



The impact of tax revenue on economic growth in Nigeria

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Abstract

The study examined the impact of tax revenue on economic growth in Nigeria, looking at the effect of petroleum profit tax, company income tax, value added tax, and custom and excise duty tax on economic growth from 1990 to 2022. The study employed human development index as an indicator of economic growth. Secondary data were used and obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin, Federal Inland Revenue Services (FIRS) database and the United Nations Development Report Database. The method of analysis employed include the autoregressive distributed lag (ARDL) method used to estimate the long- and short-run impact of tax revenue on economic growth, unit root and cointegration tests to determine the stationarity process of the series and long-run equilibrium relationship among the variables. The study using the bounds test found evidence of long-run equilibrium relationship between tax revenue and economic growth. The ARDL result revealed that the three regressors of petroleum profit tax, company income tax and custom and excise duty had insignificant negative effect of human development index, as empirical result indicated that value added tax improved human development index, but not significantly. The study recommend that the Federal Government should intensify efforts towards increasing the collection of tax revenue by digitalizing the tax filing and collection process and blocking tax loopholes exploited to shortchange government tax revenue.

Keywords:

Tax revenue, Economic Growth, Human Development Index, Petroleum Profit Tax.

1. Introduction

Nigeria over the years have experience economic activities level beyond her potential, as the rate of growth of real output level, that is total output level adjusted for inflation, has been weak, stunted and below what the country is potentially able to produce, due to its large pool of human and mineral resources. In 2016, Nigeria recorded consecutive negative growth across all four quarters, with real gross domestic product growing by -0.67% in Q1 2016, -1.49% in Q2 2016, -2.34% in Q3 2016 and -1.73% in Q4 2016. The economy began to improve and grow positively from the Q1 2017 growth of -0.91% to 0.72% in Q2 2017, continuing in the positive growth trajectory to 2.55% in Q4 2019 (NBS, 2019). The level of output decline to 1.87% in Q1 2020, declining further as output grew by -6.10% in Q2 2020 and -3.62% in Q3 2020. Economic activities rebounded as output growth rose from 0.11% in Q4 2020 to 5.01% in Q2 2021. In the years following, real output level fluctuated as real GDP nosedived from 4.03% in Q3 2021 to 3.11% in Q1 2022, and by the end of 2022, the economy grew by 3.52% in Q4 2022 (NBS, 2022). In Q1 2023, the level of aggregate output declined to 2.31%, rising marginally by 2.51% in Q2 2023 and 2.54% in Q3 2023 (NBS, 2023).

The goal of economic growth has been an audacious pursuit of successive government in Nigeria, with scholars suggesting that economic growth, is amongst other things, dependent on the availability of internal resources. These internal resources, some have argued can be acquired through revenue, well within the confines of government activities (Oladipupo & Oladipo, 2022). As noted by Oladipupo & Oladipo (2022), revenues are of two streams, namely, tax revenue and non-tax revenue. While tax revenues are seen as compulsory revenue obtained from levy imposed by government directly on the earned income of individuals and corporation and indirectly on goods and services, non-tax revenue are other tax revenue which the government generates that are not in the form of tax revenue, such as bridge and road tolls, intakes from government leased or rented land and building construction, among others (Oladipupo & Oladipo, 2022). While increasing labour and capital has been pushed as drivers of economic growth, following the pioneering work of Solow (1956), tax revenue is also considered a determinant of economic growth. The role of tax revenue in the economic growth process is championed by the tax handle theory. Tax revenue are a critical source of internal resources and revenue, deployed by policy makers and government in the provision of social and infrastructure facilities that are crucial and supportive of productive activities. With the provision and improvement in infrastructure, security, and government regulatory institutions critical for economic growth, and the importance of capital acquired through tax revenue essential for their provision, tax revenue could be an important factor that determine economic growth. Though tax revenue can support economic growth through the financing of infrastructural facilities and other growth-enhancing programmes, arguments have been made for the negative effect of tax revenue on the level of productivity or output. The negative relationship between tax revenue and economic growth is emphasized by the impact of higher tax rate. Taxes affect labour participation and reduces the incentive to work, which negatively impacts on productivity and economic growth. Higher tax rates distort price signals and reduces the incentive to investment. High taxes also reduce domestic capital accumulation as investors concerned with profit maximization would prefer to invest abroad with lower taxes, reducing domestic capital accumulation and economic growth (Ahmad, Ali & Khan, 2020). Put differently, taxes may hamper economic growth through it effect on marginal productivity of capital, as investment shifts from countries with high taxes to where taxes are lower.

The impact of tax revenue on economic growth has attracted the attention of researchers, policy makers and academicians. From the empirical view point, tax revenue has been shown to promote economic growth (Ali, Ali & Dalmar, 2018; Adebisi, Ibrahim & Abdullahi, 2020; Edori, 2022; Oladipupo & Oladipo, 2022; Tsaurai, 2021), while its impact on economic growth has also been shown to be negative (Maganya, 2020; Ahmad, Ali & Khan, 2020; Obadiaru, Okon & Ayeni, 2024; Oboh, Chinonyelum & Edeme, 2018). This study revisited the nexus between tax revenue and economic growth from the period 1990 to 2022, using the autoregressive distributed lag (ARDL) estimator proposed by Pesaran, Shin & Shin (2001) to estimate the short- and long-run tax revenues that affect economic growth in Nigeria.

