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The Impact of Fiscal Policy on Poverty Reduction in Nigeria (1980-2018)

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ABSTRACT

Poverty has been a phenomenon that has tormented many nations of the world, Nigeria included. Many of its citizens have been unable to provide themselves with their basic needs such as food, a suitable edifice, a sound level of education, and adequate healthcare services. Some say income inequality is a cause of the prevailing poverty in Nigeria, a case where the affluent continue to enrich themselves, and the poor remain tied down by their unfortunate circumstances. Over the years, the Nigerian government has used fiscal policy as a means of correcting the problem of income inequality by varying its expenditures (capital and recurrent) and taxes levied on its citizens to reduce the high level of poverty prevalent in Nigeria. This paper seeks to find out the level of impact fiscal policy has on poverty reduction in Nigeria from 1980 to 2018, using Impulse Response Function and Variance Decomposition on a Vector Auto Regression Model. After analyzing the data, it was discovered that government capital expenditure impacts more on the economy than recurrent expenditure with regards to poverty reduction, hence policies that advocate for increases in expenditure for capital development projects and social infrastructure be put in place to bring about a substantial decrease in the poverty level prevalent in Nigeria. It was also discovered that government tax revenue had an insignificant impact on poverty reduction. This can be traced to the high level of corrupt practices surrounding the collection of tax revenue, which has greatly hindered the implementation of development plans. Hence, taxes should be levied properly and remitted timeously so as to avoid the misappropriation of funds.

Keywords: Fiscal Policy, Poverty, Impulse Response Function, Variance Decomposition

1. INTRODUCTION

Over the years, economists have shown interest in the study of poverty. Poverty has no precise definition but can refer to a situation where an individual finds it difficult to make ends meet. It can also be defined as a social condition that has as its key features, a lack of access to basic needs such as food needs and non-food needs for the sustenance of everyday life. Some of these needs include - food, adequate housing facilities, pipe-borne water, adequate health facilities, a high level of literacy as well as job opportunities (Akintola & Yusuf, 2001).

An increase in the use of fiscal policy as a macroeconomic tool and the increase in the disparity in incomes has made for increased use of fiscal policy as a means of curbing poverty and income disparity (Obi, 2007).

Ndiyo (2008) saw the prevalence of absolute poverty as a cause for concern, despite the growth experienced in Nigeria's Gross Domestic Product (GDP). He added that it was a case where those who were rich got richer and the poor sank deeper into inexplicable depths of poverty. According to Tejvan Pettinger (2019), absolute poverty exists where a family's income is unable to allow it to maintain a moderate level of existence. In such a scenario, they are unable to buy food to eat and be satisfied, and live in modest abodes; while relative poverty refers to a situation where the income accruing to a family is beneath a stipulated fixed median income.

The World Bank has emphasized that the inability to attain a minimum standard of living that is above the "poverty line" has caused over 40 percent of the population in developing countries to remain in absolute poverty", which is a case where sicknesses prevail, basic level of literacy lacking, poor dietary conditions are present and people live in deplorable conditions to make them unable to enjoy a comfortable life. In other words, it is observed that many decades of growth in underdeveloped countries have been of little or no benefit to perhaps a third of the population. This sheer weight of poverty, despite years of development, is leading to a reassessment of development theories, policies, and practices (Ndiyo, 2008).

A means used by the Government to bring about a more equitably redistribute income and reduce the high level of poverty is Fiscal Policy. Fiscal Policy refers to the use of taxation and expenditures by the Government to regulate economic activities (Omitogun et al, 2007).

Fiscal Policy looks at how changes in taxation and Government expenditure affect macroeconomic outcomes. It could be discretionary or non – discretionary. It is discretionary if it is 'active' and looks at how deliberate changes in taxation and government expenditures either expand or contract economic activities within the economy. It is non- discretionary if it is 'passive' and involves the use of built-in stabilisers to influence the economy positively. Using fiscal policy helps in monitoring and controlling the amount of money in the hands of individuals. If well implemented, can correct distortions in the economy and also assist in equitably distributing income among citizens of a country. (Zhattau, 2013). This study envisages finding out whether the use of fiscal policy will lead to a more equitable distribution of income and in turn reduce the high and ever-increasing level of poverty in Nigeria.

Fiscal policy looks at the aspect of government policy that is concerned with revenue generation through taxes and other sources and deciding on how to spend such revenues raised in such a manner as to bring about the smooth running of activities within the economy. Indeed, it can be looked upon as a policy used by the government through which revenue generated is spent to create an enabling environment that is desirable and tries to eradicate unpleasant economic effects on its national income, production, and employment.

It can be seen as a means of deliberately spending on infrastructure as well as the imposition of taxes to cause the economy to experience a scenario where prices are fairly stable, to reduce incessant fluctuations in the business cycles, and to take the output of the country and its level of employment to the next level of growth. (Jhingan, 2003).

According to Musa & Azare (2013), fiscal policy can be seen as how government spending and the imposition of taxes can influence macroeconomic variables in such a way that will favour economic growth. It involves the manipulation of certain fiscal policy tools such as taxation, government expenditure as well as borrowing by the government to cause a positive outcome on the economy as a whole (Atuma & Eze, 2017).

It has been observed that there is a need for government to stabilise the economy by manipulating taxes and expenditures. Government taxation, as well as expenditure policies, were designed to create a level of balance in the business cycle, attain a level of full employment, cause stability in the price level, and make for sustained growth in the economy. Keynes believed that a low level of demand causes inflation. Thus, fiscal policy is to be used to stimulate the economy by causing demand and output to increase when business is declining by increasing government expenditures and reducing taxes, thus making available more income at the disposal of its citizens and using the reverse to rectify a situation where there is excess expansion. The government's policies on taxation and expenditure have a great role to play in the economy.

Keynes' theory advocates for the use of fiscal policy to reduce imbalances found within the economy. He further added that fiscal policy be used in stimulating an economy trying to recover from recession through spending more than increasing taxes levied on its citizens. On the other hand, if inflation was high, taxes should be increased and government spending reduced to reduce the high level of inflation and create a budget surplus that will be beneficial to the economy. Such stabilisation policies require that those who formulate policies should set achievable targets and know how to manipulate the fiscal policy tools to bring about the desired effect of great improvement within the economy (Fiscal Policy, 2019).

Anyanwu & Oaikhenan (1995) stated that the major objectives of fiscal policy in Nigeria include revenue generation, of which revenue generated can be used to improve the welfare of the citizens, a shift from overdependence on crude oil, a reduction in individual and corporate taxes, maintenance of economic equilibrium, which aids in regulating inflation, increased economic growth, a reduction in Balance of Payment deficits and the generation of employment opportunities which guarantees a level of protection for our domestic industries, an increase in self reliant development, a substantial decrease in budget deficit, the addition of the internal sector into economic activities, an improvement in government's fiscal operations, which brings about a high level of transparency with regards to public finances; the effective handling of the twin challenges of low productivity in agriculture and low level of industrialisation in the manufacturing sector, a reduction in the debt profile (both local and foreign) and bring inequalities in wealth, income and consumption to a bare minimum, so as to bring about efficiency in production and to attain a level of social justice and stability in the polity.

