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Are Indirect Taxes Necessary and Sufficient to Cater for Government Capital Expenditure on Economic Services in Nigeria? Empirical Evidence from ARDL Approach

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Abstract

This study examined the effects of indirect taxes on government capital expenditure on economic services using *ex post facto* research design. The data were obtained from certified sources such as the Central Bank of Nigeria (CBN) Statistical Bulletin and Federal Inland Revenue Service (FIRS) for the 1994Q1-2018Q4 totaling one hundred (100) observations. The documents were already exposed to the scrutiny of the appropriate regulatory agencies and the data were analyzed using descriptive and inferential statistics employing the Autoregressive Distributed Lag (ARDL) model approach to cointegration. The study also revealed that LVAT and LEXDTS have significant effect on government capital expenditure on economic services in Nigeria (Adj. R^2=0.59, α_1= 0.875, t =2.108, p = <0.05 and α_2= 0.470, t = 2.00, p = <0.05). The study concluded that indirect tax revenue has impact on government capital expenditure on economic services in Nigeria. It was recommended that a greater percentage (at least 60%) of the Nigeria's budget should allocate to government capital expenditure on economic services as this will as this will boost economic development of the country.

Keywords: *Economic Services, Value Added Tax, Custom and Excise Duties, Total Tax Revenue*

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Background to the Study

The importance of Infrastructural development cannot be over-emphasized as it is germane to the national development and socio well-being of any nation. Over the years, despite the tremendous growth recorded in the federal government retained revenue, there are reoccurring questions as to how government have fully utilized revenues earmarked for provision of infrastructural development. In Nigeria, huge amount of revenue has been received by various governments and its usage in improving the level of infrastructural development in the country is still an issue of debate. The issues mentioned above constitute the problem to be addressed by this research work.

The whole essence of Infrastructural development is to provide the required environment for the free flow of goods and services across the length and breadth of the country. Many factors are responsible for this menace in Nigeria. Ukpabi (2019) revealed that the mono product nature of the Nigeria economy has received series of criticism in recent times. He further explains that without diversification, the Nigerian economy may soon collapse. The socio-political instability of the country, with a long period of military ruling contributed to the challenge. Successive governments from colonial era till date have paid little or no attention to these decays in infrastructural development, hence, the total break-down of and lack of maintenance on the little available in the country. (Ashibogwu and Bankole, 2018).

According to Onuoha and Akintoye (2018) for many years, as a result of the oil boom, Nigeria has almost forgotten the importance of tax revenues. The situation has been so grave that the revenues that would come from taxes in some areas were lost because companies defaulted in tax payments with impunity. Today, the result of this show in the dismal contribution of tax revenue to the gross domestic product (GDP). The resultant effect of this statement has yielded the following negatives vibes of unemployment, poverty, corruption and lack of accountability and transparency in the public sector, frustrations, desperations, illicit drug usage and abuse, crime and criminology has contributed to moral and socio decadence in the country. There is a gradual shift from large dependence on oil globally towards indirect taxes, most countries in the world now shift to indirect taxes (Value Added Taxes, Custom and exercise duties), because the taxes on these commodities cannot be largely avoided, insofar there is consumption, taxes on them must be paid.

In order to finance the infrastructural decay in Nigeria, the various governments embark on massive tax reforms and policy redirection towards archiving their various developmental goals. (Gasper and Wingender,2016) Much emphasis was directed to indirect taxes to archive this goal. The increasing size of government coupled with the ongoing global financial meltdown has renewed interest in the study of how the public sector can be used to provide a stimulus thereby remedying the situation and supporting the long-run growth of the Nigerian economy.

In developed economies - Japan and United States of America for example, telecommunications, electricity and water are used in the production process of nearly every sector, and transport is an input for every commodity. The provision of economic

infrastructure can expand the productive capacity of the economy by increasing the quantity and quality of such infrastructure, thereby accelerating the rate of economic growth and enhancing the pace of socio-economic development. Again, road infrastructure has been found by Cesar and Surhid (1992) to be a significant factor of economic growth and development. In their 1992 World Bank study, they employed "an empirical approach to explore the association between road infrastructure and economic development. The study revealed that there are consistent and significant associations between economic development, in terms of per capita gross national product (GNP), and road infrastructure, in terms of per capita length of paved road network. The study also showed that road condition seems to be associated with economic development. Indeed, good infrastructure raises productivity and lowers production costs. Thus, infrastructural development is a function of economic development;

