

Public Expenditure and Revenue Causality Pattern in Nigeria

Ojelabi, Sunday Adeyemi

Anan University, Kwall Plateau State, Nigeria

Mohammed Bulama

Anan University, Kwall Plateau State, Nigeria

Aruwa Suleiman A. S.

Anan University, Kwall Plateau State, Nigeria

ABSTRACT

Government expenditure remains an important instrument utilised in the process of development. It plays a pivotal role in the functioning of any economy at almost all stages of growth and development. The expenses incurred will provide the necessary infrastructures such as health care, educational and social security services etc. Funds spent on the provision of infrastructures are basically sourced from taxes, fines, royalties, borrowings and grants from the states, national and international governments. This study is on Nigeria public expenditure and revenue for the period of 2010-2020, data were collected for eleven years and were analyzed using statistical package E-view 10. The study revealed that fiscal synchronization and tax and spend have positive and significant effects on government expenditure. While spend-revenue and spend and tax were found to be negative and insignificant on government expenditure in Nigeria. Based on the findings, the study concluded that federal government revenue, tax and spend and fiscal synchronization among the independent variables were statistically significant at 5% level of significance in the short run. In the long run, spend-revenue and spend and tax also turned out to be statistically significant. The study recommended that spend and tax of the country should cautiously be under watch to ensure that government should first make expenditure decision then adjust the tax policy and revenue in a way that it can go with the expenditure of the country. As for spend-revenue, government should always keep her expenditure under control by making sure that her expenditure change does not have any significant change on the revenue.

Key words: Nigeria, Public Expenditure, Revenue, Causality Pattern

INTRODUCTION

Government expenditure remains an important instrument utilised in the process of development. It plays a pivotal role in the functioning of any economy at almost all stages of growth and development. Most developing and developed countries today use public expenditure to improve income distribution, direct the allocation of resources in desired areas, and influence the composition of national income (Assi et al., 2019; Vtyurina, 2020; World Bank, 2008). In developing countries for instance, the variation in government spending pattern is

not only projected to guarantee stabilization but also to spur economic growth and expand employment opportunities (World Bank, 2015).

Empirical evidences on the effect of government expenditure on output growth especially for developing economies like Nigeria, present two opposing views, some suggesting that government expenditure has negative effect on output growth (Abu & Abdullahi, 2010; Devarajan et al, 1996; Folster & Henrekson, 2001; "Gukat & Ogboru, 2017; Nurudeen & Usman, 2010; Saidu & Ibrahim, 2019; Segun & Adelowokan, 2015). In contrast, other studies established that government expenditure promotes output growth and development of a country (Aigbeyisi, 2013; Akanbi, 2014; Ahuja & Pandit, 2020; Awode & Akpa, 2018; Nyarko-Asomani, et al., 2019; Bose, Haque & Osborn, 2007; Idris & Bakar, 2017; Ihugba & Njoku, 2017; Jibir & Aluthge, 2019a; Jibir & Babayo, 2015; Srinivasan, 2013; Olayungbo & Olayemi, 2018).

Public expenditure describes spending made by government on common needs of a country in terms of pension, provision of infrastructure and lots of other economic issues. Until the 19th century, public expenditure according to Adam Smith in his 'Wealth of Nations' (1776) should be restricted to defense against foreign assault, protection of home peace and order, public development work. Further functions in addition to these were seen as beyond the ability of the state and expenses on them were treated as unjust and wasteful. However, there had been a startling growth in the activities of state and this resulted in incomparable boost in public spending.

In the 20th century, John Maynard Keynes argued the role of public expenditure in determining levels of income and distribution in the economy. Keynes opined that government should borrow money to spend on public works; and deficit spending would create jobs and enhance purchasing power in the economy as trying to balance the government's budget during a depression would make things worse, not better. Keynes's supposition laid the basis for the field of macroeconomics which treats the economy as a whole and focuses on government's use of fiscal policy spending, deficits and tax in overall economic management, since then government expenditures have shown a rising trend.

