



Tax Revenue, Tax Reform and Government Expenditure: The Case of Nigerian Economy (1994 – 2017)

Chinedu Jonathan Ndubuisi^{1*}, Onyekachi Louis Ezeokwelume¹
and Ruth Onyinyechi Maduka¹

¹Department of Accountancy, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria.

Authors' contributions

This work was carried out in collaboration among all authors. Author CJN designed the study, wrote the protocol, wrote the manuscript and managed the literature searches. Author OLE performed the statistical analysis. Authors ROM and OLE managed the analyses of the study. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJEBA/2020/v18i330283

Editor(s):

(1) Dr. Ivan Markovic, University of Nis, Serbia.

Reviewers:

(1) Andreas, University of Riau, Indonesia.

(2) Taufik Abd Hakim, Universiti Teknologi MARA (UiTM), Malaysia.

(3) Musayev Akif Farhad, Azerbaijan National Academy of Sciences, University of Azerbaijan, Business University, Chamber of Auditors of Azerbaijan Republic, Azerbaijan.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/61326>

Original Research Article

Received 15 July 2020
Accepted 18 September 2020
Published 22 October 2020

ABSTRACT

The objective of this study is to empirically investigate the effect of tax revenue and years tax reforms on government expenditure in Nigerian. Tax revenue were explained using custom and excise duties, company income tax, value-added tax and tax reforms explained by the years in which reforms took place measured by dummy variables as proxies. In conducting this research, an annual time series data from central bank statistical bulletins and Federal Inland revenue Service of Nigeria spanning from 1994-2017 were employed. The data were tested for stationarity using the Augmented Dicker-Fuller Unit Root Test and found stationary at first difference. The Johansen co-integration test was also conducted and showed that the variables are co-integrated at the 5% level, which implied that there is a long-run relationship between the variables in the model. The presence of co-integration spurred the use of vector error correction model and VEC granger causality to determine the effects and decision for the study objective. Findings revealed that Customs and

*Corresponding author: E-mail: cj.ndubuisi@unizik.edu.ng;

Excise Duties has positive (3.96) and significant (-8.38) impact on government expenditure at 5% level of significance ($t=8.38>1.96$), Company Income Tax has negative (-1.25) and significant (2.98) impact on government expenditure at 5% level of significance ($t=2.98>1.96$), Value added tax has positive (8.54) and significant (3.90) impact on government expenditure at 5% level of significance ($t=3.90>1.96$) and Tax reforms periods has negative(-3.52E+12) and significant (8.39) impact on government expenditure at 5% level of significance ($t=8.39>1.96$). The study thus concluded that tax revenue and tax reforms significantly affect the Nigerian economy with the direction of causation running from government revenue to government expenditure, supporting the revenue-spend or tax-spend hypothesis. It was recommended while seeking to increase its revenue base via tax should also increase their expenditure profile to create a balance with the tax revenue and every other tax reform should be geared towards this balance.

Keywords: Custom and excise duties; company income tax; value added tax; tax reforms and government expenditures.

1. INTRODUCTION

Various governments all over the world carry out developmental projects, both capital and recurrent. These governments require funds to finance these social goods and its programmes and hence engage in various activities that would generate fund for the government. Varying sources of income in different magnitudes and volumes are available to the government to finance developmental projects in the country. Most governments however overly depend a particular source of income which could be occasioned by the magnitude of income that comes from it, thus neglecting some other areas or sources of income. In Nigeria, the over dependence on oil as a source of income can never be over-emphasised. Available statistics show that revenue from the petroleum sector has been the dominant revenue yielding source for the Federation contributing over 78% of total revenue. [1] noted that the implication of the over dependence of Nigeria on oil income is that the economy will be vulnerable to fluctuations in the international oil market prices and or social disorder particularly in the oil producing regions. This advocates the need to have a mix of revenue sources to enhance government's revenue base through efficient management of appropriate fiscal policies.

Governments all over the world have a similar source of income which is taxes. Where other sources of income fail, taxes don't. They are to a great extent sacrosanct. Taxes are authentic source of government revenue which aids in achieving socio- economic, political and macroeconomic objectives of any country. [2] noted that taxes are major source of revenue to many governments, and that it's a fiscal instrument for regulating and resolving economic

and social policies and a mechanism for enhancing economic growth. As a fiscal instrument, it reduces private consumption and transfers resources to the government for economic development by financing public utilities, performing social responsibilities and greasing the administrative wheel of the government. [3] defined tax as an enforced contribution of money to government pursuant to a defined authorized legislation. [4] defined tax as a compulsory transfer of resources to the government from the rest of the economy. Tax is a compulsory levy imposed on individuals and corporate identities regardless of the status [5]. For tax to fulfil the purpose of revenue generation, its administration must be seamless.

