

## **Public Expenditure and Income Growth in Nigeria: A Vector Autoregressive Analysis**

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### **Abstract**

This study examined the effects of public expenditure on income growth in Nigeria using Vector Auto-regressive Analysis (VAR). The results show that real income responds positively to public expenditures on administration, community services, defence and economic services. The results also confirm the feed-back effects of income and government expenditures on administration, community services, defence and economic services. It was concluded that government should direct her expenditure policies to favoured expenditures that positively impact the growth of real national income and per capita income. Hence, government should increase and judiciously manage her expenditure on administration, economic services, defence and community services. Corrupt practices in government should also be drastically curbed for effective usage of fiscal allocation.

### **Keywords**

Public expenditures, income growth, corrupt practices, feed-back effects, VAR

### **Introduction**

Public expenditure is the government spending aimed at attaining planned macro-economic objectives. The size of government expenditures and its effects on economic growth and income growth has continued to generate arguments in the literature. Economists (e.g. Wagner, 1883; Keynes, 1936; Obinna, 2003; Saunoris, 2015; Irwin, 2014 etc.) have argued that increase in government expenditure on socio- economic and physical infrastructure encourages income growth. For instance, government expenditure on health and education raises the productivity of labour and increase the growth of national income. Also, expenditure on infrastructure such as roads, communications, power, reduces production costs, increases private sector investment and profitability of firms

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and encourages income growth (Obinna, 2003). In the Nigerian economy public expenditure can be categorized into capital and recurrent expenditures. The recurrent expenditures are government expenses on administration such as wages, salaries, interest on loans, maintenance expenditure on capital projects like roads, airports, telecommunication, electricity generation are capital expenditures (Obinna, 2003). Public spending has continued to rise in Nigeria due to the large receipts from production and sales of crude oil, and the increased demand for public goods (CBN, 2019). Available statistics show that total government expenditures have continued to rise in the last three decades. For instance, government expenditures in 1980 were - ₦780m for defence, ₦260.7m for transportation and communication, ₦106.2m for health, ₦468m for agriculture and ₦154m for education. In 1990, government expenditure rose to ₦1.6b for defence, ₦961m for transportation and communication, ₦498m for health, ₦1.966b for agriculture and ₦2.3b for education. Also, government expenditure rose in 2010 to ₦68.3b for defence, ₦18.4m for transportation and communication, ₦12.4b for health, ₦3.6m for agriculture and ₦18.8m for education. In 2019, administration expenditure rose to ₦144.2b, community expenditure rose to ₦2.1b, defence expenditure rose to ₦588.9b, economy expenditure rose to ₦479.0b, education expenditure rose to ₦593.3b, health expenditure rose to ₦388.4b and transfer expenditure rose to ₦3.1b. The total of both capital and recurrent expenditure of the government grew sporadically from about ₦60.25 billion (about \$7.49bn) in 1990 to about ₦3.99 trillion (\$39.07bn) in 2010 (CBN, 2019).

Government functions have shifted in modern times from maintaining law and order and provision of social amenities to include attainment of full employment, maintenance of price stability, promotion of economic growth and development, maintenance of balance of payment equilibrium, and promotion of equitable distribution of income and wealth (Ofanson, 2007). These functions are attained by the management of fiscal policy of government which involves public expenditure policy. Public expenditure is an important instrument of government fiscal policy for the maintenance of the economy. It plays an important role in the functioning of both developed and developing economies. Government expenditure is an important element of national income from the expenditure approach of measuring national income. This implies that government expenditure is a key determinant of the size of the economy and of economic and income growth (Wang and Wen, 2013). However, a central question remains whether or not public sector expenditure increases the growth rate of the economy and income. Hence, the question of whether the pattern of transformation of public spending over the years in Nigeria has translated into desirable economic growth and prosperity of the people remains unanswered. Despite increasing government expenditure in Nigeria, there are still high rates

of unemployment, illiteracy and increasing poverty to the extent that 65% of Nigerians still lives on less than US\$1 per day (WHO, 2010). More so, about 70% of Nigerians still lack medical care, access to clean and portable water as well as other basic needs of life (WHO, 2010) while macro-economic indicators do not favour Nigeria. It is therefore, contentious that the growing public expenditure over the years has not provided the desirable economic and income growth in Nigeria. Against this backdrop, this study examines the effects of pattern of public expenditure on national income growth in Nigeria with data covering 1981-2019. The remaining parts of this study are divided into four sections. Section two examines the trends of public expenditures and real gross domestic product (as index of national income growth) while section three covers methodology. Section four comprises data analysis and discussion of results while section five concludes.

