Effect of Taxation on Revenue Generation: Empirical Evidence from the Nigerian Economy (2007 – 2023)

**Abstract**

This study examined the effect of taxation on revenue generation in Nigeria. There are conflicting empirical results regarding the nexus between taxation and revenue generation in both developed and developing countries of the world. Specifically, this study determined the effect of petroleum profit tax, companies’ income tax, and value added tax on total federally collected revenue in Nigeria from 2007 to 2023. The study applied an *ex post facto* research design. Data were sourced from Federal Inland Revenue Service (FIRS) and was analysed using the Ordinary Least Square (OLS) regression and Granger Causality techniques. The result of the analysis revealed that value added tax and companies’ income tax have no significant effect on total federally collected revenue, while petroleum profit tax has significant effect on total federally collected revenue. Finding also showed that total federally collected revenue is positively related with petroleum profit tax and companies’ income tax but negatively related to value added tax. This study proposes that petroleum profit tax rates in Nigeria be increased as it will lead to additional revenue to the government when applied to tax object. The value added tax bases be widened to bring the informal sector into the value added tax net so as to stem possible evasion even by the so faithfully complying under the old rate. Federal Government may consider as a matter of urgency reduce tax incentives granted to corporations in Nigeria as this will increase their taxable income or profit hence increase their tax liability and lead to increase in Government revenue generated through taxation.

**Keywords:** Revenue generation, petroleum profit tax, companies’ income tax, value added tax.

1. **INTRODUCTION**

Every modern state or nation requires a lot of revenue to be able to provide and maintain essential services for its citizen. One ready means of revenue for the government is through the imposition of tax. The imposition of tax by the government is not a new phenomenon. The existence and sustainability of every creature requires the sufficiency of the necessary infrastructure and amenities within its environment, and since government is the ‘rule of the people by the people and for the people’, the existence and sustainability of government rely wholly on the perceptions, cooperation, support and the general responsiveness of the people (Nwadi, 2022). The co-operation of the people and the government is oiled/lubricated through adequate funding by means of taxation. There is hardly any government today that does not rely on taxation. However, apart from the complications that has crept into the taxation system in modern times, the reason for the imposition of tax in fact ceased to be only for the generation of revenue for the state. In using taxation to generate revenue, government is faced with two problems: how to get the money and who to take it from. The purpose of the efficiently designed taxation is to achieve desired fiscal policy objectives (allocation, distribution and stabilization) in the most efficient way by limiting undesired distortions, minimizing the cost of tax collection and promoting economic growth. From the point of view of Desislava and Nikolay (2012), the efficiency of taxation and particularly the tax structure plays important role in achieving economic growth and fiscal consolidation.

In implementing various tax policy for revenue generation, government should adopt an economically and politically acceptable taxes that would ensure easy administration, accounting, verification, auditing and investigation based on the equality, neutrality and other attributes of a good tax (Adebayo, Adeyemi, & Osunwole, 2022). The measure of the amount of tax revenue countries are expected to raise is widely measured by the tax to GDP ratio, and this is adopted globally as a standard benchmark for assessing how well governments are raising tax revenues to finance their activities (Umar, Derashid & Ibrahim, 2017). They went further to state that the International Monetary Fund (IMF) recommends 15% of GDP as the minimum benchmark on which countries should raise tax revenue based on the expert advice of Kaldor in 1963 that countries which fall below this benchmark are at fiscal risk. The implication of this benchmark in Nigeria provides evidence that the country is at fiscal risk.

Eke and Omogbai (2022) recognised the need for the government to provide social amenities, engage in developmental projects is a compulsory one for the improvement of the standard of living of the citizenry but the government has often lamented of lack of fund to embark on these projects. For the development and growth of any economy, the provision of basic infrastructure is necessary. This is why government shows great concern for a medium through which fund can be made available to attain set goals for the society. Due to diverse nature of human wants requiring huge fund which individual or society alone are incapacitated to provide, it becomes a heavy burden on the government to increase revenue generation to provide the infrastructural needs of her citizen. Olaoye and Ayeni (2018) note that revenue generation serves as a prominent role in the growth of an economy and government in all spheres of the world strategize to increase its revenue for the welfare of her citizen. Following the fall of crude oil in the international market in 2016 that resulted in serious exchange rate crisis and economic recession in the country, they have been calls from different stakeholders to diversify the economy from oil dependent to non-oil, with particular reference to agriculture as was the case before the discovery of crude oil in the 1960s in order to increase the revenue generation capacity of the government. With this call, the assertion by Adegbite and Fasina (2019) that indeed, taxation, rather than natural resources, such as oil, ought to be the central instrument of state economic policy in Nigeria – as it of truly modern democratic states” cannot be debated.

 **Problem Statement**

Tax revenue mobilization as a source of financing development activities in Nigeria has been a difficult issue primarily because of various forms of resistance, such as evasion, avoidance and other forms of corrupt practices. These activities are considered as sabotaging the economy and are readily presented as part of the reason for present state of underdevelopment in Nigeria. Government exists in order to effectively collect taxes from available economic resources and make use of same to create economic prosperity such that available and willing human and other resources are gainfully employed, infrastructures provided, essential public services (such as the maintenance of law and order) put in place among others. Tax laws in Nigeria are complex and difficult for the common taxpayers to understand, and some cases are problematic even for literate official. In addition to lack of understanding, many taxpayers are unaware of the existence of certain tax. This coupled with lack of information, laziness of the staff official, uncooperative taxpayers and the habit of “quick – fix” solutions – encourages the use of the best judgement approach. This may be a manifestation of the poor tax education and weak fulfilment by the authorities of their responsibilities with regard to public awareness.

