

Effects of Indirect Tax Revenue on Government Capital Expenditure on Economic Services in Nigeria

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Abstract

The bedeviling state of our infrastructure has so much affected our economic output as a country to such a degree that there is need for diversification of the economy. In as much as the government needs fund to provide infrastructural facilities, indirect tax is a gold mine that must be looked into so as to generate more revenue needed for these capital projects. This paper investigated the effects of indirect tax revenue on government capital expenditure on economic services in Nigeria. The paper employed ex-post facto research design. The population of the study was Nigeria. The data used was obtained 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. Pre-test, the Auto Regressive Distributed Lag (ARDL) approach and the post-estimation test or the diagnostic tests were used to analyze the data. The study found out that there is a positive and significant relationship between indirect taxes and government capital expenditure on economic services and that indirect tax revenue is a significant factor influencing changes in government capital expenditure on economic services in Nigeria. The Long-Run Dynamics results shows that (LVAT= 0.875, t-test= 2.108, $\rho < 0.05$ and LEXDTS = 0.470, t-test= 2.000, $\rho < 0.05$). While the short-Run results shows that (ECM= -0.06, t-test = -5.356, $\rho < 0.05$). The study concluded that there is a significant relationship between indirect tax revenue (value added tax, custom and excise duties) and government capital expenditure on economic services. The paper therefore recommended that the government should be more efficient in the collection of indirect taxes, close the border and expend more funds in the provision of infrastructure.

Keywords:

Indirect taxes,
Government capital
expenditure,
Economic services,
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Background to the Study

Nigeria is a country blessed with the right mix of human and natural resources and should earn a place among the top 20 economies of the world in less than nine years which is the time lag to the vision 20:2020 date but it is rather unfortunate that we are still battling with the bedeviling nature of poor infrastructure which has affected our economic output. We as a nation have for many years, as a result of the oil boom 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 (Onuoha and Akintoye, 2018). Today, the result of this shows in the dismal contribution of tax revenue to the gross domestic product (GDP) leading to high unemployment rate, poverty, corruption and lack of accountability and transparency in the public sector, illicit drug usage and abuse, and crime and criminology which 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.

The poor state of infrastructure has now engaged the attention of many African governments, especially in attracting foreign investments as the development of infrastructural facilities is one of the determinants of foreign direct investments inflow into any economy. Nigeria with her vision of becoming one of the top 20 big economies by the year 2020 needs to take seriously her infrastructural development, according to Remi Babalola (a former Minister of state finance), the country would need over \$100 billion of her GDP in the next 5years to develop a new platform for her infrastructural development. Most of the current infrastructural facilities in Nigeria were developed during the second national development plan between (1970- 1974) (Edun, Akinde, Olaleye & Idowu, 2013). Olaseni and Alade (2012) further posit that Nigeria is the most populous black nation on planet earth and sets a great vision to be among the top 20 economies in the world by 2020 with a minimum GDP of \$900 billion and a per capita income of no less than \$4000 per annum. Aigbokhan (1999) gives examples of physical infrastructure as public utilities such as power, telecommunications, piped water supply, sanitation and sewage, solid waste collection and disposal and piped gas as well as public works which include roads, major dam and canal works for irrigation and drainage, and other transport projects like urban and interurban railways, urban transport, seaports and waterways and airports. Physical infrastructure has played a very significantly positive role in the growth performance of countries in recent times. Where development of economic infrastructure has followed a rational, well-coordinated and harmonized path, growth and development has received a big boost, examples are Korea and Japan (Familoni, 2000). Where the growth of infrastructures have not followed such a rational and coordinated path, growth and development has been stunted. Examples can be found in most African countries and other LDCs. The role of infrastructure is a very wide and controversial issue that has been the subject of numerous empirical studies.

Nigeria and other African Countries are today facing series of challenges when it comes to optimizing taxation revenue from indirect taxes for economic and social growth while aiming to reach development targets and infrastructural developments. The most glaring difficult challenge is how to find the optimal balance between a tax regime that is business and investment friendly while at the same time leveraging enough revenue for public service delivery which in turn makes the economy more attractive to investors (Olaseni & Alade, 2012). It is in our opinion that the taxation system in Nigeria has not being fully tapped and maximized and its role in promoting economic and social activities and growth is not felt because of its poor administration. In this direction, Olashore (1998) submitted that the economy has remained in deep slumber or shamble as all macroeconomic indicators show that the economy is in urgent need of changes, balancing and indeed radical reform. In addition, the attitude of Nigerians towards taxation is worrisome as many prefer not to pay tax; because of this unwillingness to pay tax as well as evading tax, the economy therefore continues to lose huge amount of revenue. If this lost revenue is employed back into the economy and utilized, it can change the fortune of the nation. In view of all these, the objective of this paper is to investigate the effects of indirect tax revenue on government capital expenditure on economic services in Nigeria by providing answers to the degree of impact indirect tax revenue has on government capital expenditure on economic service in Nigeria.