Three stances of fiscal policy exist. They include:

Neutral fiscal policy: this stance is usually taken when there is neither recession nor boom within the economy. The government's deficit spending (the part not funded through taxes) doesn't change over time so there is little or no effect on economic activities; Expansionary fiscal policy: This is used when the government's expenditures exceed its tax revenues. It is normally implemented when a country is experiencing a recession. Contractionary Fiscal

policy: This is used when a country's deficit spending is rather low (Fiscal Policy, 2019). The use of fiscal policy by the government affects the level of aggregate demand within the economy. By influencing spending and taxation, the government can determine the amount of money consumers have at their disposal as well as some level of control over the demand for goods and services. As such, if taxes increase and government expenditures decrease, aggregate demand will fall. On the other hand, if taxes are reduced and government expenditures increased, it will help bring the economy out of recession. It was also observed that an increase in taxes and a reduction in government expenditure has the impact of slowing down a boom (Abata et al, 2012).

Since the late 1980s, Nigeria has increased its use of fiscal policy to bring about a level of stability in the economy. One of such reasons for its increased use is as a result of the dominant role played by Nigeria's public sector in its economic activities as a result of the prominence of the oil sector and the boom that followed in the early 1970s, the need for rehabilitating the areas ravaged by the Nigerian Civil war, which spanned from 1969-1970, the shift to an industrialisation strategy, which was part of an import substitution policy in the economy and the advent of military rule in Nigeria. Another reason for the prominence of fiscal policy is the huge decline in oil prices in the late 1980s. With a persistent deficit that started in the early 1970s coupled with a fall in oil prices gave rise to the need to adopt fiscal policy to improve the state of the economy (Burges, 2003).

A fall in oil prices and a poor level of management of economic activities in the 1980s became a cause for concern concerning economic growth. It was noticed that by the mid-1980s, the formal private sector was fast becoming inconsequential, economic activities which were measured by the level of aggregate output, industrial production, and non- oil exports were performing poorly. There was also an increasing rate of poverty despite increased government expenditure and a high fiscal deficit. By 1986, all the major social indicators were falling drastically. High unemployment rates prevailed, purchasing power of the naira was low and poverty became the order of the day, while economic growth became negative. This signified a high level of macroeconomic imbalance domestically and externally. As such, the economy needed serious help to come out of its predicament.

With the poor economic situation prevailing in Nigeria, the IMF- World Bank's structural adjustment programme (SAP) and other such reforms were introduced and adopted in 1986 to help correct the anomalies within the economy. However, it was observed that instead of improving the economic conditions, it hurt it instead. The fiscal activities were at variance with the proposed budget. The government resorted to funding itself through supplementary budgets which helped in worsening the living conditions of the majority of its citizens. For some decades, Nigeria has suffered several challenges which include mismanagement of public funds, corruption, poorly formulated policies, and an inability to harness its human and non – human resources despite the numerous changes made in its macroeconomic policies. (Ogbole et al, 2011).

This goes to show that Nigeria's economy has experienced a high level of instability, and as such, the economy has gone through many shocks and disturbances internally and externally, despite the attempts to introduce fiscal measures since 1986 and given the use of fiscal policy to manage macroeconomic outcomes in Nigeria. Economic growth has greatly eluded the Nigerian economy and recession has been on the increase, especially in the rural areas, even though fiscal policy is being seen as a means for bringing about economic growth, sharing income more equitably, and bringing down the high level of poverty (Atuma & Eze, 2017).

Several studies have been done on fiscal policy in times past. Ocran (2011) looked at how fiscal policy variables impacted the growth of the South African economy from 1990-2004. The study involved using the Vector autoregression model to find out if a relationship exists between some selected fiscal policy variables and the performance of the economy (growth). The fiscal variables included government consumption expenditure, investment expenditure, deficit, and tax receipts. The findings were that government expenditure on consumption had a significant positive impact on the increase in output but its impact was less significant than that of consumption expenditure, tax receipts have a positive impact on the growth of output and the deficit has no significant impact on growth. With regards to taxation, there was an assertion that distortions induced by taxes could affect the allocative decisions of private agents unfavourably about the accumulation of the factors of production and supply and as such may hinder growth. This is based on an assumption that all forms of taxes except lump sum taxes were non-neutral and distortionary. There was also a debate about taxation being used as a short-run instrument of fiscal policy and the effect it will have on growth in the long run (Zagler & Durneker, 2003).

Ghali and Al Shamsi (1997) investigated to examine the causality between economic growth and fiscal policy from 1973 to 1995 in U.A.E. using cointegration between GDP and government expenditure. It was discovered that causality ran from government expenditure to GDP. Enache (2009) in his study sought to discover if there was a relationship between fiscal policy and growth in the Romanian economy from 1992-2003. The results showed that though positive, the impact of fiscal policy on economic growth was weak. Sikiru and Umaru (2007) carried out a study to find out the relationship between fiscal policy and the growth in the Nigerian economy using unit root test, cointegration and error correction model (ECM) from 1977-2009. It was discovered that expenditures on productive activities yielded a positive impact on the growth of the economy during the time frame and there was a long-run relationship between the variables used in the study. Also, Ajisafe, Folorunso (2001) in their study carried out found that monetary policy had a greater influence on economic activities in Nigeria than fiscal policy.

Titiloye and Ishola (2020) conducted a study to find out the effect of fiscal and monetary policy affected the growth of the Nigerian economy. They discovered that the supply of money and the total expenditures made by the government had a significant impact on the growth of the economy, Odedokun (1998) also confirmed in his study that the increase in financial aggregates in real terms had a positive effect on the development of third world countries irrespective of their level of development, with regards to the economy. Modebe, Okafor, Onwumere and Ibe (2012) conducted a study of the impact recurrent and capital expenditures had on the Nigerian economy's growth rate using multiple regression analysis from a time period of 1987-2010. The study found that though both had no significant effect on the growth of the economy, the effect of recurrent expenditure on the growth of the economy was positive while that of capital expenditure was negative. Olugbenga & Owoye (2007) sought to investigate the relationship between government expenditure and economic growth, using 30 countries as their case study choosing 1970-2005 as its time frame.

The study discovered that there was a long-run relationship between government expenditure and the growth of the economy, and causality ran from the growth of the economy to expenditures made by the governments of 10 countries, which confirms the law posited by Wagner. Muritala & Taiwo (2011) investigated the effects of the spending made by the government on the rate of growth of the real Gross Domestic Product in Nigeria, using Ordinary

Least Square (OLS) method. The study found that there was a positive relationship between real Gross Domestic Product as against capital and recurrent spending. Ogujiuba & Abraham (2012) conducted a study to investigate the relationship between the government's income and expenses in Nigeria from 1970-2011 using correlation analysis, the Granger causality test, the vector error correction model, and impulse response analysis. It was revealed that there was a high level of correlation between the expenditure and revenue as well as causality running from revenue to expenditure in Nigeria.

The primary purpose of this paper is to find out how capital and recurrent expenditure with taxation revenue can affect the poverty line in Nigeria and its impact on the reduction of poverty in the Nigerian Economy.