In Nigeria, tax administration has been burdened by several factors ranging from inadequate and unreliable data, paucity of administrative capacity, shortage of skilled manpower, corrupt tax officials, high incidence of tax avoidance and evasion, complex tax codes and the hydra – headed monster of multiple taxation [6]. This necessitated the Nigerian government to embark on several tax reforms, which has been dated back to the year 1991. However, prior to these tax reforms, tax administration showed a great lot of inefficiencies, characterized by deficiencies in the tax administration and collection system, complex legislations and apathy on the part of those outside the tax nets. According to [6], the need for tax policy reforms in Nigeria may be summarized as: the compelling need to diversify the revenue portfolio for the country in order to safeguard against volatility of crude oil prices, and to promote fiscal sustainability and economic viability at the lower tiers of government.

These tax reforms will not be impactful if it doesn't reflect on government expenditure

especially on the provision of social amenities. Taxes contribute significantly to the provision of basic amenities to the citizens. When social amenities are provided to the taxpayers, it encourages voluntary compliance, stimulate business activities that in turn pay taxes and provide revenue to the government. Other services government renders/provides include maintenance of law and order, defence against external aggression, regulation of trade and business to ensure social and economic maintenance. [7] noted that tax serves as an incentive to work when the marginal rate of tax is low and vice versa. Several studies about tax reforms in Nigeria have been carried out. These studies concentrate on economic growth undermining public generated revenue via tax reforms and how much they reflect on government expenditure. Most at times, expectation and the actual result of tax reform seems to be apart, as the objective of engaging on particular tax reform are rarely achieved, and therefore this study seeks to examine the effect of tax reforms on government expenditures in Nigeria from 1994 to 2017.

2. REVIEW OF RELATED LITERATURE

2.1 Tax Reforms

Tax reform according to [8] is a base-broadening, rate-reducing changes that are neutral with respect to the pre-existing revenue levels and distributional burdens of taxation. They asserted that there is a theoretical presumption that such changes should raise the overall size of the economy in the long-term, though the effect and magnitude of the impact are subject to considerable uncertainty. Expanding the tax base by lowering or removing tax expenditures raises the effective tax rate that masses and firms face and hence will operate, in that regard, that is, a direction opposite to rate cuts. But base-broadening has the additional benefit of reallocating resources from sectors that are currently tax-preferred to sectors that have the highest economic (pre-tax) return, which should raise the overall size of the economy [8]. Tax reforms also affect the economy through changes in government finances. If the change does not affect revenue then it doesn't affect government spending as well since the reformed system would raise the same amount of revenue as the existing system. However, [9] noted that tax reform is an ongoing process with tax policy makers and tax administrators continually adopting the tax systems to reflect changing

economic, social and political circumstances in the economy. According to [10], the objectives of tax reforms in Nigeria include: to bridge the gap between the National Development needs and the funding of the needs; to ensure taxation as a fiscal policy instrument; to achieve improved service delivery to the public; to improve on the level of tax derivable from non-oil activities, vis-à-vis revenue from oil activities; make efforts at constantly reviewing the tax laws to reduce/manage tax evasion and avoidance; and to improve the tax administration to make it more responsive, reliable, skilful and taxpayers friendly and to achieve other fiscal objectives.

Tax reforms in Nigerian can be dated back to 1904 with the introduction of the personal income tax which was known as community tax. In 1945 came the grant of autonomy to the Nigerian Inland Revenue and the formation of Raisman Fiscal Commission of 1957. The Inland Revenue Board was established in 1958, and a year after, the Petroleum Profit Tax Ordinance No. 15 of 1959 was promulgated, the Income Tax Management Act 1961 followed suit and the promulgation of the Companies Income Tax Act (CITA) in 1979. The Inland Revenue Board was reformed and renamed the Federal Board of Inland Revenue under CITA 1979, it was again reformed in 1991/1992 and renamed Federal Inland Revenue Service. The tax policy and administration under the Federal Inland Revenue Services were reformed with an amendment in 2001 and 2004. Prior to 2004, a study group was set up to appraise the indirect tax system. A major outcome of this study group was the introduction of value-added tax (VAT) in the 1993. VAT marked a diversion from tax on foreign trade related activities to consumption-based tax [11]. Prior to this, the share of central, state and local government of VAT was 20%, 50% and 30% respectively. However, by the year 1995, the sharing formula was revised in favour of central government thus (Central government, 35%; State government, 40% and Local government 25%). Agitations from sub-national government provoked another revision of VAT, so that the current sharing formula for Central, State and Local governments are respectively, 15%, 50% and 25% [11]. In the 2004 tax reform, the government instituted a Study Group on the Nigerian Tax System, consisting of individuals from business, academia, and the government to study the present tax laws and recommend the suitable reform in general and their impact to the overall economy. The study group recommended nine (9) bills on tax reforms to the Federal

Executive Council, which was sent to National Assembly for the consideration and subsequently passed as Act. The Acts includes: Federal Inland Revenue Service Act 2004; Companies Income Tax Act 2004; Petroleum Profit Tax Act 2004; Personal Income Tax Act 2004; Value Added Tax Act 2004; Education Tax Act 2004; Customs, Excise Tariffs, etc (Consolidation) Act 2004; National Sugar Development Act 2004; and National Automotive Council Act 2004. It is also worthy of note here that as part of the reforms, the Chartered Institute of Taxation of Nigeria (CITN) was established in 1982 and Chartered by Act No. 76 of 1992 to regulate tax practice and administration in Nigeria.