### **Brief Review of Literature**

Ditimi, Nwosa and Ajisafe (2011) investigated the impact of government expenditure on education, agriculture, health, transport and telecommunication on economic growth in Nigeria from 1970 to 2010. The long-run and short-run regression estimates established that expenditure on agriculture was the most significant component of government expenditure which impacted economic growth. Adewara and Oloni (2012) in the composition of public expenditure and economic growth in Nigeria from 1960-2008 using the Vector Autoregressive Model (VAR) show that expenditure on education failed to enhance economic growth due to the high rate of rent-seeking in the country. Sevitenyi (2012) analyzed the relationship and the direction of causality between public spending and economic growth in Nigeria adopting a Granger-causality test with annual time series data from 1961 to 2009. The findings revealed a unidirectional causality running from aggregate public spending to income growth, which supports the Keynesian hypothesis. Appah and Ateboh-Briggs (2013) investigated the patterns of public expenditure and growth in Nigeria for the period 1961-2010 employing VECM and other diagnostic tests. The results revealed that the pattern of public expenditure on administration, social community services, economic services and transfers affects income growth in Nigeria. Chude et al. (2019) investigated the effect of public expenditure in education on economic growth in Nigeria over a period from 1977 to 2012, with a particular focus on disaggregated and sectoral expenditure analysis. The study used the error correction model (ECM) and shows that total expenditure on education is statistically significant and has a positive effect on income growth in Nigeria in the long run. Edame (2014) examined the structure and growth of federal government expenditure in Nigeria from 1970 to 2009. The results obtained revealed that factors such as the fiscal deficit, gross domestic product, government revenue and debt servicing are some of the factors causing growth in the government expenditure in Nigeria for the reference period.

Akanbi (2014) in the determinants and of government expenditure in Nigeria using a public choice framework from 1974 to 2012, with the Johansen estimation techniques show that capital and recurrent expenditure are resilient to shocks in total government spending. Similarly, total government expenditure is found to be resilient to shocks in capital and recurrent spending. The increased per capita income was found to support Wagner's law in total and capital expenditure specifications, but this was negated by the recurrent expenditure specification. Danladi et al. (2015) in their study of government expenditure and its implication on economic growth in Nigeria employing the Autoregressive Distributed Lag Model (ARDL) found that government spending significantly explained the income growth of the country. In comparing the results of the government capital expenditure and recurrent expenditure, the authors show that both have a positive impact on income growth. Their study corroborated the Keynesian model (1936) of government intervention in the economy. Miftahu and Rosni (2017) on public sector spending and economic growth in Nigeria using the ARDL model also revealed the existence of a positive and significant relationship between public spending and economic growth in Nigeria. Government expenditure is considered important in creating opportunities and widening the productive base on which Nigeria and other developing countries can grow.

### ***Trends of Public Expenditure and Income Growth in Nigeria***

Public expenditures are functionally classified into capital and recurrent expenditures in Nigeria. These are further disaggregated into administration, economic services, social and community services, transfers, education, health and defence. Ogboru (2010) argues that government expenditures tend to increase over time as the economy becomes large due to the increase in the scope of government activities. He identified recurrent and capital budget as the major types of budget in an economy. The capital budget concerns the expenditures needed to buy capital assets. Taiwo (2012) has noted that government's spending is a fiscal instrument that serves a valuable role for controlling inflation, unemployment, depression, balance of payment disequilibrium and foreign exchange rate stability. During depression, government spending increases aggregate demand and production of goods and services also increases. Therefore, the increase in the supply of goods and services combined with a rise in the aggregate demand exerts a downward pressure on unemployment and depression. National Income growth (interchangeably referred to as economic growth) is a long term rise in capacity to supply increasing diverse economic goods and services (Taiwo, 2012). It is hypothesized as a country's potential gross domestic product (GDP) contingent on the measurement of national

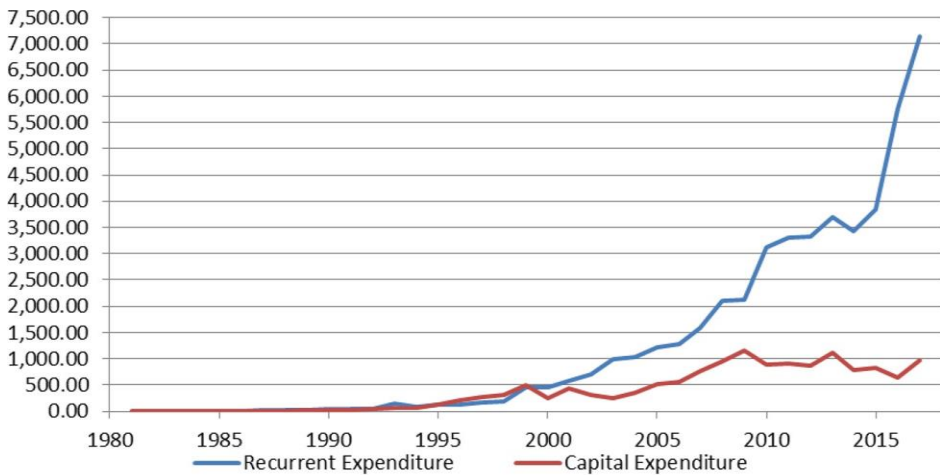
product. Income growth must be sustained for a developing economy to break the cycle of poverty. National income growth is traditionally measured as an increase in real GDP (IMF, 2012).