This paper is organized into five sections. Section 1 provided the motivation for the study. Section 2 focus on the review of theoretical and empirical literature relating to the subject matters. Section 3 present the methodological approach used for the study. The outcome of the estimation carried out were presented in Section 4. Section 5 concludes the study and offers policy recommendations.

2. Literature Review

Theoretical Literature

In achieving economic growth, there has been suggestions as to how countries can increase their level of productivity and achieve sustainable growth. In the literature, the suggestion on how this can be achieved is myriad and the variables that can bring about economic growth have been proffered. A theory that provides explanation as to how economic growth can be achieved and the factors responsible for growth is the Solow (1956) growth model. The Solow (1956) growth model argues that economic growth is driven by labour and capital and increasing the level of total output will require increasing either labour or capital or both input factors. The suggestion of the model is that, countries desirous of growth can achieve such by increasing capital investment or getting more of her workforce in active productive activities. Another theory relevant in the investigation of how tax revenue impact on economic growth is the traditional tax handle theory. This theory is credited to Solow (1956) and Swan (1956). The argument of this theory is that, there is a relationship between the level of fiscal need and economic growth and development. The major postulation of this theory is that, a certain level of revenue is needed to attain a certain level of income per capita, and this required revenue level can be obtained through taxation (Edewusi & Ajayi, 2019). The theory portends that, economic growth and development is propel by tax revenue. Mansfield (1988) argues that tax structure differs among developed and developing countries, thus what propels economic development. The postulation of the theory is that, as the economy grows and per capita income rises, indirect tax revenue rises relative to direct tax revenue. Mansfield (1988) argues that economic growth and development in developing countries is driven by indirect taxes, while direct taxes stimulate growth and development in developed countries. Hence, for developing countries to grow, there is need to improve the administration and collection process of indirect taxes.

Review of Empirical Literature

Abomaye-Nimenibo, Michael & Friday (2018) examined how tax revenue affect economic activity in Nigeria, focusing on the period from 1980 to 2015. In the analysis of this relationship, the variables of gross domestic product (GDP), company income tax (CIT), petroleum profit tax (PPT) and customs and excise duties (CED) were considered and the multiple regression model was estimated using the OLS method. With cointegration confirmed to exist among the selected variables, it was shown the tax variables of PPT, CIT and CED insignificantly stimulate economic growth. Result from the Granger test was consistent with the OLS result, as there was no evidence of causal link among the growth variables.

Ihenyen & Ogbise (2022) in their evaluation of how economic growth respond to changes in tax revenue, used annual data of Nigeria from 2010 to 2020. Their empirical work considered how petroleum profit tax (PPT), company income tax (CIT), value added tax (VAT), and customs and excise duties (CED) influence economic growth proxy by gross domestic product. It was shown through the use of the OLS method that PPT, VAT and CIT generate positive influence on GDP, as it was reported that GDP declines significantly as CED sourced revenue rises.

Olushlola, Oliver, Okon & Osang (2020) adopted an econometric approach in their study of the economic growth effect of tax revenue. The empirical study focused on the Nigerian economy

and time series data were employed. A linearized model multiple regression model was used and estimated using the OLS method. Long run economic growth was found to be insignificantly driven by tax revenue. Contrast to this finding, the OLS result portrayed domestic investment and government expenditure as factors that contributed significantly to the expansion of the Nigerian economy during the study period.

Oboh, Chinonyelum & Edeme (2018) employed panel dataset that comprise of five (5) ECOWAS countries during 2000 – 2015 and the seemingly unrelated regression (SURE) model in studying the tax revenue types that contributes the most to growth of the economy of the ECOWAS countries. The estimation result indicated that direct tax is unproductive in fostering economic growth. They found that direct tax causes decline in real GDP growth, while total tax and indirect tax significantly stimulated economic activities. Their estimation revealed dampening effect of trade openness on economic growth.

Obadiaru, Okon & Ayeni (2024) evaluated the nexus between tax revenue and economic growth using Nigeria data spanning over three decades from 1991 to 2021. In analysing this relationship, the proxies of tax revenue utilized were corporate income tax (CIT), personal income tax (PIT) and value-added tax (VAT), and gross domestic product (GDP) served as the outcome variable. The determination of the tax revenue type that affect growth the most was done within the autoregressive distributed lag (ARDL) framework, following the ADF test result that the variables were mixed orders. They confirmed the variables have similar trend in the long run and that an increase in VAT significantly spur long-run growth. However, it was indicated that PIT had harmful effect on the expansion or growth of the Nigerian economy in the long run. Also, the positive contribution of CIT to growth was found not to be significant.