Conceptual Review

Infrastructural Development

The concept of Infrastructure was first used in the 1880s and the word was coined from two Latin words "*infra*" and "*struere*" meaning "below" and "to build". Infrastructure thus means the structure in which the economy is built. Infrastructure are physical system that undergirds the structure of nations and ensure it meet its needs for growth and development, they are usually basic and expected to be available, they include transport system, communication network, clean water supply, proper waste management and adequate power supply (Babatunde, 2018). Infrastructural development is closely linked to growth in economic activities that cuts across a wide geographical location such as a metro train that runs across a country or a gas pipe line that supplies millions of house hold, due to the magnitude of this nature; public financing, supervision and regulation is usually required to meet these needs. Consequently, economic activities will grow and natural monopolies will be established.

Government Capital Expenditure on Economic Services (LGCEES)

Babatunde (2018) defined government capital expenditure as economic services as expenditure on education, transportation, communication, health infrastructure, agriculture as well as investment in natural resources. This refers to the real infrastructure with in the country such as roads, communication network, rail tracks, National airline fleet, refineries hospital buildings and all agro related industries (Akintoye *et al.*, 2015; Edame & Fonta, 2014). Economic services are capital expenditure incurred by government in order to facilitate economic activities within the country and create opportunities for growth. Economic services have the ripple effect of increasing money

within the economy as well as providing employment opportunities. A close and deep look at the different definitions highlighted above shows that economic services relate to expenditure on tangible and physical assets by government. Assets that can be seen and felt and used by all citizens regardless of location. Babatunde (2018) highlighted the different examples of expenditure on economic activities in explaining the meaning of economic services.

From the above definitions, capital expenditure on economic services can be defined as government investment on physical activities that can promote economic activities or that can support the existence of economic activities. The major elements of expenditure of government on economic services thus are education, health, transport, communication, roads and various means of transportation including air and water, investment in Agro activities as well as adequate drainage facilities. Economic services such as investment in agriculture will mean that food will be relatively cheaper thus helping to meet one of the basic needs of man. Agriculture can also be a major source of export for countries and this can help with balancing a deficit budget, Construction of road network means that economic activities can be carried out seamlessly and this will save time and increase money. A good transport system will mean that short time is used to travel long distance and business activities can thrive. Communication network and internet services are two very essential modern-day infrastructures, this also economic activity to be carried out across different part of the world without physical presence. By providing economic infrastructure, the economy of a country will grow and standard of living of citizens will improve and poverty rate will reduce. In highlighting the definition of expenditure on economic activities, it becomes clear what type of government expenditure is being carried out annually, thus the ambiguity of saying that government invest in capital infrastructure can be narrowed down and explained explicitly using the heading capital expenditure on economic activities, while this is an advantage, it may be difficult to classify some items under this heading, items such as health. Is health here referring to the health sector as a whole or just physical buildings and equipment?

Value Added Tax (VAT)

Value added tax is a consumption rate placed on all production line of a product, which is borne by the final consumer of such goods in which it is imposed. VAT is regulated by the Value Added Tax Act No 102 of 1993 but later became effective on the 1st of January 1994 (Ibadin & Oladipupo, 2015). In Nigeria, VAT is administered by the Federal government and distrusted among all arms of government; the VAT rate is 7.5% and it covers a wide variety of economic transactions excluding books, medical drugs, agricultural related items and baby products. Over 116 countries across the world has implemented VAT on production of goods and services and it is collected on behalf of government on economic activities carried out and same is remitted to the government (Inyiama & Ubesie, 2016; Joseph, Ikechukwu & Amah, 2016).

Custom and Excise Duty

Customs and Excise Duty are taxes collected on imported and exported items. This form of tax can be used to encourage or discourage a line of activity within a country. Ibadin

and Oladipupo (2015); Fasoranti (2013) stated that custom duties are usually in form of percentages of the import value or a fixed portion of a certain quantity or weight. Excise duty on the other hand is levied on goods produced within a country but meant for export to another country. It is expected that excise duties will be relatively lower than custom duty because of the objective of the tax revenue head (Babatunde, 2018).

Exchange Rate

An exchange rate is the price of one currency expressed in terms of another currency, or against a basket of other currencies. In a floating exchange rate regime rates are determined by the forces of demand and supply in the foreign exchange market.

Inflation Rate

The inflation rate is the percentage increase or decrease in prices during a specified period, usually a month or a year. The percentage tells you how quickly prices rose during the period. Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.

