

TAX REVENUE AND ECONOMIC GROWTH IN NIGERIA

John Obiora Anyaduba

Department of Accounting, Faculty of Management Sciences,
University of Benin, Benin City, Nigeria

Dickson Osamudiamen Efonayi

Department of Accounting, Faculty of Management Sciences,
University of Benin, Benin City, Nigeria
Correspondence: anyajobi@yahoo.com.

ABSTRACT

This study investigated the impact of tax revenue on economic growth using adjusted and unadjusted GDP. Data for the study were collected from the annual abstract of National Bureau of Statistics (NBS) and Central Bank of Nigeria Statistical Bulletin (CBN) from 1984 to 2018. Economic growth was proxy using unadjusted GDP (Nominal GDP), adjusted GDP (RGDP), and analysed using Error Correction Models (ECMs). The results from the study revealed that Petroleum Profits Tax (PPT) had a positive influence on economic growth when GDP was adjusted and a negative influence when GDP was unadjusted for inflation. Value Added Tax (VAT) had a negative influence on economic growth when GDP was unadjusted for inflation and a positive influence on economic growth when GDP was adjusted for inflation. Companies Income Tax (CIT) had a negative influence on economic growth when GDP was adjusted and a positive influence when unadjusted for inflation. Custom and Excise Duties (CED) had a positive influence on economic growth when GDP was unadjusted and unadjusted. The study concludes that for CED researchers are free to use either GDP or RGDP as a proxy for economic growth but PPT, CIT and VAT researchers will find mixed result in using GDP or RGDP as a proxy for economic growth.

Keywords: Adjusted GDP, economic growth, taxation, unadjusted GDP.

INTRODUCTION

Governments all over the world use taxation as one of the means of raising revenue for running their activities. However, the judicious use of this revenue to provide social amenities, infrastructure and security for the citizens will translate to economic growth. Economic growth, on the other hand, is an increase in the amount of goods and services produced per head of the population over a period. Onakoya and Afintinni (2016) were of the view that taxation has not played its role in promoting the growth of Nigeria economy. They added that optimal tax which is an avenue for economic growth had not been realized due to poor tax administration. Olushlola, Oliver, Okon and Osang (2020) were of the opinion that investment opportunities should be available in order to foster economic growth. Therefore, government should increase their spending to increase investment. On the other

hand, Tax Authority over the years has put in place different tax policies that will help to increase tax revenue such as the E-payment scheme, Tax Identification Number (TIN) and Anti-Tax Avoidance legislation. Major issues still suffice such as poor accountability, corruption among tax officials, tax avoidance, tax evasion, high tax rate, lack of awareness of the public on the importance and benefits of taxation and poor method of tax collection (Onakoya & Afintinni, 2016).

Nigeria as a nation has the vision of becoming one of the world's 20 largest economies in the year 2020. For the actualisation of this vision, the federal, state and local governments should direct their attention to infrastructural development, which is a tool that stimulates economic growth and attain a developed economy. A developed economy according to Ihenyen and Mieseigha (2014) is an economy that can stimulate investment, create wealth, and offer an atmosphere that is business-friendly to potential investors. The importance of tax revenue cannot be overemphasized because revenue from taxation has a significant relationship with GDP, which serves as a standard for assessing the economic wellbeing of a nation (Okafor, 2012). Studies carried out on tax revenue and economic growth over the years reveal that significant relationship exists between tax revenue and the growth of the economy (Abata, 2014; Ojong, Anthony & Arikpo, 2016; Okafor, 2012).

A review of the extant literature on tax revenue and economic growth reveals the existence of methodological difference and mixed results. Studies such as (Adereti, Sanni & Adesina, 2011; Inyiama & Ubesie, 2016; Izedonmi & Okunbor, 2014; Okoh, Onyekwelu, & Iyidiobi, 2016; Otu & Theophilus, 2016) reveal that the concept of economic growth was proxied with the use of Gross Domestic Product (GDP) at current basis (unadjusted for inflation). These studies did not consider the effect of inflation on Nigeria economic growth. Contrary, studies such as (Afolayan & Okoli, 2015; Etale, & Bingilar, 2016a; Ibadin & Oladipupo, 2015) use GDP at constant basis (adjusted for inflation) as a proxy for economic growth, considering the effect of inflation on Nigeria economic growth. The broad objective of the study is to investigate the impact of tax revenue on economic growth in Nigeria using adjusted and unadjusted GDP, with the following specific objectives. Which are to:

- i. investigate the impact of Companies Income Tax (CIT) on economic growth in Nigeria;
- ii. analyse the impact of Petroleum Profit Tax (PPT) on economic growth in Nigeria;
- iii. examine if Value Added Tax (VAT) has any impact on economic growth in Nigeria; and
- iv. evaluate the impact of Custom and Excise Duties (CED) on economic growth in Nigeria.