Dalango's (2021) empirical study focused on the Ethiopian economy, as the contributory role of tax revenue in determining changes in economic activities was assessed. With real gross domestic product (RGDP) utilized as growth measure, the author explored type of effect total tax revenue exerts on the economy studied, in consideration of other growth determining factors such as investment, government spending on education and health, labour force and inflation. It was confirmed with the help of bounds testing that there is presence of co-movement among the variables as the hypothesis that suggest no cointegration was rejected. For the variables that affect growth, it was reported that long-run growth is enhanced by higher tax revenue. Other variables such as inflation, labour force, investment and government health and capital spending were insignificant in influencing the level of real GDP in the long run. However, short run result showed positive one year lag effect of government health and capital expenditure on real GDP.

Tsaurai (2021) setup a panel comprising eleven (11) emerging economies to examine the economic growth effect of tax revenue for the period that spanned from 2008 to 2018. In the model which the author specified to understand whether tax revenue is an important factor that determines the level of economic activities, economic growth was measured by gross domestic product, and other variables, in addition to tax revenue, suggested by literature to influence growth were explored such as financial development, savings, trade openness, population growth, and government expenditure. The evaluation of the variables that influence growth was performed using the generalized method of moments (GMM) estimator. The Kao test confirmed the existence of co-movement in the growth function and the estimation results shows that growth rises with increased tax revenue, but not significantly. As shown by the GMM result, growth of the economies of the emerging countries is driven by greater trade

openness and tax revenue significantly stimulate growth when there is developed financial system.

Tsaurai (2021) utilizing the dynamic GMM, random effect, fixed effects and panel OLS estimators to analyse panel dataset from 2007 to 2017, explored the determinants of tax revenue for a sample of eleven (11) upper-middle-income countries. The variables of FDI, financial development, trade openness, human capital, urbanization, exchange rate and population growth were analysed for their potential effect on tax revenue during the period. Using the Kao approach, cointegration among the employed series was verified. The author identified trade openness and exchange as having deleterious impact on tax revenue and the factors that improve tax revenue were identified to be financial development, human capital, economic growth, FDI, population growth, urbanization and lag of tax revenue.

Oladipupo & Oladipo (2022) assessed the potency of tax and non-tax revenue in stimulating economic growth in Nigeria from 1989 to 2019. While this was the focus of their paper, they further extended the scope of the empirical work to understanding the role of public sector financial management in the relationship. The estimation approach to achieving this involved the testing for stationary and cointegration and the ARDL method was used for model estimation. Following the use of bounds test, the hypothesis suggesting absence of cointegration was rejected and it was confirmed that the series used for the study move together in the long-run. Increases in tax income, total public revenue and external borrowing were found to promote growth significantly.

Eze (2023) sampled five (5) Anglophone and Francophone countries out of a population of twenty (20) for their panel study of examining the economic growth stimulating role of tax revenue. The period for which the research focused on was from 1991 to 2021 and the sample of countries comprised Nigeria, Togo, Ghana, Burkina-Faso and Mali. The paper assessed the effect of custom/excise tax revenue (CET), capital gain tax revenue (CGT) and property tax revenue (PRT) on real GDP which proxied economic growth. The cointegration test based on the Johansen Fisher method indicated that common equilibrium relationship is present among the variables. The fixed effect result evidence that the revenue sources of capital gain and property income taxes significantly facilitate growth in the economies studied. Moreso, it was reported that exchange rate and inflation had negative and significant impact on the growth index.

Ahmad, Ali & Khan (2020) studied the nature of impact of tax revenue on economic growth in the short and long run using the ARDL method. Nigeria data was used for the period covering 1980 to 2015. In addition to the interest variable of tax revenue, they likewise evaluated the effect of other factors that could potentially affect growth such as trade liberalization, life expectancy and exchange rate. Out of the four variables used to predict economic growth, only three exert significant predictive power. The ARDL result shows that an increase in tax revenue significantly dampen long-run economic growth. Exchange rate appeared with a negative sign and the negative impact on long-run economic growth was found to be significant. The outcome of the estimation indicated that GDP increases with higher life expectancy.

Edori (2022) used annual frequency data from 2008 to 2017, while assessing whether tax revenue matters for economic growth in Nigeria. The study specifically disaggregated tax revenue into petroleum profit tax (PPT), company income tax (CIT) and value added tax (VAT), analysing the tax revenue type that predict economic growth. To identify the tax

revenue type that explain GDP, the proxy used to measure economic growth, the OLS method and Granger test were employed in analysing the annual information of the selected variables. From the estimation output, all three types of revenue sources stimulate economic growth, but neither had significant effect.

Adebisi, Ibrahim & Abdullahi (2020) studied the revenue-growth nexus in Nigeria over a period of thirty (30) years, assessing how economic growth (measured using GDP) respond to changes in the Nigerian tax policies in the form of changes in company income tax (CIT), personal income tax (PIT) and value added tax (VAT). This investigation covered from 1989 to 2019 and the method applied to analysing the data to obtain estimates for the tax revenue types was the OLS method. The conclusion of the authors was that tax revenue support economic growth. More specifically, it was shown that CIT, VAT and PIT were positively related to GDP, and their positive progressive impact were significant.