2. MATERIALS AND METHODS

This paper uses time series data for a period spanning from 1980-2018 (38 years) culled from secondary sources. The two main sources of data are from the National Bureau of Statistics (NBS) and the Central Bank of Nigeria. Other sources include the Ministry of Finance, the Debt Management Office (DMO), and the International Financial Statistics. This paper involves looking at variables including capital expenditure, recurrent expenditure, revenue taxation, and the budget deficit (shock variables) and their relationship with poverty (which has been disaggregated for this study) in Nigeria. It will look at the impact of the Impulse Response Function (IRF) and Variance Decomposition on the shock variables mentioned above and their impact on aggregate poverty, urban poverty, rural poverty and core poverty. Aggregate poverty is a combination of urban, rural, and core poverty, urban poverty refers to the poverty experienced in townships, rural poverty is experienced in rural dwellings and, core poverty is experienced by those who find it hard to break free from the shackles of poverty.

The effect fiscal policy will have on poverty is dependent on how economic agents react to changes in policies, which might be influenced by the structure of the market, the endowment of an agent, and the socio-economic structure. Thus, information relating to the structure of the budget, the imposition of VAT, who must pay income taxes, and the criteria for effecting cash transfers are of great importance to carry out a comprehensive analysis of the impact fiscal policy has on the poverty incidence in Nigeria. The study, therefore, employs a Vector Auto Regression (VAR) framework which is made up of eight variables namely: [Aggregate Poverty (APOV), Urban Poverty (UPOV), Rural Poverty (RPOV) and, Core Poverty (CPOV)] representing the poverty variables, while, Government Capital Expenditure (GCE), Government Recurrent Expenditure (GRE), Government Tax Revenue (TAX) and Government Budget Deficit (GBD) represent the shock variables.

It is worthy of note that fiscal policy, either in the form of taxation or government expenditures will either directly or indirectly have an impact on the less privileged, even though the poor are rarely taxed. The main aim of our empirical estimation is to find out the impact of the external factors (shocks) on poverty reduction in Nigeria and to examine the long-run relationship that exists between the variables of interest (APOV, UPOV, RPOV, CPOV) and the shock variables GCE, GRE, TAX and GBD. The Vector Autoregressive (VAR) model takes note of every variable within the model as a function of the lagged (time-based) values of the variables within the model, also known as endogenous variables.

The VAR technique is useful for this study in the sense that it adequately represents the dynamic structure of the model. It also prevents the imposition of certain restrictions which are associated with various economic theories. The implication is that no economic theory is needed to estimate the model. The use of VAR in macroeconomics has made room for a lot of empirical evidence to be generated, which lends credence to many theories found in the Economics discipline. (see Blanchard & Watson (1986) and Bernanke (1983) among others).

This study uses a reduced form VAR to evaluate the impact of external shocks on Nigeria's poverty level. The study will utilize four VAR models A, B, C, and D, where model A represents the model with Aggregate Poverty (APOV), model B represents Urban Poverty (UPOV), model C represents Rural Poverty (RPOV) and model D represents the model with the Core Poverty (CPOV) as the dependent variables. This without doubt adds to the literature on the uses of the VAR model. All the shock variables remain constant for all the models. The VAR is expressed in terms of the selected variables and the study focuses on the poverty equation

$$Y_{ABCD(t)} = \alpha_1 + \beta_1 GCE_{t-1} + \gamma_1 GRE_{t-1} + \delta_1 TAX_{t-1} + \varphi_1 GBD_{t-1} + \mu_t \quad (1)$$

where A, B, C, and D stand for the four models, where

A = Aggregate Poverty Equation

B = Urban Poverty Equation

C = Rural Poverty Equation

D = Core Poverty Equation

GCE = Government Capital Expenditure

GRE = Government Recurrent Expenditure

TAX = Taxation Revenue

GBD = Government Budget Deficit

μ = Random or Stochastic term

2. 1. Impulse Response Function (IRF)

The effect of a shock on the i^{th} variable does not only affect the i^{th} variable, it is also shifted to other variables within the model through the time-based or lagged structure of the VAR. The impulse response function looks at how a one-time shock to one of the innovations affects the current and future values of the variables within the model.

Thus assuring the 2-variables VAR (1) model can be specified as follows:

$$\begin{bmatrix} x_{1t} \\ x_{2t} \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} x_{1t-1} \\ x_{2t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix} \quad (2)$$

A disturbance in ε_{1t} possesses an immediate and direct effect on x_{1t} . In period $t+1$, the disturbance in x_{1t} affects x_{1t-1} the first equation and also affects x_{2t-1} through the second equation. These effects continue till period $t+2$, and so on. As such, a random shock in one innovation in the VAR creates a chain reaction over a while concerning all the variables in the VAR. Impulse response function computes all the chain reactions that have emerged.

A limitation of the use of impulse response functions is that when a disturbance occurs in one innovation, it cannot be separated from other innovations in the system, though a chain reaction will occur in all the system's variables over time. From the above bi-variate model, it is doubtful to hypothesise that though one innovation receives a disturbance, the other does not. A way of solving this problem is to transform the innovations to produce a new set of orthogonal innovations, which are uncorrelated pairwise and possess a unit variance.

Variance Decomposition

While the impulse response functions traces the impact of a shock on a variable within the model concerning other variables within the model, variance decomposition separates the variation in an endogenous variable into various component shocks to the VAR. In such a situation, variance decomposition provides information about how important each random innovation is to the variables in the VAR. Assuming two variables x_{1t} and x_{2t} in the system, the forecast error variance matrix Ω can be written in terms of the changes in the orthogonal innovations in the following manner:

$$\Omega = p^{-1} \text{var}(\mu)(p^{-1}) = \begin{bmatrix} k_{11} & k_{12} \\ k_{21} & k_{22} \end{bmatrix} \begin{bmatrix} \partial_1 & 0 \\ 0 & \partial_2 \end{bmatrix} \begin{bmatrix} k_{11} & k_{12} \\ k_{21} & k_{22} \end{bmatrix} \tag{3}$$

where k 's stand for the elements of p^{-1} and $\partial_i = \text{var}(\mu_i) = 1$ for $i = 1, 2$. Since each μ_i possesses a unit variance, ∂_1 and ∂_2 equal to 1. When we multiply out eq. (3.18), we have

$$\text{var}(\hat{x}_{11}) = k^2_{11} + k^2_{12} \text{ and } \text{var}(\hat{x}_{21}) = k^2_{21} + k^2_{22}$$

where x 's second subscript stands for a one-period ahead forecast. Since p^{-1} is the lower triangular matrix by construction, and so is P^{-1} , which implies $c_{12} = 0$. As such, all the variance of \hat{x}_{11} is attributed to the first orthogonal innovation and is equal to k^2_{11} . The variance of \hat{x}_{21} is split into two parts. The first part, which is the first orthogonal innovation, is $k^2_{21} / (k^2_{21} + k^2_{22})$ and the second orthogonal innovation which when added to the remaining part $k^2_{22} / (k^2_{21} + k^2_{22})$ gives rise to the decomposition of the forecast error

3. RESULTS/EXPERIMENTAL

3. 1. Impulse responses functions (IRF)

The estimated coefficient of the VAR model indicates the direct effects the explanatory variables have on the explained variable- which is, the measure of poverty. However, this study is interested in finding out the total effects in its entirety (direct and indirect) that the explanatory variables have on poverty. There has been an assumption that fiscal policy shocks that arise unexpectedly from changes that may occur either in government expenditure or its revenue or government budget deficit can distort the poverty rate.

The impact of these unexpected shocks can be measured using the impulse response function. The IRF is used to uncover the effect of a one-time shock to one of the innovations both on the present values and those to be gotten in the future of the variables in the model. If the short-run values come together with the long-run values, it is said that there is bound to be stability in the future. This enables policymakers to accurately forecast the effects of unexpected shocks so that adequate preparations are made for the future.