Ofurum, Amaefule, Okonya and Amaefule (2018) argue that poor contribution of tax revenues to total federally collected revenue in Nigeria, and the ratio of tax revenue to Gross Domestic Product is alarming compared to other African countries such as Ghana, Tunisia, Morocco, and so on, who have their tax revenues constituting significant portion of their total revenue and Gross domestic Product. The authors reported that Ghana has 73% of its total revenue was generated from tax; in Tunisia, tax revenue accounted for 31.3% of her Gross Domestic Product, while in Morocco, tax-to-GDP ratio was 28.5%. The tax ratio to Real Gross Domestic Product (RGDP) in Nigeria based on 2017 fiscal year is 4.68%. This is abysmal when compared to that of other African countries aforementioned. There are conflicting results on empirical studies regarding the nexus between taxation and revenue generation in both developed and developing countries of the world. The studies of Madugba, Ekwe and Kalu (2015), Kwaji and Ishaja (2017), Samuel and Tyokoso (2014) and Oriakhi and Ahuru (2014) evidence positive relationship between taxation and revenue generation. Onaolapo, Aworemi and Ajala (2013) and Olawale (2014) posited the significant effect of taxation on revenue. This was countered by Olaoye and Ayeni (2018) that taxation has no significant effect on revenue generation. Other studies such as Obara and Nangih (2017), Nwaiwu and Macgregor (2018) and Abiola (2014) have resorted to the use of questionnaire in assessing the nexus and effect of taxation on revenue generation. The use of questionnaire casted some dent to the reliability of their result owing to the availability of secondary data. Consequently, this study would apply up-to-date on the variables of interest to examine the effect of taxation on revenue generation in Nigeria from 2007 to 2023.

 **Objectives of the Study**

 Specifically, this study examines the following:

1. The effect of petroleum profit tax on total federally collected revenue in Nigeria.
2. The effect of companies’ income tax on total federally collected revenue in Nigeria
3. The effect of value added tax on total federally collected revenue in Nigeria
4. **REVIEW OF RELATEDLITERATURE**

**Conceptual Clarification**

Taxation is a main source of revenue to governments across the world; thus tax becomes a burden that every citizen must bear to support the government as well has some functions to perform for the well-being of those it governs (Kwaji & Ishaya, 2017).Taxation in its simplest form is the process or system adopted by the government in administering tax. Tax is a compulsory levy on all taxable individuals and companies/corporations within a country. Ofurum, Amaefule, Okonya and Amaefule (2018) see taxation as a compulsory or coercive money collection by a levying authority, usually a government. The term "taxation" applies to all types of involuntary levies, from income to capital gains to estate taxes. In the life of any nation, taxation is an indispensable tool employed by the government for the promotion of their overall economic and social objectives (Garba, 2015).Taxation has been in practice from time immemorial and is as old as activity of man. From the dawn of civilization, taxation has been an essential avenue for revenue generation of governments (Nchuchuwe & Ojo, 2017).

A well designed tax system can help government in developing countries prioritize their spending, build stable institutions and improve democratic accountability (Brautigam, 2008). The main purpose of tax imposition by the government is to enable public sector finance its activities so as to achieve some nation’s economic and social goals. Tax is also used as an instrument for achieving both macroeconomic and microeconomic objectives of the government, especially in developing countries like Nigeria. However, dwindling level of tax revenue generation in developing countries makes it difficult to use taxation as an instrument of fiscal policy for the attainment of economic growth and development (Musgrave & Musgrave, 2004). Economic growth and development in United States of America (USA), United Kingdom and Holland have been greatly influenced by revenue from taxation through company income tax, value added tax and personal income tax (Oluba, 2008). In Africa, natural resources such as income from production sharing, mining royalties, and corporate income tax on oil and mining companies yield significant portion of tax revenue (Pfister, 2009). Tax sources are the basic and most reliable sources of government revenue because of their certainty and flexibility characteristics. Certainty characteristics implies that collection of taxes from taxpayers is assured, all other thing being equal, while its flexibility makes it possible for government to adjust the system to suit her desired purpose.

More so, revenue generation is an amount of money generated during a specific period of time (Olaoye & Ayeni, 2018). Revenue is money received by a government. It is the amount of money that a company actually receives during a specific period. Revenues earned by the government are received from sources such as taxes levied on the incomes and wealth accumulation of individuals and corporations and on the goods and services produced, exports and imports, non-taxable sources such as government-owned corporations' incomes, central bank revenue and capital receipts in the form of external loans and debts from international financial institutions. Government revenue is an important tool of the fiscal policy of the government. Governments use revenue for the development of the country, such as: construction of roads, bridges, build homes, fix schools etc. The money that government collects pays for the services that are provided for the people. The sources of finance used by the central government are mainly taxes paid by the public. In Nigeria, federally collected revenue is divided into oil revenue and non-oil revenue. While oil revenue covers all revenue generated from oil and gas activities in the country, non-oil revenue looks at any revenue earned from sources other than oil and gas activities.

 **Theoretical Underpinning**

Theories have been modelled in discussing the nexus between taxation and revenue generation. The various theories that have been propounded by different scholars are: the planning behaviour theory, benefit received theory, ability to pay theory and diffusion theory. However, this study is anchored on the Benefit Received Theory. The choice of this theory is that it posited a contractual relationship between taxation and revenue generation in that it requires that when one party fulfils its own obligations (citizen by way of pay their taxes), the other should also reciprocate in the same way (government by way of providing basic infrastructural amenities).