Increased infrastructural development can be influenced by many variables, one of which is the tax revenue of the nation. Taxation is thus, one of the most important variables that affect long term economic growth, but this truth has been neglected in the Nigerian economy because of the huge revenue generated from oil. Tax structure refers to the mix of taxes on physical and human capital which satisfy a given government budget constraint, (Chigbu, and Njoku; 2015). It is in view of the above highlighted problems that this study examined the possibility of whether or not indirect taxes is a necessary and sufficient condition to cater for government capital expenditure on economic services which is a combination of agriculture, transportation and construction. Following the introduction, section II discusses the literature review, while section III centres on methodology of the study. Section IV presents the results of the study and finally, section V is devoted to the conclusion and recommendations.

Literature Review

Theoretical Review

Social Contract Theory

This theory was said to have been postulated in the political philosophy of a renowned scholar, Thomas Hobbes. The social contract theory has since then been a scholarly discussed among scholars up to the contemporary period. The theory is both a theory of morality and at the same time theory of the state. The theory on the basis of morality and the government attempts to provide philosophical basis for the existence of the state and offers justification for political obligation. The theory regards the government in managing tax on behalf of the society who elected them as the product of a contract. It offers a rational framework for reconciling the imperatives of government authority with the rights and obligation of the masses.

Furthermore, the social contract theory says that Nigerian state and her resources should be administered on the basis of common shared principal of justice; the utilization of the revenue should be used judicious applied for the economic development of the masses. The theory, social contract theory has been defined as a sort of hypothetical or contractual arrangement between the society and the state. The theory draws some several philosophers, who had made some postulations, who include (Hobbes, 2005) each has argued and explained social

contract theory in diverse manner. Hobbes (2005) opined that how the world and its society would look not be vivid and but bleak account without social contract, suggesting that social contract is important and plays a big role in moral actions.

The philosophies of social contract theory is relevant to this study as this calls for readiness and willingness of the leaders, who should make proper usage of tax revenue to better the lots of the society, and ensure adequate provision of basic needs, towards the economic growth of the economy. This should be the priority of the elected leaders rather than busily involved in mere politicking with the resources meant for use by the people, being wasted, diverted to private business. They should see their elected position to provide good durable and quality roads, reliable electricity supply, good salary system, qualitative education for the citizens. That the priority of leadership in service of humanity.

Empirical Literature Review

Indirect Taxes and Government Capital Expenditure on Economic Services

Akintoye *et al,* (2015), reported that lack of adequate power in Nigeria negatively affected the economic growth of the country; the study noted that over all, decay in capital expenditure on economic activities had the greatest negative effect on development and huge investment was needed on capital expenditure on economic services. Darma (2014) in his study on the effect of capital expenditure on economic growth in Nigeria for 1980 to 2010 noted that capital expenditure on administration, social and communities services and transfers had a positive impact on economic growth of Nigeria ,this means that an increase in any of the above will lead to an increase in economic growth. The study noted that poor utilization and misuse of funds contributed to the decay in infrastructure in the country. The study recommended that government should ensure corrupt leaders are dealt with in order to discourage corruption which is a major challenge in Nigeria.

In line with the above studies, Fasoranti (2012) study also focused on the effects of government expenditure on infrastructure and growth in Nigerian economy. The study highlighted government expenditure on education, environment, housing, health services, transport, communication, agriculture and security, the shocking results revealed that expenditure on health, transport and communication was negative while agriculture and security was insignificant to growth. Edame and Fonta (2014) study on the same subject matter revealed that government expenditure on infrastructure has not changed significantly over 2 decades and thus rate of urbanization, external reserves and population density did not change considerably. Nurudeen and Usman (2010) position on the subject matter also support earlier position that capital expenditure has not translated to economic growth due to the low attention paid to it and the amount invested. The study noted that increase expenditure on education had a negative effect on growth and increase expenditure on transport and communication and health had a positive effect on the economy.