Valentino (2001) pointed out that public expenditure is the value of goods and services bought by the State and its articulations. He maintained that public expenditure performs such functions as contribution to current effective demand, coordinating inclination on the economy, which can be used for stabilization of fluctuations in business cycle and growth purposes. Public expenditure also increases public endowment of goods for everybody which gives rise to positive externalities to specific sectors, geographical areas and the nation at large through its capital component. He stressed that democratically, public expenditure is an expression of people's will and how they are managed through political parties and institutions, characterized by a high degree of apathy and law dependency, which tempers the will of current majority. The conflicting results can be attributed to differences in methodological approach, scope, or dataset. Irrespective of which of the arguments may be more convincing, what remains obvious is that there is need for further studies to go beyond their specifications and methodologies. Thus, the focus of this study is to empirically investigate the impact of government expenditure on economic growth in Nigeria using latest data and ARDL model with structural break.

It is the craving of each country to achieve rapid economic growth and development. Funds are needed to this effect as development entails spending. The expenses incurred will provide the necessary infrastructures such as health care, educational and social security services etc. Funds spent on the provision of infrastructures are basically sourced from taxes, fines, royalties, borrowings and grants from the states, national and international governments. This goes to justify the assertion that valid and significant monetary development and advancement can't be accomplished without fiscal management.

According to the Keynesian perspective, government's association in the undertakings of a state can trigger off economic growth by encouraging deficit financing and expenditure in the face of a decrease in government revenue and an increase in government expenditure as supported by Wager's hypothesis of increasing expenditure of the state. Due to the intrigues surrounding this subject matter, different scholars have come up with 4 alternative hypotheses to explain this phenomenon and to provide an explanation for fiscal management but they have only succeeded in creating variations as a means to the end (Kanu, et al., 2014). First is the revenue-spend hypothesis of Friedman (1978) which assumes that changes in state revenue lead to changes in government expenditure by almost the same proportion, but in the same direction. Second is the spend-income speculation which expects that adjustments of expenditure can prompt changes in pay as evolved by Peacock and Wiseman (1979). As per this speculation, emergency in an economy could prompt a removal impact i.e., the current expansion in government spending prompts an increment in income. This kind of causality associates income with consumption Meltzer.

Richard (1981) described yet another causality relationship – the fiscal synchronization hypothesis which posits that government determines its expenditures and revenues simultaneously based on the cost benefit analysis of the planned government programs. The last but not the least is the institutional separation hypothesis that is of an opposite view with the fiscal synchronization hypothesis. It posits that government determines its expenditures and revenues independently from the foregoing analyses, it is evident that empirical studies on the relationship between government revenues and expenditures appears to be inconsistent with one another. This goes to underscore the importance of the variables- revenues and expenditures in determining the public expenditure path and nature of causality relationship between them.

Hypothesis of the Study

H0₁: There is no significant relationship between government revenue and public expenditure in Nigeria from the period 2010 to 2020.

LITERATURE REVIEW

Conceptual Review

Public expenditure can be characterized as the expenditure incurred by government like the federal, state, and local governments to satisfy the aggregate needs of individuals. It is fundamentally made by the government of a country on citizen's needs and items such as pension, provision of infrastructure etc. Bhatia (2008) defines public expenditure as the expenses which a government incurs for (i) its own maintenance, (ii) the society and the economy, and (iii) helping other countries. Public expenditure refers broadly to expenditure made by local, state, and national government agencies as distinct from those of private

individuals. Public Expenditure also comprises of government payments for the goods and services acquired and for the works done pursuant to their respective laws, social security contributions, interest payments of domestic and foreign debts, general borrowing expenditures, payments resulting from the discounted sale of borrowing instruments, economic, financial and social transfers, donations and grants, and others.

Section 162 (10) of Nigeria's 1999 constitution, defines revenue as any income returns accruing from or derived by the government from any receipt arising from the operation or any law, property held by the government and any returns by way of interest or loans and individuals in respect of shares or interest held by the government in any company or statutory body. Government revenue includes all amounts of money (i.e., taxes and fees) received from sources outside the government entity. Large governments usually have an agency or department responsible for the collection of government revenue from companies and individuals. Government revenue may also include reserve bank currency which is printed and this is recorded as an advance to the retail bank together with a corresponding currency in circulation. The income is derived from the official cash rate for instruments such as 90 days bills.