The analysis of the reaction of poverty to structural shocks to growth in the economy is done by analysing the impulse response functions (IRF) and variance decomposition as used by Hamilton, (1994); Onanuga & Shittu, (2010); Muftaudeen & Hussainatu, (2014). The period (usually a year) is represented in all the graphs on the horizontal axis. The points on the graph which are above zero represent positive responses, while points that fall below zero represent negative responses. Hamilton (1994) and Muftaudeen & Hussainatu (2014) all acknowledged that the size of innovation that is used in computing an impulse response function is set to 1 standard deviation of the error term. The impulse response function for the functions of the poverty model is created to check the accuracy of the estimation performance and is useful in analysing certain policies.

The result of the impulse responses of the poverty variables to the shocks in fiscal policy, which span over the twelve years period, was duly estimated. We then measured the impulse response of four endogenous variables on Poverty variables. The endogenous variables include: Government Capital Expenditure, Government Recurrent Expenditure, Tax and Government Budget Deficit.

3. 1. 1. Impulse response of Aggregate Poverty to Shocks in Fiscal Policy

The IRF results below show how aggregate poverty behaves over time to past levels of poverty and also show the exogenous impulses or shocks of the determinant variables. The graph below shows how aggregate poverty reacts over the period stipulated to a positive shock of one standard deviation on fiscal policy. The results show that the response of aggregate poverty to one standard deviation shock in fiscal policy variables (i.e., GCE, GRE, TAX and GBD) was marginal throughout the twelve periods ahead. This implied that the current aggregate poverty level is affected by the shocks from its past and other variables. This goes to show that the past level of aggregate poverty is significant in explaining the current level of poverty. That is, aggregate poverty is affected by the shocks to its past. Government expenditure had a significant positive response from its first year to the end of the twelve years forecast period, though it was minimal.

An external positive shock that would increase government capital expenditure (GCE), will impact aggregate poverty positively over two years. The upward trend in aggregate poverty will begin to decline over the remaining ten-year period (graphically, from 3 to 12) due to the fading of the effect of the shock. The response of Aggregate Poverty to a structure one innovation is positive concerning government capital expenditure in the short run. The shock in the long run turns to poverty reduction. This goes to show that proper policy formulation and implementation go a long way in reducing poverty in the long run. Government capital expenditure maintained a high proportion of variation with regard to aggregate poverty throughout the period being reviewed. This lends credence to Mckinnon conduit effect of the transmission channel of poverty reduction. It was also observed that there were negative marginal responses in aggregate poverty to a standard deviation shock in government recurrent expenditure, which remained throughout the periods, especially in the long run.

Response to Cholesky One S.D. (d.f. adjusted) Innovations

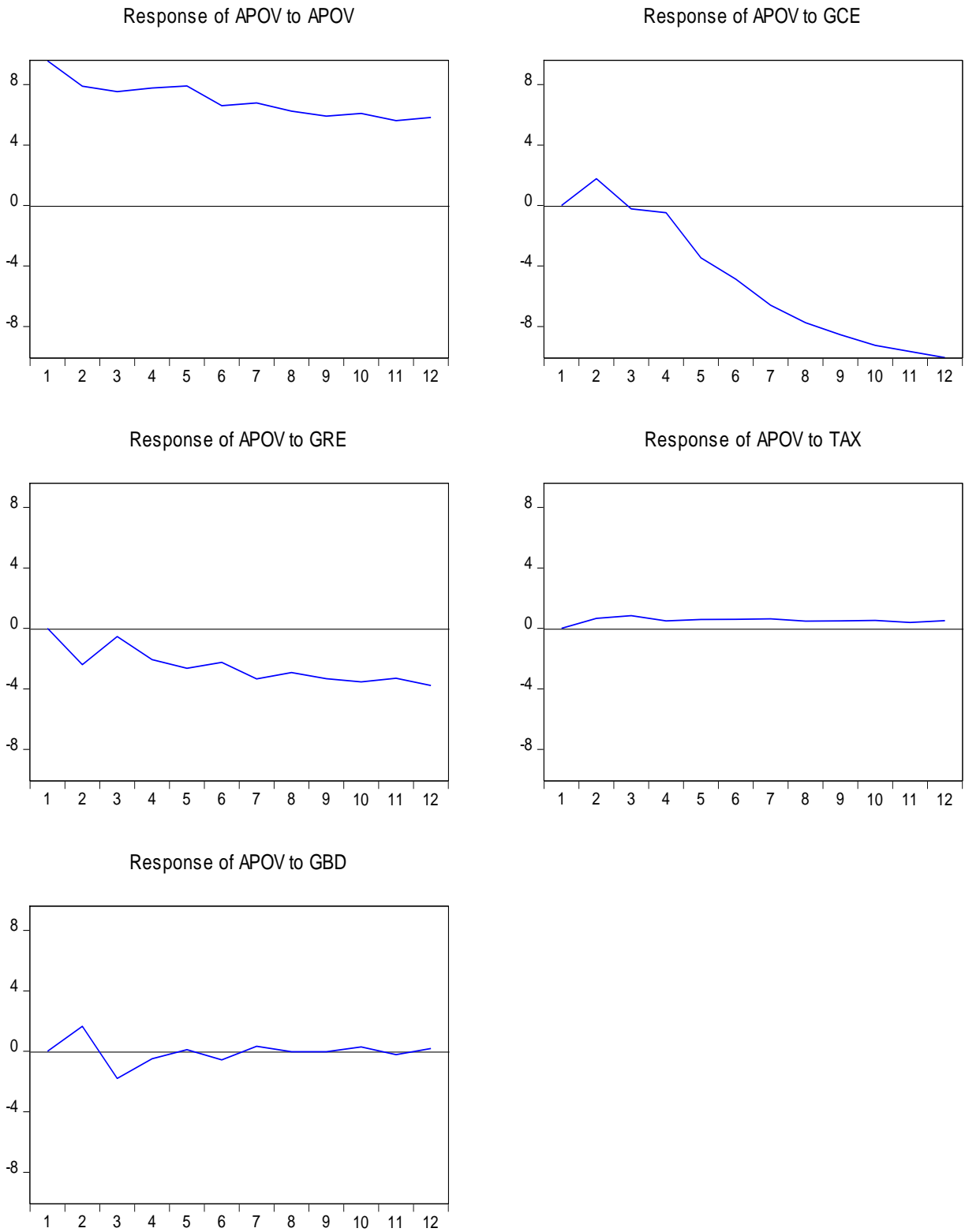


Figure 1. Reactions of Aggregate Poverty to standard shock in Fiscal Policy

As such, shocks to government recurrent expenditure, will, on average, bring about negative aggregate poverty in the next twelve periods.

We also tracked the impulse response of aggregate poverty to a positive shock of a one standard deviation on government tax revenue. The response is marginally positive all through the periods with greater positive responses shown in periods 2, 4 and 8. The implication is that on the average, if there is any unexpected shock to tax revenue, it will cause aggregate poverty to increase in the next twelve-year period, reaching its peak at period two.

The outcome entails that a rise in government tax revenue, all other variables being held constant, would cause aggregate poverty to increase over the first quarter (graphically, from 1 to 4) and drop slightly.