Theoretical Review

Social Contract Theory

This theory was postulated by a renowned scholar, Thomas Hobbes. It has been defined as a sort of hypothetical or contractual arrangement between the society and the state. The theory is both a theory of morality and at the same time theory of the state because it 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 judiciously applied for the economic development of the masses. To elucidate the idea of social contract, five important variables into which contracts approaches of relationship between the state and the masses may be analyzed are as follows: One, the nature of contract act, two, the parties to the act, three, what the rights, obligation and limitation of the parties are consenting to; three, the reasoning that leads to the agreement, four, the reasoning that leads to the agreement and five, what the agreement (constitution) is supposed to show.

Agency Theory

The agency theory was postulated by Berle and Means (1932) where they argued that due to a continuous dilution of equity ownership of large corporations, ownership and control become more separated. This situation gives professional managers an opportunity to pursue their interest instead of that of shareholders (Jensen & Runback,

1983). The issue of agency theory revolves around the subject matter of agency problems and its possible solutions (Jensen & Meckling, 1976). According to Daily, Dalton and Rajagopalan (2003), agency theory is considered as one of the oldest theory in the literature of management and also in economics.

Agency theory is concerned with one of such conflicts between the principal (owners of business) and the agent (the managers of the business) but in this case, the masses (principal) and the government (agent). In large companies, the ordinary shareholders are likely to be diversely helped, and so the action of the shareholders are likely to be restricted in practical terms. The responsibility of running and managing the company will be with the managers on behalf of the shareholders. In any business contract, there is the possibility of conflict which may arise especially when the owner is different from the day to day running and management of the company. The conflict could come in various ways: Conflict of interests, payment terms disagreements, dividend policy issues and many more. The Agency theory posits that the relationship between the principal (shareholders) and the agent of the principal (company's managers). This suggests that the firm can be viewed as a nexus of contracts (loosely defined) between resources holders. An agency relationship arises whenever one or more individuals, called principal(s), hires one or more other individuals, called agent(s), to perform some services and then delegate decision-making authority to the agents (Panda & Leepsa, 2017). The misalignment of interest between principal and agent and lack of proper monitoring due to diffused ownership structure leads to the conflict otherwise known as principal/agent conflict of interest.

Empirical Review

Indirect Taxes and Government Capital Expenditure on Economic Services

Akintoye and Tashie (2013) 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. The outcome of the work of Fazoranti (2013) provides support for the position of Akintoye *et al*, (2013).

Fazoranti (2013) study 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, with shocking results that revealed expenditure on health, transport and communication to be 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 legislation that contains 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 the Effect of Value Added Tax, Customs and Excise Duties on Nigeria Economic Growth. The study examined 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), companies 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

The study adopted *ex-post facto* research design because the study relied on existing data that has already been collected by government agencies. Nigeria represents the target population of the study and the effect of indirect taxes on infrastructural development in Nigeria for the period 1994Q1 – 2018Q4 for all the variables were examined. The method of analysis used to achieve the stated objectives of this study and to test the hypothesis is classified into three namely: the pre-test, the Auto Regressive Distributed Lag (ARDL) approach and the post-estimation test or the diagnostic tests.

Model Specification

The functional equations for the objective examining relationship between indirect taxes and infrastructural development is stated below:

$$Y = f(X, Z)$$

Y = dependent variable = infrastructural development (INFRASDEV)

X = independent variable = indirect taxes (INDTAX)

Z = control variables

Y = y_1 (measure of dependent variable)

X = x_1, x_2 (measures of independent variable)

Z = z_1, z_2 (measures of control variable)

Where:

y_1 = Government Capital Expenditure on Economic Services (LEESS)

x_1 = Value Added Tax (LVAT)

x_2 = Customs and Excise Duties (LEXDTS)

z_1 = Inflation Rate (INFR)

z_2 = Exchange Rate (LEXR)

Functional Relationships

$$\text{LINFDEV} = f(\text{LINDTAX})$$

$$\text{LEESS} = f(\text{LVAT}, \text{LEXDTS})$$

The model is specified as:

$$\text{LEESS}_t = \alpha_0 + \alpha_1 \text{LVAT}_t + \alpha_2 \text{LEXDTS}_t + \varepsilon_t$$

Where:

α_0 is the intercept; α_1 is the coefficient of the explanatory variables; t represents the time series observation periods under study; ε_t is the error or disturbance term.