LITERATURE REVIEW

Companies Income Tax (CIT) and Economic Growth

Worlu and Emeka (2012) investigated the impact that tax revenue has on economic growth in Nigeria using infrastructural development as a guide. The result from the

study reveals that only company income tax among other variables exert a significant effect on infrastructural development.

Okafor (2012) examine the influence of income tax revenue on the Nigerian economy. The result of the study revealed a positive relationship between company income tax and economic growth. Edema and Okoi (2014) investigated the impact of taxation on investment and economic development in Nigeria.” The result from the study reveals an inverse relationship between taxation and investment, a negative relationship between company income tax and the economic growth also a positive relationship between taxation and government spending.

Okoli, *et al.* (2014) examined the empirical analysis of taxation and economic growth in Nigeria, spanning through the period of 1994 to 2012. The result from the study among others revealed a dual causality between company income tax and gross domestic product implying that company income tax granger causes gross domestic product and gross domestic product granger cause company income tax. Etale and Bingilar (2016a) examine the impact of companies' income tax, value-added tax on the growth of the economy proxy by domestic product in Nigeria, from 2005 to 2014. The results from the study revealed that company income tax has a significant impact on economic growth. Based on their findings they suggested that the government should strengthen the tax administration system to broaden the tax income and embark on tax education to ensure voluntary tax compliance.

Macek (2014) study the impact of tax revenue on the growth of the economy in the Organization for Economic Cooperation and Development (OECD) countries. They employed time-series data from 2000 to 2011. They based their regression analysis on the neoclassical growth model and discovered that corporate income tax, personal income tax and social security had a negative impact on economic growth. Based on this they, therefore, conclude that OECD countries should reduce corporate and personal income taxes and place more emphasis on indirect taxes such as a tax on consumption. In Malaysia, Taha, Nanthakumar, and Colombage (2011) examine the effects of economic growth on government tax revenue for the period of 1970 to 2009. To achieve the objective of the study data on direct and indirect tax revenue was collected from the Ministry of Finance in Malaysia. The result from their findings reveals that there exists a unidirectional relationship between economic growth and direct tax. Ogwuche, Abdullahi and Oyedokun (2019), examine the impact of company income tax on Nigerian economic growth and their findings reveals that CIT has significant impact on economic growth in Nigeria.

Petroleum Profit Tax and Economic Growth

Abdul-Rahamoh, Taiwa and Adejare (2013) examines the effect of petroleum profit tax (PPT) on Nigeria economy using secondary data obtained from the Central Bank of Nigeria Statistical Bulletin from 1970 to 2010. The result from their findings reveals a positive relationship between petroleum profit tax and the growth of Nigeria economy, also income from natural resources has a positive influence on economic growth and development. Based on their findings they conclude that the Federal, State and Local governments should ensure they clearly and carefully

account for the revenue they generate from petroleum profit tax by investing in the provision of infrastructure and public goods and services. Ilaboya and Ofiafor (2014) investigate the relationship that existed among petroleum profit tax and the growth of the Nigeria economy. Their study focuses on the monumental losses from tax evasion and avoidance in the petroleum upstream sector and spanned between 1980 and 2011. The result of the study reveals that petroleum profit has a positive and significant impact on economic growth. Olatunji and Adegbite (2014) investigate the effects of petroleum profit tax, interest rate and money supply on Nigeria economy, using the gross domestic product as a proxy for Nigeria economy, from 1970 to 2010 and employ multiple regressions for the analysis. The result from the study reveals that petroleum profit tax has a positive relationship with economic growth. Okoh, Onyekwelu and Iyidiobi (2016) examine the impact of petroleum profit tax on the economic growth of Nigeria. Economic growth was proxied by gross domestic while the data was analysed with Simple Linear Regression. The findings from the study reveal that PPT had a positive and significant effect on GDP. Etale and Bingilar (2016b) investigate the connection between petroleum profit tax, personal income tax and the growth of Nigeria economy. The study adopted real gross domestic product as a proxy for economic growth. The result of the study reveals that petroleum profit tax has a positive impact on economic growth in Nigeria. In a recent study, Ojutawo, Adegbe and Salawu (2020) examine petroleum profit tax volatility on economic growth using inflation and exchange rates as moderating variables. Their findings reveals that PPT volatility had positive and significant effect on economic growth in Nigeria