Maganya (2020) explore the link between tax revenue and economic growth. The assessment of the effectiveness of tax revenue in dictating the pace of growth was conducted using Tanzanian data, and this nexus was examined from 1996 to 2019. The data collected for GDP (economic growth measure), tax revenue such as households and firms' income taxes and taxes on domestic goods and services, in addition to other control variables such as foreign direct investment, inflation and domestic investment were analysed using the ARDL estimator. The bounds test F-statistics was found to be significant, indicating long-run equilibrium relationship among the variables. From the long-run ARDL result, they observed that GDP decline significantly when households and firms' taxes increase, whereas output increases when taxes on goods and services rise. Another factor found to significantly stimulate economic growth in the long-run was domestic investment.

Ali, Ali & Dalmar (2018) applied the OLS method to Kenya's macrodata from 1980 to 2007, analysing the economic growth effect of tax revenue during the period. In examining the nature of relationship that exist between tax revenue and growth, a multiple regression model was specified, with real GDP functionally depending on grant revenue and total tax revenue. The estimate parameters from applying the OLS method to the annual data evidence that tax revenue significantly enhance growth, as the negative sign of grant revenue revealed that grant revenue significantly repress output growth in Kenya.

3. Data and Methodology

Data

The data employed in assessing how tax revenue affect economic growth is in annual frequency and this data was collected from 1990 to 2022. In the specified model used in this assessment, four tax revenue sources were considered, namely, petroleum profit tax (PPT), value-added tax (VAT), company income tax (CIT) and custom and excise duty (CED). The measure of economic growth used was the human development index (HDI), as taxes have welfare implications. The study sourced data on petroleum profit tax (PPT), value-added tax (VAT), company income tax (CIT) and custom and excise duty (CED) from the Federal Inland Revenue (IRS) Statistical database and that of HDI from the United Nations Development Report (UNDR).

Model Specification

The model used for this study is predicated on the Solow growth model and traditional tax handle theory. While the Solow growth model focuses on the determinants of economic growth, the traditional tax handle theory emphasized that, to attain a certain level of per capita income growth, a given level of national income is required, and the latter can be obtained through taxation. The study also modelled the relationship in line with those adopted by Adebisi, Ibrahim & Abdullahi (2020), though modifications were made to reflect the focus of this current study.

The functional model is crafted as:

$$hdi_t = f(ppt_t, cit_t, ced_t, vat_t) \quad (1)$$

When equation (1) is re-specified in econometrics form, it becomes:

$$hdi_t = \gamma_0 + \gamma_1 \ln ppt_t + \gamma_2 \ln cit_t + \gamma_3 \ln ced_t + \gamma_4 \ln vat_t + \varepsilon_t \quad (2)$$

Where: hdi_t is human development index, ppt_t is petroleum profit tax, cit_t denote company income tax, ced_t is custom and excise duty, vat_t is value-added tax, γ_0 is the constant term, $\gamma_1 - \gamma_4$ are the slope coefficients, $\ln$ represent the natural logarithm notation and ε_t is error term.

An increase in tax revenue has implication for welfare condition, as it reduced disposable income, shrinking the household income and firms profit that would have ordinarily finance household consumption and business expansion. Hence, it is expected that $\gamma_1 - \gamma_4 < 0$, based on economic theory.

Method of Data Analysis

The estimation strategy adopted for this study are in three phases. In the first phase, the study carried out pre-estimation analysis. In this phase, descriptive analysis of data was performed with statistics such as mean, range kurtosis, among others computed. Next, the study examined the stability properties of the series through unit root testing. Most economic and financial series trend upwards or downwards and such trend pattern have features that indicates that the mean of such series are not reverting and the variance is not constant. Using such series when estimating economic relationships often leads to spurious regression, and interpretation made off such relationship are usually untrue. Thus, the study conducted unit root test of each series. This test was performed to avoid having spurious relationship and guiding in the selection of the method or estimator that can accommodate the attributes of the variables exposed through unit root testing. The third test carried out in the first phase of estimation is the cointegration test. The test was conducted to determine co-movement among the variables. The test for equilibrium relationship became necessary as some of the variables are stationary when first differenced. The bounds test developed by Pesaran, Shin & Smith (2001) was relied upon to detect long-run relationship among the selected variables. The estimation phase focused on the estimator employed in estimating the slope coefficients. For this, the autoregressive distributed lag (ARDL) estimator was used in estimating Equation 2. The estimates computed through the estimator are unbiased and consistent and the estimator is robust to series that are either $I(0)$, $I(1)$ or mix of $I(0)$ and $I(1)$. The third phase in the estimation strategy is the post estimation test. Here, certain tests were conducted on the residuals and slope coefficients estimated from the

model. It is important that certain OLS assumptions are upheld for the model and slope coefficients to be used for prediction. This is what the post-estimation tests seeks to achieve. The tests conducted on the estimated residuals and slope coefficients include serial correlation, heteroscedasticity, normality, linearity and stability tests.

