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Value Added Tax Gap and Capital Expenditure over Economic Services in Nigeria

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Abstract:
The inability of governments to provide basic amenities has continued to attract academic research. Extent literature has established availability of infrastructure and social amenities as indicators of development, however, developing countries like Nigeria have consistently failed to achieve the desired level of infrastructural development. Value Added Tax is an indirect tax that is charged on goods and service and studies have shown that revenue generate for VAT can be used to finance infrastructural development, however there remain an insufficient information on the tax gap on VAT in Nigeria. This has thus necessitated this research. This study examined the effect of value added tax gap on capital expenditure over economic services in Nigeria. The study adopted ex post facto research design. The population of the study was Value Added Tax in Nigeria for the period of 25 years (1994 – 2018). Data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the Federal Inland Revenue Service Reports (FIRS). Data used were validated by the regulatory agencies and certified as reliable by the office of the Auditor -General of the Federation in line with government regulation. Data were analysed using descriptive and inferential statistics employing the Auto Regressive Distributed Lag (ARDL) approach. The study found that there are significant positive impact of tax gap of Value Added Tax (LVATG) on It was revealed that LVATG have positive significant relation with capital expenditure on economic services(β_1 = 0.273, t(25)= 4.580, ρ<0.05). The study concluded that Value added tax gap can lead to a decrease in on capital expenditure over economic services in Nigeria. The study recommends that government should put in place policies that support economic activities that can lead to increase in value added tax collected, and VAT revenue should be used to finance infrastructural development like paved road and urban housing.

Keywords: *Capital expenditure over economic services, Tax gap and Value Added Tax, infrastructural development*

1. Introduction

Every individual desire`s to live a comfortable and decent life and the presence of adequate and efficient infrastructural amenities in a nation determines the standard of living of its residents. Countries that have modern day infrastructural amenities such as adequate and steady power supply, good education, contemporary legislative reforms, efficient property regulation system, transparent electoral processes, progressive trade policies, security, upright regulatory environment, efficient transport system, effective judicial system, industrial growth, access to good health care system, low level of unemployment and corruption as well as low poverty rate are considered to be developed nations while their counter parts that lack the above or have them but not at an advanced level are referred to as developing or under developed nations. Thus, the government of every country strives to provide the above amenities so as to improve the standard of living of its citizens as well as attain the respect associated with being a developed country.

Inability to generate adequate funds can affect the level of infrastructural amenities provided by the government of a State (Adeosun, 2017). Thus, government is always saddled with the responsibility of providing the necessary infrastructure that will spur development as well as meet needs of the contemporary society such as the need to save time. Adegbie and Daniel-Adebayo, (2017). Developed countries around the world have invested substantially in infrastructural development over the centuries and still do, however, many of their developing counterparts in Asia and Africa have struggled with infrastructural challenges for decades and Nigeria is no exception.This lack of investment in infrastructure has given rise to a situation where the economy cannot encourage and sustain start-up businesses that can trigger a growth in the economy.

Infrastructural development projects are classified into administration, economic services, social and community services and transfers. capital expenditure on administration, includes cost of ensuring internal and external security, capital expenditure on economic activities relates to investment in real infrastructure such as road, power, communication, housing and transportation. capital expenditure on social and community services relates to cost of providing a good health system, education and urbanization or rural areas and capital cost on transfers are incurred to

balance trade and debt financing (Nworji, Okwu, Obiwuru, & Nworji, 2012). This study adopted capital expenditure on economic activities as a proxy for infrastructural development.

