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Tax Revenue and Economic Growth: Empirical Evidence from Nigeria

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Abstract: Organizations reduced their tax revenue through tax evasion and avoidance, thereby affecting the economic growth of the country. In an attempt to further stress this assertion, this study aims to empirically examine the effects of tax revenue on economic growth in Nigeria. Tax revenue was a proxy with PPT, CIT, VAT and CTD, while economic growth was proxy with GDP. Ex post facto research design was employed, while time series quarterly data were collected from the statistical bulletins of CBN and FIRS for 10 years (2011-2020). Data collated were analyzed using descriptive analysis, unit root test, bounds cointegration test and ARDL. The findings revealed that PPT, CIT, VAT and CTD had positive insignificant effects on economic growth. The study concluded that tax revenue had insignificant effects on the economic growth of Nigeria and therefore, recommended that proper tax audit should constantly be carried out to reduce tax evasion and avoidance.

Keywords: *Tax revenue, Economic growth, Company income tax, Value added tax, Petroleum profit tax, Custom and excise duties, Gross domestic product.*

1. Introduction

The collection of taxes and fees is a vital means through which government generates public revenues in quantum to enable her to finance several of her investments in human capital, infrastructure, as well as citizens' services and businesses. Taxation is a very important tool for managing the economy as it spurs up public goods financing, regulate consumption pattern, direct production of desired commodities, and above all protect infant industries. Taxation also reduces discrepancies in income distribution (Okoye, 2014). According to Offiong (2013), tax is a compulsory levy on individuals and organizations to the government by established standards for which no direct or specific benefits are accrued to the taxpayer. Ayeni and Omodero, (2022) opine that a greater portion of the nation's responsibilities is funded through taxes. The amount to be paid as tax, the citizen who is due to pay tax, the basis of taxation, the period to pay tax as well as the items on which tax should be paid is solely the responsibility of the government, through the tax agents to decide. Gale (2014) posits that a nation's tax system determines the extent of its economic growth. This corroborates Etim, Nsima, Austin, Samuel and Anselem, (2021) who noted that taxation plays a crucial role in the economic growth of the nations, adding that this benefit of taxes is yet to be harnessed among many developing countries.

This implies that the payment of taxes by individuals and companies usually impacts the level of economic activities in the country, including productivity, consumption, the propensity to save and invest, and the expenditure side of the government. Economic growth is described as an increase in the value of goods and services of a given country over a given period of time. This is measured via GDP. It is a determinant of peoples' living standards. Keynes thought that higher government expenditure will be followed by higher economic growth and also that consumers demand is the primary driving force in an economy. According to the theory of economic growth, for long-term employment in a nation's economic activities, two major conditions must be met. The amount of investment to income must be commensurate with the amount of employment savings. In the same manner, the natural growth rate must equate economy's growth rate for the nation to experience full employment. He further singled out the deficiency of aggregate effective demand as the devil that causes stagnation and unemployment in a nation. Keynes maintained that massive government spending targeted at expanding aggregate demand would be the only way out of economic stagnation.

Government expenditures depend on the revenue accruing through taxation, including petroleum profit tax, company income tax, value-added tax, customs and excise duties (Gbeke & NKak, 2021). In Nigeria, the government is yet to actualize the projected revenue that they expected from taxes which serves as a medium

to increase the accrued government revenue and the country's gross domestic products (Etim, Umoffon & Ekanem, 2020). Tax evasion and avoidance by taxpayers can also result in a reduction in government revenue, which further reduces government expenditure, which amounts to low economic activities as well as poor economic growth. Tax administration and the challenge of information technology have been significant issues affecting the tax system in Nigeria. These include a lack of data management, the diversity of taxes, outdated tax laws, unfavorable tax reforms, tax evasion, tax avoidance and corrupt practices (Ajala & Adegbie, 2020). Proponents of tax cuts claim that lowering the tax rate will spur greater economic growth and prosperity. Opponents maintain that lower taxes will favor the rich who may gain all the profits since they will pay most of the taxes.

The imposition of high tax rates results in the reduction of disposable income of taxpayers, payment of high tax rates reduces their expenditure on necessaries which are to be consumed for the sake of improving efficiency on economic growth. Related empirical studies have been carried out, despite the robust techniques, methods and design adopted by the researchers, the outcomes are nothing but varied findings and conflicting results that are not consistent at all. While some found a positive statistically significant relationship between PPT, CIT, VAT, CED and economic growth (Onakoya & Afintinni 2016; Edewusi & Ajayi; 2019; Olushlola, Oliver, Okon & Osang, 2020; Ewa, Adesola & Essien, 2020; Anisere-Hameed, 2021; Yaro & Adeiza, 2021), others have evidence that the variables have a significant negative effect on economic growth (Asaolu, Olabisi, Akinbode & Alebiosu, 2018; Sani & Ahmad, 2019; Agunbiade & Idebi, 2020; Onoja & Ibrahim, 2020), while some find no significant relationship among the variables (Onoja & Ibrahim, 2020). This necessitated a more thorough work with recent data, hence the study of tax revenue and economic growth in Nigeria using quarterly data from 2011 to 2020.