**Benefit Received Theory:** The main crux of this theory is aimed at the benefit the tax payers received for parting a portion of their income to the government through taxation. The rationale about the benefit theory is to ensure that the more revenues are generated through taxation, the more benefit the citizens should receive as a compensation for carrying out their civil responsibilities. Looking at this relationship between the tax payers and the government, it is a contractual relationship that requires that when one party fulfils its own obligations, the other should also reciprocate in the same way. The benefit theory has a lacuna because it is hard for the government to measure exactly the benefit that individual tax payers derived in order to know the amount that each tax payer will be levied to match the benefit he/she is receiving. It is impractical to adopt the benefit received theory since the objective of taxation is to ensure redistribution of income by imposing high tax to the rich than the poor. The application will negate the objective because the poor might end up paying high tax than the rich since most of the government expenditure is aim at ameliorating the lives of the plebeians in the society. In essence, there is a positive relationship between taxation and revenue generation. The higher the level of taxation, the higher the revenue base which translate to increased government expenditure.

**Planning Behaviour Theory:** The planning process of the tax officials and the altitudes of the payers as regard to tax aversion and avoidance and poor compliance is the main crux of this theory. The attitude of tax officials in ensuring effective administration that will boost the individual tax payers to have the will of seeing tax as an instrument for economic development is a motivational factor that will ensure effective and efficient administration of the tax system which will in turn enhance revenue generation (Ajzen, 1991). The strategies adopted in the tax system is a motivational factor that will propel the tax payers to comply willingly as behaviours differs from one tax payer to another and even the intention of the tax payers to choose either to perform their civil duties also differs among the tax payers.

**Ability to Pay Theory:** The tax payers in which the tax is gotten from done have the same level of income. As such, it is expected based on tire ability to pay theory that each tax payer should be levy the amount he/she will pay as tax with regards to their income. Those with high incomes should be tax high and those with tow income should be tax low based on the income they received. In practice, effective administration with a well-articulated process will encourage voluntary compliance by the tax payers because such process is to ensure that tax payers are not over-burden in terms of the amount to pay as tax which is a function of their incomes. This theory holds that tax payers carry out their civil responsibilities because they are buoyant to do so and not a kind of commercial dealings between the tax payers and the government which oblige both parties to fulfil all conditions in the terms of agreement, rather the ability to pay is to ensure equity and justice in the amount tax that an individual will pay as tax (Musgrave & Musgrave, 2004; Bhartia, 2010, Jhingan, 2012, & Appah, 2011).

**Diffusion Theory of Taxation:** The diffusion theory of taxation is anchored on the assumption that in a stable or perfect market condition, the tax that is levied will automatically diffused or absorbed throughout the environment. But in real life situation, the tax levied on the tax payers does not diffused automatically. Within the community because the tax official still need to ensure that they adopt effective strategies to inform the tax payers about the tax that have been imposed on them and the need for compliance. Mansfield (1961), an advocate of this theory hold that when tax is levied of automatically passes to the users of commodity and the burden is share between the manufactured and the consumers. The diffusion theory has always been criticized because it is not all taxes that diffused automatically, and as such, the need for effective administration is a panacea to ensure compliance in order to reduce the incidence of tax aversion and avoidance. The quantum of revenue generated is a function of how effective the administration is because taxes like: income tax, toil tax and inheritance tax does not absorbed rather. The individual or the tax payer bears the burden alone.

**Empirical Studies**

Nwadi (2022) investigated the effect of tax revenue on revenue generation in Nigeria for the period of 1985-2015, with the purpose of finding effect of the various tax revenue represented by Petroleum Profit Tax, Company Income Tax and Customs and Excise Duties taxes had impacted on revenue generation in Nigeria for the period of the study. The data which are secondary in nature were analysed using Simple Regression Analysis for the three research questions and three hypotheses in the study. The findings reveal that, Petroleum income tax have significant relationship on revenue generation in Nigeria, while company income tax and customs and excise duties does not have significant relationship on revenue generation in Nigeria.

Adebayo, Adeyemi, and Osunwole (2022) examined the influence of tax administration on government revenue generation of Osun State, Nigeria. The specific objectives are to evaluate the shortage of staff and inadequate training of available tax collectors on revenue generation and investigate how the improper records and account keeping of revenue officers affect the revenue generation. Descriptive survey design and purposive sampling technique were employed. A total of 187 respondents participated in the study. Questionnaires were used to gather the data while descriptive and inferential statistics were used to analysed data. The result shows that shortage and inadequate training of staff and improper records and accounting keeping had a negative and significant influence on revenue generation.

Eke and Omogbai (2022) examined the impact of tax reforms on revenue generation in Nigeria. The study specifically examined the impact of tax reforms on petroleum profit tax, company income tax and value added tax as a source revenue generation in Nigeria. Secondary data was obtained from the Central Bank of Nigeria and the Federal Inland Revenue Service. The paired sample T test was used to ascertain the pre and post effect of tax reforms on revenue generation in Nigeria. The study found that there is a significant difference in PPT, CIT and VAT between the period of 2010-2014 and 2015-2021 towards revenue generation in Nigeria.