Aremu et al., (2020) investigated the impact of government expenditures on critical sectors on economic growth in Nigeria (1984-2019). The study employed Autoregressive Distributed Lag model (Bound Test Co-integration Approach) to estimate both short and long run impacts of government expenditures on economic growth. The result revealed that government expenditure on defense has negative impacts on economic growth while government expenditure on agriculture enhances economic growth. Government expenditure on education, transport and communication did not have impact on economic growth in the long-run.

Akanbi (2018) investigated government expenditure in Nigeria: Determinants and trends. The study used time series data from 1974 to 2016. It was discovered that capital and recurrent expenditures were resilient to shocks in total government spending and also, total government expenditure was confirmed to be resilient to shocks in capital and recurrent spending.

Kanayo et al., (2016) examined the long run relationship between government expenditure and economic growth in Nigeria. Johansen co-integration was the tool of analysis employed in testing the long run relationship while Vector Error Correction Model (VECM) was used to test the short and long run adjustments. Granger Causality Effect test was adopted to analyse the effects of government expenditure on economic growth. The long run test revealed the evidence of a long run relationship between government expenditure and economic growth in Nigeria. The Vector Error Correction Model analysis suggested the possibility of Nigeria achieving a steady level of growth if preference is given to capital expenditure more than recurrent expenditure. The Granger Causality Effect result obtained showed that recurrent and capital expenditure have significant effects on economic growth in Nigeria.

Idris and Bakar (2017) examined the relationship between government expenditure and economic growth with the aim of establishing a stable relationship. To estimate the existence or otherwise of the equilibrium relationship among the examined variables, the study employed an ARDL model. The data covered a period of thirty-five (35) years from 1980 to 2015. The result from the ARDL estimation indicated an existence of positive and long-run equilibrium relationship between economic growth and government expenditure in Nigeria.

Ditimi et al., (2019) examined relationship between the components of government expenditure with focus on education, agriculture, health and transport and telecommunication variables on economic growth in Nigeria for the period between 1970 and 2018. The results of the long run and short run regression estimates indicated that expenditure on agriculture was the most significant of the components of government expenditure which impacted on economic growth.

Nworji et al., (2018) studied the effect of public government spending on economic growth in Nigeria, based on variables considered relevant indicators of economic growth and government expenditure for the period 1970 – 2017. The Ordinary Least Square (OLS) multiple regression model specified on perceived causal relationship between government expenditure and economic growth was used. Results of the analysis showed that capital and recurrent expenditure on economic services had insignificant negative effect on economic growth. Capital expenditure on transfers had insignificant positive effect on growth. Capital and recurrent expenditures on social and community services and recurrent expenditure on transfers had significant positive effect on economic growth.

THEORETICAL REVIEW

Several theories have been advanced to underpin the nature of the relationship and causality among government expenditure and economic growth. The classical view could be traced to Smith (1776) and Ricardo (1821). These economists pioneered the notion that expansive government expenditure results in lowering economic growth. The scholars believed in the principle of laissez faire approach in economic activities regarding maximum government intervention as interference with the free-market situation which would hinder economic progress. The maximum intervention in expenditure, Smiths believed should be limited to the fundamental functions of government: protecting the society from the violence and invasion of other independent societies, protecting every member of the society from the injustice of operation of every other member of it and erecting and maintaining those public works which are very essential to the society and which no single individual or small group of individuals could erect and maintain. This implies that apart from expenditure on the general administration, defense (both internal and external), as well as expenditure on the provision of public goods and services which no single or a group of individuals can advantageously provide to the economy, any other government expenditure entails an intervention in an economy and would not lead to economic growth.

Some scholars support Smith's claim of negative impact of excessive government expenditure on economic growth through a different dimension. Nimeri et. al. (2012) for instance argued that the negative effect of expansive government expenditure on economic growth results through increase in taxes and/or borrowing. According to him, in an attempt to finance rising expenditure, government may resort to increase in taxes or borrowing. The scholar advanced two negative effects of this scenario that would lead to lowering of economic growth. One, higher income tax may discourage individuals from working for long hours or even taking up appointment which reduces income and aggregate demand. Two, higher profit tax tends to increase production costs thereby reducing firms expenditure and investments thereby reducing firms sales volume and profit subsequently lowering production, employment and economic growth.