Objectives of the Study: Specifically, the following objectives will be considered:

- To assess the effects of petroleum profit tax (PPT) on the gross domestic product (GDP) in Nigeria.
- To evaluate the effects of company income tax (CIT) on the gross domestic product (GDP) in Nigeria.
- To assess the effects of value-added tax (VAT) on gross domestic products in Nigeria.
- To examine the effects of customs and excise duties (CTD) on gross domestic products in Nigeria.

Research Hypotheses: Flowing from the objectives, the null hypotheses were equally formed:
Ho_1: There is no significant effect of petroleum profit tax on GDP in Nigeria.
Ho_2: Company income tax has no significant effect on GDP in Nigeria.
Ho_3: There is no significant effect of value-added tax on GDP in Nigeria.
Ho_4: Custom and excise duties have no significant effects on GDP in Nigeria.

2. Literature Review

Conceptual Review: Tax is assessed following a certain framework of apportionment on certain categories of individuals or property in a given tax jurisdiction. Okafor (as cited in Osho, Omotayo & Ayorinde, 2018) viewed the tax as the charges levied on the wealth and income of a person or firm for the social, common and economic benefit of the masses or public. Tax a mandatory and unrequited transfer of wealth to the public sector by individuals or corporate bodies, is charged based on certain yardsticks. Classical economists have the notion that the essence of tax is to raise revenue for the government, however, this notion no longer holds as taxes are used not just for revenue generation but for a number of other things ranging from directing production and consumption pattern to the distribution of wealth that will lead to achieving social welfare through economic development. Meanwhile, the economic relevance of different taxes changes over time, though a strong link exists between a nation's tax structure and its economic growth, (Ihenyen & Ogbise, 2022). Dibia and Onwuchekwa (2019) stated that a well-structured tax system plays many vital roles in encouraging economic growth and development.

The macroeconomic variables responsible for economic growth and development are grossly influenced by the efficacy of the tax system. This is particularly true of developed and developing economies. This implies that the economic development of a nation is a function of the nation's tax base. Therefore, tax reforms, policies and strategies need to change in line with the changing degree of economic development and technology (Kiabel & Nwokah, as cited in Edewusi & Ajayi, 2019). Tax revenue is a dynamic source of revenue

and as such can be manipulated to reflect the dynamic micro and macroeconomic circumstance of a nation, which have the capacity to boost economic growth (Ihenyen & Ogbise, 2022). Tax policies substantially impact economic capacity at both the micro and macro levels, necessitating a crucial stabilizing instrument by monetary authorities. The amount of taxable income in any country has a significant impact on the behavioral pattern of the people economically, thereby affecting their economic decision in terms of choice of work, saving and even investment, this tells on the country's economy. Furthermore, higher tax collection raises the cost of individual welfare, but it also has a significant impact on consumer expenditures by reducing disposable income.

Edewusi and Ajayi (2019) asserted that in numerous developing nations. While the government struggles with budgetary challenges of the increase in government expenditure, not much has been done to improve revenue generation from tax. The government has access to a variety of tax instruments that may be used to generate sufficient income. These tax instruments include corporate and personal taxes, value-added taxes, customs and excise charges, capital gain tax, Withholding Tax, and so on. Nwachukwu, Nwoha and Inyama (2022) aligned with the above statement, noting that government can explore any of the several tax tools to raise funds for its projects. Despite the challenges faced by the Nigerian economy the federal government through its liberation plan announced Nigeria as becoming a better place for business investment. However, tax revenue is indispensable to the growth and development of any nation since is able to spur rural and urban development (Edewusi & Ajayi, 2019). According to Odusola (2006), Petroleum Profit Tax (PPT) as a tax is peculiar to upstream operations in the oil industry, noting that PPT applies to rents, royalties, margins, and profit-sharing, charged oil mining, prospecting and exploration leases.

Petroleum Profit Tax Act (PPTA), notably described Petroleum operations as involving petroleum exploration, sale of crude oil, production and development. Ogbonna (as cited in Onoja & Ibrahim, 2020) opines that the place of the petroleum industry in Nigeria's economic development is significant and strategic in providing the needed revenue to the government. Ani (2004), described CIT as a direct tax charged on companies' gains. Companies Income Tax is chargeable on the profit of any companies incorporated under the Companies and Allied Matters Act, 1990 as amended. This is in line with the presets of section 8(1) of the Companies Income Tax Act (CITA), that CIT is payable upon profits of a company regardless of whether the profit is made in Nigeria, received by the corporation in Nigeria or both. VAT is an indirect tax levied on the consumption pattern of the people (Okoye & Ani, as cited in Onoja & Ibrahim, 2020). Federal Inland Revenue Service (FIRS) described VAT as a consumption tax with strong features of contributing significantly to economic variables, making it easy to administer, collect and difficult to evade.

