, government expenditure, taxation and transfer payments to control and regulate the economy by altering revenue and spending levels. These policies can be deployed as either fiscal stimulus or as fiscal contraction tools. In fulfilling its role as a stimulus, the policies are targeted to spur economic activities while as contractionary tools; they are used to mop-up liquidity and slow down economic activities. Invariably, fiscal policy is engaged to stabilize the economy.

The aptness of fiscal policy as a tool for economic stabilization is premised on its capability to vary output by influencing overall demand in an economy. There are essentially three fiscal policy variables that are commonly used, namely expenditure (spending), receipt (tax revenue) and the fiscal deficit (Nguyen, 2015). Justifying the effectiveness of fiscal policy, Anyalechi, Onwumere

and Boloupremo (2017) and Osuka and Achinihu (2014) highlighted its potential to stimulate economic growth and development and effectuate price stability. Undoubtedly, fiscal/monetary policy is central to the health of every economy, as government power to tax and spend, as well as money stock; affects the disposable income of individual households, firms, as well as general business climate (Abata, Kehinde & Bolarinwa 2012).

By implication, there is a dilemma as to whether these two policies are complementary, or act as substitutes to each other for achieving macroeconomic goals. Policy makers are viewed as interacting on strategic substitutes when one policy maker's expansionary or tightening policies are countered by another policy maker's tightening or expansionary policies. However, for any economy to grow there must be macroeconomic-policy framework that influences economic growth. Fiscal policy has been one of the macroeconomic policy tools used to attain various macroeconomic objectives, such as economic growth, globally over the years.

The use of taxation as a fiscal policy tool remains a controversial issue among economists. For instance, some economists (Ohaka & Agundu, 2012) are of the view that granting tax holidays is better than government infrastructural investment after taxation because of the resultant leakage effects; the objectives of the government to spend and invest in the industrial sector might be sabotaged. Over the years, the Nigerian economy has been experiencing the problems of unemployment, price level instability, lack of sustainable economic growth and balance of payments disequilibrium. There exists a consensus in the literature that an adequate and effective macroeconomic policy is critical to any successful development process aimed at achieving these macroeconomic variables. This, therefore, suggests that the significance of fiscal policy measures cannot be overemphasized in any growth-oriented economy. Nigeria's potential for growth, price stability, low level of unemployment and balance of payment equilibrium is yet to be realized. Therefore, the main objective of this study is to analyse the effect of fiscal policy on macroeconomic stability in Nigeria. The paper is structure as follows, section two discusses the related literature of the study, section three presented methodology, the results and discussion are presented in section four, and section five captured conclusions and recommendations.

2 Literature Review

2.1 Theoretical Framework

Various theories have been postulated to evaluate the relationship between fiscal policy and inflation. The relevant one with regards to this study is hereby discussed. Fiscal theory of the price level (FTPL): The theory, according to Tule, Nurudeen, Ogundele and Martins (2019), is spearheaded by both Sims (1994) and Leeper (1991). It represents a significant shift from monetarist theory as it eliminates any direct allusion to monetary policy and propounds that price level is

determined by government activities with regards to debt, tax and planned expenditure (Bassetto, 2008). That is, it theorises that, fiscal policies are determinants of price level rather than monetary policies. Explicitly, Carlstrom and Fuerst (2000) explained that the theory maintains that fiscal policy, independent of money growth, exerted direct influence of price stability. This view strongly opposes the monetarist view of money supply being the primary determinant of inflation.

Quantitatively, the FTPL expresses the interaction between fiscal policy and price level by relating discounted stream of future primary government surpluses to the outstanding nominal debts. This equation, according to Bassetto and Cui (2018) is termed as the government budget constraint. The equation is stated thus:

$\frac{B_t}{P_t}$ ……..(2.1)

Present value of primary fiscal surpluses at time t

Where B is the outstanding nominal debts of the government, and P is the price level. The main assumption of FTPL, as stated by Buiter (2005), is that the government can commit to non-Ricardian rules that involve fiscal-monetary plans that do not necessarily satisfy a government intertemporal budget constraint. It also assumes the context of an infinitely-lived, representative agent (Farmer & Zabczyk, 2019). Furthermore, Xu and Serletis (2017) also indicated that the theory assumes the existence of an economy with fiscal dominance, that is, an economy where a passive monetary policy in combination with an active fiscal policy exists. Diminishing the relevance of FTPL, Buiter (2005) criticised the supposition of a flexible price and fiscal dominance as being mis-specified. More importantly, Buiter and Siberwere (2017) warned that the application of FTPL would result in hyperinflation. Despite the aforementioned fallibility of FTPL, its validity in a developing economy such as Nigeria, where the injections from fiscal policies especially budget deficit are crucial for inducing aggregate demand, remains plausible.