The economic history of Nigeria has been a complex one. In the period 1960-70, the GDP recorded 3.1% annual growth. During the oil boom era, 1970-78, GDP grew positively by 6.2% annually (IMF, 2012). In the structural adjustment and economic liberalization period, era, 1988-1997, the GDP grew at a positive rate of 4%. Gross domestic investment as a percentage of GDP, which was 16.3% and 22.8% in the periods 1965-73 and 1973-80 respectively, decreased to about 14% in 1980-88 and increased to 18.2% in 1991-98. Gross National Saving has been low, especially during the period 1973-80. The current account balances before official transfers are negative for 1965-73, 1980-88 and 1991-98 (CBN, 2019). Inflation rate which has never reached double-digit since the 1960s increased to 3.39% in 2005 and declined to 1.81% in 2019 and by year 2021 inflation rate had increased to 5.37%. Unemployment rates averaged 13.55% from 2006-2020 and fell to 3.5% in 2019. However, unemployment rate is currently estimated as 32.5% in Nigeria (CBN, 2021).

The trend of public expenditure has been characterized by steady and incessant increase in the expenditure side of the budget in Nigeria as shown in Figure 1. Government expenditure was ₦314.41b on average between 1960 and 1970 but rose to ₦5972.9b between 1971 and 1980 representing 1,799.7% growth in government expenditure during the decade of 1970s (CBN, 2019). This development was associated with the discovery of oil in the early 1970s that led to unprecedented increase in Nigeria's revenue. Also, government budgeted large monies for reconstruction after the 1960s civil war. The country also embarked on increase in spending on priority sectors to provide an enabling environment required to accelerate sustainable growth and development (CBN, 2019). Besides, government expenditure was ₦11,188.42b on average between 1981 and 1985 representing the growth rate of 87.3% (CBN, 2019). Public expenditure exhibited upward trend despite countless efforts by government to reduce its expenditure particularly through the structural adjustment program (SAP) in 1986. This continuous increase in public spending in the SAP era which contradicts the dictate of the IMF-inspired SAP of cutting down public expenditure was due more to corrupt practices of the political class and a significant portion of this public spending went into the private pocket and uncultivated consumption of imported goods. Hence, public expenditure continued to maintain steady and upward trend from 1986 to 1991. Total government expenditure was ₦11,413.7b in 1986 but by 1990, it slightly increased to ₦66,584.4b representing 10% increase (CBN, 2019). This scenario was attributed to the volatile revenue base of government and large fiscal deficits. Public expenditure was ₦701,059.40b and rose greatly to ₦4,813,380.00b from 2000 to 2016 (CBN, 2019). The average growth rate of government expenditure was 19.2% between 2001 and 2010 (CBN, 2019). Public expenditure continuously increased in this period due to the increased

demand for the provision of socioeconomic services, increase in the flow of revenue from the production and sales of crude oil as a result of high price of crude oil, expenditure on election and the desire of political leaders to fulfill election promises (CBN, 2019).

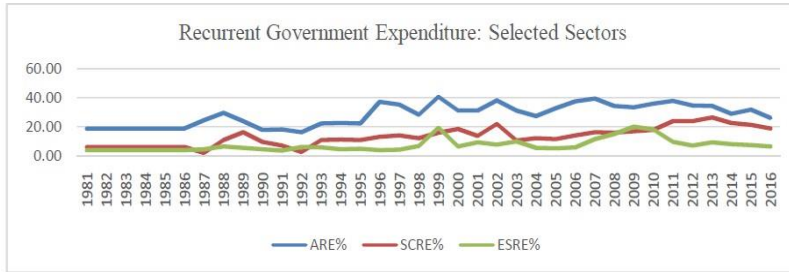
**Figure 1: Trends of Recurrent and Capital Expenditures in Nigeria**



**Source:** CBN Statistical Bulletin, 2016

Government allocates funds to the various sectors of the economy annually in Nigeria. Figure 2 shows the trend of recurrent government expenditure in selected sectors of the economy. The recurrent expenditure was disaggregated into administration, social community services and economic services. Recurrent expenditure on administration (ARE) was steadily the highest while recurrent expenditure on economic services (ESRE) was the lowest except in the early 1990s, late 1990s and late 2000s when it exceeded recurrent expenditure on social and community services (SCRE). This implies that the highest percentage of expenditure goes to personnel. This is astonishing because the economic services sector is the most productive and should have had the highest allocation to enable income growth.