2.2 Government Expenditure

This refers to the expenditure of government on governmental bodies and on various segments of the economy. A good pattern of government expenditure encourages economic growth, favours provision of employment, good roads, infrastructure and good increase in salaries of civil servants. Government expenditure pattern of developing countries (Nigeria inclusive) should be geared towards this international standard of goodness [12]. Government expenditure can be refer to as expenses which any government incurs for its own maintenance, for the good of society and the economy, and for assistance to external bodies and other countries [13]. [14] asserts that the traditional function of government expenditure is the maintenance of the bureaucratic structure (i.e. the civil service) and defence. Today, governments perform a variety of economic functions. According to him during the industrial revolution, poverty was increasing at an alarming rate, and as an offshoot of the increasing suffering of the labourers, Karl Marx and his followers agitated for a communist revolution. In reaction to this growing suffering, the governments of many countries started to increase their presence in the economic arena by acting as a redistributive agent to lessen the burden of the poor.

Government spending can be a useful economic and fiscal policy tool. It is one of the Fiscal policy mechanism that influences the economy. When the government increase its spending known as expansionary fiscal policy, it stimulates the economy especially during a recession. On the other hand, when government reduces its expenditure known as contractionary fiscal policy, it cools down the economy during an

economic boom. A reduction in government expenditure can help checkmate inflation. During economic recessions, in the short run, government expenditure can be changed either through automatic stabilization or discretionary stabilization. Automatic stabilization is when present policies automatically change government spending or taxes in response to economic fluctuations without an additional passage of laws. A prime example of an automatic stabilizer is unemployment insurance that provides financial assistance to unemployed workers. Discretionary stabilization is when a government takes actions to change government expenditure or taxes in direct response to changes in the economy. For instance, government may decide to increase government expenditure as a result of a recession. With discretionary stabilization, the government must pass a new law to make changes in government spending.

[15] mentioned four hypotheses relating to the relationship between government expenditure and revenue (tax). The hypotheses were; the Tax-and-Spend hypothesis, the Spend-and-Tax hypothesis, the Fiscal Synchronization hypothesis or the Fiscal Neutrality hypothesis and the Institutional Separation hypothesis. The Tax-and-Spend hypothesis theorized that the rise in tax revenues will lead to an increase in government expenditures and consequently worsens the governmental budgetary balance. The hypothesis suggested that government would spend all its revenues and an attempt to raise government revenues would lead to higher government expenditures. Under this hypothesis, empirical results pre-empted a unidirectional causality running from government revenues to government expenditures. If the Tax-Spend hypothesis holds, then budget deficits can be eliminated or avoided by implementing policies that stimulate or increase government revenue. The second is the Spend-and-Tax hypothesis, a reverse of the Tax-and-Spend hypothesis in which tax revenue responds to prior spending changes. This hypothesis suggested that government would raise the funds to cover its spending, and therefore higher government expenditures lead to higher government revenues. Thus, empirical results are anticipated to show a unidirectional relationship moving from government expenditure to revenue. If the Spend-Tax hypothesis holds, it suggests that government's behaviour is such that it spends first and raises taxes later in order to pay for the spending. The fiscal synchronization hypothesis

or the fiscal neutrality hypothesis indicates bi-directional relationship between revenue and spending. If the bidirectional causality between government revenue and government expenditure does not hold, it means that government expenditure decisions are made independent of government revenue decisions and vice versa. The last hypothesis is the institutional separation hypothesis where decisions on revenue are taken independently from government expenditure allocation, and therefore no causal relation between revenue and spending is expected.

2.3 Empirical Review

[16] examined the causal relationship between government spending and government revenue, their results of both bivariate and multivariate models showed evidence of a unidirectional causal association moving from revenue to spending. [17] studied the relationship between government revenue and government expenditure in Nigeria using time series data from 1970 to 2007. They utilized the Engel-Granger two-step co-integration technique, the Johansen co-integration method and the Granger causality test within the Error Correction Modeling (ECM) framework and found a long-run relationship between the two variables and a unidirectional causality running from government revenue to government spending in Nigeria. [18] investigated the causality and the long-run relationships between government expenditure and government oil revenue in oil exporting countries during 2000-2009 using P-VAR framework and they found a positive unidirectional long-run relationship between oil revenue and government expenditures. [19] also examined the revenue-spending hypothesis for Nigeria using macro data from 1970 to 2011. Applying correlation analysis, granger causality test, regression analysis, lag regression model, vector error correction model and impulse response analysis. They reported that revenue and expenditure are highly correlated and that causality runs from revenue to expenditure in Nigeria. The vector error correction model also proves that there is a significant long run relationship between revenue and expenditure.