In the global economy, taxes are one of the most secured forms of financing infrastructural deficit or gap (Gasper & Wingender, 2016). The essence of taxation is to provide government with funds to provide basic amenities, infrastructure as well as close the gap or redistribute income among various existing social classes in a country (Asaolu, Olabisi, Akinbode & Alebiosu, 2018). However, there seems to be a gap between the expected funds to be generated through tax collection and the actual amount collected. Such gap is described as a tax gap.Tax Gap is the difference between the potential revenue to be collected legally and the actual revenue collected (Khwaja & Iyer, 2014). A link was established between the low level of taxes collected versus the expected level of infrastructure in a country (Danquah & Osei-Assibey, 2016). For Nigeria, it has become pertinent to determine the effect of Value Added Tax gap on infrastructural development as The United Nations noted that Nigeria will have to improve on internal revenue mobilization if it wants to remove over 70% of its population that are currently in the poverty bracket out of that bracket. Raczkowki and Mroz (2018) noted that the revenue from tax remains an important source of income to every government to fund infrastructural development and that government must closely monitor tax revenue heads and estimate tax gaps in order to achieve optimal revenue collection. Adegbie and Daniel-Adebayo (2017) noted that Value Added Tax was significantly positive to economic development but the study failed to estimate the Value Added tax gap. Akintoye *et al*. (2015) asserted that deficit in Infrastructural development in Nigeria is affecting economic growth and low level of tax revenue is contributing to the challenges. However, the study did not test the effect of Value Added tax gap on infrastructural development in the economy.

Most recent of the reform is the Nigerian Tax Policy of 2017, noted that tax gap, resulting from the informal sector was high and that the government needs to diversify the economy by focusing on tax revenue generation through indirect taxes such as value added tax. The troubling state of infrastructure in Nigeria and the need to estimate the impact of Value Added tax gap on the ability of government to provide the needed level of infrastructure is the focus of this study. The main objective of this study was to examine the effect Value Added tax gap on capital expenditure over economic servicesin Nigeria.Findings and recommendations from this study are expected to be useful to scholars, tax regulatory agencies as well as government policy making bodies.

2. A Review of Extant Literature

2.1. Conceptual Review

2.1.1. Capital Expenditure on Economic Services

Babatunde (2018) defined Government Capital Expenditure on Economic Services as expenditure on education, transportation, communication, health infrastructure, agriculture as well as investment in natural resources. This refers to the real infrastructure within the country such as roads, communication network, rail tracks, National airline fleet, refineries hospital buildings and all agro-related industries (Asaolu *et al.,* 2018; 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 (Adegbie & Daniel- Adebayo, 2017).

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. These are assets that can be seen and felt and used by all citizens regardless of location. While Adegibe and Daniel- Adebayo (2017) explained the meaning of economic services, Babatunde (2018) highlighted the different examples of expenditure on economic activities in explaining the meaning.

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, therefore, 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 a short time is used to travel long distances and business activities can thrive.

2.1.2. Tax Gap

Tax gap is the variance between the actual or expected tax liability in any tax or year and the amount of voluntary tax paid. The intended tax to be paid by tax payers can differ from the statutorily calculated or computed tax to be paid. The difference makes up the tax gap. The time of payment of tax can also contribute to the tax gap as late payment of due taxes will increase the existing tax gap (Usman, 2018;Raczkowski& Mroz 2018; Raczkowsk 2015). Tax Gap is usually computed net of payments related to late payments, penalties or interest on under reported or unpaid taxes. Gross tax gap is the total tax gap computed in a year; net tax gap however is the gross tax gap less late payment received or payment received as a result of tax enforcement activities in the year (Toder, 2007).Non-filing, Under-filing of tax owed and Under-remittance of taxes are reasons why tax gap exists.

2.1.3. 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 on which it is imposed. Value Added Tax 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). The tax is paid on the total cost of a goods less total cost of material and production. It is a flat rate of 5% in Nigeria with a proposal of increasing it to 7.5% in Value Added Tax is collected and remitted by the retailer of a product**.** Value Added Tax in Nigeria is administered by the Federal government and distributed among all arms of government. Value Added Tax is a common form of taxation that focuses on indirect incomes. They are taxes on goods and services that is borne by the final consumer of the product. In Nigeria, the Value Added Tax rate is 7.5% and it covers a wide variety of economic transactions excluding books, medical drugs, agricultural related items and baby products.