Oseni (2014) discussed on multiple tax system entitled Multiple Taxation as a Bane of Business Development in Nigeria. The study examines the appropriateness of multiple taxes in developing nations like Nigeria. Despite clear and unambiguous legislations that contain

list of fees and taxes to be collected, all tiers of governments, ministries, departments and agencies are involved in collecting taxes that are not within this list. Various names are coined for these multiple taxes. The study used content analysis method to highlight challenges that are peculiar to Nigeria. Introducing taxes that are not backed by laws to investors because of the apparent profitability of their businesses and the attempt to increase revenue base is like shifting the goal post after the ball has been put into the net. This may lead to disinvestment. The new directive of making it illegal to use tax consultants by all tiers of government and mandating police to arrest those involved in collecting taxes outside the ones listed in The Taxes and Levies (Approved Rates for Collection) Act, 1998 will go a long way to put sanity to business environment. Healthy business environment will lead corporate entities to fulfill their corporate social responsibilities to the societies.

Inyiama and Ubesie (2016) discussed Effect of Value Added Tax, Customs and Excise Duties on Nigeria Economic Growth. The study examines the effect of Value Added Tax and Customs and Excise Duties on Nigeria Economic Growth. Secondary sources were explored in data gathering while simple regression technique was employed in data analysis for test of the study hypotheses. Furthermore, correlation analysis was applied in the assessment of the relationship between the non-oil revenue sources and Nigeria Gross Domestic Product. The outcome reveals that all the non-oil tax revenue affects Nigeria Gross Domestic Product. On the side of the relationship among the variables studied, the strength of their relationship is very high for all the variables. The researcher concludes that Value Added Tax and Customs and Excise Duties are some of the major contributors to Nigeria Gross Domestic Product. The revenue sources could be used to predict the value and status of the nations' Gross Domestic Product as indicated by the strength of the relationship between the variables. The federal, state and local authorities therefore could finance a reasonable proportion of their capital and recurrent budget through non-oil tax revenue.

Eze, Celina and Atuma (2018) found out in their report entitled Re-Evaluation of the Economic Impact of Tax Policy on the Growth of Nigeria Economy. The study investigated the impact of tax policy on economic growth in Nigeria for the period 1981-2015. Auto Regressive Distributed Lag (ARDL) test and Pairwise Granger causality test were employed in the analysis. The variables used in the study include real gross domestic product (LRGDP), personal income tax (PIT), company's income tax (CIT), government expenditure (GEX), exchange rate (EXCR), broad money supply (MS) and interest rate (INR). The results ARDL test indicated evidence of both long run and short run relationships among the variables. It also showed that personal income tax (PIT) has positive and insignificant impact on real GDP while companies income tax (CIT) has negative and significant impact on real GDP. The results also revealed that GEX and MS have positive and insignificant impact on real GDP while EXCR and INR have negative and insignificant impact on real GDP. More so, the result of the Pairwise Granger causality test showed that PIT, CIT and MS have unidirectional relationship with real GDP with causality runs from PIT, CIT and MS to RGDP. Thus, the study recommended for the application of personal income tax by government in generating revenues to promote economic growth more than it uses companies' income tax as it will lead to improvement in economic growth of the country.

Methodology

Following the review of the theoretical literature of the social contract theory of Hobbes, 2005; the specification for examining the impact of indirect tax revenue on capital expenditure economic services in Nigeria is given as:

$$LEESS_t = \propto_0 + \propto_1 LVAT_t + \propto_2 LEXDTS_t + \varepsilon_t \quad (1)$$

Equation (1) is the long-run determinants of government capital expenditure on economic services. LEESS is the logarithm of government capital expenditure on economic services, LVAT is the logarithm of value added tax and LEXDTS is defined as the logarithm of custom and excise duties. Thus, the values for $\square_1$ and $\square_2$ should be positive and ε is the error term. To distinguish the short-run effects of economic services from their long-run effects, equation (2) is specified in an error–correction modeling form. Following Pesaran et al.'s (2001) bounds testing approach and rewrite (1) as follows:

$$\Delta LEESS_t = \alpha + \sum_{i=1}^{n1} \beta_i \Delta LEESS_{t-k} + \sum_{i=0}^{n2} \delta_i \Delta LVAT_{t-k} + \sum_{i=0}^{n3} \varphi_i \Delta LnLEXDTS_{t-k} + \rho_0 + \rho_1 LVAT_t + \rho_2 LEXDTS_t + \mu_t (2)$$

To test for cointegration, the Pesaran et al. (2001) F-test for joint significance of the lagged level variables was used. Once cointegration is established, estimates of $p_1 - p_2$ normalized on p_0 will yield the long-run effects of all exogenous variables. The short-run effects are reflected by the estimates of coefficients attached to first-differenced variables. It should be noted that equation (2) assumes that value added tax and custom and excise duties have effects on government capital expenditure on economic services in Nigeria.