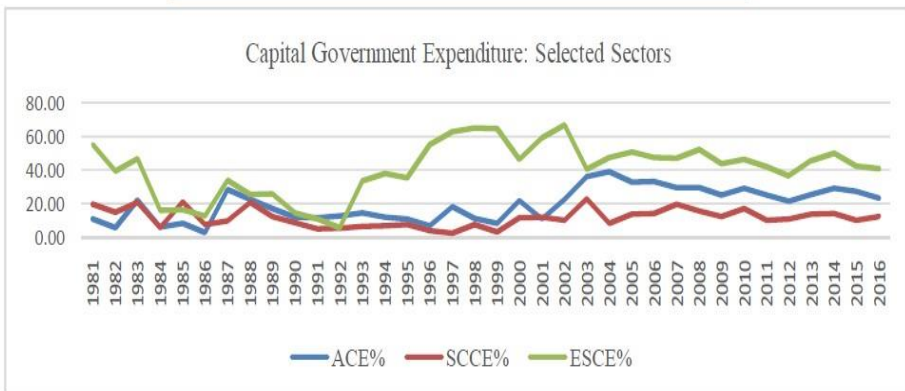
**Figure 2: Trend of Recurrent Government expenditure in Nigeria**



Source: CBN Statistical Bulletin, 2016

Figure 3 shows the trend of capital government expenditure from 1981 to 2016. The economic services sector has the highest allocation as shown by capital expenditure on economic services (ESCE) in this period. This is followed by the capital expenditure on administration (ACE). However, the social and community services sectors which include education and health sectors have the lowest share of capital expenditure (SCCE). This is unfortunate because neglecting the human capital component of any economy will lead to ugly situation in the long-run.

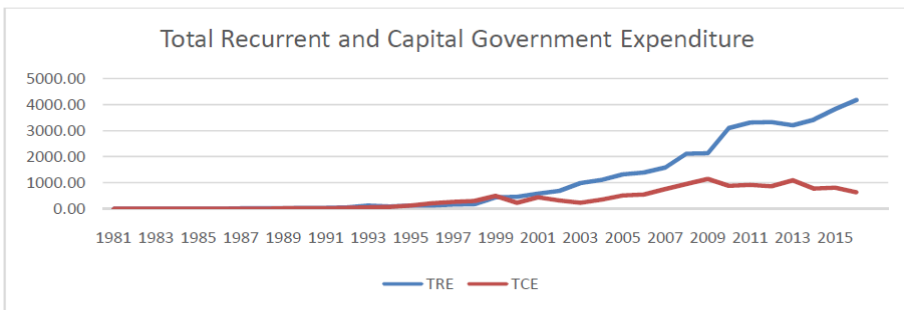
**Figure 3: Trend of Capital Government Expenditure in Nigeria**



Source: CBN Statistical Bulletin, 2016

Figure 4 shows the total recurrent and capital government expenditure from 1981 to 2015. Except for a short period of 1995 and 1999, total recurrent expenditure has a higher portion. This means that a higher percentage of Nigeria’s income is spent on salaries, interests and maintenance which are not as productive as capital projects. This trend substantially remains the same till now and it is a misplacement of priority by the government that must be urgently addressed.

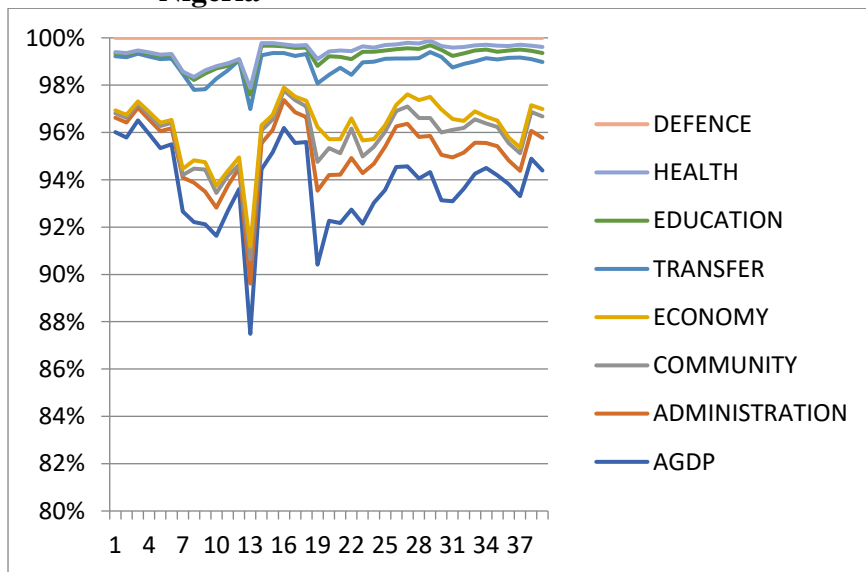
**Figure 4: Trends of Recurrent and Capital Government Expenditure in Nigeria**