2.3 Empirical Literature

Akpoghelie (2022) explicitly digs into the separated impact of fiscal and monetary policies as government stabilization policies on the Nigerian industrial sector performance as a real sector, from 1986-2021, using the ARDL Bounds Testing Approach. The results show that government stabilization policies are potent determinants on the industrial sector output in Nigeria both in the short-run and long-run. An appropriate monetary and fiscal policies mix and adjustments to match the dynamic nature of the economy would not only develop and sustain the Nigerian industrial sector but also enhance the living standard of the people. Likewise, Michael et al. (2022) examined the contribution of fiscal policy measures to economic stability in Nigeria using ordinary least squares and co-integration/error correction mechanism from 1970 to 2019. The results show that

fiscal policy measures had serious implication on economic growth. This is evidenced by the coefficient of determination of the model. The R^2 value is consistently high in the model. Also, government expenditure and revenue were significant in the model.

Josephine and Bushi (2022) investigated the effects of aggregates of fiscal policy on price stability in Nigeria using Autoregressive Distributed Lag (ARDL) Model and Error Correction Model (ECM) on annual time series data from 2000 to 2019. Fiscal policy was proxied as budget deficit, government expenditure and taxation while price stability was measured as inflation rate. The results revealed the consistent absence of a significant effect with regards to budget deficit and government expenditure. Taxation, on the other hand, exerted a positive and significant influence on price stability. This study concluded that fiscal policy in Nigeria is not inflationary, hence suggesting that the Nigerian situation may be a monetary phenomenon.

Olasehinde and Omolade (2022) examined the effect of fiscal policy shocks on industrial sector output growth from 1981-2020 using structural vector error correction (SVEC) model. This study demonstrates that government spending does not stabilize Nigeria's industrial sector, i.e., it has no lasting impact on the industry. The industrial sector responds positively to revenue shock but declines after reaching a peak while expenditure shock has no significant effect on the industrial sector output growth. Also, interest rate shock is shown to cause a decline in the industrial sector output growth on the impact and likewise, aggregate demand shock caused a permanent negative impact on the industrial sector output growth. Investment shock to capital has a permanent positive effect on the industrial sector growth.

Abayomi (2021) studied the fiscal-monetary policy mix and growth inclusion in Nigeria. Error correction mechanism (ECM) and Long-run (Static) Models and Short-run (Dynamic) Models was adopted. The results shows that fiscal-monetary policy mixes have significant positive and negative impacts on inclusive growth variables in Nigeria. Both static and dynamic analyses shows that prudent fiscal policy together with healthy monetary policy raise economic welfare in a good fiscal-monetary policy mix environment for inclusive growth sustainability.

Moses et al. (2020) examined monetary and fiscal policy mix in a small open economy: Evidence from Nigeria. Structural vector auto-regressive (SVAR) model was used to assess the degree of coordination between monetary and fiscal policy and how such coordination has helped to attain common policy goals of macroeconomic stability in Nigeria using monthly data from 2003 to 2017. Their main results indicated that while expansionary monetary policy may have contemporaneous positive effects on the economy, expansionary fiscal policy, however, does not automatically translate to growth.

In the same year, Ojeyinka and Yinusa (2020) investigated the nature and the effect of fiscal and

monetary policy interactions on major macroeconomic variables in a small open economy of Nigeria between 1981 and 2018. The paper employed the generalized method of moment as technique of analysis due to its potential to address the endogeneity issues among the explanatory variables. Findings from the study revealed that interest rate and government expenditure have significant effect on output and inflation. Also, the study found that fiscal and monetary policy interact as strategic substitutes in Nigeria. This implies that the two policies perform better when combined in achieving price stability and sustained output growth in the country.

3 Methodology

3.1 Model Specification

To effect of fiscal policy on macroeconomic stability, the methodology employed by Andlib et al (2012) is adopted for the period 1980 to 2021.

GDP =F (GOVTEXP, TAXR, INFL, UNEMP) ……(3.1)

Where

GDP = Gross domestic product

GOVTEXP = Government expenditure

TAXR = Tax revenue

INFL = Inflation rate

UNEMP = Unemployment

3.2 SVAR Model

The study adopted the Structural Vector Auto Regression (SVAR) methodology with long run restrictions first proposed by Blanchard and Quah (1989) for analysis. This methodology was adopted because it allows us impose restrictions on the model framework based on economic theory and also retrieve the responses of the variables to structural shocks. The aim of SVAR is to use economic theory to recover the structural innovations from the reduced form residuals (Enders, 2015). In VAR model each endogenous variable is determined by the lag value of itself and of other endogenous variables.

$Y_t = b_{10} - b_{12}Z_t + \gamma_{11}y_{t-1}\gamma_{12}Z_{t-1}\varepsilon_{yt}$……(3.6)

$Z_t = b_{20} - b_{21}\,y_t + \gamma_{21}y_{t-1} + \gamma_{22}z_{t-1} + \varepsilon_{Zt}$……..……(3.7)

From equations (3.6) and (3.7), y_t and z_t are endogenous variables, b_{12} and b_{21} captures the contemporaneous effect of z_t on y_t and y_t on z_t respectively. The coefficients γ_i captures the lagged relationship between the variables, while ε_{yt} and ε_{zt} are structural errors.

3.4.2.1 Identification of Restrictions

In analyzing the dynamic effects of a SVAR model, identification of restrictions is a necessary step

in order to ensure that impulse response functions provide proper structural interpretations. This is achieved by imposing appropriate contemporaneous restrictions on parameters of the model which conventionally drives from economic theory and apriori expectation. This allows for the recovery of the structural shocks from the reduced form VAR model.