Theoretical Review: Two philosophical theories such as "The Expediency Theory" and "Benefit Received Theory" were reviewed to underpin the study. The Expediency theory was propounded by Bhartia in 2009. Otu and Adejumo (2013) using this theory emphasized the practicality test as the government option in considering a tax proposal. The theory corroborated the canon of taxation as it buttresses the principles of effectiveness, the efficiency of tax collection, the economic and social objectives of the state and the effects of a tax system should be treated as irrelevant. The Premise of expediency theory lies in the connection between tax liability and state activities. It believes that citizens of a state should be made to pay for services provided to them, hence the need to collect taxes from them (Kiabel & Nwokah, as cited in Edewusi & Ajayi, 2019). It further added that the efficiency of a tax system lies in the ease of administration and collection otherwise it does not what it is. This is because pressures from economic, social and political groups abound where each group tries to structure or lobby the restructuring of tax to suit their group.

Tax is an efficient robust tool for policy decision-making and management of social disturbances by the authorities of the society (Ihenyen & Ebipanipre, 2014). Benefit Received Theory is a theory propounded by Cooper in 1994. The premise of this theory lies in what is called a transactional relationship between the state and the dwellers of the state, such that the state plays a role in satisfying the need of the dwellers (citizens) through the provision of public goods and services as part of its obligation while the citizen, in turn, pays the state for its services through payment of tax to the tone of the benefit enjoyed (Ayuba, 2014). This means that the only reason for the payment of tax by the people is because of the notion that the revenue from the tax is properly engaged towards better amenities and societal development that leads to economic growth. Therefore, the theory sees the benefit of tax from the angle of the quantum of infrastructure

available in society as well as the growth level. In practice, however, the implementation of this theory is difficult following the impossibility of determining the benefits of government services including diffuse benefits like the defense of citizens, resident and non-resident taxpayers (Ahuja, 2012).

Empirical Review: Onakoya and Afintinni (2016) examined the cointegration relationship between tax revenue and economic growth in Nigeria. Engle-Granger Cointegration test and The Vector Error correction model were employed and the result revealed a long-run relationship between taxation and economic growth in Nigeria. It also, suggested a significant positive relationship among PPT, CIT and GDP, whereas economic growth reacted negatively with customs and Excise Duties. Asaolu, et al. (2018), examined the nexus between tax revenue (VAT, PPT, CIT and CED) and economic growth in Nigeria. Data spanning from 1994 to 2015 were gathered and analyzed with Auto Regressive Distributed Lag (ARDL) as estimation techniques while post estimations were done the study found, VAT and CED to have a significant relationship with economic growth, while CIT negatively but significantly related with economic growth, while no significant relationship existed between PPT and economic growth. Sani and Ahmad (2019) examined the impact of tax revenue on aggregate and disaggregate economic growth in Nigeria for the period 1979-2018. ARDL model was employed and the result showed Petroleum Profit Tax and Company Income Tax have a negative but statistically significant impact on economic growth, while custom and excise duties have a positive and statistically significant impact on economic growth performance in the short-run. In a related study by Edewusi and Ajayi (2019), the nexus between tax revenue (PPT, CIT and VAT) and economic growth in Nigeria was investigated.

Data collated were analyzed using multiple regression analysis, co-integration, as well as post estimation tests were done and the study found petroleum profit tax, company income tax and VAT to have a positive significant impact on economic growth. Also, Agunbiade and Idebi (2020) studied tax revenue and economic growth in Nigeria for a period of 38 years (1981–2019). Companies Income Tax, Value Added Tax and Petroleum Profits Tax were the variables of interest. Having analyzed the data using the Vector Error Correction Model (VECM) and other post-estimation tools the study documented a causal relationship between Real GDP and the tax components. The result also showed that the direct tax (CIT and PPT) effect on GDP was low, whereas the indirect tax (VAT) effect on GDP is significantly increased over the period. The dynamic relationship between tax revenue, infrastructural development and economic growth in Nigeria was examined by Ayeni and Afolabi (2020) using time series data covering the period from 1981 to 2018. Vector autoregression (VAR) and other robust estimation tools were employed and the study found that while tax revenue influences economic growth and infrastructure, infrastructure on the other hand does not influence economic growth, though it significantly impacts tax revenue collected.