Source: CBN Statistical Bulletin, 2016

Figure 5 shows the trends of government expenditures and income in Nigeria. The figure depicts a highly volatile movement of both public expenditures and income growth in Nigeria. Both government expenditures and income growth considerably fluctuate over the years and the trend is still the same up till now. This is due to receipts from oil and non-oil revenue as well as an increasing demand for public goods such as roads, electricity, education, health and security.

**Figure 5: Trends of Public Expenditure and Income Growth in Nigeria**



## Research Methodology

This study adopts the proposition of Wagner (1883) in explaining the connection between government expenditure and income growth. According to Wagner (1883), increase in per capita income will be accompanied by increase in government expenditure and vice versa. Hence both have feedback effect on each other. From the Wagner (1883) proposition, the relationship between government expenditure and income growth can be expressed as:

$$G = f(y) \quad (1)$$

Where G stands for growth and Y represents income. Since, both income and public expenditure have a feedback effects on each other, equation (1) is hereby restated as:

$$y = f(G) \quad (2)$$

Hence, it is assumed that income growth is linearly dependent on the growth of public expenditure. Equation (2) is the functional form that is usually estimated as Wagner's (1883) law. Public expenditure in equation (2) can be modified to include expenditure on administration, economic services, social and community services, transfers, education, health and defense. Therefore, income can be stated as linearly dependent on expenditure on administration, economic services, social and community services, transfers, education, health and defense thus:

$$y = (EX_{ad}, EX_{es}, EX_{cs}, EX_{tr}, X_{ed}, EX_{he}, EX_{df}) \quad (3)$$

Note that all the public expenditures in equation (3) have component of both recurrent expenditures and capital expenditures. Equation (3) state that income growth depends on the growth of public expenditures. This can be expressed in explicitly econometric form as:

$$y = \beta_0 + \beta_1 EX_{ad} + \beta_2 EX_{es} + \beta_3 EX_{cs} + \beta_4 EX_{tr} + \beta_5 EX_{ed} + \beta_6 EX_{he} + \beta_7 EX_{df} + \varepsilon_t \quad (4)$$

In equation (4), y is income proxy by real gross domestic product (RGDP). RGDP is used because only real value which has been deflated of inflationary effect can be used to evaluate change in welfare.  $EX_{ad}$  is the public expenditure on administration;  $EX_{es}$  is expenditure on economic services;  $EX_{cs}$  is the expenditure on social and community services;  $EX_{tr}$  is the expenditure on transfers;  $EX_{ed}$  is the total expenditure on education;  $EX_{he}$  is total expenditure on health and  $EX_{df}$  is the total public expenditure on defense. A priori it is expected that the coefficients of public expenditures on various services will be positive (i.e.  $\beta's > 0$ ).

**Estimation Techniques**

This study employs annual time series data on income measured by the real gross domestic product (GDP). Real GDP is used to measure growth of income because it has been deflated to remove inflationary pressure. Other variables are public expenditure on administration, expenditure on economic services, expenditure on social and community services, public expenditure on transfers, expenditure on education, expenditure on health and public expenditure on defense from 1981-2019. Since the data used for the study is a time series data, stationary test was carried out using Augmented Dickey-Fuller test. The unit root test also guides the decision between using Autoregressive Distribute Lag Model (ARDL) and Vector Autoregressive Analysis (VAR). The data for this study were obtained from the Central Bank of Nigeria statistical bulletin. Table 1 show the variables used in the study and their description.

**Table 1: Description of Variables**

S/N	VARIABLES	MEASUREMENT
1.	Income Growth	Real GDP is used to measure income/economic growth.
2.	EX <sub>ad</sub>	Public expenditure on administration measured by the total government expenditures on administration from 1981-2019.
3.	EX <sub>ex</sub>	Public expenditure on economic services measured by the total government expenditures on economic services from 1981-2019.
4.	EX <sub>cs</sub>	Public expenditure on social and community services measured by the total government expenditures on community services from 1981-2019.
5.	EX <sub>tr</sub>	Public expenditure on transfers measured by the total government expenditures on transfers from 1981-2019.
6.	EX <sub>ed</sub>	Public expenditure on education measured by the total government expenditures on education sector from 1981-2019.
7.	EX <sub>he</sub>	Public expenditure on health measured by the total government expenditures on health sector from 1981-2019.
8.	EX <sub>df</sub>	Public expenditure on defense measured by the total government expenditures on defence valued from 1981-2019.