2.2. Theoretical Consideration

2.2.1. Multiple Indicators Multiple Causes Theory

This paper was based on the Multiple Indicators Multiple Causes Theory that was propounded by Frey and Weck Hanneman in 1984.This theory of estimating the tax gap utilizes two variables: observed and indicator. The observed variable helps to identify the causal factors of the shadow economy such as level of government spending (taxation), provision of infrastructure, GDP per capita, government consumption, cost of security provided, level of unemployment and corruption index. Indicator (latent) variable however identifies the shadow economy which can contribute to the Tax gap. factors such as cash circulating in the economy, level of growth per GDP, number of employment outside official system are measured to estimate the latent variable(Nchor & Adamec, 2015;Jöreskog, Karl & Goldberg, 1975).The major assumption of this theory is that there exists a latent relationship between the indicator and the observed variables. The Structural Equation Modelling is used to compute the observed variables

2.3. Empirical Review

Alavuotunki, Haapanen and Pirttilä (2019) and Sok-Gee, Zulkufly, and Mohd Zaini (2017) examined the impact of VAT on inequality, public spending and government revenue While Alavuotunki, Haapanen and Pirttilä (2019) reported that Value Added Tax caused inequality in the income base and there was no effect on consumption inequality. This result is in contrast to Sok-Gee, Zulkufly and Mohd Zaini (2017) who noted that VAT enhanced government spending on economic growth and that government spending promotes economic growth as well as VAT systrtedfxdem moderating can improve democratic and legislative strength of government.Adegbite, (2018); Onuora, Okegbe and Ezejiofor (2017); Ibadin and Oladipipo (2016) all conducted, with empirical evidence, the effect of the Value Added Tax on Nigerian economy for period ranging from 1994 to 2015 Secondary data was obtained from Central Bank of Nigeria statistical bulletin and multiple regression was employed to analyze data on Gross Domestic Product, value added tax, inflation, exchange rate and export duty. Results from the studies revealed that Value Added Tax had an overall significant effect on Economic growth. VAT has a negative relationship with per capita income and VAT does not significantly affect Gross Domestic Product of the economy.Onuora, Okegbe and Ezejiofor (2017) however noted that VAT has a negative relationship with per capital income and VAT does not significantly affect Gross Domestic Product of the economy. This position aligns with Adegbite (2018) who noted that VAT rate had negatively affected income and aggregate consumption of individuals. Adegite (2018) further noted that Value Added Tax contributes to the government finance significantly and government role of monitoring and collecting VAT must be conducted equitably and orderly in order to close loopholes, increase revenue collected and deter illegal behaviour on the part of tax administrators that divert government revenue into their personal coffers. The study noted further that the reduction in income tax with a corresponding increase in VAT had a substitute effect and revenue generated increased. Onuora, Okegbe and Ezejiofor (2017) agreed that overall, Value Added Tax contributed to economic growth but that the development will be slow, the study recommended that fiscal policies that will increase expenditure on infrastructure should be considered by the government in order to stimulate economic activities in Nigeria and investment should be on agriculture, industries and technology which form part of the capital expenditure on economic services. Ibadin and Oladipipo (2016) stated that changes in VAT administration will slow down the economy for two years and take a year to become effective and that VAT proceeds must be invested in infrastructural development such as economic services which will in turn increase VAT collectable.lzedonmi and Okunbor, (2014); Onwuchekwa and Aruwe (2014); Onaolapo, Aworemi and Ajala (2014) empirically reviewed the contribution of Value Added Tax to the Nigerian economy using similar variables. The studies agreed that Value Added Tax revenue was significant and it contributed 92% significant variance to Nigeria`s GDP, thus government should invest in infrastructural development that can spiral economic activities that will further increase Value Added Tax related revenue. Onwuchekwa and Aruwa (2014) agreed that revenue from Value Added Tax has consistently increased and recommended that government should estimate the Value Added Tax gap and causes in order to close the gap. Onaolapo, Aworemi and Ajala (2014) also empirically related the significance of Value Added Tax to the theory of spend and tax noting that Value Added Tax has recorded an annual increase for over 10 years on the economic activities of Nigeria. The study noted further that past Value Added Tax revenue could significantly predict future Value Added Tax revenue and assist in the diversification policy of the Nigeria Tax Policy of 2012 now replaced by the 2017 edition.Ihenyen and Ebipanipre (2014) and Abdul-Rahman, Joshua and Ayorinde (2013) examined the impact of Value Added Tax and taxation on revenue generation and growth and development in Nigeria. Data was derived from Central Bank of Nigeria Bulletin and Federal Inland Revenue Service. The empirical results revealed a link among companies' income tax, Value Added Tax and

economic growth in Nigeria. The studies noted that taxation is an important instrument to economic growth and additional measures must be put in place to ensure that loopholes are closed and tax evasion and avoidance is reduced in order to ensure proper income distribution. Regulatory bodies were charged with the responsibility of collecting taxes and censure compliance by taxpayers. Other recommendations of the studies are that taxes collected must be adequately distributed within the economy in order to achieve uniform development. Also, the training of tax administrator was important in order to encourage honest behaviour.