The structural shocks: $e^{RGDP}\, e^{GOVTEXP}\, e^{TAXR}\, e^{INFL}\, e^{UNEMP}$ are orthogonal. This assumption implies that the variance-covariance matrix which is derived using orthogonality restrictions and normalization of errors. Real gross domestic product is affected by the change in government expenditure, tax revenue, inflation rate, and unemployment.

Government expenditure is affected by the changes in tax revenue, inflation rate, and unemployment. Therefore $A_{21}= 0$.

Tax revenue is affected by the changes in inflation rate, and unemployment. Therefore, A_{31} and $A_{32} = 0$. Inflation rate is affected by the changes in government expenditure, tax revenue, and unemployment. Therefore $A_{41}= 0$. Unemployment is affected by the changes in government expenditure, tax revenue, and inflation rate. Therefore $A_{51}= 0$.

$$RGDP_t = \alpha_{10} - \alpha_{20}\, GOVTEXP - \alpha_{30}\, TAXR_t - \alpha_{40}\, INFL_t - \alpha_{50}\, UNEMP_t + \sum_{t-1}^{p} \beta_{10}^{t}\, RGDP_{t-1} + \beta_{10}^{t}\, GOVTEXP_{t-1} + \beta_{12}^{t}\, TAXR_{t-1} + \beta_{13}^{t}\, INFL_{t-1} + \beta_{14}^{t}\, UEMP_{t-1} + \mu_t^{RGDP} \quad (3.8)$$

$$GOVTEXP = \alpha_{10} - \alpha_{20}\, RGDP - \alpha_{30}\, TAXR_t - \alpha_{40}\, INFL_t - \alpha_{50}\, UNEMP_t + \sum_{t-1}^{p} \beta_{10}^{t}\, GOVTEXP_{t-1} + \beta_{10}^{t}\, RGDP_{t-1} + \beta_{12}^{t}\, TAXR_{t-1} + \beta_{13}^{t}\, INFL_{t-1} + \beta_{14}^{t}\, UEMP_{t-1} + \mu_t^{GOVTEXP} \quad (3.9)$$

$$TAXR_t = \alpha_{10} - RGDP - \alpha_{30}\, GOVTEXP_t - \alpha_{40}\, INFL_t - \alpha_{50}\, UEMP_t + \sum_{t-1}^{p} \beta_{10}^{t}\, TAXR_{t-1} + \beta_{10}^{t}\, RGDP_{t-1} + \beta_{12}^{t}\, GOVTEXP_{t-1} + \beta_{13}^{t}\, INFL_{t-1} + \beta_{14}^{t}\, UNEMP_{t-1} + \mu_t^{TAXR} \quad (3.10)$$

$$INFL_t = \alpha_{10} - \alpha_{20}\, RGDP - \alpha_{30}\, GOVTEXP_t - \alpha_{40}\, TAXR - \alpha_{50}\, UNEMP_t + \sum_{t-1}^{p} \beta_{10}^{t}\, INFL_{t-1} + \beta_{10}^{t}\, RGDP_{t-1} + \beta_{12}^{t}\, GOVTEXP_{t-1} + \beta_{13}^{t}\, TAXR_{t-1} + \beta_{14}^{t}\, UNEMP_{t-1} + \mu_t^{INFL} \quad (3.11)$$

$$UNEMP_t = \alpha_{10} - \alpha_{20}\, RGDP - \alpha_{30}\, GOVTEXP_t - \alpha_{40}\, INFL_t - \alpha_{50}\, TAXR_t + \sum_{t-1}^{p} \beta_{10}^{t}\, UNEMP_{t-1} + \beta_{10}^{t}\, RGDP_{t-1} + \beta_{12}^{t}\, GOVTEXP_{t-1} + \beta_{13}^{t}\, TAXR_{t-1} + \beta_{14}^{t}\, INFL_{t-1} + \mu_t^{UNEMP} \quad (3.12)$$

$$\begin{bmatrix} RGDP \\ GOVTEXP \\ TAXR \\ INFL \\ UNEMPP \end{bmatrix} = \begin{bmatrix} C_1 \\ C_2 \\ C_3 \\ C_4 \\ C_5 \end{bmatrix} \begin{bmatrix} 1 & A_{12} & A_{13} & A_{14} & A_{15} \\ A_{21} & 1 & A_{23} & A_{24} & A_{25} \\ A_{31} & A_{32} & 1 & A_{34} & A_{35} \\ A_{41} & A_{42} & A_{43} & 1 & A_{45} \\ A_{51} & A_{52} & A_{53} & A_{54} & 1 \end{bmatrix} \begin{bmatrix} RGDP_{t-1} \\ GOVTEXP_{t-1} \\ TAXR_{t-1} \\ INFL_{t-1} \\ UNEMP_{t-1} \end{bmatrix} + \begin{bmatrix} 1 & \alpha_{12} & a_{13} & a_{14} & \alpha_{15} \\ 0 & 1 & a_{23} & a_{24} & \alpha_{25} \\ 0 & 0 & 1 & a_{34} & a_{35} \\ 0 & \alpha_{42} & a_{43} & 1 & \alpha_{45} \\ 0 & a_{52} & a_{53} & a_{54} & 1 \end{bmatrix} \begin{bmatrix} U_t^{RGDP} \\ U_t^{GOVTEXP} \\ U_t^{TAXR} \\ U_t^{INFL} \\ U_t^{UNEMP} \end{bmatrix}$$