Arguing on the borrowing effect of government expenditure on economic growth, Laudau (1986), Eugen and Skinner (1992), Folster and Henrekson (2001), Dar and AmirkhalKhali (2002) and Nimedi et. al. (2012) stressed that if the borrowing is from banks and other financial institutions, it will crowd-out private sector, thus reducing private investment and subsequently lowering productivity and economic growth. These scholars submitted that government expenditure often turns into inefficient expenditure which causes distortion in allocation of resources and corruption.

The Wagnerian view attributed to Adolph Wagner (1883) attempts to explore the causal relationship between government expenditure and economic growth. According to him, as the real income (economic growth) increases there is the long run tendency for government expenditure to increase relative to national income. In other words, there is a functional relationship between economic growth (growth in the per capita income) and government expenditure with the causality running from per capita income to government expenditure and not vice versa. Supporting this view, Ogba and Likita (1999) argued that when economy grows, there will be increase in the number of urban centers with the associated increase in social vices such as crime, which requires government intervention in the area of internal security to maintain law and order. This intervention, according to them, has associated costs leading to increase in public expenditure in the economy.

The Neoclassical view otherwise known as the Keynesian view holds rather an opposing view regarding the relationship and direction of causality between government expenditure and economic growth. Keynes posited that increase in government expenditure results in higher growth of the economy. Commenting on this issue, Nworji et. al. (2012) and Dermibas (1999) stated that Keynes viewed public expenditure as a fiscal policy instrument necessary for achieving short term stability and long term economic growth. In addition, it can help in overcoming the inefficiencies of the market system in the allocation of resources as well as influences the level of employment and price stability (Szorowska, 2011). Some scholars who also support the Keynesian claim regarded increase in government expenditure as instrument that provides insurance protection to private assets thus encouraging economic growth, Ram (1986), Kormendi and Merguire (1986) for instance argued that expansive government expenditure provides insurance function to private property there by encouraging private investment which cause economic growth.

METHODOLOGY

This study made use of an Ex-post facto research design. Secondary data was employed covering the period 2010-2020. The data were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin (2020) Edition. The Auto Regressive Distributed Lag (ARDL) was used for the model estimation.

Model Specification

This study modeled economic growth as a function of government expenditure on health, general administration, education, and defense.

$$\text{PUBEXP} = f(\text{TAX-SPD}, \text{SPD-REV}, \text{SPD-TAX}, \text{FISYNCHRO})$$

In econometric form:

$$\text{PUBEXP} = b_0 + b_1\text{TAX-SPD} + b_2\text{SPD-REV} + b_3\text{SPD-TAX} + b_4\text{FISYNCHRO} + e$$

Where:

PUBEXP = Public Expenditure.

TAX-SPD = Tax and spend.

SPD-REV = Spend revenue.

SPD-TAX = Spend and tax.

FISYNCHRO = Fiscal synchronization b_1 – b_4 are coefficients of parameters estimates and b_0 is the intercept of the model. ϵ is the white noise error term.

DATA ANALYSIS

Lag length selection criteria.

VAR Lag Order Selection Criteria

Endogenous variables: PUBEXP TAX-SPD, SPD-REV, SPD-TAX, FISYNCHRO.

Included observations: 31

Table 1

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1189.841	NA	2.07e+27	77.08650	77.31779	77.16190
1	-1064.295	202.4928	3.23e+24	70.59970	71.98742	71.05206
		45.49779	1.91e+24	69.93771	*	70.76705
2	-1029.034	*	*	*	72.48188	.

From the table above, the dominant lag length is 2; hence the lag of 2 will be used throughout the estimation and analysis.

Table 2 Correlations

VARIABLES	TAX-SPD	SPD-REV	SPD-TAX	FISYNCHRO	PUBEXP
TAX-SPD	1	0.0885	0.0231	0.2875	-0.0746
SPD-REV	0.0885	1	0.9366	0.8620	0.9620
SPD-TAX	0.0231	0.9366	1	0.8129	0.9653
FISYNCHRO	0.2875	0.8620	0.8129	1	0.8185
PUBEXP	-0.0746	0.9620	0.9653	0.8185	1

From the above table:

TAX-SPD has a positive but weak correlation with SPD-REV, SPD-TAX and FISYNCHRO respectively, but a negative and weak correlation with PUBEXP.