That positive relationship between taxation and aggregate poverty can be mostly reflected through the corrupt practices associated with the collection of tax revenue which greatly hinders the proper implementation of development plans. According to Adegbe & Fakile (2011) these activities are associated with sabotages experienced in the economy and they in turn, lead to the underdevelopment of the nation.

Another impulse response function worthy of note is that of aggregate poverty to a one standard deviation positive change in government budget deficit. The response obtained from aggregate poverty rate to a standard deviation shock to government budget deficit was mixed. Aggregate poverty's response to government budget deficit was positive in the first two periods but later responded negatively up to 5th period and thereafter was insignificant in the long run.

The response of aggregate poverty to a standard deviation shock to government budget deficit was positive up till the 2nd period, after which it becomes negative and thereafter stabilising to the further shocks on government budget deficit. This is in line with the findings of Wosewei (2013) that fiscal deficits met the economic apriori in terms of its positive coefficients with aggregate poverty.

3. 1. 2. Impulse response of Urban Poverty to Shocks in Fiscal Policy

The results of the impulse response function of urban poverty to shocks in fiscal policy variables are discussed below. From Figure 2, it was observed that there was a large response of urban poverty to its own innovations. For instance, the figure showed an immediate positive response of urban poverty to its own shock in the first two years and with negative effect starting after the second year continuing in same path to the end of study period.

The response of urban poverty to unexpected shocks on government capital expenditure initially stabilised within the first three periods, and became negative thereafter all through the remaining period, reaching its negative peak in the eleventh period, persisting all through the forecast horizon. The response of urban poverty to government recurrent expenditure shock was negative at the first two periods and continued to decline even after the tenth year period. However, the responses of urban poverty to a standard deviation shock from government tax revenue are positive and slightly significant; especially in the long run. This agrees with Lovell & Branson (2001).

Finally, the response of urban poverty due to government budget deficit shock was positive at initial stage climbed to its peak in the second period before it declining in the third period after which it stabilised to a neutral level. Urban Poverty's response to structural one innovation appeared relatively insensitive to the shocks by government budget deficit, though it impacted positively on poverty incidence in both in the short- and long- run, though the impacts were insignificant in long run.