Where $A = \begin{bmatrix} 1 & A_{12} & A_{13} & A_{14} & A_{15} \\ A_{21} & 1 & A_{23} & A_{24} & A_{25} \\ A_{31} & A_{32} & 1 & A_{34} & A_{35} \\ A_{41} & A_{42} & A_{43} & 1 & A_{45} \\ A_{51} & A_{52} & A_{53} & A_{54} & 1 \end{bmatrix}, C = \begin{bmatrix} C_1 \\ C_2 \\ C_3 \\ C_4 \\ C_5 \end{bmatrix}, Z = \begin{bmatrix} RGDP \\ GOVTEXP \\ TAXR \\ INFL \\ UNEMPP \end{bmatrix}, Z_{t-1} = \begin{bmatrix} RGDP_{t-1} \\ GOVTEXP_{t-1} \\ TAXR_{t-1} \\ INFL_{t-1} \\ UNEMP_{t-1} \end{bmatrix}, U_{t-1} =$

$\begin{bmatrix} U_t^{RGDP} \\ U_t^{GOVTEXP} \\ U_t^{TAXR} \\ U_t^{INFL} \\ U_t^{UNEMP} \end{bmatrix}$ and a = $\begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} & a_{15} \\ a_{21} & a_{22} & a_{23} & a_{24} & a_{26} \\ a_{31} & a_{32} & a_{33} & a_{34} & a_{35} \\ a_{41} & a_{42} & a_{43} & a_{44} & a_{45} \\ a_{51} & a_{52} & a_{53} & a_{54} & a_{46} \end{bmatrix}$ $such\ that\ U_t \sim$ iid $(0, a^2)$

z_t is a 5 × 1 vector of dependent variables; Z_t *is* a 5 × 1 vector of lagged variables; A is a 5 × 5 matrix of the parameters to be estimated and identified with 1 as a diagonal elements, C is a 5 × 1 vector of constants, a is a 5 × 5 matrix of the coefficients of lagged variables and μ_t is a 5 × 1 vector of the structural/ orthogonal zed errors which are assumed to be serially uncorrelated with a mean of zero and a constant variance.

4 Result and Discussion

4.1 Descriptive statistics

Table 4.1 Descriptive statistics

Statistics	LRGDP	LGOVTEXP	LTAXR	INFL	UNEMP
Mean	3.464331	0.806342	5.952141	11.77375	6.475000
Median	3.378682	0.774461	5.911416	11.82500	5.500000
Maximum	4.661342	0.946850	6.187521	13.93000	9.600000
Minimum	3.356641	0.643780	5.751964	8.500000	4.900000
Std. Dev.	0.305760	0.087470	0.139477	1.349735	1.550360
Skewness	0.495760	0.148165	0.413496	-0.426890	0.901167
Kurtosis	13.46719	2.287738	2.016087	2.687882	2.273232
Jarque-Bera	316.8868	1.190256	3.304000	1.652715	7.553205
Probability	0.000000	0.551492	0.191666	0.437640	0.022900
Sum	166.2879	38.70439	285.7028	565.1400	310.8000
Sum Sq. Dev.	4.393998	0.359600	0.914327	85.62393	112.9700
Observations	48	48	48	48	48

Source: Researcher's computation using E-views 10.

Table 4.1 shows the result of descriptive statistics of the study, it indicates that the standard deviations of the variables employed are not far away from their means except poverty rate. The Skewness of the distribution in the table shows that real gross domestic product, government expenditure, tax revenue and unemployment rate are positively skewed and less than one while inflation rate is negatively skewed and also less than one, this means that all the variables employed are normally distributed. The Kurtosis in the table shows that all the variables employed are normally distributed because their values are less than 3 except for real gross domestic product. The Jarque-Bera test for normality, it necessitates the rejection of the null hypothesis and conclude that all the variables employed are normally distributed as their p-values are greater than 5% except for real gross domestic product and inflation rate.

4.2 Unit Root Test

The study estimated unit root test of both Augment Dickey Fuller and Phillips Perron in order to

identify the order of integration of the variables under study.

Augment Dickey Fuller and Phillips Perron unit root test

Table 4.2 Augment Dickey Fuller and Phillips Perron unit root test

	Test at level		Test at first difference		Order of Integration
Variables	**ADF test**	**PP test**	**ADF test**	**PP test**	
LRGDP	-3.226109	-2.944194	-6.504943	-16.22724	I(1)
LGOVTEXP	-0.902212	-0.844108	-7.319846	-7.361273	I(1)
LTAXR	-2.326614	-2.326614	-7.399971	-7.448481	I(1)
INFL	-3.707851**	-3.626971**			I(0)
UNEMP	-1.913493	-0.539446**	-1.979925	-9.517291**	I(1)

Source: Researcher computation using E-views 10.