The data used to achieve the stated major and specific objectives were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the Federal Inland Revenue Service (FIRS) for the period covering 1994Q1-2018Q4 representing 100 observations.

Results

Descriptive Statistics

This presents the descriptive statistics presented in table 1, and they are the mean, median, maximum, minimum and standard deviations, Skewness, Kurtosis and Jacque-Bera. Quarterly data for twenty-five years were used from 1994Q1-2018Q4 for Nigeria. The rationale behind the use of quarterly data is premised on the fact that for time series observation it is expected that the total number of observation should be greater than or equal to 30. Thus, variables for the study were interpolated using EVIEWS 10. The second rationale for using quarterly data was that the one of the regressor - value added tax data starts from 1994. In this section, the dependent variable is the government capital expenditure on economic services (LEESS), the independent variable is indirect taxes and they are the natural log of value added tax (LVAT) and the custom and excise duties (LEXDTS).

Table 1: Descriptive Statistics

Variables	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob	Obs
LEXDTS	13.03	13.28	16.16	5.45	1.69	-1.84	0.29	1.66	0.3	100
LVAT	10.74	10.75	11.78	7.64	0.81	-0.88	1.83	2.58	0.15	100
LEESS	10.98	10.92	12.4	9.74	0.6	0.39	1.07	2.56	0.28	100

Notes: Table 1 shows the mean, median, maximum, minimum, standard deviation, skewness, kurtosis and Jarque-Bera test for normality of the variables. The dependent variable is the natural logarithm of government capital expenditure on economic services (LEESS). The independent variables are the logarithms of value added tax (LVAT) and the custom and excise duties (LEXDTS) for the period 1994Q1-2018Q4in Nigeria. The estimation process was facilitated using Eviews 10.

Interpretation

LEESS: The mean value of the government capital expenditure on economic services is 10.98 with a median of 10.92. In addition, it shows that the maximum value is 12.40 and the minimum value 9.74. This implies that the government capital expenditure on economic services in Nigeria differ across time period. The standard deviation of 0.60; shows that the government capital expenditure on economic services is less susceptible to change in Nigeria. In addition, the government capital expenditure on economic services follows a normal distribution because the Jarque-Bera test of 2.56 shows that the variable is normally distributed.

LEXDTS: The mean value of the custom and excise duties is 13.03 with a median of 13.28. In addition, it shows that the maximum value is 16.16 and the minimum value 5.45. This implies that the custom and excise duties in Nigeria differ across time period. The standard deviation of 1.69; shows that the custom and excise duties is susceptible to change in Nigeria. In addition, the custom and excise duties tax gap follows a normal distribution because the Jarque-Bera test of 1.66 shows that the variable is normally distributed.

LVAT: The mean value of the value added tax is 10.74 with a median of 10.75. In addition, it shows that the maximum value is 11.78 and the minimum value 7.64. This implies that the value added tax in Nigeria differ across time period. The standard deviation of 0.81; shows that the value added tax is less susceptible to change in Nigeria. In addition, the value added tax follows a normal distribution because the Jarque-Bera test of 2.58 shows that the variable is normally distributed.

Pearson Correlation

This sub-section discusses the degree of association between the variables of interest of the study. The correlation between logarithms of value added tax (LVAT) and custom and excise duties tax(LEXDTS) with the logarithm of government capital expenditure on economic services (LEESS)for the period 1994Q1-2018Q4in Nigeria. The results in Table 2 show that

value added tax and custom and excise duties and have a positive association with government capital expenditure on economic services. The implication of these results is that increases in value added tax and custom, excise will lead to increases in government capital expenditure on economic services Nigeria.

Table 2: Correlation Matrix for Indirect Tax Revenue and Government Expenditure

Variables	LEESS	LEXDTS	LVAT
LEESS	1		
LEXDTS	0.15	1	
LVAT	**0.19**	**0.46**	1

Notes: Table 2 shows the Pearson pairwise correlation matrix. The dependent variable is the natural logarithm of government capital expenditure on economic services (LEESS). The independent variables are the logarithms of value added tax (LVAT) and the custom and excise duties (LEXDTS) for the period 1994Q1-2018Q4 in Nigeria. The estimation process was facilitated using Eviews 10. The correlations are below the major diagonal and the bold coefficients denotes statistical significant at 1 and 5 per cent

Result of the Stationary Test

The time series properties of the variables were examined using the Augmented Dickey Fuller (ADF) and the Phillip-Perron unit root tests and the result is presented in Table 3. The results show that government capital expenditure on economic services, and custom and excise duties were stationary in their first differences, while value added tax is stationary at levels at 5 per cent level of significance. It should be noted that because of the different order of integration of the variables, the autoregressive distributed lag (ARDL) model approach to cointegration of Pesaran and Pesaran (2001) which allows for the of combination of levels and first difference stationary variables were used.