Value Added Tax and Economic Growth

Ilaboya and Mgbame (2012) adopted the combination of cointegrated and error correction mechanism to study indirect tax and the growth of the Nigeria economy. The result from the study shows a negative and non-significant relationship between indirect tax (VAT, CED) and economic growth. Emmanuel (2013) findings were contrary to the work of Ilaboya and Mgbame (2012). They found a positive relationship between Value Added Tax and economic growth. Based on their findings they suggested that the government should sensitize to improve tax compliance and thereby increase government revenue. The roles of value-added tax and the growth of Nigeria economy was examined by Izedonmi and Okunbor (2014). Time series data on GDP, VAT revenue, total tax revenue and total federal government revenue were sourced from CBN from 1994 to 2010. The finding reveals a significant relationship existed between revenue from VAT and economics growth in Nigeria. Based on the findings they suggested that the federal government and the various tax authorities should block VAT leakages to ensure it contributes significantly to economic growth. Onoja and Audu (2014) examine the relationship between tax revenue and national income in Nigeria. The result from their findings reveals among others that VAT contributes significantly to the national income in Nigeria. Based on this they recommended that tax administration in Nigeria should be strengthened to enhance the increase in revenue generation. Onwuchekwa and Aruwa (2014) investigated the influence of value-added tax on the growth of Nigeria

economy from 1994 to 2011. The result from the study reveals that VAT contributes significantly to the total tax revenue in Nigeria thereby contributing to economic growth. They opined that to boost revenue from VAT, leakages in VAT should be eliminated; also sensitizing the managers of companies in Nigeria on the importance of remitting VAT revenue collected by them to the appropriate tax authorities.

Ibadin and Oladipupo (2015) examined the influence of indirect taxes on economic growth on Nigeria, making use of time-series data from 1981 to 2014. The researchers use RGDP as a proxy for economic growth. The finding reveals that VAT exerts a positive relationship with RGDP. It was also revealed that the VAT of two-period lags shows a negative but significant relationship with RGDP. Based on their findings they suggested that the federal government should identify all administrative loopholes and leakages and block them, to maximise the contribution of VAT revenue to economic growth. Using the same methodology Afolayan and Okoli (2015) investigated the impact of VAT on the Nigerian economy. The result from the study reveals a positive and non-significant correlation between VAT and RGDP as some problems are inhibiting its effectiveness. The Granger Causality Test revealed that the relationship between VAT and real GDP is unidirectional and a lag period of four years exists. In line with these, they suggested that the government should identify all problems and administrative loopholes and plugged them in other for VAT to contribute to economic growth. Ofishe (2015) examines the impact of value-added tax on economic growth in Nigeria from 1994 to 2014. The result from their study reveals that value-added tax has a significant impact on economic growth in Nigeria since its inception in 1994. Based on their result they recommended that the government should put in place measures to ensure that revenue generated from VAT are effectively utilised to develop and grow the economy through infrastructural development

Inyama and Ubesie (2016) examined the impact of Value Added Tax and Customs and Excise Duties on Nigeria Economic Growth. The result from their findings reveals a positive and significant relationship between value-added tax and gross domestic product. They, therefore, conclude that there is a significant relationship between value-added tax and economic growth for the period under study. Based on these findings, they suggested that the federal, state and local governments should harness their potentials with respect to legislations, machinery and procedures for collection of Value Added Tax Akhor and Ekundayo (2016) investigates the impact of indirect tax revenue on the growth of Nigeria economy using value-added tax and custom and excise duty for direct tax. The result of the study reveals that both VAT and CED have no significant impact on economic growth. They argue that for tax revenue to contribute to economic growth, the government should block all administrative loopholes.

Madugba and Joseph (2016) examined the relationship between value-added tax and economic development in Nigeria. The result of the study reveals a negative significant relationship between VAT and GDP. Based on this they suggested that the government should educate the general public more on the essential of VAT

payments. In a recent study, Omes, Ngoke and Ordu (2020) assesses the relationship between non-oil revenue and economic development of Nigerian economy using VAT as a element of non-oil revenue. Their result reveals that non-oil revenue has a positive impact on Nigeria economic development both in the short and long run.