Table 2 shows the descriptive statistics of the variables used in the study. From table 2 the mean of the real GDP is about 8.6, the mean of public expenditure on administration was about 4.3, the mean of public expenditure on community services was about 3.5, the mean of public expenditure on defence was about 3.3, the mean of public expenditure on economic services was around 2.9, the mean of public expenditure on education was around 2.9, the mean of public

expenditure on health was about 2.1 and the mean of public expenditure on transfer was about 5.0. Also, the maximum values for real GDP was 11.9, the maximum values of public expenditure on administration was 7.7, the maximum values of public expenditure on community services was 7.23, the maximum values of public expenditure on defence was 6.37, the maximum values of public expenditure on economy services was 6.33, the maximum values of public expenditure on education was 6.38, the maximum values of public expenditure on health services was 5.96 and the maximum values of public expenditure on transfer was 8.44.

**Table 2: Descriptive Statistics of the Variables Used**

	Y	EX <sub>ad</sub>	EX <sub>cs</sub>	EX <sub>df</sub>	EX <sub>ec</sub>	EX <sub>ed</sub>	EX <sub>he</sub>	EX <sub>tr</sub>
<b>Mean</b>	8.6199	4.3325	3.4997	3.3245	2.8596	2.8688	2.0756	5.0170
<b>Max</b>	11.8790	7.6521	7.2396	6.3784	6.3328	6.3857	5.9619	8.4401
<b>Min</b>	4.9755	-0.1089	-1.2416	-0.1089	-1.7592	-1.8192	-3.1865	1.2216
<b>Std. Dev.</b>	2.3665	2.6032	2.8861	2.0101	2.7428	2.8013	2.9765	2.2949
<b>Prob</b>	0.1796	0.1519	0.1729	0.2888	0.1636	0.1450	0.1568	0.2480
<b>Sum</b>	336.1775	168.9696	136.4895	129.6588	111.5267	111.8842	80.9486	195.6658
<b>Sum Sq. Dev.</b>	212.8281	257.5185	316.5317	153.5395	285.8919	298.2052	336.6730	200.1303
<b>Obs</b>	39	39	39	39	39	39	39	39

## Results and Discussion

Table 3 shows the result of the unit root test using the Augmented Dickey Fuller Test (ADF) for the stationarity nature of the data.

**Table 3: Unit Root Test**

Variables	ADF Tests Statistics	Critical Values	Order of Integration	Remark
Y	-3.197555	-2.943427	I(1)	Stationary
EX <sub>ad</sub>	-8.080906	-2.943427	I(1)	Stationary
EX <sub>cs</sub>	-8.061765	-2.943427	I(1)	Stationary
EX <sub>df</sub>	-8.935564	-2.943427	I(1)	Stationary
EX <sub>ec</sub>	-7.461439	-2.943427	I(1)	Stationary
EX <sub>ed</sub>	-7.785273	-2.943427	I(1)	Stationary
EX <sub>he</sub>	-10.13805	-2.943427	I(1)	Stationary
EX <sub>tr</sub>	-8.025919	-2.943427	I(1)	Stationary

The result shows that all the series are stationary after first difference. The Akaike Information Criterion gives the optimum lag length of income (GDP) as 4. The Schwarz information criterion was used to decide the optimum lag length for other series and their probabilities were found to be significant at  $p < 0.05$ . Since all the variables are I(1) variables, Vector Auto-regressive Analysis (VAR) was employed for the estimation of the relationship between income and