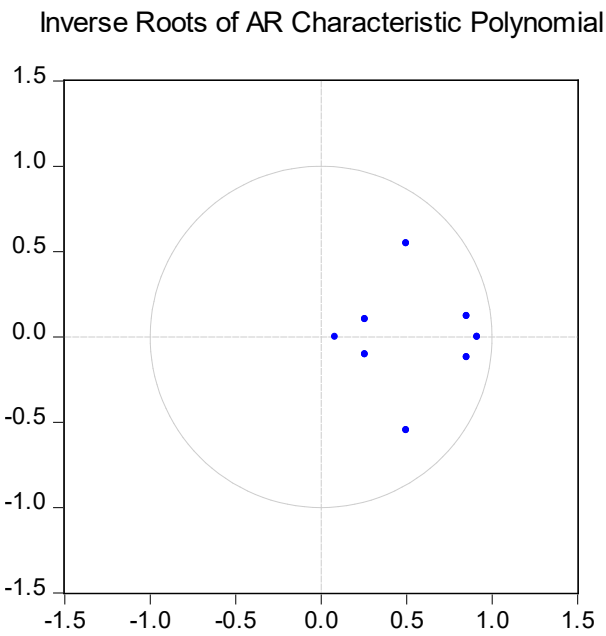
*Asterics ** indicates stationary 5% level of significance.*

Table 4.2 presents the result of Augment Dickey Fuller and Phillips Perron unit root test, it clearly shows that real gross domestic product, government expenditure, tax revenue and unemployment are stationery at first difference e.i. are (I) process in both ADF and PP tests while inflation rate is stationary at level i.e (0) process. Therefore, there is mixture of order of integration among the variables employed.

4.3 SVAR Stability Test

The SVAR stability test was employed to check whether all the Eigen values are less than one or all the moduli are lies inside the unit circle. The figure 4.1 shows that all the moduli lies inside the unit circle. This indicates that SVAR model is stable, it implies that the impact of the shocks are finite and calculable. Hence, the SVAR satisfies its condition.

Figure 4.1 SVAR Stability Test



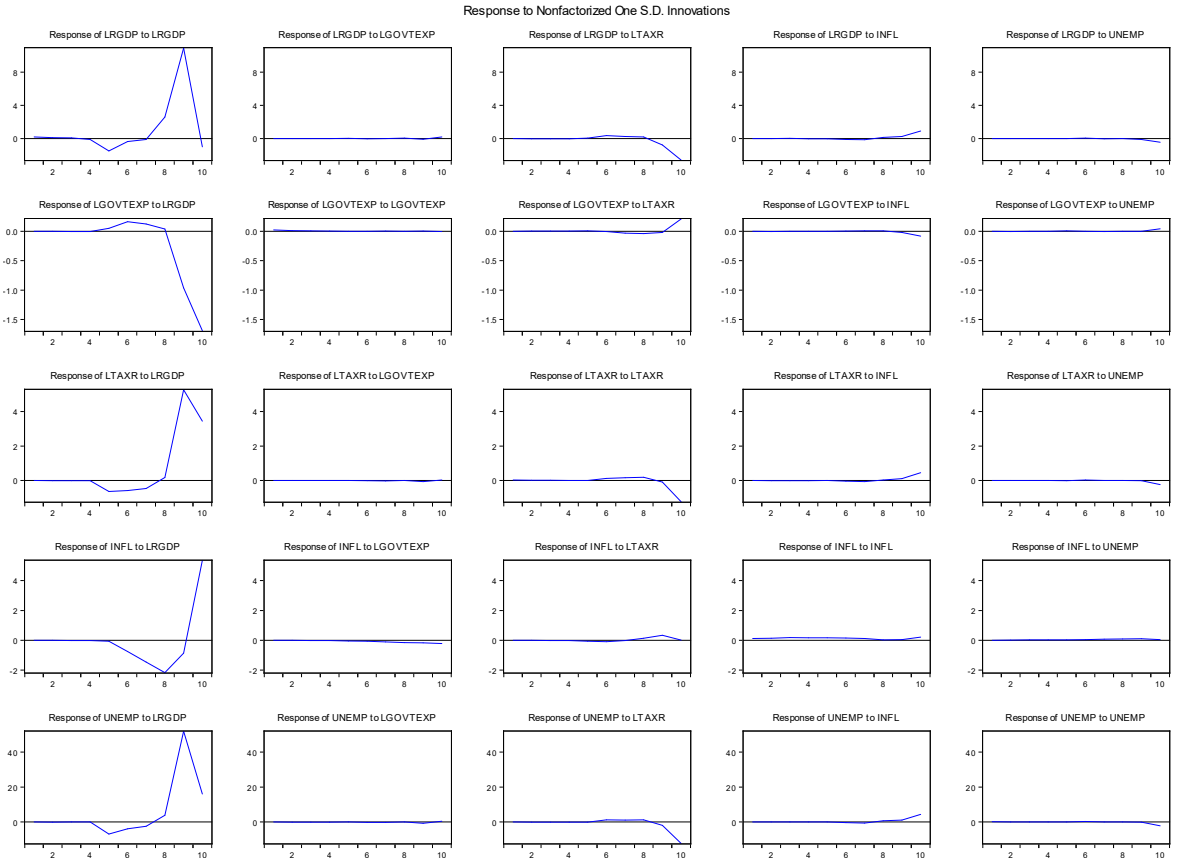
Source: Researcher computation using E-views 10.