Custom and Excise Duty and Economic Growth

Ibadin and Oladipupo (2015) observed that custom and excise duty of two-period lags has a positive relationship with economic growth. Implying that taxes levied on imported goods and exports in the past can still play a significant role today in boosting the growth of the economy. Ilaboya and Mgbame (2012) found a negative relationship between indirect tax and economic growth in Nigeria. Akhor and Ekundayo (2016) examine the impact of indirect tax revenue on economic growth in Nigeria. The result from the study reveals a negative relationship between custom and excise duty, value-added tax and economic growth in Nigeria. Their findings also reveal that long-run real gross domestic product (RGDP) is quickly adjusted to equilibrium in the short-run. They also found out that there is an absence of autocorrelation in the Durbin-Watson model. Based on this they recommend that tax administrative loopholes should be plugged for tax revenue to contribute greatly to economic development.

Inyama and Ubesie (2016) examined the effect of Value Added Tax and Customs and Excise Duties on Nigeria Economic Growth. The result from their findings reveals a strong significant relationship between custom and excise duty and gross domestic product. Based on their they suggested that customs and excise duties leak away at the borders, wharves, airports and seaports through with the help of customs officials and other security agents. Government should ensure put in place strategies to eliminate the cause of this leakages to boost the revenue generated from CED.

Omes, Ngoke and Ordu (2020) assesses the relationship between non-oil revenue and economic development of Nigerian economy using CED as a component of non-oil revenue. Their result reveals that non-oil revenue has a positive impact on Nigeria economic development both in the short and long run.

Theoretical Framework

This section gives an insight into the theory to which this study is based. Theories supporting this study are the neoclassical growth model and the endogenous growth model.

The Neoclassical Growth Model

The neoclassical growth model, also known as the exogenous growth model or Solow-Swan growth model was developed by Robert Solow and Trevor Swan in 1956. The model is of the view that a sustained increase in capital investment will lead to an increase in the growth rate temporarily. "The neoclassical growth model was the first attempt to model long-run growth analytically. It assumes that a steady growth path is reached when output, capital and labour are all growing at the same rate, such that output per worker and capital per worker are constant.

The neoclassical model makes three important predictions according to Otu and Theophilus (2013). Firstly, an increasing capital relative to labour creates economic growth, since people can be more productive given more capital. Secondly, poor countries with less capital per person will grow faster because each investment in capital will produce a higher return than rich countries with ample capital. Thirdly, because of diminishing returns to capital, economics will eventually reach a point at which no new increase in capital will create economic growth. The following are the limitations of the model; its failure to take account of entrepreneurship and strength of institutions. The model also fails to explain how or why technological progress occurs. These limitations have led to the development of endogenous growth theory.”

Endogenous Growth Model

This study will be anchored on the endogenous growth model, also known as the new growth theory that was developed in the 80s as a result of the criticism of the neoclassical growth model. The theory holds that investment in human capital, innovation, and knowledge are significant contributors to economic growth as popularized by King and Sergio (1990) as cited in Ilaboya and Mgbame (2012). The theory implies that government and private policies that embrace openness, competition, change and innovation will promote economic growth. Otu and Theophilus (2013) argue that the theory stresses the need for government, private and market institutions to nurture innovation and private incentives for an individual to be resourceful. The resourcefulness of individuals, on the other hand, will increase the productive capacity of the company, thereby enabling the companies to make more profit. Increase in the company's profit will lead to an increase in companies' income tax in the short run and economic growth in the long-run. In addition, government expenditure on Research and Development (R & D) can result in better quality inputs which are more productive. Over time, old input will be replaced by new input and total productivity increases. This increase will lead to increase in tax revenue, and economic growth. On the other hand, policies that have the tendencies of slowing change by protecting or favouring a particular industry such as the oil industry over time will slow growth to the disadvantage of the economy. The economic implication of this theory is that the government should pursue tax and expenditure policies that will lead to economic growth. Such as government and firm decisions to invest in capital, R&D or investment in human capital, which will have a reliable effect on output in both short and long run, thereby translating to increase in tax revenue and leading to economic growth.

METHODOLOGY

This study adopted an ex-post-facto and longitudinal research design. The population and sample of the study comprised of direct and indirect taxes, Real Gross Domestic Product (RGDP), and Gross Domestic Product (GDP) in Nigeria from 1984 to 2018 (as at the time of carrying out this research work, 2019 data were not available due to COVID-19 pandemic. To this end, the population of the study will comprise of Companies Income Tax (CIT), Petroleum Profit Tax (PPT), Value

Added Tax (VAT) and Custom and Excise Duty (CED), RGDP and GDP in Nigeria. These taxes are chosen because of their effectiveness, potency and capacity to generate maximum revenue for the government when fully harnessed. The data comprised of secondary sources made up GDP, RGDP and CIT, PPT, VAT and CED collected from the Annual abstract of National Bureau of Statistics (NBS) and Central Bank of Nigeria Statistical Bulletin(CBN) from 1984 to 2018, the study is country-specific relating to Nigeria only. It should be noted that VAT became operational in Nigeria in 1994.