Table 3: Result of the Unit Root Test

Variables	ADF	PP	Remarks
LEESS	-2.832	-2.541	
ΔLEESS	-3.011**	-4.932***	I(1)
LEXDTS	-1.835	-2.383	
ΔLEXDTS	-3.826***	-6.030***	I(1)
LVAT	-2.282	-4.481***	I(0)
ΔLVAT	-4.923***	-8.468***	I(1)

Source: Researcher's Computation, (2020)

Notes: Table 3 presents the unit root test. The dependent variable is the natural logarithm of government capital expenditure on economic services (LEESS). The independent variables are the logarithms of value added tax (LVAT) and the custom and excise duties (LEXDTS) for the period 1994Q1-2018Q4 in Nigeria. The estimation process was facilitated using Eviews 10. The critical value at 5 for intercept and trend is -3.50 and for intercept alone is -2.93. ** and *** indicates significant at 5 and 1 per cent respectively.

Hypothesis Testing

Research Objective: Examine the effect of indirect tax revenue on government capital expenditure on economic services in Nigeria

Research Question: In what way has indirect tax revenue on government capital expenditure on economic services affected Nigeria?

Research Hypothesis: Indirect tax revenue does not have a significant effect on government capital expenditure on economic services in Nigeria.

Table 4: Full Information on the Effects of Indirect Tax Revenue on Government Capital Expenditure on Economic Services

Panel A: Long Run Estimates

Dependent Variable: LEESS				
Variable	**Coefficient**	**S.E**	**t-stat**	**Prob**
LVAT	0.875	0.415	2.108	0.038
LEXDTS	0.470	0.235	2.000	0.049
C	7.543	2.913	2.589	0.011

Panel B: Short -Run Estimates

Variable	**Coefficient**	**S.E**	**t-stat**	**Prob**
C	0.459	0.087	5.246	0.000
D(LVAT)	0.510	0.065	7.823	0.000
D(LEXDTS)	0.019	0.021	0.864	0.390
ECM(-1)	-0.061	0.011	-5.356	0.000

Panel C: Diagnostic Tests	**Statistic**	**Prob.**
Bound Test	7.076	0.000
Serial Correlation	1.203	0.305
Heteroscedasticity	1.073	0.381
Linearity Test	0.797	0.374
Adjusted R-Square	0.588	
	CUSUM	CUSUMSQ
Stability Test	Stable	Stable
F-Statistics	69.218	0.000

Notes: Table 4 reports the long-run estimates, short run estimates and the diagnostic tests for the relationship between indirect tax revenue and government capital expenditure on economic services. The dependent variable is the logarithm of government capital expenditure on economic services (LEESS) while the independent variables are the value added tax (LVAT) and custom and excise duties (LEXDTS).

Interpretation

Based on the estimated model in Table 4, the estimated equation is given as

$LEESS_t = \alpha_0 + \alpha_1 LVAT_t + \alpha_2 LEXDTS_t + \varepsilon_t$
$LEESS_t = 7.543 + 0.875 LVAT_t + 0.470 LEXDTS_t + \varepsilon_t$

Bound Test

Using the bound test to ascertain the possibility of long-run relationship, the results show that the bound test statistics of 7.076 is statistically significant at 5 per cent level. This is because the statistics of 7.076 is greater that the critical values of 4.26, 3.5 and 3.13 at 1 percent. This implies that the variables there are possibility of a long-run cointegrating relationship. Based on the possibility of a long-run relationship between indirect tax revenue and government capital expenditure on economic services, the study then estimate the long-run and the short-run elasticity. The empirical results for the model for the effects of indirect tax revenue and government capital expenditure on administration, in the short and long run are reported in Table 4.