In the same year, Onoja and Ibrahim (2020) investigated Tax Revenue (PPT, VAT and CIT) and Nigeria's Economic Growth. Secondary data collected were analyzed with regression analysis and the study affirmed no significant but positive relationship between economic growth and Petroleum Profit Tax. While Value Added Tax and Companies Income Tax (non-oil Tax Revenue) revealed a significant relationship with Nigeria's Economic Growth. Subsequently, Olushlola, et al. (2020) assessed tax revenue and economic growth with an econometric approach. Secondary data was employed and analyzed using a multiple regression model and the result suggested a positive relationship between tax revenue and economic growth. Furthermore, in the work of Ewa, et al. (2020), the impact of taxation proceeds (company profits, petroleum profit and value-added tax) on the development of the Nigerian economy covering a period from 1994 to 2018 was determined. The study adopted Ordinary Least Square and found a significant effect of CIT and Value Added Tax on Gross Domestic Product Growth, Petroleum profit tax has little or no effect on Gross Domestic Product growth in Nigeria. In a recent work by Anisere-Hameed (2021), the impact of taxation (PPT, CGT and CIT) on the growth and development of the Nigerian economy was examined.

Data was obtained and analyzed via the Ordinary least square (OLS) regression method and the result showed CGT and PPT as insignificant towards the economic growth of Nigeria. Whereas CIT has a significant effect on economic growth in Nigeria. Similarly, Yaro and Adeiza (2021) investigated the relationship between taxation and economic growth in Nigeria. A simple percentage method was used and the results revealed a positive significant impact of both non-oil revenue and profit tax on the growth of Nigeria. Nwachukwu, Nwoha and Inyama (2022), examined the effect of taxation on economic growth in Nigeria.

Secondary data was gathered and analyzed using OLS and other inferential tools. The results reveal that PPT, VAT, CIT and PIT have a positive and significant effect on the economic growth parameters. Nwobodo, Adegbie and Fakunmoju (2022) examined indirect taxes and the economic growth of Nigeria. The study gathered secondary data on VAT, CED and GDP, using ARDL; the study found that VAT and CED influence GDP positively. Ihenyen and Ogbise, (2022) examined the effect of tax revenue generation on economic growth in Nigeria. Secondary data was obtained from reliable sources, using multiple linear regression, the study found that PPT, CIT and VAT have a positive impact on Nigeria's economic growth while customs and excise duties have a negative impact on Nigeria's economic growth.

3. Research Methods

An ex-post facto design was adopted for this study, while secondary quarterly data were obtained from the CBN Statistical Bulletin, FIRS and National Bureau of Statistics covering the period from 2011 to 2020. The dependent variable is the economic growth proxy by GDP while the independent variable is the tax revenue proxy by PPT, CIT, VAT and CTD. The preliminary analysis includes descriptive statistics and pre-tests which include the unit roots test and co-integration test. Regarding the estimation, the study adopted panel Autoregressive Distribution Lag (ADRL) using pooled mean group (PMG) to examine the short-run and long-run relationship. To evaluate the statistical reliability of the estimates obtained and the adequacy of the model estimated, the post estimation tests such as the serial cross-sectional dependence test and normality test were conducted. The hypotheses were tested at the conventional level of significance of 1%, 5% and 10% were applicable.

The model is specified below:

$$RGDP_t = f(PPT_t, CIT_t, VAT_t, CTD_t) \quad (1)$$

The regression model is expressed as follows:

$$RGDP_t = \beta_0 + \beta_1 PPT_t + \beta_2 CIT_t + \beta_3 VAT_t + \beta_4 CTD_t + \mu_t \quad (2)$$

The econometric form of the model after expressing the same in log-linear form is specified in equation 3:

$$lnRGDP_t = \beta_0 + \beta_1 lnPPT_t + \beta_2 lnCIT_t + \beta_3 lnVAT_t + \beta_4 lnCTD_t + \mu_t \quad (3)$$

Where:

PPT= Petroleum Profit Tax
CIT = Companies Income Tax
VAT =Value Added Tax
CTD = Custom and Excise Duty
β_0 = constant
β_1- β_4 = partial slope co-efficient
μ = error term
t = time

4. Results and Findings

Descriptive Statistics: Table 1 displays the summary statistics of the variables being examined in the study. It could be observed that the measure of variation, given as the standard deviations, is less than the respective averages for the variables. This suggests that there is moderate or less dispersion in the values or observations of the variables over the quarterly sampled period. Meanwhile, customs and excise duties (*CTD*) are observed to have the largest average value of about ₦1065.59 billion over the considered sample period. On average, this takes about 6.42 percent of the real GDP for the period of 40 years. By implication, *CTD* has the largest contribution to tax revenue among the selected tax revenue sources. Following *CTD* is the petroleum profit tax (*PPT*) with an average of ₦536.48 billion which is about 3.23 percent of real GDP. Value-added tax (*VAT*) appears to have the least average value of ₦199.26 billion for the given sample period. Meanwhile, all the variables appear to be positively skewed (long right tail) having positive coefficients of skewness. Correspondingly, all the variables such as *RGDP*, *PPT*, *CIT*, *VAT* and *CTD* appear to have flat-topped distributions (platykurtic) relative to the normal distribution, having their kurtosis coefficients less than the threshold of 3 in the case of moment distribution. Remarkably, the Jarque-Bera statistics for the normality test yield insignificant results for all the variables such that their respective *p*-values are greater than the 5% level of significance. This implies that all the variables are normally distributed.