A VAR model is said to be stable if all its moduli i.e. characteristics polynomial are less than unity and also if they lie within a unit circle.

4.4 Impulse Response Functions (IRF)

Impulse Response Functions (IRFs) are one of the useful tools of the unrestricted VAR approach for examining the interaction between the variables in this study. They reflect how individual variables respond to shocks from other variables in the system. When graphically presented, the IFRs give a visual representation of the behavior of variables in response to shocks. The results can be presented in the figure **4.2** below:

Figure 4.2: Generalized Impulse Response



Source: Researcher computation using E-views 10.

Dynamic movements of each to one standard error shock to each other variables, particularly to the real gross domestic products (GDP) are analyzed by using orthogonalized impulse response functions (IFRs). Presented in graphs above. There are four shocks namely; real gross domestic products (shock 1), government expenditure (shock 2), tax revenue (shock 3) inflation rate (shock 4) and unemployment rate (shock 5). Each shock occurs over a 10-period time.

According to the impulse response functions (IFRs) figure 4.2, one unit response of real gross domestic products shock to its own was positive in period one to four, negative in period five to seven and die positively. The response of real gross domestic products to government expenditure is positive throughout the horizon in period. The response of real gross domestic products to tax revenue is negative throughout the horizon in period. The response of real gross domestic products to inflation rate is positive throughout the horizon in period. The response of real gross domestic products to unemployment rate is negative throughout the horizon in period. The shock effect of government expenditure to real gross domestic products is positive from period 1 to 6, and 8 die negatively. The one-unit standard deviation shock of government expenditure to tax revenue is positive throughout the horizon in period. The response of government expenditure to inflation rate is positive from 1 to 8 and dies negatively. The response of government expenditure to

unemployment rate is positive throughout the horizon in period. The one-unit standard deviation shock of tax revenue to real gross domestic products is negative from 1 to 8 and dies positively.
The response of tax revenue to government expenditure is negative throughout the horizon in period. The response of tax revenue to inflation rate is positive throughout the horizon in period. The one-unit standard deviation shock of tax revenue to real unemployment rate is positive from 1 to 8 and dies negatively. The one-unit standard deviation shock of inflation rate to real gross domestic products is negative from 1 to 8 and dies positively. The response of inflation rate to government expenditure is negative throughout the horizon in period. The response of inflation rate to tax revenue is positive throughout the horizon in period. The response of inflation rate to unemployment rate is positive throughout the horizon in period. The one-unit standard deviation shock of unemployment rate to real gross domestic products is negative from 1 to 7 and dies positively. The response of unemployment rate to government expenditure is positive throughout the horizon in period. The response of unemployment rate to tax revenue rate is positive from 1 to 8 and dies negatively. The response of unemployment rate to inflation rate is positive throughout the horizon in period.

4.5 Variance Decomposition

Forecast error variance decompositions are presented in table, (see appendix). Which help to identify the main channels of effects for the individual variables. The numbers under each variable represent the percentage of variance of the variable analyzed that was attributable to particular variable over 10 years periods. It tells us the proportion of movement in a sequence that occurs due to its own shocks versus shocks to other variables in the model. In other words, it shows the apportionment of forecasting errors of a variable to itself and other variables in the system.
The variance of real gross domestic product to itself is always caused by 100 percent in the first year. The fluctuation in real gross domestic product in both the short-run and long-run are explained by its own shock, approximately 96.03 percent in the 3 period and only to fall to about 95.23 percent in period 10. The shock attributable to government expenditure is very minimal, able to explain 3 percent of government expenditure variability in the long-run. Also in the long-run tax revenue is explain by about 4 percent, inflation rate 52 percent and unemployment rate is 2 percent as a result of fluctuations in the real gross domestic product.
Government expenditure in the short run explained itself by 99 percent, in 3 periods was 91 percent it continues to fall in long run to 2 percent in the 10 periods. The shock attributable to real GDP in the long run is 98 percent. Tax revenue in the short run explained itself by 90 percent but it continues to fall in the long run to 26 percent. The shock attributable to real GDP in the long run is 96 percent. Inflation rate in the short run explained itself by 89 percent, in 3 periods was 89 percent it continues

to fall in long run to 50 percent in the 10 periods. The shock attributable to real GDP in the long run is 98 percent. Unemployment rate explained itself in the short run and long run by 15 and 2 percent, In the long run, shocks attributed to real GDP, government expenditure, tax revenue, inflation rate and unemployment rate are 95 percent, 5 percent, 3 percent, and 46 percent.