The Long-Run Dynamics

The estimated long-run coefficients (elasticities) for the UECM model are given in the tables Panel A of Tables 4. In the long run, there is evidence that value added tax and custom and excise duties tax have positive relationship with government capital expenditure on economic services. This implies that increases in value added tax and custom and excise duties will lead to increase in the government capital expenditure on economic services in Nigeria. Furthermore, there is evidence of a long-run significant relationship that value added tax and custom and excise duties with government capital expenditure on economic services in Nigeria (LVAT= 0.875, t-test= 2.108, $\rho<0.05$ and LEXDTS = 0.470, t-test= 2.000,$\rho<0.05$). This implies that value added tax and custom and excise duties are significant factors influencing changes in with government capital expenditure on economic services in Nigeria. Studies in conformity with tis studies are; Darma (2014) in his study on the effect of capital expenditure on economic growth in Nigeria for 1980 to 2010 noted that capital expenditure on administration, social and communities services and transfers had a positive impact on economic growth of Nigeria. In line with the above studies, Fasoranti (2012) study also focused on the effects of government expenditure on infrastructure and growth in Nigerian economy. The study highlighted government expenditure on education, environment, housing, health services, transport, communication, agriculture and security, the shocking results revealed that expenditure on health, transport and communication. Edame and Fonta (2014) study on the same subject matter revealed that government expenditure on infrastructure has not changed significantly over 2 decades and thus rate of urbanization, external reserves and population density did not change considerably.

Inyiama and Ubesie (2016) discussed Effect of Value Added Tax, Customs and Excise Duties on Nigeria Economic Growth. The study examines the effect of Value Added Tax and Customs and Excise Duties on Nigeria Economic Growth. Secondary sources were explored in data gathering while simple regression technique was employed in data analysis for test of the study hypotheses. Furthermore, correlation analysis was applied in the assessment of the relationship between the non-oil revenue sources and Nigeria Gross Domestic Product. The outcome reveals that all the non-oil tax revenue affects Nigeria Gross Domestic Product.

To test the hypothesis for the research objective, the F-statistics of 69.218 was used and it is statistically significant at 5 per cent level, thus on the overall, the null hypotheses that there is no significant effect of indirect tax revenue on government capital expenditure on economic services in Nigeria was rejected and accept the alternative hypothesis that there is significant effect of indirect tax revenue on government capital expenditure on economic services in Nigeria.

Also, a 1 per cent increase in value added tax and custom and excise duties will lead to 0.875 and 0.470 per cent increase in government capital expenditure on economic services in Nigeria respectively in the long run.

Short-run Dynamics

The purpose of this section is for two reasons. First, is to examine if changes and the statistical significance experienced in the long run also exist in the short run model. Second, is to examine the degree of adjustment back to equilibrium using the error correction term. The short-run adjustment process is measured by the error correction term ECM_{t-1} and it shows how quickly variables adjust to a shock and return to equilibrium. For stability, the coefficient of ECM_{t-1} should carry the negative sign and be statistically significant.

The result shows that in the short-run value added tax have positive and significant relationship with government capital expenditure on economic services, while custom and excise duties is positive but insignificant. In addition, the estimated coefficient for the ECM_{t-1}reported in Panel B of Table 4is negative and statistically significant (ECM= -0.06, t-test = -5.356, $p<0.05$). This implies that deviations from government capital expenditure on economic services equilibrium path are corrected by nearly 6 per cent over the following quarter. In other words, the adjustment process is relatively slow in Nigeria. The statistical significance of the ECM_{t-1}confirms the presence of long-run equilibrium relationship between indirect tax revenue and government capital expenditure on economic services in Nigeria.

The Adjusted R-square is 0.59; this implies that value added tax and custom and excise duties explains about 59 per cent changes in government capital expenditure on economic services, while the remaining 41 per cent were other factors affecting changes in government capital expenditure on economic services but were not captured in the model.

Post-Estimation test

For the validity and reliability of the parameter estimates and to be able to draw valid conclusions based on the results, five types of residual test and conducted. First, is the serial correlation test which is used to test for the possibility of the error term being uncorrelated? Second is to check if the finite variances of the error terms are equal. This assumption is referred to as the homoscedasticity. A violation of this assumption is referred to as heteroscedasticity. Third, is the normality test, which is a test for the degree of asymmetry and flatness and peakness of the distribution, a non-significance of the Jarque-Bera test implies normality. Fourth, is the linearity test, which is used to test if the model is linearly specified, the non-significance of the Ramsey RESET test implies the model is linear specified. Fifth, is

the stability test, where the CUSUM and CUSUMSQ are used. For the stability of the estimated model, the plot of CUSUM and CUSUMSQ statistic must stay within a 5% significance level portrayed by two straight lines.