Table 1: Summary Statistics Sample Period-: 2011Q1 – 2020Q4

Statistics	Variable RGDP	PPT	CIT	VAT	CTD
Mean	16610.65	536.48	281.25	199.26	1065.595
Median	16444.46	524.68	272.43	191.78	947.5838
Maximum	19550.15	888.23	556.27	454.69	1624.340
Minimum	13450.72	176.75	112.36	73.23	741.8300
Std. Dev.	1560.889	195.16	119.6676	98.4194	262.5085
Skewness	0.0412	0.0660	0.6357	0.5976	0.8962
Kurtosis	2.3674	2.0488	2.6231	2.7340	2.4656
Jarque-Bera	0.6782	1.5371	2.9310	2.4989	5.8308
P-value	0.7124	0.4637	0.2310	0.2867	0.0542
Obs.	40	40	40	40	40

Source: Authors' computation (2022).

Pre-Estimation Tests: This section provides the pre-tests results such as unit root and cointegration tests to examine the statistical properties (such as stationarity and linear combination respectively) of the variables being examined.

Unit Root Tests: Table 2 shows the result of the unit test using the ADF unit root test. Thus, the results reveal that only *RGDP* appears to be integrated of order zero, in other, it is an *I(0)* series. This also implies that it is stationary in its level form. Meanwhile, all the tax revenue variables such as *PPT*, *CIT*, *VAT* and *CTD* are integrated of order one, that is, they are *I(1)* processes. This suggests the need for differencing the series to achieve stationarity. Thus, the combinations of *I(0)* and *I(1)*) orders of integration of the variables validate the use of bounds co-integration test to assess the presence of linear combination among the variables.

Table 2: Unit Root Test Results Sample Period: 2011Q1 – 2020Q4

Variable	Test form	ADF- Statistics Constant	Constant & Trend	None	*I(d)*
RGDP	***Level***	-2.6796*	-1.9752	0.6875	***I(0)***
	1st Difference	-	-	-	
PPT	***Level***	-1.0987	-1.6579	-0.3177	***I(1)***
	1st Difference	-5.5918***	-5.5792***	-5.5694***	
CIT	***Level***	-2.0215	-2.4215	1.4533	***I(1)***
	1st Difference	-14.5163***	-14.7208***	-14.142***	
VAT	***Level***	-0.3585	-3.2344	2.9259	***I(1)***
	1st Difference	-6.2309***	-6.1623***	-5.2459***	
CTD	***Level***	0.0310	-2.1385	1.5058	***I(1)***
	1st Difference	-2.4557	-2.5855	-1.9246*	

Source: Authors' computation (2022). Note: ***, ** and * denote statistical significance at 1%, 5% and 10% respectively.

Bounds Cointegration Test*:* Since the variables under consideration have different orders of integration, it is, therefore, paramount to test for possible linear combinations or steady state of equilibrium among the variables. Thus, having different orders of integration suggests the use of the bounds co-integration test (the ARDL bounds test) to examine the existence of the steady state of equilibrium among the variables. Table 3 shows the outcome of the bound's co-integration test of the ARDL approach. However, because F-statistic (6.3759) is greater the critical values of the upper bounds at 1%, 5% and 10% levels of significance. This suggests that there is evidence of a long-run relationship or linear combination among the variables. In other words, real GDP (*RGDP*), petroleum profit tax (*PPT*), company income tax (*CIT*), value-added tax (*VAT*) and custom and excise duties (*CTD*) appear to have a long-run relationship despite having different orders of integration among the variables. Thus, there is a non-existent spurious relationship among the variables.

Table 3: Bounds Co-Integration Test Result Sample Period: 2011Q1 – 2020Q2

F – Statistic:	6.3759	
Level of Significance	**Lower Bounds – I(0)**	**Upper Bounds – I(1)**
1%	3.29	4.37
5%	2.56	3.49
10%	2.2	3.09

Source: Authors' computation (2022).

Model Estimation: Since there is the existence of a linear combination among the variables being examined, the model estimation includes both long-run and short-run estimates. Furthermore, the natural logs of the variables were in the estimation. Therefore, the estimates obtained are expressed as partial elasticity coefficients.

Estimation of ARDL Short-Run Coefficients: Table 4 shows the short run form of the ARDL result. The coefficient (-0.9492) of the *ECT* term called the speed of adjustment is negative and statistically significant (*p*-value = 0.0000) at a 1% level of significance. As expected, the coefficient lies between -1 and 0 for convergence. Thus, this implies that *RGDP* adjusts to *PPT*, *CIT*, *VAT* and *CTD* in the long run. In other words, the system corrects its disequilibrium in the previous period at a speed of 94.92%, thereby restoring it to equilibrium in the current period. Therefore, equilibrium or long-run relationship has been restored among the variables. Meanwhile, *PPT* and *CTD* are not captured in short-run estimation judging by the optimally selected lag. However, most of the short-run coefficients have a statistically significant impact on *RGDP* (economic growth). The explanatory power (adjusted R-squared) of the model is considerably high (92.35%) and thus, suggests that *PPT*, *CIT*, *VAT* and *CTD* are good predictors of the growth of the economic growth in Nigeria in the short-run for the given sampled period.