4.6 Diagnostic Test

The diagnostic test is conducted to check the consistency and reliability of the estimated coefficients included in the model. Test such as Serial Correlation, Heteroscedasticity and normality test, SVAR stability tests are also conducted.

Table 4.3 post estimation test

Residual serial correlation LM tests		
Lags	LM-Stat	Prob
1	57.12747	0.4004
2	44.54340	0.3514
3	53.72777	0.2010
4	94.38983	0.4700
5	7.982799	0.3082
Residual heteroscedaticity tests		
Chi-square	Df	
614.3962	600	0.3330
Jarque-Bera	Df	
279.9086	8	0.0000

Source: Researcher computation using E-views 10.

From table 4.3, it is clear that the model is free from Serial correlation and Hetroskedasticity except for Normality test because its p-values is less than 5%.

4.7 Granger Causality Test

Table 4.4 Granger Causality Test

Null hypothesis	DF	F-statistics	p-value
GOVTEXP does not Granger Cause LRGDP	4	0.794681	0.9392
LGDP does not Granger Cause GOVTEXP		1.275880	0.8655
TAXR does not Granger Cause LGDP	4	7.137189	0.1288
LGDP does not Granger Cause TAXR		3.314530	0.5066
INFL does not Granger Cause LGDP	4	0.811095	0.9370
LGDP does not Granger Cause INFL		3.875463	0.4231
UNEMP does not Granger Cause LGDP	4	64.62483	0.0000
LGDP does not Granger Cause UNEMP		0.433220	0.9797

Source: Researcher computation using E-views 10.

The Granger causality shows that government expenditure does not grange cause real gross domestic product and real gross domestic product does not granger causes government expenditure, hence, the result detect no causality between government expenditure and real gross domestic product in Nigeria. Tax revenue does not grange cause real gross domestic product and real gross domestic product does not granger causes tax revenue; hence, the result detect no causality between

tax revenue and real gross domestic product in Nigeria. Inflation rate does not grange cause real gross domestic product and real gross domestic product does not granger causes inflation rate; hence, the result detect no causality between inflation rate and real gross domestic product in Nigeria. Unemployment rate grange cause real gross domestic product and real gross domestic product does not granger causes unemployment rate; hence, the result detect a unidirectional causality between unemployment rate and real gross domestic product in Nigeria.

5 Conclusions and Recommendations

5.1 Conclusion

The study investigates the effect of Fiscal Policy and Macroeconomic Stability in Nigeria. Variables employed in the study include real gross domestic product, government expenditure, tax revenue, inflation rate and unemployment rate. The statistical properties of data were tested using traditional unit root test i.e Augmented Dickey Fuller and Phillips Perron. The test indicated that real gross domestic product, government expenditure, tax revenue and unemployment are stationery at first difference while inflation rate is stationary at level. The stability shows that the impacts of the shocks are finite and calculable. The result of impulse response function shows that the shock effect of government expenditure has a positive shocks effect on the real gross domestic product in Nigeria. Tax revenue has a negative shocks effect on the real gross domestic product in Nigeria. Inflation rate and Unemployment have a negative shocks effect on the real gross domestic product in Nigeria.

5.2 Recommendations

The study recommends that the government should increase its expenditure, tame corruption that leads to expenditure leakages, reducing unemployment and stabilizing the price level. Government should improve its role in the economic management by stepping up her capital expenditure and reducing recurrent expenditure in order to boost infrastructural development and create the enabling environment for increased private investment in the economy.

References

Abayomi, S.A. (2021). The efficacy of fiscal monetary policy mix on growth inclusion in Nigeria. KIU *Journal of Social Sciences Copyright©2021 Kampala International University ISSN: 2413-9580*; 7(4): 7–17.

Abraham, O. A., Blessing, O. O. (2019). Monetary – Fiscal Policy Mix: A Tool for Economic Stabilization in Nigeria. *International Journal of Social Sciences Perspectives,* Vol. 6, No. 1, pp. 11-29.

Adegboye, A. A. (2020). Policy Coordination and Outcomes: Theoretical Perspectives and Empirical Evidence in Nigeria. *Journal of Economics and Behavioral Studies Vol*. 12, No. 4, pp. 90-105.

Adegoriola, A. E. (2018). An empirical analysis of effectiveness of monetary and fiscal policy instruments in stabilizing economy: Evidence from Nigeria. *Journal of Social Sciences*, 7(3), 133-140.

Afonso, A., & Gonçalves, L. (2020). The policy mix in the US and EMU: Evidence from a SVAR analysis. *The North American Journal of Economics and Finance*, 51, p. 100840.

Afonso, A., Alves, J., & Balhote, R. (2019). Interactions between monetary and fiscal policies. Journal of Applied Economics, *22(1), pp. 132–151.* *http://doi.org/10.1080/15140326.2019.1583309*.

Akpoghelie, E. O. (2022) The Impact of Monetary and Fiscal Policies On the Performance of the Industrial Sector in Nigeria: A Bounds Test Approach, *Global Journal of Arts, Humanities and Social Sciences*, Vol.10, No.4, pp.1-22.