Adegbite and Fasina (2019) evaluated the effects of taxation on revenue generation in Nigeria. It also analysed the direction of causality between taxation and revenue generation utilizing method of Johansen co-integration and the Granger causality tests using secondary data spanning the period 1970 to 2017. Results showed that PPT has positive significant effect on REV.VAT, CORPT and CUSEXC also had positive significant effect on REV. But CUSEXC has the lowest significant effect on REV both in the short run and in the long run. All the components of taxation showed bidirectional causality with government revenue in Nigeria because PPT, VAT, CORPT and CUSEXC, jointly, Granger-cause REV. It is concluded that taxation had positive significant impact on revenue generation of government both in the short run and in the long run.

Bereket and Durga (2018) analysed the contribution of tax to the local government revenue generation in Southern Ethiopia, Wolaita Zone. The study employed descriptive design which includes surveys and fact finding enquiry on tax trend, volume of volatility and major source of tax revenues. The total tax revenue for each year however differs, fluctuating from one year to another depending on how much each source adds to the total tax revenue. The contribution of each type of tax system is however dependent on many factors important among them are the economic situation of the time, government policies, emphasis effectiveness and reliability of the assessment collection system which all allows more tax revenue generation from one source than another. The financial impact of taxation to revenue Wolaita Zone, Southern Ethiopia, has been relatively about 65% each year. It was however discovered that this contribution is not the "optimal" and that a lot is still left to be desired about this contribution.

Olaoye and Ayeni (2018) determined value added tax and customs duties on revenue generation in Nigeria. Secondary data was sourced from Federal Inland Revenue Service (FIRS) ranging from 2000 to 2016. Autoregressive Distributed Lag (ARDL) and Granger causality tests were used as the estimation techniques. The findings of the study revealed that the F-statistics value was 2.883868 which is lesser than both the lower bound and the upper bound values of 3.79 and 4.85 respectively at the 5percent level of significance which implies that there is no long run relationship among value-added tax, customs duties and revenue generation. It was equally revealed that there is no causality among value-added tax, customs duties, and revenue generation.

Ofurum, Amaefule, Okonya and Amaefule (2018) empirically evaluated how the implementation of E-taxation in 2015 has affected Tax Revenue, Federally Collected Revenue and Tax-to-GDP ratio. The study made use of secondary data sourced from Federal Inland Revenue Service, and Central Bank of Nigeria Statistical and Economic Reports on quarterly basis from second quarter 2013 to fourth quarter 2016. The data were divided into two: pre e-tax period and post e-tax period. Means of the two sets of data were compared using a pre-post technique called paired sample t-test. Findings from the study revealed that the implementation of electronic taxation has not improved tax revenue, federally collected revenue and tax-to-GDP ratio in Nigeria. However, findings revealed that Federally Collected Revenue and Tax-to-GDP ratio significantly decreased after e-taxation was implemented.

Kipilimba (2018) assessed the impacts of tax administration on government revenue in Tanzania- case of Dares Salaam region. This study is more scientific and effective, whereby questionnaires have been used to access the required information. Researcher has been able to collect information from 85 respondents out of 100 targeted respondents from the area of the study. Findings of this study have been analysed and reveal that, good tax design, effective tax policy and laws, tax administrative structure, tax collection methods, proper use of computerized system of maintaining taxpayer register, outsourcing revenue collections to private tax collectors, internal and external capacity building, intensive coordination with other entities and proper maintenance of taxpayer’s records are the main factors that enhance effective tax administration in Tanzania.

Soetan (2017) studied the effect of tax administration on tax revenue generation in Nigeria. Survey research design was employed and structured questionnaire was developed and used to collect data for this study. One hundred and twenty six (126) participants participated in the study. Collected data were processed with the help of SPSS tool and Descriptive statistics and simple regression statistical techniques were used to analyse the data. Though, the hypothesis testing indicated that tax administration does not have significant effect on tax revenue generation in Nigeria.

Oseni (2017) analysed the effects of Value Added Tax (VAT) on government revenue generation profile in Nigeria. The study was a library study where existing literature on the subject matter were reviewed so as to ascertain the effects of value added tax on government’s revenue generation and how it can be enhanced so as to boost the government revenue generation profile in Nigeria in an effective and efficient manner. The paper concluded that value added tax has positive effect on government revenue generation profile in Nigeria thereby contributing to its economic growth and development.

Madugba, Ekwe and Kalu (2015) examined the impact of petroleum tax income and companies’ income tax on total consolidated revenue of the government. The study tested the relationship between petroleum tax income on total consolidated revenue and the relationship between companies income tax on total consolidated revenue. Pearson correlation and simple regression was used to analyse the data gotten from central bank of Nigeria annual statistical bulletin of various years. The result of the correlation showed a positive significant relationship between petroleum tax income and total consolidated revenue. Also, it showed a positive significant relationship between companies’ income tax and total consolidated revenue. The regression result revealed a negative significant relationship between petroleum tax income and total consolidated revenue and companies’ income tax and total consolidated revenue.

Afuberoh and Okoye (2014) looked at the impact of taxation on revenue generation in Nigeria, with reference to FCT and some selected states in the country. Attempt was also made in the study (through the means of secondary data) at highlighting the concept and nature of taxation, objectives of taxation, features in Nigerian tax system, taxation as a tool for wealth creation and employment, classification of taxes, Nigeria’s major taxes and other issues that relate to taxation. In achieving the objective of the study, the researcher adopted also primary sources of data to present and analyse the information for the study. The testing of the hypotheses of the study was done using regression analysis computed with the aid of SPSS version 17.0. The research discovered among others that, taxation has a significant contribution to revenue generation and taxation has a significant contribution on gross domestic product.