[20] employed Granger causality test on a bivariate model to study the causality between government expenditure and tax revenue. They concluded that there exists a unilateral stable long run relationship running from expenditures to revenues in Malaysia. [21] examined the long

run equilibrium relationship between government expenditure and revenues in Saudi Arabia using co-integration technique, Error Correction Model (ECM) and Granger causality test and found a long run equilibrium between government expenditure and revenues. The causality tests showed the existence of a bi-directional causal relationship between government expenditure and revenues in the long and the short run. [22] adopted the autoregressive distributive lag approach to cointegration, variance decomposition and rolling regression method to determine the causal relationship between expenditure and revenue of Romanian government. The results indicated that bidirectional long run relationship exists between government expenditure and revenue. The variance decomposition result further suggested that government revenue shock has sharp impact on the government expenditure compared to the revenue collection response to shock in government expenditure. [23] examined government revenue and expenditure nexus using annual data for the period 1976-2009, and applying the Johansen co-integration and Granger causality techniques, they found no relationship among the variables both in the long run and the short run granger. This result supports institutional separation hypothesis.

The study by [24] for nine (9) Asian countries, using cointegration and Granger causality approach, supported the tax-and-spend hypothesis for Indonesia, Singapore and Sri Lanka in the short-run; and Nepal in both the short-run and the long-run. The results of the study also supported the spend-and-tax hypothesis in the long-run for Indonesia and Sri Lanka; and showed neutrality for the other countries. The study by [25] for twelve (12) developing counties indicated that the tax-and-spend hypothesis is valid for Mauritius, El Salvador, Haiti, Chile, Paraguay and Venezuela; the spend-and-tax hypothesis is valid for Haiti, while there is evidence of neutrality for Peru, South Africa, Guyana, Guatemala, Uruguay and Ecuador. The study utilized the Granger causality test which allows for causal inference based on an augmented vector autoregression with integrated and cointegrated processes. [26] examined the relationship between government spending and public revenue based on evidence from six (6) countries of the oil-dependent Gulf Cooperation Council (GCC) namely: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. The study, which used the Granger causality testing technique, showed that

the tax- and-spend hypothesis is valid for Bahrain, the United Arab Emirates and Oman. The fiscal synchronization hypothesis is found to be true for Qatar, Saudi Arabia and Kuwait. For Kuwait and Saudi Arabia, however, the causality from revenue to expenditure showed higher significance than the reverse direction. [27] analysed the multivariate public expenditure and public revenue nexus based on the experiences of thirteen (13) African countries the modified version of the Granger causality test. The results of the study provided evidences supporting the fiscal synchronization hypothesis for Mauritius, Swaziland and Zimbabwe; institutional separation hypothesis for Botswana, Burundi and Rwanda; the tax- and-spend hypothesis for Ethiopia, Ghana, Kenya, Nigeria, Mali and Zambia; and the spend-and-tax hypothesis for Burkina Faso.

3. METHODOLOGY

The research design adopted was the *ex post facto* research design. This design was adopted because the study sought to determine the cause-effect relationship between tax reforms and government expenditure using past time series data. The major sources of the data for the study were the publications of the Central Bank of Nigeria and the National Bureau of Statistics. Time series data on taxation and government expenditure in Nigeria for the period ranging from 1994 to 2017 were collated and employed. Data were analysed using the Augmented Dickey-Fuller test (ADF) which tests the null hypothesis to determine that a unit root is present in a time series sample and the alternative hypothesis to test trend stationarity of variables. The choice of ADF was occasioned by its prevalence in modern day literature on trend analysis. The Johansen Co-integration test to test long term relationship and provides likelihood ratio statistics with exactly known distributions. If the variables are co-integrated, the final stage of the Time-Series analysis is to construct dynamic error correction models (ECMs) that take into account the underlying co-integration properties. The ECM differs from the standard Granger-Causality models in equations in that they add another regressor in each equation, that is, the estimated residuals (the error correction, EC, terms) obtained from the associated co-integrating equations. Finally, the vector error-correction model (VECM) and the vector error-correction granger causality test (VECGC) will be used to check for the speed of

adjustment of the model from the short run to the long run equilibrium state, The greater the coefficient of the error correction term, the faster the speed of adjustment of the model from the short run to the long run. All this will be done with the aid of E-view version 9. The Augmented Dickey-Fuller (ADF) test constructs a parametric correction for higher-order correlation by assuming that the y series follows an AR(p) process and adding p lagged difference terms of the dependent variable y to the right-hand side of the test regression. The ADF tests involve estimating the following equation:

$$\Delta y_t = \gamma + \delta xt + \alpha y_{t-1} + \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} + \dots + \beta_p \Delta y_{t-p} + v_t \quad (1)$$

Where, γ is constant α , β and δ are the parameters, p is the lag order of the autoregressive process and v is the error term.