Results and Discussion of Findings

Table 1: Descriptive Statistics

Variables	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob	Obs
LINFDEV	12.44	12.45	14.61	10.17	0.74	0.35	1.47	2.83	0.12	100
LEESS	10.98	10.92	12.40	9.74	0.60	0.39	1.07	2.56	0.28	100
LEXDTS	13.03	13.28	16.16	5.45	1.69	-1.84	0.29	1.66	0.30	100
LVAT	10.74	10.75	11.78	7.64	0.81	-0.88	1.83	2.58	0.15	100
LEXR	4.62	4.87	5.75	2.38	0.84	-0.08	1.05	2.95	0.12	100
INFR	16.24	11.92	83.55	-0.75	15.47	0.97	1.59	1.45	0.48	100

Source: Researcher's Computation (2020)

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 infrastructural development (LINFDEV) and further classified into the natural logarithms 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). The control variables are the logarithm of exchange rate (LEXR) and inflation rate (INFR) for the period 1994Q1-2018Q4 in Nigeria. The estimation process was facilitated using Eviews 10.

LINFDEV: The mean value of infrastructural development is 12.44 with a median of 12.45. This suggests that the level of infrastructural development embarked upon by the Nigerian government is on the increase over time. In addition, it shows that the maximum value is 14.61 and the minimum value 10.17. This implies that the levels of government infrastructural development in Nigeria differ across time period. It also shows that the total government capital expenditure increases over time. The standard deviation of 0.74 shows that the degree of variability of infrastructural development is very low and as such is less likely to change overtime in Nigeria. It also shows that infrastructural development follows normal distribution because the Jarque-Bera test shows that the variable is normally distributed with a chi-square statistic of 2.83.

LEESS: The mean value of the government capital expenditure on economic services is 10.98 with a median of 10.92. This implies that government capital expenditure on economic services which is made up of agriculture, construction, transportation, communication and other economic services, which is the main drive of the economy is growing over time. 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. The implication of this is that government collects a reasonable amount of tax revenue through its border in form of custom and excise duties. 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 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. The implication of this is that the Nigerian government realize a reasonable amount from value added tax in the country and as such it will increase the level of government revenue if appropriate tax policy and administration were employed. 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.

LEXR: The mean value of the exchange rate is 4.62 with a median of 4.87. The implication of this result is that the rate at which the Nigerian naira exchange for the United States dollar is not constant over time, thus the naira is subjected to the volatility in the country. In addition, it shows that the maximum value is 5.75 and the minimum value 2.38. This implies that the exchange rate in Nigeria differ across time period covered for in the study. The standard deviation of 0.84; shows that the exchange rate is less susceptible to change in Nigeria. In also shows that exchange rate in Nigeria follows a normal distribution because the Jarque-Bera test of 2.95 shows that the variable is normally distributed.

INFR: The mean value of the inflation rate is 16.24 with a median of 11.92. The implication of this result is also that on the average the prices of goods and services in the country is not constant and thus, it changes with time. In addition, it shows that the maximum value is 83.55 and the minimum value 0.75. This implies that the inflation rate in Nigeria differ across time period covered for in the study. The standard deviation of 15.47; shows that the inflation rate is susceptible to change in Nigeria. In also shows that inflation rate in Nigeria follows a normal distribution because the Jarque-Bera test of 1.45 shows that the variable is normally distributed.

Table 2: Full Information on the Effects of Indirect Tax Revenue on Government Capital Expenditure on Economic Services

Panel A: Long Run Estimates

Dependent Variable: LEES				
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

Source: Researcher's Computation (2020)

Notes: Table 2 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 (LEES) while the independent variables are the value added tax (LVAT) and custom and excise duties (LEXDTS).

Based on the estimated model in Table 2, the estimated equation is given as

$$LEES_t = \alpha_0 + \alpha_1 LVAT_t + \alpha_2 LEXDTS_t + \varepsilon_t$$

$$LEES_t = 7.543 + 0.875 LVAT_t + 0.470 LEXDTS_t + \varepsilon_t$$

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 than 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 Long-Run Dynamics

The estimated long-run coefficients (elasticities) for the UECM model are given in the tables Panel A of Tables 2. 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.

To test the hypothesis for this 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 the alternative hypothesis that there is significant effect of indirect tax revenue on government capital expenditure on economic services in Nigeria was accepted.

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 2 is 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 explain 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 were 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 linearly 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. It 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 have a constant finite variance.

Conclusion and Recommendations

Infrastructure development has proved to be a catalyst for economic growth and development and should be pursued with every seriousness it deserves. The study concluded that indirect tax revenue (value added tax and custom and excise duties) have significant impact on government capital expenditure on economic services.

In view of the findings of this study, it is highly recommended that the government should intensify her revenue drive through the collection of import duties tax so as to enhance government infrastructure in the area of agriculture, construction, transportation and communication which are all components of government capital expenditure on economic services. In addition, the country border should remain closed and be well protected so as to increase the revenue from customs and excise duties, and as such proliferation of sub-standard and adulterated goods should be banned in the

Nigeria territories through proper enforcement and investigation. Nonetheless, government should continue to spend on infrastructure that will lead to propel growth in the real sector such that the level of inflation can be reduced.

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