Samuel (2014) studied the impact of value added tax on revenue generation in Nigeria. The study is aimed at the appraisal of revenue generation in Nigeria. Secondary data were used in this study, the data were collected from CBN statistical bulletin also gathered from journals and textbook that is related to the research topic, the study collected data from 1994 to 2012. The result of the analysis showed that that there is significant relationship between value added tax and consolidated revenue generation in Nigeria. At 5% level of significance, the F-statistics computed value is 1186.6 which is significant at 5% significant level, we accept the alternate hypothesis and conclude that there is significant relationship between value added tax and consolidated revenue generation in Nigeria.

Oriakhi and Ahuru (2014) ascertained the impact of tax reforms on tax revenue generation in Nigeria. Specifically, an attempt will be made to verify the relationship between federally collected revenue and specific tax revenue generation sources. The study employed annual time series data spanning the years (1981-2011).The Johansen’s co-integration test shows that long-run relationship exists between tax reform and federally collected revenue in Nigeria. The Granger causality shows that custom and excise Duties and value-added tax granger causes federally collected revenue. The Partial Stock Adjustment Model shows that the various income taxes were statistically significant and have positive relationship with federally collected revenue. The coefficient of the Error correction model showed that 66.2940 percent of the deviation of federally collected revenue from its long-run equilibrium value can be reconciled yearly. On the whole, our study shows that tax reform by improving the tax system and reducing tax burden enhances the ability of the government to generate more revenue.

Samuel and Tyokoso (2014) appraised taxation on revenue generation in Nigeria, attention is given to FCT and some selected states. In achieving the objective of the study, the researcher adopted primary and secondary sources of data to present and analyse the information for the study. The result of the study revealed that taxation has a significant contribution on revenue generation, taxation has a significant contribution on gross domestic product and tax evasion and tax avoidance have a significant effect on revenue generation in Nigeria.

Onaolapo, Aworemi and Ajala (2013) ascertained the impact of value added tax on revenue generation in Nigeria. The Secondary Source of data was sought from Central Bank of Nigeria statistical Bulleting (2010), Federal Inland Revenue Service Annual Reports and Chartered Institute of Taxation of Nigeria Journal. Data analysis was performed with the use of stepwise regression analysis. Findings showed that Value Added Tax has statistically significant effect on revenue generation in Nigeria.

Abiola and Asiweh (2012) attempted to look at the Nigeria tax administration and its capacity to reduce tax evasion and generate revenue for development desire of the populace. The study made use of 121 online survey questionnaires containing 25 relevant questions. Descriptive statistics were used to analyse 93 usable responses. The study found among other things that increasing tax revenue is a function of effective enforcement strategy which is the pure responsibility of tax administration. Nigeria lack enforcement machineries which include among other things, adequate manpower, computers and effective postal and communication system.

1. **RESEARCH DESIGN**

An ex-post facto research design was employed to examine the effect of taxation on revenue generation in Nigeria for a period of seventeen (17) years: 2007 to 2023. This research design was considered suitable because the researcher is favourably not disposed to manipulate the data as they are documented by legally established government agencies or parastatals. The data were carefully sourced from the statistical bulletin of Central Bank of Nigeria (CBN) and annual reports of Federal Inland Revenue Service (FIRS). The Total Federally Collected Revenue (TFCR) is the dependent variable. It is the total revenue of the government from all sources. It comprises of revenue from oil and gas exploration as well as revenue from non-oil and gas activities. Taxation is the independent variable of the study. Taxation was disaggregated into Petroleum Profit Tax (PPT), Companies Income Tax (CIT) and Value Added Tax (VAT).The data was analysed using the Ordinary Least Square (OLS) regression and Granger Causality models.

The model for this study is adopted from Olaoye and Ayeni (2018). The model is stated as:

$$TRG=f\left(VAT, CD\right) 3.1$$

Where:

$TRG$ = Total Revenue Generation

$VAT$ = Value Added Tax

$CD$ = Custom Duties

The model has been modified by removing custom duties, while petroleum profit tax and companies’ were been introduced. Consequently, the modified model this study is stated as:

$$TFCR=f\left(PPT, CIT, VAT\right) 3.2$$

Where:

$TFCR$ = Total Federally Collected Revenue

$PPT$ = Petroleum Profit Tax

$CIT$ = Company Income Tax

$VAT$ = Value Added Tax

The econometric equation is stated as:

$$TFCR\_{t}=β\_{0}+β\_{1}PPT\_{t}+β\_{2}CIT\_{t}+β\_{3}VAT\_{t}+ε\_{t} 3.3$$

$β\_{0}$$a\_{0}$ = a constant term

$β\_{1}$, $β\_{2}$, and $β\_{3}$ are the coefficients of the regression equation

$ε$ = the error term

$t$$i $= the time trend

A priori expectation is that $β\_{1}$, $β\_{2}$, $β\_{3}$> 0

1. **RESULT AND DISCUSSION OF FINDINGS**

**Descriptive Properties of the Data**

Table 1 shows the descriptive statistics of the variables. It shows the total number of observations, mean, median, maximum, minimum, standard deviation and sum of mean deviation. The mean values of the independent variables: TFCR, VAT, PPT and CIT are 8327420, 769769.8, 2024787 and 1011507 respectively, while the median of the study variable are 8498400, 785000, 1987191 and 1047950. The minimum values of the series are 4844590 for TFCR, 481410 for VAT, 939400 for PPT and 593700 for CIT, whereas the maximum values are 11116850, 1108041, 3201300 and 140921 respectively for TFCR, VAT, PPT and CIT. The standard deviations of the variables are 2188079, 183158.6, 836001.7 and 305135.7 for TFCR, VAT, PPT and CIT respectively. The measure of asymmetry of the distribution of the series around its mean that is, skewness of all the variables are positive with the exception of TFCR suggesting that all the variables in the model are positively skewed towards normality. The p-values of the Jarque-Bera for all the variables are significant at 5% level meaning that all the variables are normally distributed and free from any outlier that may affect the regression output.