3. Methodology

The research design adopted for this work was ex-post facto. Prior studies such as Usman (2018),Danquah and Assibey (2016) and Raczkowski (2015).This study considered the effect of Value Added Tax gap on economic services in Nigeria covering the period of twenty-five (25) years from 1994 to 2018 for all the variables, Nigeria represents the target population of the study. Value Added Tax revenue head is administered by the Federal Government and thus data was easily assessed and verified. The proxy for infrastructural development was economic services and this represented the dependent variables, while the independent variables is Value Added Tax. The tax gap was computed from the underground economy and the variables that were used for the underground economy were the real balances of the money supply, interest rates and value added tax. The data from the Federal Inland Revenue Service (FIRS) and the Central Bank of Nigeria (CBN) Statistical Bulletin was examined and confirmed valid and reliable by the office of the Auditor - General of the Federation. The nature of data used in this study to achieve the stated objectives was time series in nature. Thus, the study was subjected to three categories of test. First, descriptive statistics and the purpose was to know the descriptive characteristics of the data. Therefore, statistics such as the mean, maximum, minimum values, standard deviation and the Jarque-Bera test were computed to know the behaviour of the variables. In addition, unit root tests were performed to examine the time series properties of the variables of study. To achieve this, the Augmented Dickey-Fuller (ADF) and the Phillip-Peron (PP) will be used.

Second, the Auto Regressive Distributed Lag (ARDL) approach advanced by Pesaran and Pesaran (2001) was used to examine the long-run and short run co- integrating dynamics of tax gap on infrastructural development in Nigeria. Third, is the diagnostic tests; the purpose of these tests was to examine if the estimated models were not spurious. To this end, five diagnostic tests were conducted and they are; i. Serial Correlation LM Test to determine if the successive error terms are correlated; ii. Breusch-Pagan/Harvey test for homoscedasticity residuals; iii. Ramsey Regression Equation Specification Test (RESET) used to examine the existence of linear relationship between the dependent and independent variables; iv. The Jarque-Bera test to examine the relation between the weakness and flatness as well as the degree of asymmetry of the variables; v. The cumulative sum of residuals (CUSUM) and the cumulative of squared residuals were also used to examine the stability of the model. E-View version 10 was used to facilitate the estimation process.

3.1. Model Specification

3.1.1. Tax Gap Computation

In determining the tax gap on Value Added Tax, the computation of the underground or the shadow economy is required. This study therefore follows the Multiple Indicators and Multiple Causes (MIMC) approach advanced by Frey and Hanneman (1984). The regression equation for the underground economy is given as;

$$LRMBAL_t = \beta_0 + \beta_1 LRMBAL_{t-1} + \beta_2 LVATGDP_t + \beta_3 LRATES_t + \beta_4 LCPI_t \quad (3.1)$$

Where:

LRMBAL = Natural logarithm of the real money balances which is defined as broad money supply deflated by the Consumer Price Index.

LRMBAL (-1) = Natural logarithm of the previous value of the real money balances

LVATGDP = Natural logarithm of the Value Added Tax expressed as a percentage of the Gross Domestic Product for modelling the effect of tax burden on liquidity demand

LRATES = Natural logarithm of one-year bank deposit rates to account for the opportunity cost of cash demand.

LPCI = Natural logarithm of the per capita income to account for the effect of precautionary and transaction demand of money

After the computation of equations 3.1 the underground economy is computed as;

$$UE = LRMBAL_t - \{\beta_0 + \beta_1 LRMBAL_{t-1} + \beta_2 LVATGDP_t + \beta_3 LRATES_t + \beta_4 LCPI_t\} \quad (3.2)$$

It should be noted that equation 3.2 is the underground economy for Value Added Tax. From equations 3.2, the tax gap is computed as;

$$VATG = UE.VATR \quad (3.3)$$

Where

UE = Underground Economy

VATG = Value Added Tax gap.