Assuming the direction of cointegration is not known, the specification of the ARDL model is given thus:

$$\begin{aligned}\Delta \ln rgdp_t = & \delta_0 + \sum_{j=1}^{\rho} \gamma_1 \ln rgdp_{t-j} + \sum_{j=0}^{\omega} \gamma_2 \Delta \ln pppt_{t-j} + \sum_{j=0}^{\omega} \gamma_3 \Delta \ln cit_{t-j} \\ & + \sum_{j=0}^{\omega} \gamma_4 \Delta \ln ced_{t-j} + \sum_{j=0}^{\omega} \gamma_5 \Delta \ln vat_{t-j} + \pi_1 \ln rgdp_{t-1} + \pi_2 \ln pppt_{t-1} \\ & + \pi_3 \ln cit_{t-1} + \pi_4 \ln ced_{t-1} + \pi_5 \ln vat_{t-1} + \varepsilon_{1t}\end{aligned}\quad (3)$$

$$\begin{aligned}\Delta \ln pppt_t = & \delta_0 + \sum_{j=1}^{\rho} \gamma_1 \ln pppt_{t-j} + \sum_{j=0}^{\omega} \gamma_2 \Delta \ln rgdp_{t-j} + \sum_{j=0}^{\omega} \gamma_3 \Delta \ln cit_{t-j} \\ & + \sum_{j=0}^{\omega} \gamma_4 \Delta \ln ced_{t-j} + \sum_{j=0}^{\omega} \gamma_5 \Delta \ln vat_{t-j} + \pi_1 \ln pppt_{t-1} + \pi_2 \ln rgdp_{t-1} \\ & + \pi_3 \ln cit_{t-1} + \pi_4 \ln ced_{t-1} + \pi_5 \ln vat_{t-1} + \varepsilon_{2t}\end{aligned}\quad (4)$$

$$\begin{aligned}\Delta \ln cit_t = & \delta_0 + \sum_{j=1}^{\rho} \gamma_1 \ln cit_{t-j} + \sum_{j=0}^{\omega} \gamma_2 \Delta \ln rgdp_{t-j} + \sum_{j=0}^{\omega} \gamma_3 \Delta \ln pppt_{t-j} + \sum_{j=0}^{\omega} \gamma_4 \Delta \ln ced_{t-j} \\ & + \sum_{j=0}^{\omega} \gamma_5 \Delta \ln vat_{t-j} + \pi_1 \ln cit_{t-1} + \pi_2 \ln rgdp_{t-1} + \pi_3 \ln pppt_{t-1} \\ & + \pi_4 \ln ced_{t-1} + \pi_5 \ln vat_{t-1} + \varepsilon_{3t}\end{aligned}\quad (5)$$

$$\begin{aligned}\Delta \ln cet_t = & \delta_0 + \sum_{j=1}^{\rho} \gamma_1 \ln cet_{t-j} + \sum_{j=0}^{\omega} \gamma_2 \Delta \ln rgdp_{t-j} + \sum_{j=0}^{\omega} \gamma_3 \Delta \ln pppt_{t-j} + \sum_{j=0}^{\omega} \gamma_4 \Delta \ln cit_{t-j} \\ & + \sum_{j=0}^{\omega} \gamma_5 \Delta \ln vat_{t-j} + \pi_1 \ln cet_{t-1} + \pi_2 \ln rgdp_{t-1} + \pi_3 \ln pppt_{t-1} \\ & + \pi_4 \ln cit_{t-1} + \pi_5 \ln vat_{t-1} + \varepsilon_{4t}\end{aligned}\quad (6)$$

$$\begin{aligned}\Delta \ln vat_t = & \delta_0 + \sum_{j=1}^{\rho} \gamma_1 \ln vat_{t-j} + \sum_{j=0}^{\omega} \gamma_2 \Delta \ln rgdp_{t-j} + \sum_{j=0}^{\omega} \gamma_3 \Delta \ln pppt_{t-j} \\ & + \sum_{j=0}^{\omega} \gamma_4 \Delta \ln cit_{t-j} + \sum_{j=0}^{\omega} \gamma_5 \Delta \ln cet_{t-j} + \pi_1 \ln vat_{t-1} + \pi_2 \ln rgdp_{t-1} \\ & + \pi_3 \ln pppt_{t-1} + \pi_4 \ln cit_{t-1} + \pi_5 \ln cet_{t-1} + \varepsilon_{5t}\end{aligned}\quad (7)$$

4. Results and Discussions

Table 1: Results of Descriptive Analysis

	HDI	PPT	CIT	CED	VAT
Mean	0.4868	1312.034	548.7173	388.7805	560.1343
Median	0.4730	1256.500	244.9000	232.8000	401.7000
Maximum	0.5390	4209.017	2649.191	1990.021	2511.518
Minimum	0.4500	26.9100	2.9970	8.6400	7.2600
Std. Dev.	0.0313	1149.768	644.7172	442.7564	608.8099
Skewness	0.5663	0.5389	1.2996	1.8290	1.5272
Kurtosis	1.6454	2.4290	4.4805	6.5222	5.2016
Jarque-Bera	4.2868	2.0457	12.3042	35.4591	17.1303
Probability	0.1172	0.3595	0.0021	0.0000	0.0001
Observations	33	33	33	33	29

Source: Authors' computation (2024)