**Table 1: Descriptive Properties of Data**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Mean** | **Median** | **Maximum** | **Minimum** | **Std. Dev.** | **Skewness** | **Kurtosis** | **Jarque-Bera** | **P-value** | **Obs** |
| TFCR | 8327420 | 8498400 | 11116850 | 4844590 | 2188079 | -0.250427 | 1.682591 | 10.82767 | 0.001108 | 17 |
| PPT | 2024787 | 1987191 | 3201300 | 939400.0 | 836001.7 |  0.117400 | 1.453510 | 7.019484 | 0.040651 | 17 |
| CIT | 1011507 | 1047950 | 140921.0 | 593700.0 | 305135.7 | -0.044433 | 1.561225 | 8.865822 | 0.034618 | 17 |
| VAT | 769769.8 | 785000.0 | 1108041 | 481410.0 | 183158.6 |  0.250799 | 2.592121 | 8.174153 | 0.036607 | 17 |

*Source: Output data from E-views 10.0*

**Data Unit Root Test Result**

 The unit root test is utilized to ascertain stationarity in a time series. A time series has stationarity if a shift in time does not cause a change in the shape of the distribution; unit root are one cause for non-stationarity in time series data. The assessment of the stationarity of the data were carried with Augmented Dickey-Fuller (ADF)and Phillips Perron (PP). The unit root test was performed at level and first difference. The non-stationarity of the data at level necessitated the first difference estimation. The result in Tables 3 – 5 shows that all the variables are stationary at first difference.

**Table .2: Result of ADF Test at Level**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Intercept** | **Trend & Intercept** |  **None** | **Inference** |
| TFCR | -1.934967 (0.30) | -1.837317 (0.61) | 0.028107 (0.67) | Not Stationary  |
| PPT | -1.985099 (0.29) | -1.847702 (0.61) | -0.241198 (0.58) | Not Stationary |
| CIT | -0.883852 (0.75) | -3.100016 (0.17) | 1.668672 (0.97) | Not Stationary |
| VAT | -0.692444 (0.80) | -2.904979 (0.20) | 3.930289 (1.00) | Not Stationary |

*Source: Data output via E-views 12.0*

*Note: The optimal lag for ADF test is selected based on the Akaike Info Criteria (AIC), p-values are in parentheses where (\*) & (\*\*) denote significance at 1% and 5% respectively.*

**Table 3: Result of ADF Test at First Difference**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Intercept** | **Trend & Intercept** |  **None** | **Inference** |
| TFCR | -2.502026 (0.15) | -2.901075 (0.21) | -2.619921 (0.02)\*\* | Stationary  |
| PPT | -2.189600 (0.22) | -2.285190 (0.40) | -2.327028 (0.03)\*\* | Stationary |
| CIT | -1.971807 (0.29) | -2.893219 (0.21) | -2.185805 (0.03)\*\* | Stationary |
| VAT | -2.568677 (0.32) | -2.469887 (0.33) | -2.714899 (0.01)\* | Stationary |

*Source: Data output via E-views 12.0*

*Note: The optimal lag for ADF test is selected based on the Akaike Info Criteria (AIC), p-values are in parentheses where (\*) & (\*\*) denote significance at 1% and 5% respectively.*

**Table 4: Result of PP Test at Level**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Intercept** | **Trend & Intercept** |  **None** | **Inference** |
| TFCR | -1.922395 (0.31) | -1.737627 (0.66) |  0.581505 (0.83) | Not Stationary  |
| PPT | -2.046078 (0.27) | -1.793089 (0.64) | -0.103707 (0.63) | Not Stationary |
| CIT | -0.864711 (0.76) | -1.939887 (0.57) |  2.256675 (0.99) | Not Stationary |
| VAT | -0.282064 (0.90) | -1.715369 (0.67) |  3.220083 (1.00) | Not Stationary |

*Source: Data output via E-views 12.0*

*Note: Spectral estimation methods are Bartlett kernel and Newey-West method for Bandwidth, p-values are in parentheses where (\*) & (\*\*) denotes significance at 1% and 5% respectively.*

**Table 5: Result of PP Test at First Difference**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Intercept** | **Trend & Intercept** |  **None** | **Inference** |
| TFCR | -3.757966 (0.02)\*\* | -2.702609 (0.26) | -4.098332 (0.00)\* | Stationary  |
| PPT | -2.732049 (0.10) | -2.345037 (0.38) | -2.919241 (0.00)\* | Stationary |
| CIT | -4.160005 (0.00)\* | -4.154214 (0.04)\*\* | -2.130985 (0.04)\*\* | Stationary |
| VAT | -2.597820 (0.13) | -3.153068 (0.16) | -2.813227 (0.01)\* | Stationary |

*Source: Data output via E-views 12.0*

*Note: Spectral estimation methods are Bartlett kernel and Newey-West method for Bandwidth, p-values are in parentheses where (\*) & (\*\*) denotes significance at 1% and 5% respectively.*

**Diagnostics Test**

**Serial Correlation LM Test**

When the variables in a model are serially correlated, inferences from estimation of such model would be spurious and unreliable in statistical terms. In order to prevent the occurrence of serial correlation in the model specified for this study, the serial correlation LM test was performed. The result which indicated in Table 6 reveals that the variables in the model were not serially correlated with each other as the p-value are insignificant at 5% level of significance.