Table 4: Estimated ARDL Short Run Coefficients Sample Period: 2011Q1 – 2020Q4 Dependent Variable: *RGDP*

Independent Variable	**Coefficient**	**Std. Error**	**t-Statistic**	***p*-value**
$\Delta GGDP_{t-1}$	0.6416***	0.1527	4.2010	0.0004
ΔCIT_t	0.1035***	0.0187	5.5288	0.0000
ΔCIT_{t-1}	-0.0795**	0.0347	-2.2889	0.0326
ΔCIT_{t-2}	-0.0117	0.0262	-0.4462	0.6600
ΔCIT_{t-3}	-0.0446**	0.0197	-2.2608	0.0345
ΔVAT_t	0.1082**	0.0419	2.5846	0.0173
ΔVAT_{t-1}	-0.0898*	0.0459	-1.9560	0.0639
ΔVAT_{t-2}	-0.0861	0.0505	-1.7061	0.1027
ΔVAT_{t-3}	-0.0714	0.0543	-1.3132	0.2033
ECT_{t-1}	-0.9492***	0.1815	-5.2293	0.0000
R-squared	0.9432			
Adjusted R-squared	0.9235			

Source: Authors' computation (2022). *Note: ***, ** and * denote statistical significance at 1%, 5% and 10%* respectively.

Estimation of ARDL Long Run Coefficient: Table 5 reports the result of the long run equation of the ARDL. Thus, the statistical tests of the significance of the individual coefficients are provided below:

Petroleum Profit Tax and GDP in Nigeria: As shown in Table 5, changes in petroleum profit tax (*PPT*) result in a positive impact on economic growth (*RGDP*) with a partial regression coefficient of 0.0294. This implies that a 1% rise (fall) in *PPT* will on average, lead to a rise (fall) in *RGDP* by about 0.029% in the long run holding other variables constant. Statistically, the changes in *PPT* exert a positive significant impact (p-values = 0.0973 < 0.1) on the growth of the Nigerian economy in the long run. Seemingly, the statistically significant effect of *PPT* on *RGDP* may be considered to be weak having a *p*-value (0.0973) close to a 10% (0.1) level of significance. Nevertheless, the null hypothesis that "petroleum profit tax has no significant impact on economic growth in Nigeria" can be rejected. Furthermore, *RGDP* appears to be inelastic with respect to *PPT*

since the partial elasticity coefficient (0.029%) is less than 1%. That is, the percentage in *RGDP* is less than the percentage in *PPT*. However, economic growth responds positively and significantly to petroleum profit tax for the given sampled period.

Company Income Tax and GDP in Nigeria: As shown in Table 5, changes in company income tax (*CIT*) yield a positive impact on economic growth (*RGDP*) with a partial regression coefficient of 0.1815. This implies that a 1% rise (fall) in *CIT* will on average, lead to a rise (fall) in *RGDP* (economic growth) by about 0.18% in the long run holding other variables constant. Statistically, the changes in *CIT* exert a positive significant impact ($p = 0.0001 < 0.01$) on economic growth in Nigeria in the long run. Thus, the null hypothesis that "company income tax has no significant impact on economic growth in Nigeria" can be rejected. Nevertheless, *RGDP* is *CIT* inelastic since the elasticity coefficient (0.1815%) is less than 1%. That is, the percentage in *RGDP* is less than the percentage in *CIT*. Nevertheless, economic growth responds positively but insignificantly to company income tax for the given sampled period.

Value-Added Tax and GDP in Nigeria: As revealed in Table 5, changes in value-added tax (*VAT*) result in a positive impact on economic growth (*RGDP*) with a partial regression coefficient of 0.0837. This implies that a 1% rise (fall) in *VAT* will on average, lead to a rise (fall) in *RGDP* (economic growth) by about 0.084% in the long run while holding other variables constant. Statistically, the changes in *VAT* exert a positive significant effect (p-values = 0.0124 < 0.05) on Nigeria's economic growth in the long run. Thus, the null hypothesis that "value-added tax has no significant effect on economic growth in Nigeria" can be rejected. In addition, *RGDP* is *VAT* inelastic having a partial elasticity coefficient (0.0837%) being less than 1%. In other words, the relative change in *RGDP* is less than that of *VAT*. Nevertheless, Nigeria's economic growth responds positively and significantly to value-added tax for the considered sample period.