In the first phase of the estimation process, the study conducted descriptive analysis of the employed series. The analysis revealed that the average of human development index (HDI) in Nigerian over the thirty-three (33) investigation period is 0.4868. This indicates a low level of economic progress and development in Nigeria during the investigation period. During the thirty-three years period, HDI increased from 0.4500 to 0.5390. Over the period, the average of petroleum profit tax (PPT) is N1,312.034 billion and this lies between the minimum revenue of N26.91 billion and maximum of N4,209.017 billion. Company income tax during the period was an average of N548.7173 billion and this was higher than the median value of N244.9 billion, implying that company income tax collected in majority of the years was lower than the mean value. Custom and excise duty lies between a minimum of N8.64 billion and N1,990.021 billion, with an average value of N388.7805 billion. Tax revenue from VAT over the investigated period averaged N560.1343 billion and this lie within the range of N7.26 billion and NN2,511.518 billion. Compared to the mean, the standard deviation is relatively high at N1149.768 billion for PPT, N644.7172 billion for CIT, N608.8099 billion for VAT and N442.7564 for CED. This suggest that, the tax revenue collected by the Nigerian government from these sources are further away from their mean value. Based on the Skewness statistics, all the variables are positively skewed, indicating that there are more lower values for HDI, PPT, CIT, CED and VAT. Furthermore, it was revealed from the analysis that all other variables except HDI and PPT are not normally distributed.

Table 2: Result of unit root

Variable	Phillip-Perron (PP)			Decision I(d)
	Level	1 st Diff.	CV at 5%	
HDI_t	0.1588	-5.3456***	-2.9571	I(1)
$\ln PPT_t$	-1.5584	-4.7830***	-2.9571	I(1)
$\ln CIT_t$	-2.7943	-4.6844***	-2.9571	I(1)
$\ln CED_t$	-2.0057	-5.7003***	-2.9571	I(1)
$\ln VAT_t$	-3.1998**	-	-2.97185	I(0)

Note: *, ** & *** represent significance at 10, 5 and 1% respectively

Source: Authors' computation (2024)

To choose the best estimator in order to have unbiased and consistent elasticities that gives a true sense of the relationship between tax revenue and economic growth, the study adopted the Phillip-Perron test to examine the condition of stability of the variables. If the variables are

nonstationary and the right estimator is not used in estimating the model, then the regression will be spurious. Table 2 indicates that the Phillip-Perron test statistics for HDI, PPT, CIT and CED is greater than the critical value of -2.9571, suggesting that unit root is present in the level form of these variables. The stability of these series is essential for estimation; hence these series were transformed through first difference and result showed that the first difference of the series are stable. This means that HDI, PPT, CIT and CED are I(1), as stability was attained after they were differenced once. On the other hand, the PP statistics for VAT before differencing is significant, indicating that VAT is stable in the level form. Overall, the variables used in estimating the model are mix of I(0) and I(1), making the ARDL estimator the right estimation framework to use in getting a sense of how tax revenue affect overall growth.

Cointegration Test

The co-integration test was carried out to verify whether the variables under examination move together over time or if there exists long-run relationship among the variables. A core prerequisite for the choice of a cointegration test approach is the determination of the order of integration of the variables. The study adopted the bound test co-integration promulgated by Pesaran, Shin & Smith (2001). The ARDL technique is applicable even when the variables in the model are I(0) or I(1), or a mixture of I(0) and I(1). The technique only produces spurious result when there is a presence of an I(2) series (Mohapatra, Giri and Sehrawat, 2016; Appiah-Konadu, Junior, Eric and Twerefou, 2016; Pesaran, 1997). The result of the bound test for the three models are presented in Table 3.

Table 3: Cointegration Result

Model	$F_{HDI}(HDI/PPT, CIT, CED, VAT)$	
ARDL Model	(1, 2, 0, 0, 3)	
F-Statistics	4.217880**	
Regressors	K = 4	
Critical Value	I(0)	I(1)
1%	3.29	4.37
2.5%	2.88	3.87
5%	2.56	3.49
10%	2.2	3.09

Note: Null hypothesis: No level relationship; *, ** and *** denote significance at 10%, 5% and 1% level, respectively.

Source: Authors' computation (2024)

From the result presented in Table 3, the outcome of the test mirrors the first, as the F-statistics value of 4.217880 is greater than the I(0) critical value (2.56) and the I(1) upper bound critical value of 3.49. Hence, the study found that there is cointegrating relationship among the variables. This implies that, there is long-run relationship between petroleum profit tax, company income tax, custom and excise duty, value-added tax and economic growth (as proxy using human development index). Under this scenario, both the static and dynamic model can be estimated to determine the impact of petroleum profit tax, company income tax, custom and excise duty, and value-added tax on economic growth (as proxy using human development index) in the long-run and short-run.

Long- and short-run Model Result

Hinging on the confirmation of long run relationship between the measure of economic growth (human development index) and the independent variables of petroleum profit tax (PPT), company income tax (CIT), custom and excise duty (CED) and value-added tax (VAT), the study estimated the long run and short run models that provide information on the nature of relationship between the independent variables and the dependent variables. The result is presented in Table 4.