**Table 6: Serial Correlation LM Test**

|  |  |  |  |
| --- | --- | --- | --- |
| F-statistic | 2.715783 |     Prob. F(2,2) | 0.2691 |
| Obs\*R-squared | 7.308777 |     Prob. Chi-Square(2) | 0.0259 |

*Source: Data output via E-views 12.0*

**Heteroskedasticity Test**

The presence of heteroskedasticity is considered not ideal and casts a dent to inference that would be made from such estimation of a model. In an attempt to be sure of the absence of of heteroskedasticity, the model was checked accordingly. The results of the test which is highlighted in Table 7 points to the fact that there is no heteroskedasticity in the model judging from the insignificant p-value of the f-statistics coefficient at 5% level of significance.

**Table 7: Heteroskedasticity Test**

|  |  |  |  |
| --- | --- | --- | --- |
| F-statistic | 1.145618 |     Prob. F(1,21) | 0.4605 |
| Obs\*R-squared | 5.888197 |     Prob. Chi-Square(1) | 0.3173 |

*Source: Data output via E-views 12.0*

**Ramsey RESET Test**

The Ramsey Reset specification is the general test for how well a model is specified. It determines whether non-linear combination of the fitted values help explain the dependent variable. With the result in Table 8, the non-linear combination of the fitted values of the independent does not explain the changes in the dependent owing to the insignificant p-value (5% level of significance) for the regression model estimated.

**Table 8: Ramsey Reset Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **Estimates** | **t-statistic** | **df** | **P-value** |
| t-statistic |  2.726039 |  3 |  0.0722 |
| F-statistic |  7.431286 | (1, 3) |  0.0722 |

*Source: Data output via E-views 10.0*

**OLS Relationship**

The nature of relationship between revenue generation and taxation was estimated using the traditional OLS methodology. The global utility of Adjusted R-square, f-statistic, Durbin Watson and the relative statistic of the individual variables were the statistical yardstick for interpretation of the OLS run relationship analysis. The result in Table 9 reveals that there is a positive relationship between taxation with respect to petroleum profit tax, company income tax and revenue generation. Value added tax surprisingly related negatively with revenue generation. Holding taxation constant would results in N2639788 million in revenue generation. A unit rise in petroleum profit tax, company income tax lead to N2.58 million and N1.19 million value appreciation in revenue generation in Nigeria. On the contrary, revenue generation would be down by N1.67 million following a percentage increase in value added tax. The adjusted R-square reveals that 91.89% changes in revenue generation was as a result of fluctuations in sources of taxation: petroleum profit tax, company income tax and value added tax. This is statistically significant with respect to the p-value (0.00) and f-statistic (21.41). The Durbin Watson coefficient of 2.50 signifies no issue of autocorrelation in the model.

**Table 9: OLS Regression**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| C | 2639788. | 1116860. | 2.363581 | 0.0774 |
| VAT | -1.666895 | 2.933985 | -0.568133 | 0.6003 |
| PPT | 2.577118 | 0.376509 | 6.844763 | 0.0024 |
| CIT | 1.192683 | 2.163717 | 0.551220 | 0.6108 |
| R-squared | 0.963979 | Mean dependent var | 8327420. |
| Adjusted R-squared | 0.918952 | S.D. dependent var | 2188079. |
| S.E. of regression | 622921.2 | Akaike info criterion | 29.80594 |
| Sum squared resid | 1.55E+12 | Schwarz criterion | 29.98749 |
| Log likelihood | -143.0297 | Hannan-Quinn criter. | 29.60678 |
| F-statistic | 21.40917 | Durbin-Watson stat | 2.500060 |
| Prob (F-statistic) | 0.005474 |  |  |

*Source: Data output via E-views 12.0*

**Granger Causality Analysis**

To causal relationship between the dependent and independent variables were determined using the granger causality analysis. From the result in Table 10, there is no causal relationship between revenue generation and sources of taxation: petroleum profit tax, company income tax and value added tax. Causality does not flow from taxation to revenue generation or from revenue generation to taxation at 5% level of significance. This result implies that taxation measured by petroleum profit tax, company income tax and value added tax are not causally related with revenue generation in Nigeria within the period covered by the study.

**Table 10: Granger Causality Result**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Null Hypothesis:** | **Obs** | **F-Statistic** | **Prob.** | **Remarks** |
| PPT does not Granger Cause TFCRTFCR does not Granger Cause PPT | 16 | 0.017100.15569 | 0.8992 0.7035 | No CausalityNo Causality |
| CIT does not Granger Cause TFCRTFCR does not Granger Cause CIT | 16 | 0.171752.19166 | 0.6895 0.1770 | No CausalityNo Causality |
| VAT does not Granger Cause TFCRTFCR does not Granger Cause VAT | 16 | 0.138974.05600 | 0.7190 0.0788 | No CausalityNo Causality |

*Source: Data output via E-views 12.0*

**Test Hypotheses**

**Decision Rule:** If the p-value of f-statistic in granger causality test is less than 0.05, the null hypothesis is rejected. On the other hand, the null hypothesis is accepted if the p-value of f-statistic in granger causality test is above 0.05.