Custom and Excise Duties and GDP in Nigeria: As shown in Table 5, changes in custom and excise duties (*CTD*) yield a positive impact on economic growth (*RGDP*) with a partial regression coefficient of 0.1298. This implies that a 1% rise (fall) in *CTD* will on average, lead to a rise (fall) in *RGDP* (economic growth) by about 0.13% in the long run holding other variables constant. Statistically, the changes in *CTD* exert a positive significant impact (p-values = 0.0001 < 0.01) on economic growth in Nigeria in the long run. Thus, the null hypothesis that "custom and excise duties have no significant impact on economic growth in Nigeria" is rejected. Numerically, *RGDP* appears to be inelastic with respect to *CTD* since the elasticity coefficient (0.1298%) is less than 1%. That is, the percentage in *RGDP* is less than the percentage in *CTD*. Nevertheless, economic growth responds positively and significantly to custom and excise duties for the considered sampled period.

Table 5: Estimated ARDL Long Run Coefficients Sample Period: 2011Q1 – 2020Q4 Dependent Variable: *RGDP*

Independent Variable	Coefficient	Std. Error	t-Stat.	*p*-value
PPT	0.0294*	0.0170	1.7358	0.0973
CIT	0.1815***	0.0374	4.8519	0.0001
VAT	0.0837**	0.0306	2.7354	0.0124
CTD	0.1298**	0.0540	2.4042	0.0255
C	9.3672***	0.2017	46.445	0.0000

Source: Authors' computation (2022)**.** *Note: ***, ** and * denote statistical significance at 1%, 5% and 10% respectively*.

Post Estimation Tests (Residual Diagnostics): The residual diagnostics include a serial correlation test, Heteroscedasticity test, normality test, linearity or specification error test (Ramsey RESET test) and stability test (CUSUM test). Table 6 presents the results of the serial correlation test, Heteroscedasticity test, normality test and linearity test. The serial correlation test, using Breusch Godfrey (BG) LM, the method yields an insignificant result since the p-values (0.3451 and 0.1485 respectively) of both the F-statistic (1.1257) and LM statistic (3.8137) are greater than the 5% level of significance, thus, the null hypothesis of no serial correlation cannot be rejected. Thus, the model is free from serial correlation for the considered sample. The heteroscedasticity test, using the autoregressive conditional heteroscedasticity (ARCH) test method, yields an insignificant result suggesting the acceptance of the null hypothesis of homoscedasticity (i.e. absence of heteroscedasticity).

Since the p-values (0.5842 and 0.5710) of both the F-statistic (0.3055) and LM statistic (0.3211) respectively are greater than a 5% level of significance. Thus, the estimated model is free from heteroscedasticity for the given sample period. Furthermore, the normality test result reveals that the residuals of the estimated model are normally distributed as the p-value (0.5601) of the Jarque-Bera statistic (0.8929) is greater than the 5% level of significance (statistically insignificant). The linearity test using the Ramsey RESET test examines whether there is the existence of a linear relationship between the dependent variable (*RGDP*) and the explanatory variables (*PPT*, *CIT*, *VAT* and *CTD*) or whether the model is correctly specified. The null hypothesis is that the model is linear and correctly specified. Thus, since the t-statistic (0.1364) and F-statistic (0.8929) are not statistically significant (that is, having their respective p-values above a 5% level of significance); the null hypothesis for linearity cannot be rejected. This suggests that the estimated model in this is linear or correctly specified.

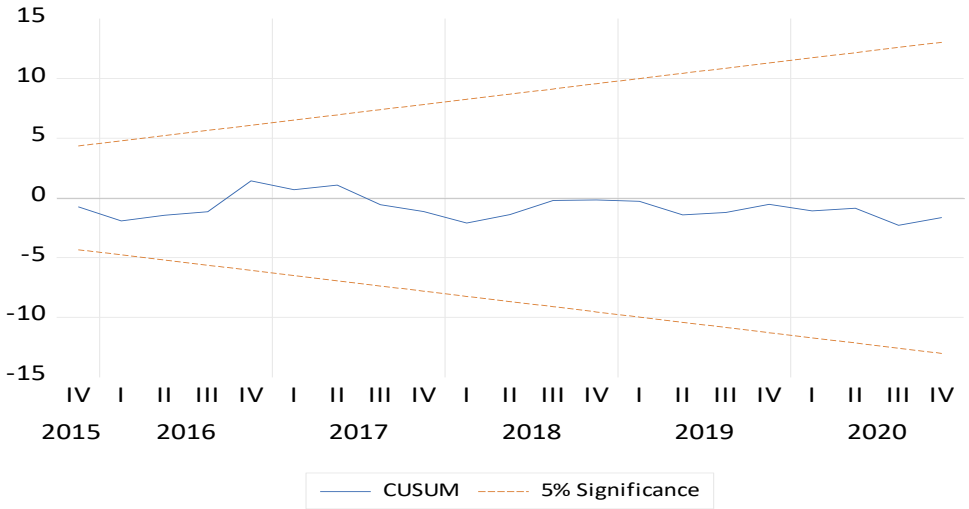
Table 6: Results of Post-Estimation Tests Sample Period: 2011Q1 – 2020Q4

Serial correlation test (BG):		***p*-value**
F-statistic	1.1257	0.3451
LM Statistic	3.8137	0.1485
Heteroscedasticity test (ARCH LM):		***p*-value**
F-statistic	0.3055	0.5842
LM Statistic	0.3211	0.5710
Normality Test:		***p*-value**
Jarque-Bera	1.1593	0.5601
Linearity Test		***p*-value**
t-statistic	0.1364	0.8929
F-statistic	0.0186	0.8929

Source: Authors' computation (2022).