Table 4: Long- and Short-run results

Dependent Variable: HDI_t				
Part I: Long Run				
<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t – Stats</i>	<i>Prob.</i>
$\ln PPT_t$	-0.0285	0.0270	-1.0563	0.3075
$\ln CIT_t$	-0.0381	0.1279	-0.2983	0.7695
$\ln CED_t$	-0.1241	0.2431	-0.5105	0.6171
$\ln VAT_t$	0.1799	0.3268	0.5507	0.5899
C	0.6484	0.4314	1.5028	0.1536
Part II: Short Run				
<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t – Stats</i>	<i>Prob.</i>
$D(\ln PPT_t)$	-0.0036*	0.0019	-1.8749	0.0804
$D(\ln PPT_{t-1})$	0.0111***	0.0021	5.2271	0.0001
$D(\ln CIT_t)$	0.0071	0.0051	1.3721	0.1902
$D(\ln VAT_t)$	-0.0073	0.0062	-1.1711	0.2598
$D(\ln VAT_{t-1})$	-0.0119***	0.0038	-3.1032	0.0073
ECM_{t-1}	-0.1146***	0.0225	-5.0737	0.0001
$R^2 = 0.6563$			Adjusted $R^2 = 0.5704$	

Note: *, ** & *** represent significance at 10, 5 and 1% respectively

Source: Authors' computation (2024)

Table 4 disclosed that there is a negative relationship between petroleum profit tax (PPT) and economic growth (using human development index as measure). The negative relationship estimated between petroleum profit tax and economic growth in the long run is in complete agreement with economic postulation. The coefficient of -0.0285 which suggests that petroleum profit tax had negative and insignificant impact on economic growth indicate that, an increase in petroleum profit tax by 1% is expected to lead to a decrease in human development index by 0.0285 unit, holding constant changes in other variables. The finding does not align with the work of Jibrin, Blessing & Ifurueze (2012) who found that petroleum profit tax had positive and significant impact on economic growth in Nigeria.

Company income tax (CIT) was found to undermine economic growth in the long run as the estimated coefficient for company income tax suggests that there is a negative relationship between company income tax and economic growth. The parameter value of -0.0381 for company income tax, estimated using the ARDL method, indicates that in the long run an increase in company income tax by 1% results in an insignificant decrease in human development index by 0.0381 units, in agreement with economic theories. This result failed to corroborate the findings of Asaolu, Olabisi, Akinbode & Alebiosu (2018).

In the same manner, the study found evidence of negative relationship between custom and excise duty and economic growth (when measured using human development index). The negative impact of custom and excise duty on economic growth can be inferred from the coefficient of -0.1241 estimated for custom and excise duty. As implied by the coefficient of -0.1241, an increase in custom and excise duty by 1% is expected to lead to an insignificant decline in human development index by 0.1241 units.

In contrast to the impact of petroleum profit tax, company income tax, and custom and excise duty on economic growth, the estimation of the regression model with human development index as measure of economic growth showed that value-added tax had positive sign. The regression results established that the long run relationship between value-added tax and economic growth (when measured using human development index) is positive and the value of 0.1799 was estimated for value-added tax variable. As denoted by the coefficient of 0.1799, the positive relationship between value-added tax and economic growth as suggested by the coefficient indicate that, an increase in value-added tax by 1% will lead to an insignificant increase in human development index by 0.1799. This result does not agree with the findings of Nasiru, Haruna & Abdullahi (2016) and Asaolu, Olabisi, Akinbode & Alebiosu (2018).

The study estimated an error correction term which is negative and significant, satisfying the condition that, for the estimated model to be regarded as having convergence tendency, the error correction term must be negative and statistically significant. The coefficient of the lagged ECM of -0.1146 signals that the speed of adjustment of the model is 11%. This means that, disequilibrium that emanates from the short run fluctuation in the explanatory variables are corrected to achieve long run equilibrium at the speed of 11%.

Table 5: Result of Diagnostic Test

Diagnostic Test	Test Statistics	Prob.
Serial Correlation	5.8217	0.0544
Heteroscedasticity	0.1267	0.7218
Normality	0.7732	0.6793
Linearity	0.0059	0.9397
CUSUM	Stable	
CUSUM of Square	Stable	

Source: Authors' computation (2024)

Based on the outcome of the tests presented above, the probability value of the Breusch-Godfrey LM test statistics of 5.8217 which is 0.0544 exceeds the 0.05 level of significance leading to the non-rejection of the null hypothesis and the conclusion that the errors of the estimated ARDL model are not serially correlated. Similarly, the ARCH test of heteroscedasticity shows that the variance of the error terms is constant as the probability value of the ARCH Chi-squared statistics of 0.1267 is higher than 0.05, hence the study failed to reject the null hypothesis of homoscedasticity for the model. The result showed the F-statistics of 0.0059 for the Ramsey RESET test had a probability value of 0.9397, which is higher than 0.05, the 5 percent level of significance. Furthermore, the study was able to verify that the errors from the estimated ARDL model follow a normal distribution as the Jarque-Bera statistics of 0.7732 had a probability value of 0.6793. Based on the decision rule, the null hypothesis that the errors are normally distributed cannot be rejected.

The cumulative sum (CUSUM) conducted to test the stability of the coefficient of the estimated ARDL model of (1, 2, 0, 0, 3) reveals that there is no structural break in the series and the coefficients of the ARDL model of (1, 2, 0, 0, 3) are stable as the respective plot of the CUSUM and CUSUM of Squares statistics falls within the 5% critical bounds.