VATR = Value Added Tax rate

3.2. Functional Equations

The functional equations for the specific objectives examining the relationship between Value Added tax gap and infrastructural development are stated below:

Y = f(X, Z)

Y = dependent variable = Government Capital Expenditure on Economic Services (LGCEES)
X = independent variable =Value Added Tax gap (VATG)
Z= Infrastructural Development (LINFDEV)
Y = y_1, y_2 (measures of dependent variable)
X = x (measures of independent variable)
Where:
Y_1 = Government Capital Expenditure on Economic Services (LGCEES)
x= Value Added Tax Gap (LVATG)

3.2.1. Functional Relationships
LGCEES = f(LVATG) ----------Equation$_1$
Where:
Equation1 measures the of Value Added Tax gap on Capital Expenditure on Economic Services.

3.2.2. The Models
The model equations for the functional relationship are specified below:
$LGCEES_t = \alpha_0 + \alpha_1 LVATG_t + \varepsilon_t$ …….. Model1
Where:
α_{0s}, are the intercepts; α_{1s} are the coefficients of the explanatory variables; t represents the time series observation; ε_t are the error or disturbance terms. The *a-priori* expectation is that an increase in tax gap realized in form of revenue for the government will lead to increase in infrastructural development.

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4. Data Analysis, Result and Discussion of Findings

4.1. Descriptive Statistics

In this section, the dependent variable Natural Logarithm of Government Capital Expenditure on Economic Services(LGCEES). The independent variable is Value Added Tax (LVATXG) Annual data for twenty-five years were used, from 1994-2018 for Nigeria.

Variables	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob	Obs
LINFDEV	2.16	2.46	3.23	0.61	0.86	-0.60	1.85	4.15	0.13	38
LGCEES	1.72	2.23	2.88	0.18	1.02	-0.62	1.71	4.75	0.09	38
LVATG	0.61	0.21	3.97	2.38	2.50	-1.02	3.64	2.78	0.11	25

Table 1: Descriptive Statistics
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 Government Capital Expenditure on Economic Services (LGCEES). The independent variable into the logarithms of Value Added Tax gap (LVATG). The estimation process was facilitated using Eviews 10.

4.1.1. Interpretation
LINFDEV,LGCEES and LVATG: The mean value of infrastructural development is 2.16 with a median of 2.46,1.72 with a median of 2.23 and 0.61 with a median of 0.20 respectively. In addition, it shows that the maximum value is 3.23 and the minimum value 0.61,.88 and the minimum value 0.18,the maximum value is 3.97 and the minimum value 2.38 respectively. It also shows that infrastructural development, Government Capital Expenditure on Economic Services and Value Added Tax gap follows normal distribution because the Jarque-Bera test shows that the variable is normally distributed with a chi-square statistic of 4.15, 4.75 and 2.78.

4.2. Descriptive for Tax Revenue Gap for Nigeria 1981-2018

Multiple Indicators and Multiple Causes (MIMC) approach advanced by Frey and Hanneman (1984) was used to estimate the tax gap in Table 4.1b and graphically illustrated in Figure 4.1a, for the study, it was observed that there is significant amount of tax revenue gap in Nigeria. This is not unconnected with the high number or growth in the informal sector of the economy. The mean value of the Value Added Tax gap stood at N1.80 billion and the highest value was N6.38 billion in 2000 and the lowest value being N0.01billion in 2005. The value is worrisome as a lot of government revenue which should have been invested into infrastructure is lost due to loopholes in Value added tax administration, with the increase on VAT rate to 7.5%, revenue from VAT should increase with proper management.

Year	LVATG
1994	3.97
1995	0.29
1996	2.78
1997	4.02
1998	5.41
1999	2.10
2000	6.38
2001	2.23
2002	0.87
2003	0.76
2004	1.45
2005	0.01
2006	1.25
2007	0.24
2008	1.95
2009	0.22
2010	1.00
2011	1.15
2012	0.07
2013	0.13
2014	1.17
2015	0.21
2016	2.58
2017	1.85
2018	2.85

Table 2: Tax Gap in Nigeria from 1981-2018 in Billions of Naira
Source: Researcher's Computation, (2020)

Note: Table 2 presents the computed tax revenue gap based on the Multiple Indicators and Multiple Causes (MIMC) approach advanced by Frey and Hanneman (1984) for Value Added Tax (LVATG)