SPD-REV has a weak but positive correlation with TAX-SPD, but a very strong and positive correlation with SPD-TAX, FISYNCHRO and PUBEXP, respectively.

SPD-TAX has a weak but positive correlation with FISYNCHRO, but a very strong and positive correlation with SPD-REV, SPD-TAX and PUBEXP, respectively.

FISYNCHRO maintained a positive but poor correlation with CAPEXP. However, it has a very strong and positive correlation with SPD-REV, SPD-TAX and PUBEXP, respectively.

PUBEXP has a weak and negative correlation with TAX-SPD, but a strong and positive correlation with SPD-REV, SPD-TAX and FISYNCHRO, respectively.

Table 3 Unit root test

Variable	ADF Stat. (Level)	5% Critical value	ADF Stat(1 ST DIFF)	5% Critical value	Remark
PUBEXP	-0.078277	-2.960411	-4.895840*	-2.960411	I(1)
FISYNCHRO	-4.070157*	-2.951125	-6.383951	-2.950421	I(0)
SPD-TAX	-0.598226	-3.632900	-5.319471*	-2.951125	I(1)
SPD-REV	2.236721	-2.948404	-4.750310*	-3.639407	I(1)
TAX-SPD	-0.324319	-2.951125	-6.549778*	-2.951125	I(1)

Source: Researcher's compilation from E-views 10 Regression output.

From the above test FISYNCHRO achieved stationary at level while, TAX-SPD, SPD-REV, SPD-TAX and PUBEXP turned stationary at first difference.

ARDL BOUNDS TEST FOR COINTEGRATION

Null Hypothesis: No level relationship

F-Bounds Test

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.765150	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

Decision: The table above shows that there exists presence of long run relationship in the model since the F-statistic has a value greater than the I(0) and I(1) bounds respectively at 5% level of significance.

Table 4: ARDL Estimation

Dependent Variable: PUBEXP

Method: ARDL

Selected Model: ARDL(4, 1, 2, 1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
PUBEXP(-1)	0.611927	0.278172	2.199814	0.0465
PUBEXP(-2)	-0.355929	0.328706	-1.082819	0.2986
PUBEXP(-3)	0.529324	0.331759	1.595510	0.1346
PUBEXP(-4)	-0.518058	0.269861	-1.919721	0.0771
FISYNCHRO	-5.787987	3.715925	-1.557617	0.1433
FISYNCHRO (-1)	5.954637	2.893734	2.057769	0.0602
TAX-SPD	3.521871	3.076080	1.144922	0.2729
TAX-SPD (-1)	-9.018546	3.273383	-2.755115	0.0164
TAX-SPD (-2)	5.941335	4.068535	1.460313	0.1679
SPD-REV	-3.443953	2.684507	-1.282900	0.2219
SPD-REV(-1)	3.482940	2.371720	1.468529	0.1657
SPD-TAX	2.473763	1.940494	1.274811	0.2247
SPD-TAX (-1)	6.285491	1.980960	3.172952	0.0073
C	13152.77	6490.332	2.026517	0.0637

R-squared	0.996639	Mean dependent var	31889.01
Adjusted R-squared	0.993278	S.D. dependent var	15544.00
S.E. of regression	1274.433	Akaike info criterion	17.44454
Sum squared resid	21114342	Schwarz criterion	18.11646
Log likelihood	-221.5013	Hannan-Quinn criter.	17.64434
F-statistic	296.5234	Durbin-Watson stat	1.943525
Prob(F-statistic)	0.000000		

From the table above, FISYNCHRO was found to have a positive relationship with PUBEXP at the current and 2nd time lag but showed a negative relationship with PUBEXP at the 1st time lag respectively. However, it was only significant at the 1st time lag. Examining the relationship between TAX-SPD and PUBEXP; it was found that at the current period, it had a negative relationship, but a positive one at the 1st time lag. However, it was neither significant at any of these time periods. SPD-REV showed a negative relationship with PUBEXP at the current period, but a positive one at the 1st time lag. However, it was neither significant at any of these time periods. SPD-TAX showed a positive relationship with PUBEXP in the current and 1st time lag period, although only significant at 1st lag.