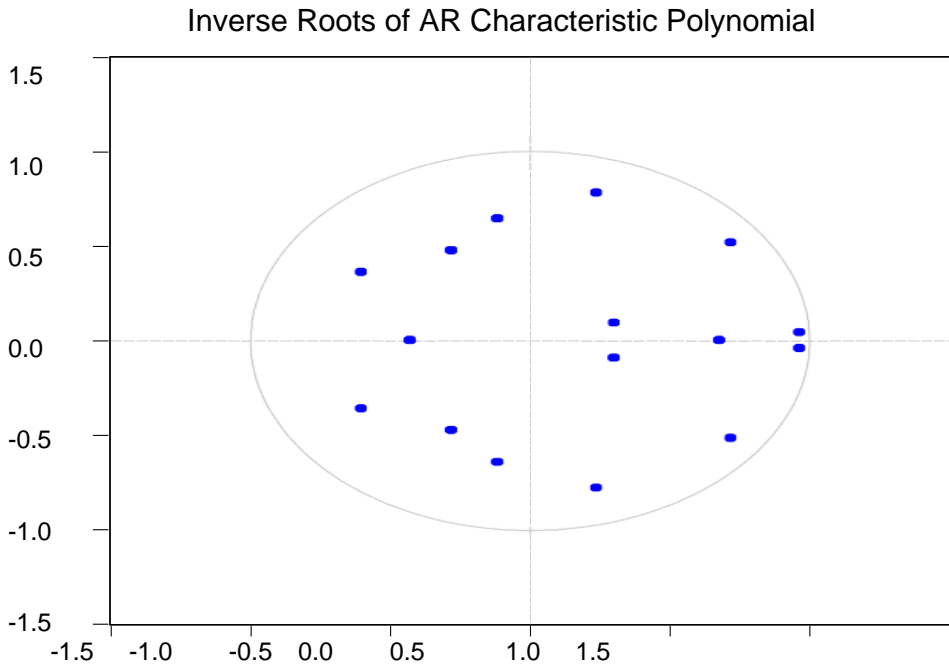
public expenditures in Nigeria. Table 4 shows the results of the estimated VAR (1) for the relationship between income and public expenditure on administration, social and community service, economic service, transfer, education, health, defense and economic growth in Nigeria. Literature has shown that the reduced form VAR is difficult to interpret due to its theoretical nature; hence, a check on whether the estimated model is well specified and stable was done using the impulse function and inverse root of polynomial. The estimated VAR is stationary if all roots have modulus less than one and lie inside the unit circle. Figure 6 is the impulse response polynomial function. The figure shows that all roots lie inside the unit circle, which is an indication that the VAR result in Table 4 is stable. In particular, income (real GDP) is positively related to its own lag but positively related to the first lag of public expenditure on administration. The public expenditure on administration positively relates to its own lag and negatively relates to the first lag of public expenditure on community services. For each right-hand side variable, the estimated coefficient, its standard error, and the t-statistic are reported.

Judging from the coefficients it appears that public expenditure on administration granger-causes real income, the real income granger-causes community services and defence, economic services granger-causes real income and transfers granger-causes real income growth. These observations are confirmed with formal tests for granger non-causality in Table 5. These results are confirmed by previous works on government expenditure on economic growth (e.g. Ogbonna and Ejem, 2019; Adamu and Hajara, 2015; Ogboru, 2010; Ogundipe and Oluwatobi, 2010 etc.). Public expenditures serve a wide range of purposes, such as providing health care, education and justice services to the population, and maintaining public order and safety but expenditures by function show government's priorities and challenges and track their evolution over time. The results of this study further reinforce the need for government to re-prioritize her expenditure outlay to favour more economic services, defence, administration, community services and other sectors of the economy that impact positively and have positive growing effects on the income growth.