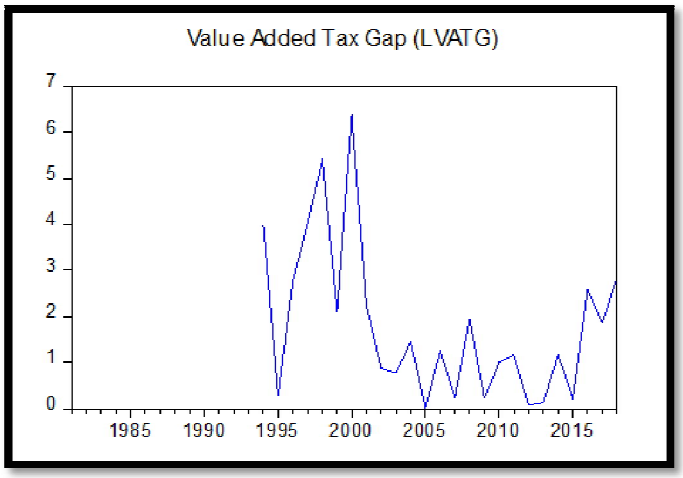

Figure 2: Value Added Tax Revenue Gap in Nigeria from 1994-2018
Source: Researcher's Computation, (2020)

Table 2 shows the VAT tax gap for 25 years starting from 1994 to 2018,while Figure 2 depicts graphically the VAT gap for the same period.1998 experienced the highest tax gap at 5.41B and 2005 had the lowest at 0.01B

4.2.1. Panel A: Long Run Estimates

Dependent Variable: LGCEES				
Variable	**Coefficient**	**S.E**	**t-stat**	**Prob**
LVATG	0.273	0.060	4.580	0.000
C	2.554	0.104	24.629	0.000
Panel B: Short -Run Estimates				
Variable	**Coefficient**	**S.E**	**t-stat**	**Prob**
C	0.024	0.013	1.829	0.084
D(LVATG)	0.123	0.012	10.258	0.049
ECM(-1)	-0.379	0.115	-3.294	0.004
Panel C: Diagnostic Tests		**Statistic**	**Prob.**	
Bound Test		5.256	0.000	
Serial Correlation		0.028	0.972	
Heteroscedasticity		2.116	0.112	
Normality Test		0.565	0.764	
Linearity Test		0.016	0.901	
R-square		0.536		
		CUSUM	CUSUMSQ	
Stability Test		Stable	Stable	

Table 3: Full Information on the Effects of Value Added Tax Gap on Government Capital Expenditure on Economic Services
Source: Researcher's Computation, (2020)

Notes: Table 4.6 reports the long-run estimates, short run estimates and the diagnostic tests for the relationship between Value Added Tax gap and government capital expenditure on economic services. The dependent variable is the logarithm of Government Capital Expenditure on Economic Services (LGCEES) while the independent variable is Value Added Tax gap (LVATG). The critical values for the bound test are 4.26, 3.50 and 3.13 at 1, 5 and 10 per cent respectively.

4.3. Interpretation

$$LGCEES_t = \beta_1 + \beta_2 LVATG_t + \varepsilon_t$$
$$LGCEES_t = 2.554 + 0.273 LVATG_t + \varepsilon_t$$

4.4. The Long-Run Dynamics

From Table 3 the bound test statistics value is 5.256 and it is greater than the critical values bound at upper bound (I1) of 4.26, 3.5 and 3.13 at 1 percent. The estimated long-run coefficients (elasticities) for the UECM model are given in the tables Panel A of Table 3 In the long run, there is evidence that Value Added Tax gap has positive relationship with government capital expenditure on economic services. This implies that increases in Value Added Tax gap realized will lead to increase in the Government Capital Expenditure on Economic Services in Nigeria. Furthermore, (LVATG = 0.273, t-test= 4.580, $\rho<0.05$). This implies that Value Added Tax gap is a significant factor influencing changes within Government Capital Expenditure on Economic Services in Nigeria

Also, a 1 per cent increase in Value Added Tax gap will lead to 0.273 per cent increase in Government Capital Expenditure on Economic Services in Nigeria in the long run. Using the t-stat value of 4.580, the null hypotheses that there is no significant effect of Value Added Tax gap on Government Capital Expenditure on Economic Services in Nigeria was rejected and the alternative hypothesis that there is significant effect of Value Added Tax gap on Government Capital Expenditure on Economic Services in Nigeria was accepted.