Table 5: ARDL Dynamic Short Run Error Correction Model

Dependent Variable: D(PUBEXP)

Selected Model: ARDL(4, 1, 2, 1, 1)

Case 2: Restricted Constant and No Trend

Date: 11/26/22 Time: 03:37

Sample: 2010 2020; Included observations: 27

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PUBEXP(-1))	0.344663	0.151930	2.268569	0.0410
D(PUBEXP(-2))	-0.011267	0.118426	-0.095138	0.9257
D(PUBEXP(-3))	0.518058	0.157935	3.280195	0.0060
D(FISYNCHRO)	-5.787987	2.304426	-2.511682	0.0260
D(TAX-SPD)	3.521871	2.276274	1.547209	0.1458
D(TAX-SPD(-1))	-5.941335	2.181997	-2.722889	0.0174
D(SPD-REV)	-3.443953	1.552823	-2.217866	0.0450
D(SPD-TAX)	2.473763	0.982807	2.517039	0.0257
CointEq(-1)*	-0.732735	0.105877	-6.920628	0.0000
R-squared	0.813341	Mean dependent var	1735.702	
Adjusted R-squared	0.730381	S.D. dependent var	2085.823	
S.E. of regression	1083.060	Akaike info criterion	17.07417	
Sum squared resid	21114342	Schwarz criterion	17.50612	
Log likelihood	-221.5013	Hannan-Quinn criter.	17.20261	
Durbin-Watson stat	1.943525			

Short Run Analysis

From the short run Error correction model above, FISYNCHRO has a positive coefficient and relationship in with PUBEXP in the current period, but a negative coefficient in the 1st time lag. However, it was only significant at the 1st time lag TAX-SPD was found to have a negative coefficient and relationship and showed to be also significant at 5% level of significance. SPD-

REV was found to have a negative coefficient and relationship in with PUBEXP. It also showed a significant relationship with PUBEXP at 5% level of significance.

SPD-TAX was also found to have a positive coefficient and relationship with PUBEXP. It also showed a significant relationship with PUBEXP at 5% level of significance. The Error correction coefficient was negative as expected and significant at 5% level of significance; hence, satisfied the conditions for error correction. This means that the disequilibrium found in the short run will be adjusted in the long run at a very high speed of 73 % annually.

Table 6 ARDL Long Run Form Long Run Form

Dependent Variable: D(PUBEXP)

Selected Model: ARDL(4, 1, 2, 1, 1)

Case 2: Restricted Constant and No Trend

Date: 11/26/22 Time: 03:37

Sample: 2010 2020; Included observations: 27

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13152.77	6490.332	2.026517	0.0637
PUBEXP(-1)*	-0.732735	0.366964	-1.996747	0.0672
FISYNCHRO(-1)	0.166651	2.979039	0.055941	0.9562
TAX-SPD(-1)	0.444660	3.288323	0.135224	0.8945
SPD-REV(-1)	0.038987	2.581387	0.015103	0.9882
SPD-TAX (-1)	8.759254	3.434923	2.550058	0.0242
D(PUBEXP(-1))	0.344663	0.299151	1.152134	0.2700
D(PUBEXP(-2))	-0.011267	0.310012	-0.036343	0.9716
D(PUBEXP(-3))	0.518058	0.269861	1.919721	0.0771
D(FISYNCHRO)	-5.787987	3.715925	-1.557617	0.1433
D(TAX-SPD)	3.521871	3.076080	1.144922	0.2729
D(TAX-SPD (-1))	-5.941335	4.068535	-1.460313	0.1679
D(SPD-REV)	-3.443953	2.684507	-1.282900	0.2219
D(SPD-TAX)	2.473763	1.940494	1.274811	0.2247

* p-value incompatible with t-Bounds distribution.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FISYNCHRO	0.227436	4.122608	0.055168	0.9568
TAX-SPD	0.606849	4.535565	0.133798	0.8956
SPD-REV	0.053207	3.505438	0.015179	0.9881
SPD-TAX	11.95418	3.277252	3.647624	0.0030
C	17950.23	665.8079	26.96007	0.0000

EC = PUBEXP - (0.2274* FISYNCHRO + 0.6068*TAX-SPD + 0.0532*SPD-REV + 11.9542*SPD-TAX + 17950.2265)

Long run analysis

From the long run form of ARDL model , the coefficients of :Constant (C), FISYNCHRO , TAX-SPD , SPD-REV and SPD-TAX , all had a positive relationship with PUBEXP. This shows that when

other explanatory variables are held constant, PUBEXP will increase by 17950.23, 0.227436, 0.606849, 0.053207 and 11.95418 units respectively.