The equation was modified for the study thus:

$$GEX = \alpha_0 + \alpha_1 VAT_t + \alpha_2 CIT_t + \alpha_3 CED_t + \alpha_4 TRF_t + e_t \quad (2)$$

Where:

GEX= Government Expenditure;
 VAT= Value Added Tax;
 CIT= Company Income Tax;
 CED= Custom and Excise Duty;
 TRF= Tax reforms;
 e_t = error term

4. RESULTS AND DISCUSSION

4.1 Data Analyses

Table 1 showed that the average Government Expenditure (GEX) in logarithm terms is 28.15, minimum value of 25.80, maximum value of 29.74 and a standard deviation value of 1.13. Average Value added tax (VAT) in logarithm terms is 25.22, minimum value of 22.34, maximum value of 27.60 and a standard deviation value of 1.52. Average Company Income Tax (CIT) in logarithm terms is 25.81, minimum value of 23.23, maximum value of 28.72 and a standard deviation value of 1.49. Also, custom and excise duty (CED) in logarithm terms has an average value of 26.27, minimum value of 23.63, maximum value of 28.53 and a standard deviation value of 1.27. The Jarque-Bera statistics showed that variables are not normally distributed at 5% ($p=.00<.05$).

Table 1. Descriptive statistics

	Log(CED)	Log(CIT)	Log(GEX)	Log(VAT)
Mean	26.26876	25.81060	28.15081	25.22233
Median	26.13876	25.94558	28.26808	25.35927
Maximum	28.53524	28.72930	29.74753	27.60298
Minimum	23.62989	23.23083	25.80401	22.33789
Std. Dev.	1.279941	1.494839	1.130656	1.523384
Jarque-Bera	0.880991	0.709519	1.611959	1.359265
Probability	0.643718	0.701342	0.446650	0.506803

Source: E-Views 9

4.2 Inferential Statistics

4.2.1 Unit root/stationarity test

To ascertain the stationary state of the time series variables, The Augmented Dickey-Fuller unit root test was employed. This was important because we were ignorant of the data generating process. The results at 5 percent level were summarized on Table 2 Results showed that most of the variables are non-stationary at levels, but all became stationary after first differencing, hence the variables have an order of integration of one. This conclusion is based on comparison

of the augmented Dickey fuller statistics and the critical values provided by MacKinnon (1996). Hence, this permitted the researchers to carry out the Johansen’s cointegration test.

The trace statistics showed that at $r=0$ of 94.071 exceeds its critical value of 76.973 at 5% level, and we can reject the null hypothesis of no cointegration equations. At $r=1$, the trace statistics value of 61.262 also exceeded its critical value of 54.079 at 5% level, which means we reject the null hypothesis of no cointegration equations. $r=2$, $r=3$ and $r=4$ showed the acceptance of the null hypothesis of no

Table 2. Summary of unit root tests

Variables	Level			First Differencing		
	ADF	P-Values	Remark	ADF	P-Values	Remark
Log(CED)	-1.45	0.5407	Non-stationary	-5.61	0.0002	stationary
Log(CIT)	-1.06	0.7121	Non-stationary	-7.74	0.0000	stationary
Log(VAT)	-1.39	0.5694	Non-stationary	-5.28	0.0003	stationary
Reforms(Shift)	-5.04	0.0005	stationary	-7.76	0.0000	stationary
Log(GEX)	-2.94	0.0571	Non-stationary	-7.26	0.0000	stationary

Source: E-Views 9

Table 3. Johansen co-integration

Date: 10/29/18 Time: 09:58				
Sample (adjusted): 1996 2017				
Included observations: 22 after adjustments				
Trend assumption: No deterministic trend (restricted constant)				
Series: LOG(GEX) LOG(CED) LOG(CIT) LOG(VAT) SHIFT				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized	Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.774924	94.07131	76.97277	0.0014
At most 1 *	0.729626	61.26237	54.07904	0.0100
At most 2	0.512918	32.48752	35.19275	0.0952
At most 3	0.362874	16.66242	20.26184	0.1456
At most 4	0.264051	6.745079	9.164546	0.1405
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: E-Views 9