4.5. Short-run Dynamics

The result shows that in the short-run Value Added Tax gap has positive and significant relationship with government capital expenditure on economic services. In addition, the estimated coefficient for the ECM_{t-1} reported in Panel B of Table 3 is negative and statistically significant (ECM= -0.379, t-test = -3.294, $p<0.05$). This implies that deviations from Government Capital Expenditure on Economic Services equilibrium path are corrected by nearly 38 per cent over the following year. In other words, the adjustment process is relatively okay in Nigeria. The statistical significance of the ECM_{t-1} confirms the presence of long-run equilibrium relationship between Value Added Tax gap and Government Capital Expenditure on Economic Services in Nigeria.

The R-square is 0.54. This implies that Value Added Tax gap explains about 54 per cent changes in government capital expenditure on economic services, while the remaining 46 per cent were other factors affecting changes in Government Capital Expenditure on Economic Services but were not captured in the model.

4.6. Diagnostic Test

The Linearity Test using Ramsey Reset Test. F-statistics of 0.016 and its ρ-value of 90 per cent is greater than 5 per cent chosen level of significance. This implies that the model is correctly specified and that there is a linear relationship between Value Added Tax gap and Government Capital Expenditure on Economic Services in Nigeria. The Heteroskedasticity Test revealed astatistic of 2.116 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.The Breusch-Godfrey Serial Correlation LM Test, the probability value of F-statistic of 0.028 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 Value Added Tax gap and Government Capital Expenditure on Economic Services in Nigeria.Stability Test for Nigeria, in table 4.5 the CUSUM and the CUSUMSQ test also shows that the estimated model is stable; this is because the plot of CUSUM and CUSUMSQ statistic stays within a 5% significance level portrayed by two straight lines.