Table 6 A review of our apriori expectations

Variable	Definition	Expected sign	Obtained sign	Remarks
SPD-REV	Spend and revenue	(+)	(-)	Does not Conform
TAX-SPD	Tax and spend	(+)	(+)	Conform
FISYNCHRO	Fiscal synchronization	(+)	(-)	Does not Conform
SPD-TAX	Spend and tax	(+)	(+)	Conforms

Source: Researcher's compilation (2022)

SPD-REV has no significant relationship with government expenditure in Nigeria at $\alpha=0.05$
Decision rule: Since the prob. value (0.0450) < 0.05 the null hypothesis is rejected. Thus, we conclude that spend and revenue has no significant relationship with government expenditure in Nigeria.

FISYNCHRO has no significant relationship with government expenditure in Nigeria at $\alpha=0.05$
Decision: Since the prob. value (0.0260) < 0.05 the null hypothesis is rejected. Thus, this study conclude that fiscal synchronization has no significant relationship with government expenditure in Nigeria.

TAX-SPD has no significant relationship with government expenditure in Nigeria at $\alpha=0.05$
Decision: Since the prob. value (0.1458) > 0.05 the null hypothesis is accepted. Thus, the study concluded that tax and spend has no significant relationship with government expenditure in Nigeria.

Joint Test of Significance (ANOVA)

Decision: From table 6 above, the F-prob. value is 0.000000 which is less than 0.05; hence the study reject the null hypothesis and conclude that there is a joint impact of all the explanatory variables (FISYNCHRO, TAX-SPD, SPD-REV and SPD-TAX) on PUBEXP at 5% level of significance.

Granger Causality Test			
Null Hypothesis:	Obs	F-Statistic	Prob.
SPD-TAX does not Granger Cause TAX-SPD	34	1.59075	0.2210
TAX-SPD does not Granger Cause SPD-TAX		6.69229	0.0041
SPD-REV does not Granger Cause TAX-SPD	34	0.39727	0.6758
TAX-SPD does not Granger Cause SPD-REV		2.70893	0.0834
FISYNCHRO does not Granger Cause TAX-SPD	34	5.53726	0.0092
TAX-SPD does not Granger Cause FISYNCHRO		1.56374	0.2265
PUBEXP does not Granger Cause TAX-SPD	31	11.2314	0.0003
TAX-SPD does not Granger Cause PUBEXP		9.72411	0.0007
SPD-REV does not Granger Cause SPD-TAX	34	1.38876	0.2655
SPD-TAX does not Granger Cause SPD-REV		1.56243	0.2268
FISYNCHRO does not Granger Cause SPD-TAX	34	6.22366	0.0056
SPD-TAX does not Granger Cause FISYNCHRO		1.14263	0.3329
PUBEXP does not Granger Cause SPD-TAX	31	1.49789	0.2423
SPD-TAX does not Granger Cause PUBEXP		16.0580	3.E-05
FISYNCHRO does not Granger Cause SPD-REV	34	5.74895	0.0079
SPD-REV does not Granger Cause FISYNCHRO		2.69940	0.0841
PUBEXP does not Granger Cause SPD-REV	31	2.81662	0.0781
SPD-REV does not Granger Cause PUBEXP		1.38674	0.2678
PUBEXP does not Granger Cause FISYNCHRO	31	10.0245	0.0006
FISYNCHRO does not Granger Cause PUBEXP		17.1583	2.E-05

Source: Extract from E-views 10 output

From the above table, it can be seen that causality exists and flows uni-directionally from TAX-SPD to SPD-TAX; TAX-SPD to SPD-REV; FISYNCHRO to TAX-SPD; FISYNCHRO to SPD-TAX; PUBEXP to SPD-TAX; SPD-TAX to PUBEXP and FISYNCHRO to SPD-REV. Also, bi-directional causality exists and flows from PUBEXP to TAX-SPD and PUBEXP to FISYNCHRO and vice-versa respectively as their probability values were all less than 0.05 level of significance.