Figure 1 shows the outcome of the stability test using the CUSUM criterion. Since the plot falls within the critical bounds throughout the sampled period at a 5% level of significant, thus, the model is considered to be structurally stable. In other words, the estimates obtained are stable for the selected sample period. Therefore, all the post-estimation test results suggest that the short-run and long-run estimates obtained from the estimated ARDL model are efficient and reliable for policymaking and forecasting having met the underlying assumptions of the ordinary least square (OLS) estimation method.

Figure 1: Plot of Cumulative Sum (CUSUM) of Recursive Residuals



Source: Authors' chart (2022).

Discussion of Findings

This study examined the relationship between tax revenue and Economic Growth in Nigeria from (2011-2020) using quarterly data. Gross Domestic Product was adopted as the dependent variable whereas petroleum profit tax, company income tax, value-added tax and customs and excise duties were the independent variables. The findings of the first hypothesis showed a positive insignificant effect of Petroleum Profit Tax on economic growth (GDP). This is in line with a priori expectation based on the over-dependence of the Nigerian government on petroleum products and could be seen that as an oil-producing country, taxes generated from oil has significantly affected the economic growth of the country. This finding supports some previous researchers' findings (Edewusi & Ajayi, 2019; Ayeni & Afolabi, 2020), but contradicts others (Onakoya & Afintinni, 2016; Asaolu, et al., 2018; Sani & Ahmad, 2019; Ewa, et al., 2020; Onoja & Ibrahim, 2020; Agunbiade & Idebi, 2020; Anisere-Hameed, 2021). The second hypothesis in like manners suggested positive and insignificant effects of Companies Income Tax on economic growth in Nigeria.

This finding is in line with the findings of other researchers (Edewusi & Ajayi, 2019; Ewa, et al., 2020; Olushlola, et al., 2020; Ayeni & Afolabi, 2020; Yaro & Adeiza, 2021; Anisere-Hameed, 2021) but in contrary to the findings of others (Onoja & Ibrahim, 2020; Agunbiade & Idebi, 2020; Sani & Ahmad, 2019; Asaolu, et al., 2018; Onakoya & Afintinni, 2016). Hypothesis three has evidence of the positive insignificant effects of VAT on economic growth in Nigeria. As VAT is a consumption tax, it is very difficult to evade the payment and the result is in line with a priori. This finding supports previous findings (Asaolu, et al., 2018; Edewusi & Ajayi, 2019; Ewa, et al., 2020; Olushlola, et al., 2020; Ayeni & Afolabi, 2020; Agunbiade & Idebi, 2020; Yaro & Adeiza, 2021), but contradicts Onoja and Ibrahim (2020). Finally, hypothesis four also conforms that custom and excise duties have positive insignificant effects on economic growth. It's in line with these authors' findings (Asaolu, et al., 2018; Sani & Ahmad, 2019; Olushlola, et al., 2020; Yaro & Adeiza, 2021) but negates the findings of Onakoya and Afintinni (2016).

5. Conclusion and Recommendations

The main goal of this research was to determine the effects of tax revenue on Nigerian economic growth. This research was done primarily to validate the findings of previous researchers on relevant and similar themes with recent data, as well as, to contribute significantly to the literature. Based on the findings of this study, it was concluded that petroleum profit tax, company income tax, value-added tax and customs and excise duties have a positive insignificant effect on economic growth in Nigeria. The study, therefore, recommends that government needs to articulate policy consistency, build enabling infrastructure and improve operating environment security to help companies in Nigeria thrive since their contribution in terms of payment of CIT has a positive effect on economic growth, encourages Real GDP as well as reduces unemployment, increase productivity, profitability, exportation and tax revenue generation.

Subsequently, the federal government can facilitate the provision of economic and social infrastructures that will increase the level of production in the country and create employment opportunities, to increase customs and excise duties since it affects economic growth positively. The policy that could improve the disposable income of the citizens should be advanced as a way to increase their consumption since consumption tax (VAT), has a positive effect on economic growth. A monetary policy decision that cuts interest rates can be adopted by the government, as low-interest rates make stocks more attractive, raising a household's financial assets. This will contribute to higher consumer spending, an increase in output value-added tax and ultimately an increase in economic growth. Furthermore, federal Inland Revenue Services should take a bold step to ensure that companies comply with tax payments to reduce tax evasion and avoidance since some strategies are used by companies to reduce tax payable, thereby, reducing government revenue which directly affects economic growth in Nigeria.

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