**Table 4: Vector Auto-regressive Analysis (VAR) Estimates**

	Y	EX <sub>ad</sub>	EX <sub>cs</sub>	EX <sub>af</sub>	EX <sub>cc</sub>	EX <sub>ed</sub>	EX <sub>he</sub>	EX <sub>ir</sub>
y(-1)	0.622121 (0.21856) [ 2.84639]	1.158350 (1.22088) [ 0.94878]	2.741279 (1.31615) [ 2.08280]	0.149242 (1.56887) [ 0.09513]	0.863338 (1.92667) [ 0.44810]	3.597513 (1.88391) [ 1.90960]	3.575868 (2.02556) [ 1.76537]	0.019079 (1.00543) [ 0.01898]
EX <sub>ad</sub> (-1)	0.186650 (0.08842) [ 2.11100]	0.134140 (0.49389) [ 0.27160]	-0.021555 (0.53243) [-0.04048]	-0.416030 (0.63467) [-0.65551]	-0.381641 (0.77941) [-0.48965]	0.124079 (0.76211) [ 0.16281]	-0.182061 (0.81942) [-0.22218]	0.143428 (0.40674) [ 0.35263]
EX <sub>cc</sub> (-1)	0.027514 (0.12746) [ 0.21587]	-0.611583 (0.71195) [-0.85902]	-0.192208 (0.76751) [-0.25043]	-0.072864 (0.91488) [-0.07964]	-0.509116 (1.12353) [-0.45314]	-0.187189 (1.09859) [-0.17039]	-0.567513 (1.18120) [-0.48046]	0.880880 (0.58632) [ 1.50240]
EX <sub>af</sub> (-1)	-0.133259 (0.04666) [-2.85607]	0.198617 (0.26063) [ 0.76207]	0.149259 (0.28097) [ 0.53124]	0.725918 (0.33491) [ 2.16747]	0.225363 (0.41130) [ 0.54793]	0.114231 (0.40217) [ 0.28404]	0.304009 (0.43241) [ 0.70306]	0.068283 (0.21464) [ 0.31814]
EX <sub>cc</sub> (-1)	0.045228 (0.04229) [ 1.06957]	0.391527 (0.23621) [ 1.65754]	0.580571 (0.25464) [ 2.27996]	0.410369 (0.30354) [ 1.35197]	0.830393 (0.37276) [ 2.22768]	0.542847 (0.36449) [ 1.48934]	0.519147 (0.39189) [ 1.32471]	0.052348 (0.19453) [ 0.26910]
EX <sub>ed</sub> (-1)	-0.055976 (0.07402) [-0.75622]	0.085367 (0.41348) [ 0.20646]	0.228632 (0.44574) [ 0.51293]	-0.318662 (0.53133) [-0.59975]	-0.056497 (0.65250) [-0.08658]	0.520254 (0.63802) [ 0.81542]	0.243549 (0.68600) [ 0.35503]	-0.558538 (0.34051) [-1.64030]
EX <sub>he</sub> (-1)	-0.004478 (0.05033) [-0.08897]	-0.035068 (0.28115) [-0.12473]	-0.497819 (0.30309) [-1.64247]	-0.349600 (0.36129) [-0.96764]	-0.144021 (0.44369) [-0.32460]	-0.655573 (0.43384) [-1.51110]	-0.224030 (0.46646) [-0.48028]	-0.257324 (0.23154) [-1.11137]
EX <sub>ir</sub> (-1)	0.114841 (0.05565) [ 2.06382]	-0.175732 (0.31083) [-0.56537]	-0.362656 (0.33508) [-1.08229]	-0.303693 (0.39942) [-0.76033]	-0.474658 (0.49052) [-0.96767]	-0.439524 (0.47963) [-0.91638]	-0.324908 (0.51569) [-0.63004]	0.317887 (0.25598) [ 1.24186]
C	1.912758 (0.44587) [ 4.28991]	-1.173119 (2.49061) [-0.47102]	-8.227262 (2.68496) [-3.06421]	-2.911899 (3.20050) [-0.90983]	-3.474087 (3.93042) [-0.88390]	-9.021816 (3.84318) [-2.34749]	-9.788631 (4.13216) [-2.36889]	1.122398 (2.05109) [ 0.54722]
R	0.999692	0.991801	0.992347	0.977328	0.981689	0.983251	0.983321	0.992931
Adj. R-squared	0.999445	0.985241	0.986225	0.959190	0.967041	0.969853	0.969978	0.987276
Sum sq. resids	0.057149	1.783185	2.072335	2.944562	4.440815	4.245870	4.908393	1.209360
S.E. equation	0.053455	0.298595	0.321896	0.383703	0.471212	0.460753	0.495398	0.245902
S.D. dependent	2.269024	2.457856	2.742626	1.899391	2.595536	2.653648	2.859153	2.179962

**Figure 6: Inverse Roots of AR Characteristic Polynomial**



**Table 5: Granger-Causality Test**

Null Hypothesis:	Obs	F-Statistic	Prob.
EX <sub>ad</sub> does not Granger Cause y	37	2.9248	0.0481
y does not Granger Cause EX <sub>ad</sub>		2.4226	0.1048
EX <sub>cs</sub> does not Granger Cause y	37	1.3172	0.2820
y does Granger Cause EX <sub>cs</sub>		9.1953	0.0007
EX <sub>df</sub> does not Granger Cause y	37	1.1073	0.3428
y does Granger Cause EX <sub>df</sub>		3.5491	0.0405
EX <sub>ec</sub> does not Granger Cause y	37	2.8443	0.0430
y does not Granger Cause EX <sub>ec</sub>		1.7380	0.1921
EX <sub>ed</sub> does not Granger Cause y	37	0.7984	0.4588
y does not Granger Cause EX <sub>ed</sub>		12.7394	9.E-05
EX <sub>he</sub> does not Granger Cause y	37	0.7674	0.4725
y does not Granger Cause EX <sub>he</sub>		13.4606	6.E-05
EX <sub>tr</sub> does Granger Cause y	37	5.3558	0.0099
y does not Granger Cause EX <sub>tr</sub>		0.6674	0.5200

**Conclusion**

This study examines the impact of public expenditure on income growth in Nigeria using data from 1981 – 2019. The motivation for the study stems from the knowledge gap in the existing literature. The VAR results shows real income is positively related to its last year value and the previous year public expenditure on administration, public expenditure on community services, and public expenditure in economic services. The results further confirm the feed-back effects of income and public expenditures on administration, community services, defence and economic services. Therefore, government should redesign her expenditure policies to favour expenditures that positively impact on the growth of real national income and per capita income. Government should thus, increase and judiciously manage her expenditure on administration, economic services, defence and community services. More so, leakages in the system (in form of corrupt practices and wastages) that allow public expenditure allocations to get into private pockets instead of using for public good should be drastically reduced through creative measures.

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