Response to Cholesky One S.D. (d.f. adjusted) Innovations

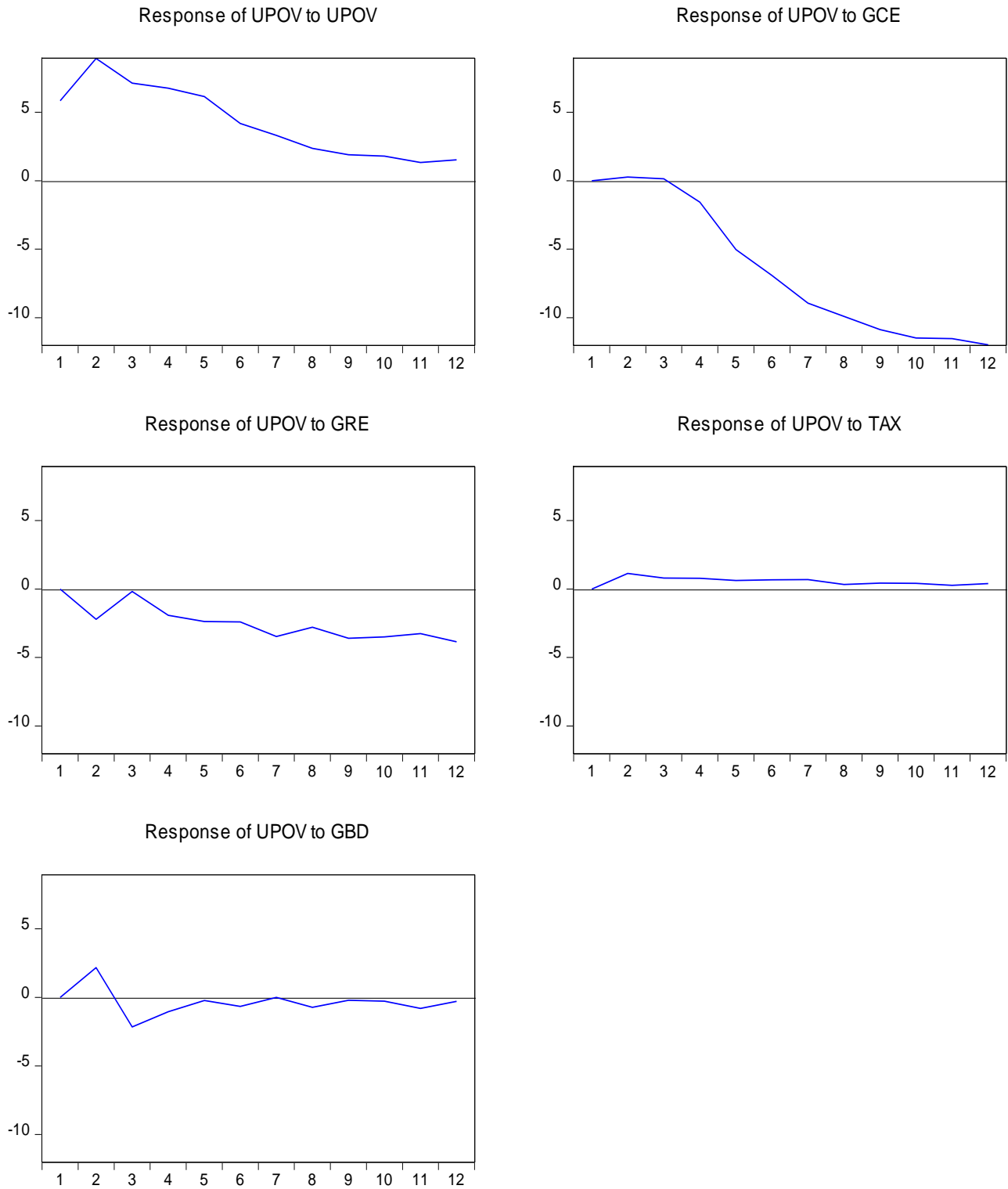


Figure 2. Reactions of Urban Poverty to standard shock in Fiscal Policy

3. 1. 3. Impulse response of Rural Poverty to Shocks in Fiscal Policy

Response to Cholesky One S.D. (d.f. adjusted) Innovations

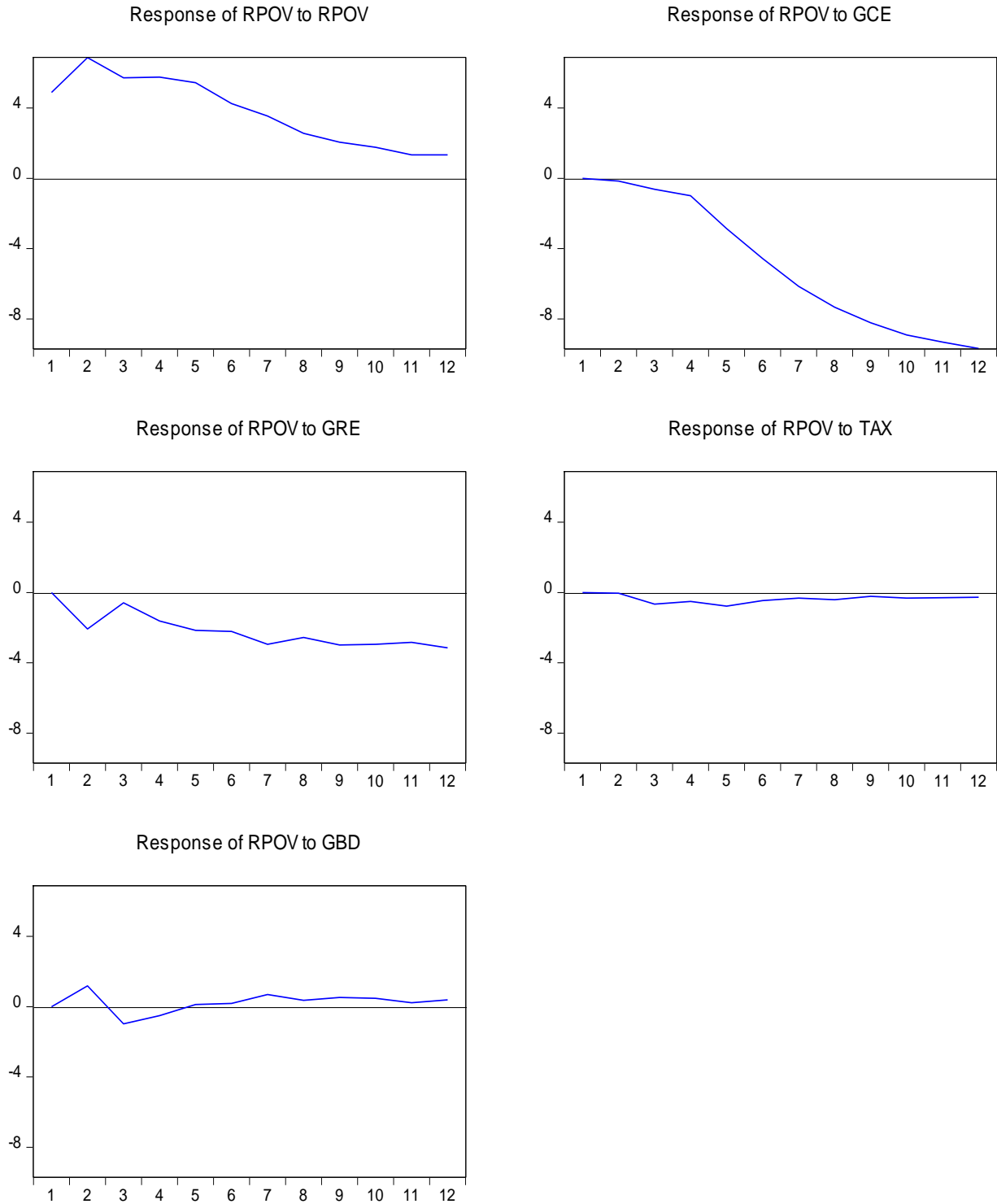


Figure 3. Reactions of Rural Poverty to standard shock in Fiscal Policy

Response to Cholesky One S.D. (d.f. adjusted) Innovations

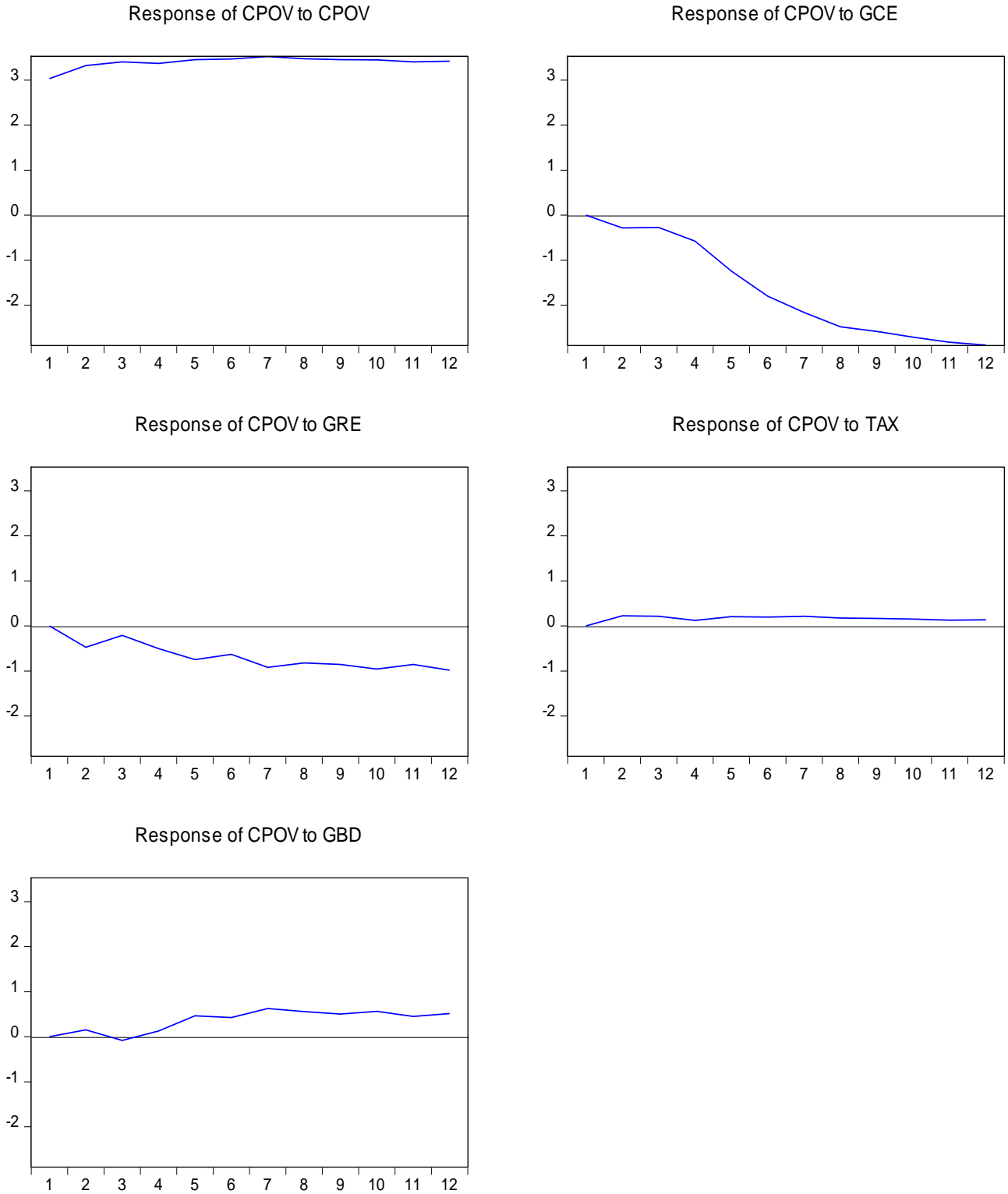


Figure 4. Reactions of Core Poverty to standard shock in Fiscal Policy

The dynamic responses of rural poverty in the system to shocks in fiscal policy rate are seen in Figure 3. The response of rural poverty to its own shock was positive in the first two periods, dropping to its minimum positive level in the tenth period and remained positive till the end of the forecast period. Rural poverty responded negatively to unexpected shocks to both government capital and recurrent expenditure especially after the first four periods. Rural Poverty's response to a one structure innovation by government tax revenue was relatively insensitive. It had a positive impact on poverty incidence both in the short- and long- run, though the impacts were insignificant. Its innovation response to government budget deficit was mixed, with the highest response in the 2nd period, attaining its highest negative response in the third period. before returning positive all through the remaining period. This is in line with Zafar and Mustafa (1998) who posited that budget deficit was positively correlated with the poverty as it was considered as a sign of macroeconomic instability.