Table 4. Vector error correction estimates 4

Date: 10/30/18 Time: 10:37					
Sample (adjusted): 1996 2017					
Included observations: 22 after adjustments					
Standard errors in () & t-statistics in []					
Cointegrating Eq:	CointEq1				
GEX(-1)	1.000000				
CED(-1)	-3.959492 (0.47233) [-8.38283]				
CIT(-1)	1.247118 (0.41748) [2.98728]				
VAT(-1)	-8.545156 (2.18977) [-3.90230]				
SHIFT(-1)	3.52E+12 (4.2E+11) [8.39442]				
C	-3.99E+12 (3.6E+11) [-11.0306]				
Error Correction:	D(GEX)	D(CED)	D(CIT)	D(VAT)	D(SHIFT)
CointEq1	-0.108553 (0.03090) [-3.51306]	0.088507 (0.06729) [1.31540]	-0.118286 (0.10048) [-1.17718]	0.000310 (0.01038) [0.02987]	-8.91E-14 (8.3E-14) [-1.07862]
R-squared	0.754822	0.485961	0.438833	0.424080	0.416763
Adj. R-squared	0.678203	0.325324	0.263468	0.244105	0.234501
Sum sq. resids	9.79E+23	4.64E+24	1.04E+25	1.10E+23	6.998849
S.E. equation	2.47E+11	5.39E+11	8.04E+11	8.31E+10	0.661383
F-statistic	9.851720	3.025207	2.502401	2.356330	2.286616
Log likelihood	-604.8637	-621.9838	-630.8066	-580.8663	-18.61838
Akaike AIC	55.53306	57.08944	57.89151	53.35149	2.238035
Schwarz SC	55.83062	57.38700	58.18907	53.64904	2.535592
Mean dependent	3.66E+11	6.06E+10	5.42E+10	4.39E+10	0.000000
S.D. dependent	4.36E+11	6.56E+11	9.37E+11	9.56E+10	0.755929
Determinant resid covariance (dof adj.)	1.88E+90				
Determinant resid covariance	3.82E+89				
Log likelihood	-2425.047				
Akaike information criterion	223.7316				
Schwarz criterion	225.5169				

Source: E-Views 9

Table 5. VEC granger causality/block exogeneity wald

Date: 10/30/18 Time: 11:34			
Sample: 1994 2017			
Included observations: 22			
Dependent variable: D(GEX)			
Excluded	Chi-sq	Df	Prob.
D(CED)	6.701883	1	0.0096
D(CIT)	2.682900	1	0.1014
D(SHIFT)	8.053784	1	0.0045
D(VAT)	22.74085	1	0.0000
All	39.17056	4	0.0000

Source: E-Views 9

cointegration equation, because the trace statistic is lower than the critical value at 5%. The Johansen co-integration result based on the trace test indicated a two co-integrating equation at the 5% level. This implies that there is a two cointegrating long-run relationship between the variables in the model.

From Table 4, Customs and Excise Duties has positive (3.96) and significant (-8.38) impact on government expenditure at 5% level of significance ($t=8.38>1.96$). This therefore means that increase in Customs and Excise Duties would significantly increase the value of government expenditure at 5% level of significance.

Company Income Tax has negative (-1.25) and significant (2.98) impact on government expenditure at 5% level of significance ($t=2.98>1.96$). This therefore means that increase in Company Income Tax revenue would significantly decrease the value of government expenditure and vice versa at 5% level of significance. Value added tax has positive and significant (8.54) impact on government expenditure at 5% level of significance ($t=3.90>1.96$). This therefore means that increase in VAT revenue would significantly increase the value of government expenditure and vice versa at 5% level of significance. This implies that all the variables had long run effect on government expenditure. Tax reforms periods has negative (-3.52E+12) and significant (8.39) impact on government expenditure at 5% level of significance ($t=8.39>1.96$). This therefore means that increase in Tax reforms years would significantly decrease the value of government expenditure and vice versa at 5% level of significance. The adjusted R-squared value of 0.6782 showed that 67.82% of the systematic variation in the government expenditure is jointly explained by the independent variables. On the error correction terms, CIT and Tax reforms years had negative coefficients of -0.118 and -8.91E-14 but were not statistically significant ($t=1.17$; $1.07<1.96$). CED and VAT had positive ECMs and thus are not desirable because they move away from equilibrium. Government expenditure however had a negative ECM of -0.108 that was statistically significant ($t=3.51>1.96$). This result clearly showed that deviation from long term growth in GEX is corrected by 10.8% by the following year or in the short run.

Three out of four variables have short term relationship with government expenditure

(Prob>0.05). Jointly, the independent variables predict government expenditure (Prob=.0000<.05).

4.3 Decision Rule

Accept null hypothesis if calculated F value is less than critical value of F at (4, 19) degree of freedom. However, reject null and accept alternate hypothesis if calculated F value is greater than critical value of F at (4, 19) degree of freedom. From the regression result in Table 4, the F -statistics value of 9.8517 which is greater than $F_{(0.05,4,19)} = 2.8951$ shows that the overall model is statistically significant. This means that there exists significant linear relationship between the dependent and independent variables in the model. The null hypothesis is therefore rejected and the alternate, accepted. Thus, the effect of Tax reforms and actual tax revenue on government expenditure in Nigeria is significant.