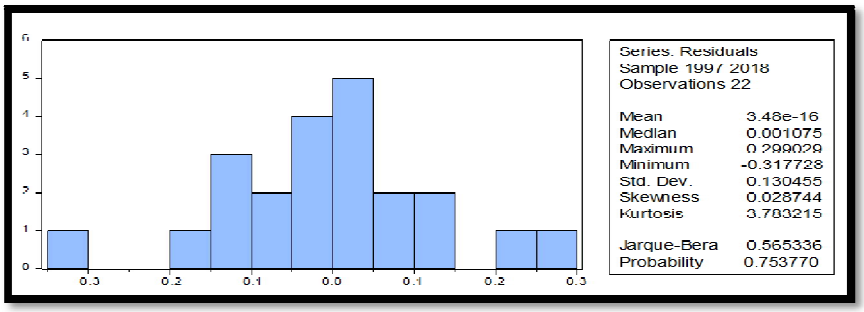

Figure 3: Normality Test –Jarque Bera Statistic

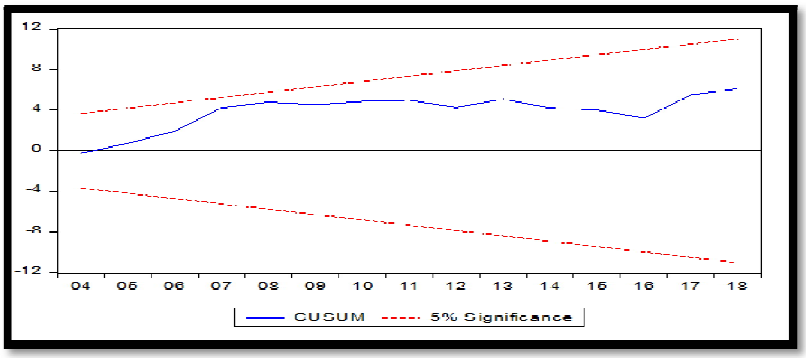

Figure 4: Stability Test - Plots of Cumulative Sum of Residual

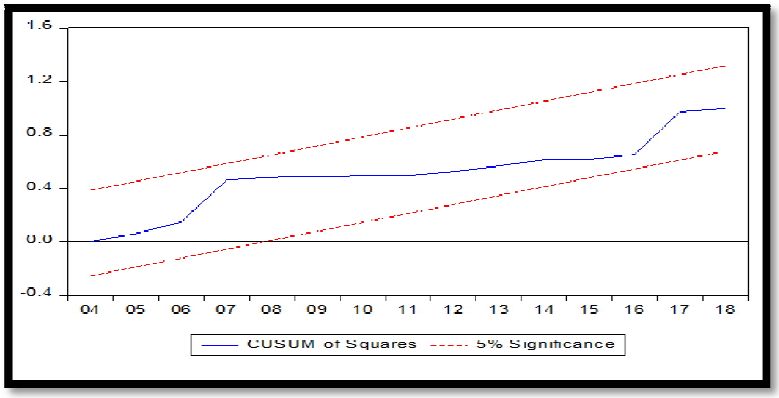

Figure 5: Stability Test - Plots of Cumulative Sum of Square Residual

7.7. Discussion of Findings

Akintoye *et al,* (2015), reported that lack of adequate power in Nigeria negatively affected the economic growth of the country, this position aligns with the outcome of this study that revealed a positive relationship between VAT and capital expenditure on economic services.

Fasoranti (2016) results revealed that expenditure on health, transport and communication was negative. This is divergent to the outcome of this study that revealed a positive relationship between tax gap realized and capital

expenditure on economic services.Edame and Fonta (2014)noted that increased expenditure on education had a negative effect on growth and increased expenditure on transport and communication and health had a positive effect on the economy. These findings are divergent to the outcome of this study that revealed a positive relationship between tax gap realized and capital expenditure on economic services. Alavuotunki, Haapanen and Pirttilä (2019) reported that Value Added Tax caused inequality in income base and there was no effect on consumption inequality, this result is in contrast to Sok-Gee, Zulkufly and Mohd Zaini (2017) who noted that Value Added Tax enhanced government spending on economic growth and that government spending promotes economic growth. The outcome of this study aligns with the position of Sok-Gee, Zulkufly, and Mohd Zaini (2017).Adegbite, (2018); Onuora, Okegbe and Ezejiofor (2017); Ibadin and Oladipipo (2016) all agreed with empirical evidence thatValue Added Tax is significant in the Nigerian economy.Results from the studies revealed that Value Added Tax had an overall significant effect on Economic growth and this position aligns with the outcome of this study. Simionescu and Albu (2016) who analysed the importance of Value Added Tax on economic growth in five Central Eastern countries (Bulgaria, Czech Republic, Hungary, Poland & Romania). Dragos (2014) also conducted a study on the Value Added Tax gap in Europe for 2008-2014. Both studies revealed that Value Added Tax had a positive effect on economic growth and this agrees with the position of this study.

5. Conclusion and recommendation

The model focused on the effect of tax gap on capital cost on economic services as it relates to infrastructural development and this was explained by the impact of tax gap on Value Added Tax, the model covered a period of 25 years from 1994 to 2018. This study found support from prior research findings on tax revenue and economic growth. Earlier works have documented that outcomes that are mixed. While some studies provide evidence of ValueAdded Tax on infrastructural development, it is noticeable that not all studies have reached the same conclusion on the discussion. The implication of the findings to Regulators is that focus should be on Value Added Tax as it has a significant effect on Capital Expenditure on Economic Services particularly now that the VAT rate has been increased. The study examined the effect of Value Added Tax gap on Government Capital Expenditure on Economic Services in Nigeria. In the long and short run there is evidence that Value Added Tax gap have positive relationship with government capital expenditure on Economic Services. This implies that decrease in Value Added Tax gap will lead to an increase in Government capital expenditure on Economic Services in Nigeria. This implies that Value Added Taxis a significant factor influencing infrastructural development in Nigeria. Consequently, the conclusion of this study is that Value Added tax gap has an effect on government capital expenditure on economic services and subsequently, infrastructural development. The study recommends that Government focus on increasing tax revenue as this will lead to an increase in economic services that can trigger development. Value Added Tax revenue can be increased by enacting policies to increase the tax net and encouraging newly enumerated tax payers to pay voluntarily in the first few years, whilst closing existing loopholes in the tax administration and collection process.

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