The results revealed that the successive error terms are not serially correlated because the probability value of F-statistic of 1.203 is not significant. is in favour of the null hypothesis that there is no serial correlation in the residuals up to the specified lag order at 5 percent significant level. Thus, the study concluded that the successive error terms were not correlated in the estimated model for indirect tax revenue and government capital expenditure on economic services in Nigeria. Also the heteroscedasticity results show that the statistic of 1.073 is not statistically significant at 5 per cent level of significance, this implies that the null hypothesis of homoscedasticity could not be rejected; thus there is evidence that the covariance of the error terms has a constant finite variance.

In addition, the Ramsey Reset Test, F-statistics of 0.797 is not significant the model is correctly specified and that there is a linear relationship between indirect tax revenue and government capital expenditure on economic services in Nigeria. Also, the CUSUM and the CUSUMSQ reported in Panel C, show that that the estimated model is stable; because the plot of CUSUM and CUSUMSQ statistic stays within a 5% significance level portrayed by two straight lines.

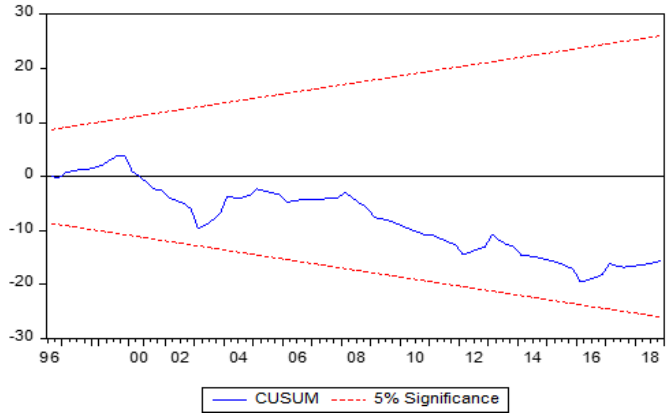

Figure 1: Stability Test - Plots of Cumulative Sum of Residual

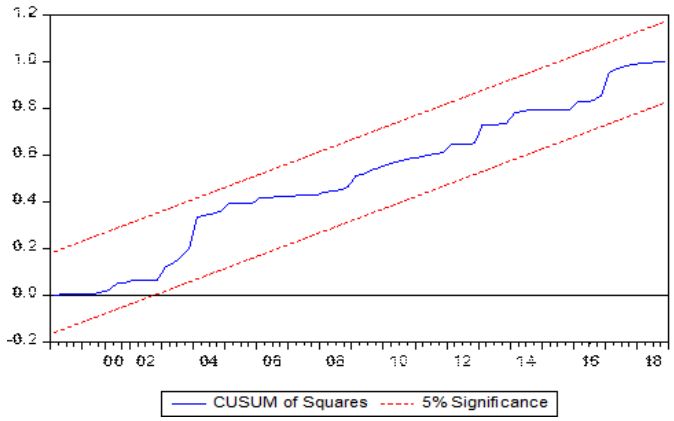

Figure 2: Stability Test - Plots of Cumulative Sum of Square Residual

Conclusion and Recommendation

The study examined the effect of indirect tax revenue and government capital expenditure on economic services in Nigeria for the period 1994Q1-2018Q4. The preliminary test such as the correlation coefficient and the unit root test were used. The Pearson correlation coefficient results showed that value added tax, and custom and excise duties have a positive association with government capital expenditure on economic services. The condition for examining the long-run cointegrating relationship is that the series must be stationary. Using the ADF and the PP unit root test, the results revealed that the series were stationary at level and in their first differences. Owing to the different order of integration of the series, the Autoregressive distributed Lag (ARDL) model was used to examine if there is a short run and long run cointegrating relationship. The results shows that in the long run, there is evidence that positive significant relationship for value added tax and custom and excise duties government capital expenditure on economic. Thus, there is evidence of a long-run significant relationship that value added tax and custom and excise duties with government capital expenditure on economic services in Nigeria

The study recommends that a greater percentage (at least 60%) of the Nigeria's budget should allocate to government capital expenditure on economic services as this will boost economic development of the country. Continuous education should be provided to the citizens by the respective officers of the government and their agencies to create awareness about the importance of tax and the need to abide by the tax laws. In addition, the government should position itself in vantage position such that revenue for value added and custom and excise duties will be able to cater for important sectors such as agriculture, transportation and road construction.

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