5. CONCLUSION

The findings showed that changes in government revenue brings about changes in government expenditure. This was visible by the long-run or equilibrium relationship between government revenue and government expenditure shown in the study. The direction of causation runs from government revenue to government expenditure, supporting the revenue-spend or tax-spend hypothesis for Nigeria. The policy implication derivable from this study is that an increase in government revenue without corresponding expenditure will create a fiscal imbalance. Thus, government will be left with an option to save, invest or incur more developmental expenses which could increase the country's reserve or enhance capital or recurrent expenditures. Therefore, raising government revenues would lead to higher government expenditures. This also suggested that budget deficits can be eliminated or avoided by implementing policies that would stimulate or increase government revenue. It is therefore recommended that since government expenditure is based on the revenue they generate;

1. Tax authorities responsible for tax administration should upgrade the tax database to capture all potential taxpayers in order to broaden tax income.
2. Voluntary tax compliance should be encouraged by government through public enlightenment

3. Government should seriously work towards diversifying the revenue base of the economy as the reduction in the price of crude oil at the international market would adversely affect income from petroleum profit tax and as such affect government expenditure negatively.
4. Government should increase their expenditure profile to create a balance with the tax revenue and every other tax reform should be geared towards this balance.
9. Azubuike JUB. Challenges of tax authorities, tax payers in the management of tax reform processes. *The Nigerian Accountant*. 2009;42(2):36-42.
10. Alli BD. Managing the tax reform process in Nigeria. *Niger. Account*. 2009;42(1):45-51.
11. Oriakhi DE, Rolle RA. The Impact of Tax Reform on Federal Revenue Generation in Nigeria. *ESUT Journal of Accounting*. 2014;5(2).
12. Obasikene AC. Government Expenditure in Nigeria and its Impact on the Nigerian Economy, 1986-2014. *Journal on Banking Financial Services & Insurance Research*. 2017;7(11):1-12.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Ebieri J, Ekwueme DC. Assessment of the Impact of Tax Reforms on Economic Growth in Nigeria. *Journal of Accounting and Financial Management*. 2016;2(2):15-28.
2. Ihendinihu JU, Jones E, Ibanichuka EA. Assessment of the long-run equilibrium relationship between tax revenue and economic growth in Nigeria: 1986 to 2012. *The Standard International Journals Transactions on Industrial, Financial & Business Management*. 2014;2(2):39-47
3. Chartered institute of taxation of Nigeria. *Nigeria tax guide and statutes, Nigeria: CITN publications*; 2002.
4. World Bank. *Lessons of Tax Reform, Washington DC*; 2000.
5. Sayode, Kayola. As cited in Adedoji & Oboh (2012). *An Empirical Analysis of Tax Leakages and Economic Growth in Nigeria*. *European Journal of Economics, Finance and Administrative Science*. 2006;48:42-52.
6. Odusola A. *Tax Policy Reforms in Nigeria*. Research Paper No. 2006/03 United Nations University-World Institute for Development Economics Research; 2006.
7. Charles UJ, Ekwe MC, Azubike JUB. *Federally Collected Tax Revenue and Economic Growth of Nigeria: A Time Series Analysis*. *Accounting & Taxation Review*. 2018;2(1):24-38.
8. Gale WG, Samwick AA. *Effects of Income Tax Changes on Economic Growth*. *Economic Studies at Brookings*. 2014;1-16.
13. Anyanwu JC. *Monetary Economics: Theory, Policy and Institutions*. Onitsha: Hybrid Publishers Ltd; 1993.
14. Attamah N. *Basic Principles of Economics*. Enugu: Marydan Publishers; 1999.
15. Nwosu DC, Okafor HO. *Government Revenue and Expenditure in Nigeria: A Disaggregated Analysis*. *Asian Economic and Financial Review*. 2014;4(7):877-892.
16. Moalusi D. *Causal link between government spending and revenue: A case study of Botswana*. *Fordham Economics Discussion Paper Series*. 2007-07.
17. Emelogu CO, Uche MO. *An examination of the relationship between government revenue and government expenditure in Nigeria: Co-integration and causality approach*. *Central Bank of Nigeria Economic and Financial Review*. 2010;48(2):35-57.
18. Saeed KP, Somaye S. *Relationship between government spending and revenue: Evidence from oil exporting countries*. *International Journal of Economics and Management Engineering (IJEME)*. 2012;2(2):33-35.
19. Ogujiuba K, Abraham TW. *Testing the relationship between government revenue and expenditure: Evidence from Nigeria*. *International Journal of Economics and Finance*. 2012;4(11):172-182.
20. Zinaz A, Samina K. *Government expenditure and tax revenue, causality and co-integration. The Experience of Pakistan*. 2002;1972-2007.
21. Al-Qudair KHA. *The relationship between government expenditure and revenues in the Kingdom of Saudi Arabia: Testing for co-integration and causality*. *JKAU: Econ. & Adm*. 2005;19(1):31-43.

22. Hye QMA, Jalil MA. Revenue and expenditure nexus: A case study of Romania. Romanian Journal of Fiscal Policy. 2010;1(1):22-28.
23. Ali R, Shah M. The causal relationship between government expenditure and revenue in Pakistan. Interdisciplinary Journal of Contemporary Research in Business. 2012;3(12):323-329.
24. Narayan PK. The Government Revenue and Government Expenditure Nexus: Empirical Evidence from Nine Asian Countries. Journal of Asian Economies. 2005;15(6):1203-1216.
25. Narayan PK, Narayan S. Government Revenue and Government Expenditure Nexus: Evidence from Developing Countries. Applied Economics. 2006;38(3):285-291.
26. Fasano U, Wang Q. Testing the Relationship between Government Spending and Revenue: Evidence from GCC Countries, IMF Working Paper WP/02/201; 2002.
27. Wolde-Rufael Y. The Revenue-Expenditure Nexus: The Experience of 13 African Countries. African Development Review. 2008;20(2):273-283.