3. 1. 4. Impulse response of Core Poverty to Shocks in Fiscal Policy

Shocks to core poverty, which are shown in Figure 4 below, the results showed a positive significant response to itself which rose to its peak and it remained positive till the end of the study period. Core poverty and rural poverty had similar negative responses to shocks in government capital expenditure. The negative impact on core poverty continued to be persistent. The response of core poverty to government recurrent expenditure shock was initially negative in the first two-year period, significantly increasing in the third year. In the long run, core poverty's response to a standard deviation shock from government tax revenue was positive and significant in the long run. This according to Ilegbinosa (2013) could be attributed to the poor tax administration in Nigeria and it's over dependence revenue generated from crude oil which were used to fund her projects.

Interestingly, the story seems a bit different when we consider the response of core poverty to the government budget deficit. Here, core poverty appeared insignificant to government budget deficit in the first four periods before responding positive which it maintained all through the remaining period. This result tally with the findings of Ali and Ahmad (2010) that fiscal deficit was negatively related to economic growth.

3. 2. Variance Decomposition

To determine the mutual occurrence on the variables, it is necessary to evaluate the results from the variance research carried out on them. The forecast error variance decomposition was carried out to find out the extent to which a change in the variables was due to its own shocks and the shocks of other variables found in the system. Shocks to a variable can cause changes in itself and other variables alike, thus the forecast error variance decomposition helps identify these effects. The variance decomposition of the poverty and the fiscal policy variables for h-step, ahead forecast errors are presented in Appendix A. However, a summary of the results are presented in Table 1, 2, 3 and 4.

Table 1 shows that in the first period aggregate poverty is attributed to its own shocks since 100% of variations are explained by its own shocks. However, when considering the 6th and 12th periods, we would see that 84.4% and 50.2% of variations of variations in aggregate poverty is attributed to itself, while the remaining 15.6% and 49.8% are emanating from shocks to other variables. Of the 15.6% variations in aggregate poverty attributed to fiscal policy variables in the 6th period, the government capital expenditure accounts for 8.7%, government

recurrent expenditure accounts for approximately 5%, government tax revenue accounts for only 0.5% and government budget deficit accounts for 1.4%. In the 12th period, the fiscal policy variables account for 49.9% (i.e. GCE accounts for 41.4%; GRE accounts for 7.6%, TAX accounts for 0.3% while GBD accounts for 0.6%). The Government capital expenditure explains relatively significant proportions of aggregate poverty reduction especially in the long run. This implies that the trickledown effect of fiscal policy effect through government spending is only attainable in the long run, though the issue of inequitable distribution of income would cause an opposite reaction in the poverty reduction trend; unless the poor are empowered and given opportunities to contribute towards the growth of the economy. Public expenditure can have a positive influence on the growth of the economy and help reduce poverty through the provision of infrastructure and social services (Asghar, Hussain & Rehman, 2012).

Table 1. Selected Variance Decomposition Analyses for Aggregate Poverty

Period	S.E.	APOV	GCE	GRE	TAX	GBD
1	9.578270	100.0000	0.000000	0.000000	0.000000	0.000000
2	12.89012	92.75202	1.903802	3.442063	0.261455	1.640655
3	15.06851	92.82488	1.413228	2.647446	0.505890	2.608561
4	17.09833	92.74060	1.173343	3.502198	0.478117	2.105738
5	19.34371	89.18799	4.108126	4.586888	0.468017	1.648975
6	21.14720	84.38432	8.734105	4.958384	0.473530	1.449664
7	23.41509	77.21615	15.04217	6.080137	0.458176	1.203365
8	25.61515	70.46582	21.72860	6.381996	0.417932	1.005652
9	27.84422	64.14425	27.78903	6.828876	0.386667	0.851185
10	30.18052	58.67153	33.04833	7.186266	0.360229	0.733639
11	32.35341	54.07007	37.66736	7.291085	0.328586	0.642896
12	34.58532	50.15291	41.40123	7.570279	0.309909	0.565672
Cholesky Ordering: APOV GCE GRE TAX GBD						

Table 2 above shows the variance decomposition of urban poverty with fiscal policy variables. It is interesting to see the difference when considering the variations in urban poverty, which can be attributed to its own shocks and that of other variables. In the second period, urban poverty rate accounted for 91.2% variations in itself, while the remaining 8.8% came from

shocks of the fiscal policy variables. Considering periods 6 and 12, we could see that 70.7% and 24.8% respectively of the changes in urban poverty rate emanate from its own shocks, while government capital expenditure accounted for 20.2% and 66.1% in the 6th and 12th periods respectively. Government recurrent expenditure accounted for 5.3% and 7.7% variations urban poverty rate in the 6th and 12th periods respectively, while government tax revenue accounted for 0.9% and 0.4% in the 6th and 12th periods respectively, and government budget deficit accounted for 2.9% and 1% in the 6th and 12th periods respectively. Thus, it was inferred that the fiscal policy variables had a marginal impact on the urban poverty rate and this trend will likely continue in the next 12 periods. This supports the findings earlier made from the impulse response analysis.

Table 2. Selected Variance Decomposition Analyses for Urban Poverty

Period	S.E.	UPOV	GCE	GRE	TAX	GBD
1	5.834180	100.0000	0.000000	0.000000	0.000000	0.000000
2	11.16623	91.16052	0.054513	3.941690	1.046977	3.796303
3	13.45063	90.95971	0.047865	2.736286	1.074509	5.181626
4	15.30961	89.66515	1.093962	3.689358	1.086679	4.464853
5	17.42270	81.70014	9.165470	4.701182	0.969177	3.464030
6	19.37722	70.69186	20.15120	5.340858	0.900918	2.915164
7	21.88582	57.69522	32.50750	6.707777	0.804329	2.285179
8	24.31308	47.69715	42.94600	6.747928	0.670579	1.938344
9	26.94591	39.32888	51.23825	7.278589	0.570526	1.583757
10	29.56131	33.04772	57.68477	7.449932	0.493497	1.324084
11	31.93863	28.48421	62.46718	7.420768	0.429460	1.198387
12	34.37072	24.79118	66.11758	7.665629	0.383739	1.041866
Cholesky Ordering: UPOV GCE GRE TAX GBD						

The results further reveal in Table 3 that for variance decomposition of rural poverty, in the second period, 92.5% of the variations in rural poverty is attributed to its own shock, while only fiscal policy variables account for the remaining 7.5%. However, when we considering the 6th and 12th periods, it was seen that 78.2% and 29% respectively were the variations in rural poverty attributed to its own shock, while government capital expenditure accounted for 12.9% and 60.9% in the 6th and 12th periods respectively. Government recurrent expenditure accounted

for 7.1% and 9.2% of variations in rural poverty rate in the 6th and 12th periods respectively; while government tax revenue accounted for 0.6% and 0.3% in 6th and 12th periods respectively; so that the remaining 1.1% and 0.5% in the 6th and 12th periods respectively emanated from government budget deficit. In general, it could be inferred that among the selected fiscal policy variables, only Government capital expenditure contributed maximally to rural poverty reduction especially in the long run. Other variables accounted marginally for variations in rural poverty rate, which is consistent with the finding earlier made from the impulse response analysis.