Ana Marta G. (2021). The effects of the interactions between Monetary and Fiscal Policy on the Euro Area's GDP – an ARDL approach. *ISCTE-IUL – Instituto Universitário de Lisboa*

Andlib, Z., Khan, A., & Hag, I. U. (2012). The coordination of fiscal and monetary policies in Pakistan: An empirical analysis 1980–2011. *The Pakistan Development Review,* 51(4), 695 – 704.

Anyalechi K. C., Onwumere J. U., & Boloupremo, T. (2017). Fiscal policy and the Nigerian economy: An econometric review. *International Journal of Business and Management,* 12(4), 186-196.

Asogu, J. O. (1998). An Econometric Analysis of the Relative Potency of Monetary and Fiscal Policy in Nigeria, *CBN Economic and Financial Review,* 36(2), 30-63.

Bassetto, M. (2008). Fiscal theory of the price level. *The New Palgrave Dictionary of Economics, 1–5.* doi:10.1057/978-1-349-95121-5_2575-1.

Bassetto, M., & Cui, W. (2018). The fiscal theory of the price level in a world of low interest rates. *Journal of Economic Dynamics and Control, 89, 5-22.*

Buiter W. H., & Sibert, A. C. (2017). The fallacy of the fiscal theory of the price level – one last time. *Economics Discussion Papers, No 2017-84*, http://www.economics-ejournal.org/economics/discussionpapers/2017-84

Buiter, W. H. (2005). New Developments in Monetary Economics: Two Ghosts, Two Eccentricities, a Fallacy, a Mirage and a Mythos. *The Economic Journal, 115 (502), C1-C31.*

Chen, P., Chen, A.C., Chu, H., & Lai, C. (2017). Short-run and long-run effects of capital taxation on innovation and economic growth. *Journal of Macroeconomics, 53*(1), 207-221.

Chukwunyere, I. J., Valentine, O. C., & Nicholas, A. (2020) Impact of Fiscal Policy on Nigeria's Macro-Economic Performance. Electronic Research Journal of Social Sciences and Humanities, 2(3), 1 -15.

Dijkstra, A.G. (2000). Trade liberalization and industrial development in Latin America. *World Development*, *28*(9), 1567–82.

Ezeoha, A. & Chibuike, U. (2005). Rethinking monetary and fiscal policies in Nigeria.

Farmer, R., & Zabczyk, P. (2000). A requiem for the fiscal theory of the price level. *IMF Working*

Paper No. 19/219.

Fetai, B. (2013). The effectiveness of fiscal and monetary policy during the financial crisis. *Journal of Economics and Business,* 16(2), 3-66.

Josephine, E. & Bushi, K. (2022). Effect Of Fiscal Policy On Price Stability In Nigeria, *Baze University Journal of Entrepreneurship and Interdisciplinary Studies (BUJEIS), Vol. 1(1), 65 – 78.*

Liu, D., Sun, W., & Chang, L. (2021). Monetary-fiscal policy regime and macroeconomic dynamics in China. *Economic Modelling*, 95, 121-135.

Maheswaranathan, S., & Jeewanth, K.M.N. (2021). Empirical investigation of the influence of fiscal policy on Sri-lanka's economic growth from 1990 to 2019. *Asian Journal of Economic Modelling, 9(2), 122-131.* doi: 10.18488/journal.8.2021.92.122.131.

Michael, E. O., Richard, O. H. O., Tobechi, A. F., Lasbrey, A. & A Glory, A. C. (2022). Fiscal Policy and Macroeconomic Performance in Nigeria. *Saudi J Econ Fin, 6*(6): 188- 199.

Ohaka, J., & Agundu, P. (2012). Tax incentives for industry synergy in Nigeria: A pragmatic proprietary system advocacy. *African Research Review*, 6(3). doi:10.4314/afrrev.v6i3.3.

Ojeyinka, T.A., Yinusa, D.O. (2020) Fiscal-Monetary Policy Interactions and Macroeconomic Performance in a Small Open Economy: A GMM Approach*, licensee Asian Online Journal Publishing Group Vol*. 7, No. 1, 1-12, 2020.

Olasehinde T. J. &Omolade. A (2022). Fiscal Policy Shocks and Industrial Sector Growth in Nigeria. *Fuoye Journal of Accounting and Management 5*(2)182-195.

Osuka, B. O., & Achinihu, J.C. (2014). The impact of budget deficits on macro-economic variables in the Nigerian economy (1981 – 2012). *International Journal for Innovation Education and Research*http://www.ijier.net/, 2(11), 164 – 183.

Peter, N. M., & Simeon, G. N. (2011).Econometric analysis of the impact of fiscal policy variables on Nigeria's economic growth. *International Journal of Economic Development Research and Investment, 2*(1), 171-183.

Stawska, J., Malaczewski, M., Malaczewska, P., & Stawasz-Grabowska, E. (2021). The Nash equilibrium in the policy mix model for Czechia, Hungary, and Romania. *Cogent Economics & Finance,* 9(1), 1869380.

Tule, M. K., Nuruddeen, U., Ogundele, O. S., & Martins, A. O. (2019). A Test of the fiscal theory of price level: Case study of Nigeria. *International Journal of Economics and Financial Issues, 9(6), 67-76*.