Post Estimation Test.

Breusch –Godfrey test for Serial Autocorrelation.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.497427	Prob. F(2,11)	0.6211
Obs*R-squared	2.239383	Prob. Chi-Square(2)	0.3264

From the Regression output, Prob.chi-square (2) = 0.3264

Decision: Since Prob.chi-square is greater than 0.05, it means that there is no serial autocorrelation in the model.

Heteroscedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.183803	Prob. F(13,13)	0.3828
Obs*R-squared	14.63625	Prob. Chi-Square(13)	0.3306
Scaled explained SS	4.092911	Prob. Chi-Square(13)	0.9902

From the Regression output, Prob.chi-square(17)= 0.3306

Decision: Since Prob. Chi-square is greater than 0.05, it means that there is no heteroscedasticity in the model.

Goodness of Fit of The Model.

Adj.R2 =0.730381x 100% = 73%

From the result of the regression, the Adjusted R-squared shows that about 73% variation in public expenditure can be explained by the revenue and expenditure variables. This means the model has a very strong explanatory power in relation to public expenditure in Nigeria.

DISCUSSION OF FINDINGS

The outcomes of study are briefly reviewed below:

FISYNCHRO: The coefficient is 2.473763 and conforms to our a priori expectation. This suggests that federal government retained revenue has a positive effect on public expenditure of Nigeria as it was statistically significant at 5% level of significance. This means that government retained revenue can be used as a veritable instrument to increase the rate of public expenditure in Nigeria. This supports the Keynesian view that government involvement is necessary to augment the workings of the invisible hand, and this is achievable through fiscal synchronization.

SPD-REV: The coefficient of spend-revenue is -3.443953 and has a negative relationship with public expenditure in Nigeria. The sign does not conform to our a priori expectation with a high magnitude. This negative relationship can be attributable to the priority shift from spend-revenue to the government reserve due to the emergence of oil.

SPD-TAX: The coefficient of spend and tax is -5.787987 and has a negative relationship with the public expenditure of Nigeria. This result was in tandem with the earlier works of Ohwofasa et al., (2012) and Chude and Chude (2013).

TAX-SPD: The coefficient of tax and spend is 3.521871 and has a positive relationship with public expenditure of Nigeria. Expenditure on capital expenditure if well managed could give rise to rapid tax growth in Nigeria.

CONCLUSION AND RECOMMENDATIONS

Outcome of study revealed that tax and spend and fiscal synchronization were statistically significant at 5% level of significance, while spend-revenue and spend and tax was insignificant. However, the explanatory variables were jointly significant at 5% level of significance.

Conclusion

The study showed that federal government revenue, tax and spend and fiscal synchronization among the independent variables were statistically significant at 5% level of significance in the short run. In the long run, spend-revenue and spend and tax also turned out to be statistically significant.

Recommendations

This study made the following recommendations:

- i. Federal government tax and spend should be maintained as a veritable instrument for fiscal adjustments. Tax and spend should be sourced to transform the Nigerian economy and complement tax as form of revenue. The country should seek revenue through tax from her solid minerals and agriculture to shore up her foreign earnings and utilize such to achieve economic growth in the short run and long run.
- ii. Fiscal synchronization should be implemented in the public expenditure and revenue to the maximum as this has eroded capital formation. The cost of administration at the federal and state level should be made publicly and not in an isolation and according to internally generated revenue. By keeping a ceiling on fiscal synchronization, the economy can achieve greater savings for investment purpose that would bring about rising output and economic growth.
- iii. The spend and tax of the country should cautiously be under watch to ensure that government should first make expenditure decision then adjust the tax policy and revenue in a way it can go with the expenditure of the country.
- iv. On spend-revenue, government should always keep her expenditure under control by making sure that expenditure change does not have any significant change on the revenue.

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