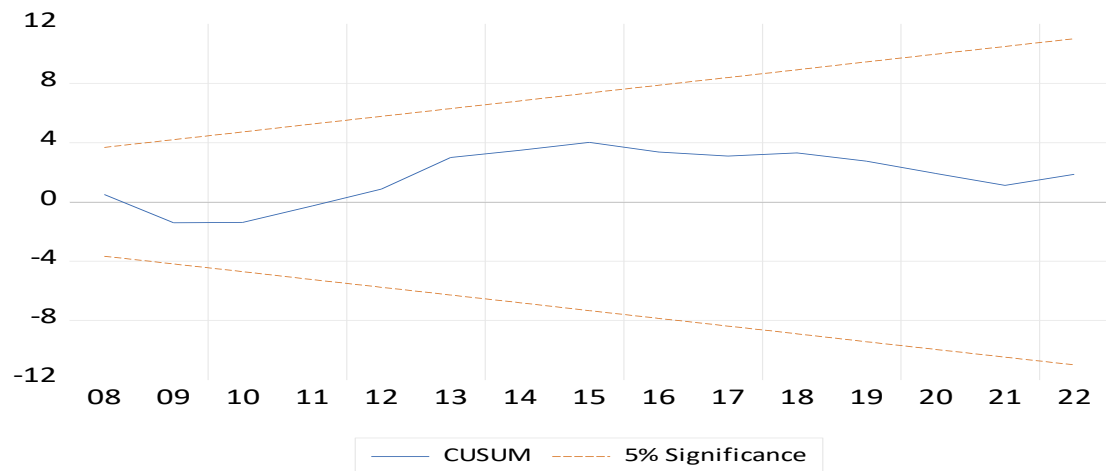


Figure 1: Plot of CUSUM for HDI Model

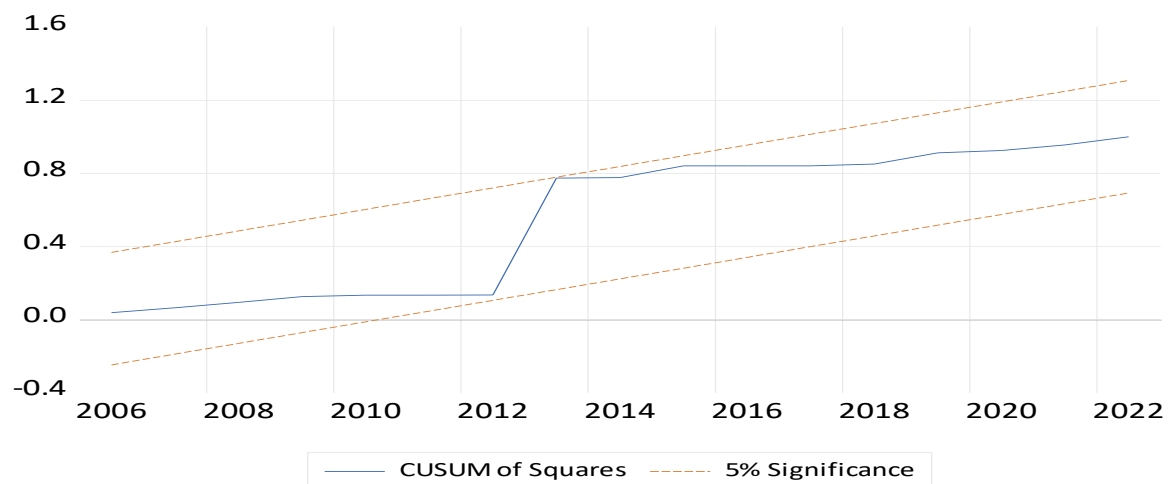


Figure 2: Plot of CUSUM of Squares for HDI Model

5. Conclusion and Recommendations

This study investigated the impact of tax revenue on economic growth in Nigeria. The tax revenue sources assessed for their impact on economic growth were petroleum profit tax, company income tax, value added tax, and custom and excise duty. To measure economic growth, the study used the human development index. The study found insignificant positive effect of company income tax and negative effect of custom and excise duty on real GDP. The three regressors of petroleum profit tax, company income tax and custom and excise duty had insignificant negative effect of human development index, as empirical result indicated that value added tax improved human development index, but not significantly. The result showed that the effect of tax revenue has dampening effect on economic growth in Nigeria.

Based on the findings of this study, the underlisted recommendations were made:

- i. The Federal Government should intensify efforts towards increasing the collection of tax revenue as the contribution of Nigeria's tax revenue to her GDP has been historically low. This can be achieved through digitalization of the tax filing and collection process and blocking tax loopholes exploited to shortchange government tax revenue.
- ii. The Federal Government should impose stringent penalties on corporate bodies or individual that indulges in unwholesome and fraudulent tax practices against the State, if tax revenue is to continue enhancing economic growth.
- iii. The Federal Government through relevant tax administrators should create effective and reliable database of taxable persons to reduce or eliminate tax evasion and periodic training and re-training of VAT administrators should be carried out to abreast them with the modern ways of tax administration.

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