**Restatement of Hypotheses**

**Hypothesis One**

H0: Total federally collected revenue in Nigeria is not significantly affected by petroleum profit tax.

H1: Total federally collected revenue in Nigeria is significantly affected by petroleum profit tax.

**Table 11: Hypothesis One**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hypothesis** | **Independent Variable**  | **Coefficient** | **P-Value** | **Decision** |
| Hypothesis 1 | Petroleum Profit Tax (PPT) | 2.577118 | 0.0024 | RejectH0&Accept H1 |

*Source: Panel OLS Output from Table 4.10*

From the output in Table 11, it is vivid that total federally collected revenue in Nigeria is significantly affected by petroleum profit tax. Therefore, the null hypothesis that total federally collected revenue in Nigeria is not significantly affected by petroleum profit tax is rejected, while the alternate hypothesis accepted.

**Hypothesis Two**

H0: Companies’ income tax has no significant effect on total federally collected revenue in Nigeria.

H1: Companies’ income tax has significant effect on total federally collected revenue in Nigeria.

**Table 12: Hypothesis Two**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hypothesis** | **Independent Variable**  | **Coefficient** | **P-Value** | **Decision** |
| Hypothesis 2 | Companies Income Tax (CIT) | 1.192683 | 0.6108 | RejectH0&Accept H1 |

*Source: Panel OLS Output from Table 4.10*

Table 12 shows that the p-value for companies’ income tax is insignificant at 5% level of significance. This implies that companies’ income tax has no significant effect on total federally collected revenue in Nigeria. In effect, the null hypothesis that companies’ income tax has no significant effect on total federally collected revenue in Nigeria is accepted, while the alternate hypothesis rejected.

**Hypothesis Three**

H0: Value added tax has no significant effect on total federally collected revenue in Nigeria.

H1: Value added tax has significant effect on total federally collected revenue in Nigeria.

The output in Table 13 depicts that value added tax has no significant effect on total federally collected revenue in Nigeria owing to the fact that the p-value for value added tax (0.6003) is insignificant at 5% level of significance. In this regard, the null hypothesis that value added tax has no significant effect on total federally collected revenue in Nigeria is accepted, while the alternate hypothesis is rejected.

**Table 13: Hypothesis Three**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hypothesis** | **Independent Variable**  | **Coefficient** | **P-Value** | **Decision** |
| Hypothesis 3 | Value Added Tax (VAT) |  -1.666895 | 0.6003 | Accept H0& RejectH1 |

*Source: Panel OLS Output from Table 10*

**Discussion of Findings**

This study discovered in Table 9, total federally collected revenue has a positive relationship with petroleum profit tax and companies income tax. This is evidence that taxation by the government increases her revenue. The resultant effect of rise in government revenue would be increase in government expenditure. Value added tax was the only source of government revenue that has negative relationship with total federally collected revenue. This implies that increasing VAT on certain essential commodities such alcohol, luxury cars, and wrist watches among others would deter the citizens from the purchase of such commodities. This would lead to reduction in government revenue generated from value added tax. This supports the finding of Onaolapo, Aworemi and Ajala (2013) that value added tax is negatively related with revenue generation in Nigeria. However, this is in disagreement with the results of Kwaji and Ishaya (2017) and Olawale (2014) that value added tax positively related with total federally collated revenue.

Petroleum profit tax significantly having a significant effect on total federally collected revenue in Nigeria points to the fact that oil still remains the major source of revenue. With this, the claims in literature that oil constitutes over 80% of the Federal Government of Nigeria revenue are undisputed. This affirms the studies of Maduga, Ekwe and Kalu (2015), Olawale (2014), Onaolapo, Aworemi and Ajala (2013) and Kwaji and Ishaya (2017). Companies’ income tax and stamp duties having a positive relationship with total federally collected revenue tallies with Maduga, Ekwe and Kalu (2015), Onaolapo, Aworemi and Ajala (2013), Kwaji and Ishaya (2017) and Olawale (2014). The granger causality test in Table 10 provides evidence that the various sources of taxation have no causal relationship with total federally collected revenue in Nigeria. Put differently, the yearly revenue of the government is not causally related with taxation as executed by the Federal Inland Revenue Services (FIRS) which is sole body responsible for remitting revenue from taxation to the government. This reveals the reliance of the Nigerian government on crude oil sales to generate revenue as against the diversification of the economy through agriculture, solid minerals, quarrying, mining, etc.

1. **CONCLUSION AND POLICY IMPLICATION**

The federal government of Nigeria has embarked and implemented policies geared toward increasing her revenue from taxation as against crude oil in recent times due to fluctuation in oil price in the international market. This study examined the effect of taxation on revenue generation in Nigeria. From the findings from this study, it is concluded that taxation has not significantly affected revenue generation by the Federal Government of Nigeria. In view of the findings of this research work, it is suggested that the value added tax bases be widened to bring the informal sector into the value added tax net so as to stem possible evasion even by the so faithfully complying under the old rate. Secondly, this study proposes that petroleum profit tax rates in Nigeria be increased as it will lead to additional revenue to the government when applied to tax object. This is based on the significant effect of petroleum profit tax on total federally collected revenue. Finally, the Federal Government may consider as a matter of urgency reduce tax incentives granted to corporations in Nigeria as this will increase their taxable income or profit hence increase their tax liability and lead to increase in Government revenue generated through taxation.

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