Table 3. Selected Variance Decomposition Analyses for Rural Poverty

Period	S.E.	RPOV	GCE	GRE	TAX	GBD
1	4.875364	100.0000	0.000000	0.000000	0.000000	0.000000
2	8.746036	92.51397	0.030420	5.612475	0.002923	1.840214
3	10.54586	92.92591	0.372130	4.173091	0.400302	2.128565
4	12.18539	91.91284	0.944196	4.894574	0.474618	1.773774
5	13.83591	86.71849	5.008507	6.209020	0.680727	1.383255
6	15.34594	78.16079	12.91820	7.138339	0.644893	1.137772
7	17.17723	66.63759	23.11052	8.634852	0.550199	1.066833
8	19.03027	56.09790	33.66588	8.834766	0.495972	0.905479
9	21.04906	46.80492	42.74139	9.234740	0.416296	0.802654
10	23.11984	39.37265	50.26997	9.285465	0.364083	0.707831
11	25.12230	33.62821	56.30746	9.135004	0.321816	0.607511
12	27.13874	29.05578	60.94735	9.171100	0.285660	0.540105
Cholesky Ordering: RPOV GCE GRE TAX GBD						

The marginal impact of government tax revenue to rural poverty can be attributed to difficulty in tax collection in the rural areas due to lack of skills and facilities for administration, leading to all sorts of resistance which include evasion and avoidance by individuals and companies.

According to Table 4, again in the first period, 100% of variations in core poverty are attributed to its own shocks. However, in the second period, 98.2% of the variations in core poverty were attributed to its own shock, while fiscal policy variables account for only 1.8%. As we consider 6th and 12th periods, we could see that 90% and 71.5% respectively of the

variations in core poverty rate are emanated from its own shocks, while government capital expenditure accounted for 7.1 and 23.9% in the 6th and 12th periods respectively.

Government recurrent expenditure accounted approximately for 2% and 3.3% variations in core poverty rate in the 6th and 12th periods respectively, while government tax revenue accounted for 0.3% and 0.2% in the 6th and 12th periods respectively, and government budget deficit accounted for 0.6% and 1.1% in the 6th and 12th periods respectively. This corresponds with the finding from the impulse response analysis that the response of core poverty to one standard deviation shock in fiscal policy variables (i.e., GCE, GRE, TAX and GBD) is marginal throughout the ten periods ahead. Thus, it is seen that fiscal policy is effective not only in short-run but also in long-run, Gupta et al. (2005).

Table 4. Selected Variance Decomposition Analyses for Core Poverty

Period	S.E.	CPOV	GCE	GRE	TAX	GBD
1	3.032801	100.0000	0.000000	0.000000	0.000000	0.000000
2	4.540915	98.17189	0.387769	1.080340	0.249921	0.110079
3	5.691343	98.30712	0.477713	0.820463	0.304582	0.090121
4	6.661243	97.36239	1.103251	1.174393	0.257461	0.102503
5	7.658892	93.98709	3.455955	1.843454	0.269104	0.444394
6	8.635813	90.09631	7.061156	1.984107	0.262923	0.595503
7	9.640509	85.64055	10.69689	2.500972	0.261249	0.900344
8	10.59138	81.72153	14.33760	2.673259	0.243940	1.023675
9	11.47988	78.62166	17.25610	2.829448	0.228981	1.063808
10	12.34116	75.84440	19.76072	3.051324	0.213767	1.129780
11	13.14602	73.55270	22.02062	3.114329	0.197800	1.114550
12	13.93200	71.52517	23.89021	3.269218	0.185789	1.129610
Cholesky Ordering: CPOV GCE GRE TAX GBD						

4. DISCUSSION

It has been observed empirically from the analysis done through the use of the impulse response function and forecast error variance decomposition analytical tools that two opposing blocks exist and they hamper the effectiveness of the use of fiscal policy, especially government capital expenditure, in addressing the poverty level and the growth of the economy. This reveals

that the size of government capital expenditure determines the economy's performance Abduliah (2000). According to Bennett (2007) fiscal policy should be formulated in such a way as to bring about a more equitable distribution of income from the rich people of the society to poor ones. The study further reveals that government capital expenditure impacts the economy far more than recurrent expenditures when it comes to poverty reduction. The implications of this finding is that though changes in some fiscal policy variables such as government capital and recurrent expenditures can be used to promote growth, the current state of government recurrent expenditure is not capable of promoting growth in Nigeria. This is consistent with the findings of Devarajan. et al. (1996) and Ghosh & Gregoriou (2006).

Though the reduction in government expenditure may have an adverse effect on the economy, an excess amount of it, which may be due to increases in recurrent expenditure or the indiscriminate use of income generated through taxes may end up creating a fiscal deficit. Most economists are of the belief that fiscal deficit cripples economies. The sluggish response of the poverty variables to government budget deficit shocks may also dilute the impact of fiscal policy on the economy. As such, fiscal deficit can greatly reduce welfare for the following reasons, such as: it can cause the inefficient allocation of resources and also a crowding out of private investment. Though a high level of fiscal deficit is detrimental to the economy since it increases poverty, if its increase is due to expenses on infrastructural development, it can help reduce poverty in the long run through increases in employment and productivity (Mehmood and Sadiq, 2010).

In general, Government tax revenue has insignificant impact on poverty rate. This can be traced to the high level of corrupt practices surrounding tax revenue which has greatly hindered the implementation of development plans. According to Adegbe and Fakile (2011), these activities can be associated with the high level of sabotaging experienced in the economy and the underdevelopment of the nation. It was also found that tax increases also increase the intensity of poverty, the disparity in poverty, and poverty ratio for all groups of household. The use of tax as a fiscal policy tool to achieve macroeconomic objectives in most third world countries including Nigeria is unreliable (Worlu & Nkoro, 2012). This is due to the fact that there is a low level of economic activities that could have stimulated the production of goods and services and net income on which taxes are based on. As such, the impact of an increase in tax on rate of poverty is higher on households in urban areas than those in the rural areas. The limited taxes realised by the Nigerian Government has had limited impact on the physical state of the economy, which is as a result of poor enforcement of payment of tax among other factors and the low effectiveness of the Nigeria Government. As such, taxes in Nigeria rather than enhancing economic growth and improved welfare for all through addressing income inequalities, instead causes societal welfare to diminish. Similarly, if government tax revenue, if not well channelled it will not enhance economic growth within the country.

5. CONCLUSION

It was observed that Government capital expenditure impacted more on poverty reduction in Nigeria, hence policies that advocate for an increase in expenditure for capital development projects and social infrastructure be put in place so as to make for a reduction in the level of poverty in the economy. Since poverty stems largely from income inequality, policies that will make for a more equitable distribution of income be implemented so as to make for a more

equitable distribution of income in the economy. Taxes were not levied adequately or properly remitted. Taxes should be levied more on the rich than the poor (Progressive taxation) and be remitted timeously to avoid excessive borrowing by the Government to fund projects.

It was also observed that fiscal policy was not effective due to administrative lapses and poor implementation. Checks should be put into place to ensure a proper implementation of formulated policies and reviews and amendments should be made on a regular basis to ensure its proper implementation.

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