Appendix A: Data on variables

Year	VAT	CIT	CED	REFORMS	GEX
1994	5026000000.00	12274957581.00	18294898316.00	Reform	160893200000.00
1995	6256900000.00	21878000000.00	37364000000.00	Reform	248768100000.00
1996	11286000000.00	22000000000.00	55000000000.00	Reform	337417600000.00
1997	13905300000.00	26000000000.00	63000000000.00	None	428215200000.00
1998	16206800000.00	33300000000.00	57700000000.00	Reform	487113400000.00
1999	23750500000.00	46200000000.00	87900000000.00	Reform	947690000000.00
2000	30643800000.00	51100000000.00	101500000000.00	Reform	701050900000.00
2001	44912900000.00	68700000000.00	170600000000.00	Reform	1018000000000.00
2002	52632000000.00	89100000000.00	181400000000.00	None	1018180000000.00
2003	65887600000.00	114800000000.00	195500000000.00	Reform	1225990000000.00
2004	96195600000.00	113000000000.00	217200000000.00	Reform	1461890000000.00
2005	87449800000.00	140300000000.00	232800000000.00	None	1840700000000.00
2006	110566800000.00	244900000000.00	177700000000.00	None	1942490000000.00
2007	144372783313.52	275300000000.00	241400000000.00	Reform	2348550000000.00
2008	198065342735.28	290666000000.00	2470000000000.00	None	3078250000000.00
2009	229323191036.59	295717000000.00	513000000000.00	None	3532550000000.00
2010	275574627780.67	2028700000000.00	546000000000.00	None	4408970000000.00
2011	318000000000.00	297516000000.00	741800000000.00	Reform	4760240000000.00
2012	347688199098.95	298460000000.00	850800000000.00	Reform	4879160000000.00
2013	389526328555.67	299010000000.00	833400000000.00	Reform	5151440000000.00
2014	388850000000.00	2999010000000.00	977090000000.00	None	5151760000000.00
2015	381265200221.52	742569000000.00	903000000000.00	Reform	5710710000000.00
2016	828199100000.00	933537000000.00	898674000000.00	None	6397490000000.00
2017	972348400000.00	1215060000000.00	1370000000000.00	Reform	8302100000000.00

Source: FIRS Statistics

Appendix B: Logarithm values of large study data

Year	LOG(CED)	LOG(CIT)	LOG(GEX)	LOG(VAT)
1994	23.62988807738082	23.23082705489801	25.80400662777697	22.33789027606781
1995	24.34397351095701	23.80874740264401	26.23978697415705	22.55695069173488
1996	24.73059902217888	23.81430829030473	26.54458716930183	23.14682885649336
1997	24.86640056333794	23.98136237496789	26.78289170990308	23.35553589937263
1998	24.77852301046047	24.22882323393281	26.91176278713211	23.50869674419949
1999	25.19946564163754	24.55624563503411	27.57729328150448	23.89086941983704
2000	25.34332463542825	24.65705033415607	27.27584633190133	24.14569619501658
2001	25.86258747200399	24.95301503617472	27.64886103405688	24.5279908955529
2002	25.92397037462745	25.21302517142318	27.64903783571535	24.68659013673011
2003	25.99882621637183	25.46645732083188	27.83476979680245	24.91121609686515
2004	26.10408442500619	25.45065365565875	28.01075123502743	25.289649455552632
2005	26.1734455528037	25.66704882405483	28.24116704998509	25.19433075138725
2006	25.90336257210702	26.22411580090453	28.29499177116981	25.42888570013953
2007	26.20972114560984	26.34112724909498	28.48481923237206	25.69566456443201
2008	28.53523926656844	26.39544067860667	28.7553823696194	26.01186282701291

Year	LOG(CED)	LOG(CIT)	LOG(GEX)	LOG(VAT)
2009	26.96354168211718	26.41266875285235	28.8930411056866	26.15839816010253
2010	27.02588481269132	28.3384163097537	29.1146622180172	26.34212431009423
2011	27.3323455020019	26.41873384199853	29.19131920306889	26.48531721972659
2012	27.46944292027249	26.42190175744973	29.2159941898298	26.57457193549053
2013	27.44877955593476	26.42374285459389	29.27029740317063	26.68819729575108
2014	27.60784460347733	28.72930335013468	29.27035951979461	26.68645950208736
2015	27.52898839036339	27.33338163259853	29.37336447512393	26.66676103350676
2016	27.52418618051459	27.56224643492204	29.48692684186855	27.44251942136325
2017	27.94583185576858	27.82581457421782	29.74752961077715	27.60298001339793

Source: E-Views 9

© 2020 Ndubuisi et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/61326>