Analytical Framework

To investigate the short and long-run relationship between the dependent and independents variable, the study employed Error Correction Model (ECM) which is an appropriate system of a single equation. The ECM tells us the degree to which GDP, RGDP is affected by CIT, PPT, VAT and CED. To test for stationary often associated with time-series data analysis, the Augmented Dickey-Fuller was used to test for the unit root while Engle-Granger will be used to test for the co-integration.

Flowing from error correction models used by extant literature on tax revenue and economic growth, GDP and Real GDP was used as proxies for the dependent variable while the independent variables are Company Income Tax (CIT), Petroleum Profit Tax (PPT), Value Added Tax (VAT) and Custom and Excise Duty (CED).

Model on GDP

Etale and Bingilar (2016a) examine the impact of company income tax on economic growth by specifying their model as:

$$GDP = \beta_0 + \beta_1 (CIT) + \beta_2 (VAT) + e \text{ -----1}$$

Our study adopted and modify the model of Etale and Bingilar (2016a). The modify model in his econometric form is given below:

$$GDP_t = \alpha_0 + \beta_1 CIT_t + \beta_2 PPT_t + \beta_3 VAT_t + \beta_4 CED_t + \varepsilon_t \text{ -----2}$$

Where

GDP: Gross Domestic Product, CIT: Company Income Tax, PPT: Petroleum Profit Tax, VAT: Value Added Tax, CED: Custom and Excise Duty, α_0 : Constant Term, $\beta_1, \beta_3, \beta_4$: Parameters of the Model, ε : Error term, t time period under study (1984 -2018)

Model on RGDP

Afolayan and Okoli (2015) specified their model as: $RGDP_t = \beta_0 + \beta_1 VAT_t + \beta_2 CIT_t + \beta_3 CED_t + \beta_4 PPT_t + \varepsilon_t$ ----- 3

However, the model of Afolayan and Okoli (2015) was adapted. Our adapted model is stated in his econometric form as:

$$RGDP_t = \alpha_0 + \beta_1 CIT_t + \beta_2 PPT_t + \beta_3 VAT_t + \beta_4 CED_t + \varepsilon_t \text{ -----4}$$

Where

RGDP: Real Gross Domestic Product, CIT: Company Income Tax, PPT: Petroleum Profit Tax, VAT: Value Added Tax, CED: Custom and Excise Duty, α_0 : Constant Term, $\beta_1, \beta_2, \beta_3, \beta_4$: Parameters of the Model, ε_t : Error term, t: time under study (1984 -2018).

Conclusively, the two models for the study using (GDP based model and the RGDP based model) will be stated side by side as follows:

GDP based model

$$GDP_t = \alpha_0 + \beta_1 CIT_t + \beta_2 PPT_t + \beta_3 VAT_t + \beta_4 CED_t + \varepsilon_t \text{-----}3$$

RGDP based model

$$RGDP_t = \alpha_0 + \beta_1 CIT_t + \beta_2 PPT_t + \beta_3 VAT_t + \beta_4 CED_t + \varepsilon_t \text{-----}4$$

Table 1: Operationalization of Variables

Variables	Proxy	Variable Type	Measurement	Apriori Expectation	Used by
Real Gross Domestic Product (Adjusted)	RGDP	Dependent	Real GDP Value as stated in National Bureau of Statistics (NBS)	Nil	Ibadin and Oladipupo (2015), Afolayan and Okoli (2015), Ilaboya and Ofiafor (2014).
Gross Domestic Product (Unadjusted)	GDP	Dependent	GDP Value as stated in the National Bureau of Statistics (NBS)	Nil	Okoh, <i>et al.</i> , (2016), Etale and Bingilar (2016a) and Inyiama and Ubesie (2016)
Company Income Tax	CIT	Independent	CIT value as stated Annual abstract of National Bureau of Statistic	+	Worlu and Emeka (2012)
Petroleum Profit Tax	PPT	Independent	PPT as stated in the Annual abstract of National Bureau of Statistic	+	Ilaboya and Ofiafor (2014)
Value Added Tax	VAT	Independent	VAT as stated in the Annual abstract of National Bureau of Statistic	+	Ilaboya and Mgbame (2012)
Custom and Excise Duty	CED	Independent	CED as stated in the Annual abstract of National Bureau of Statistic	+	Inyiama and Ubesie (2016)

Source: Researcher’s Compilation (2020)

RESULTS AND DISCUSSION

The data analysis entails the use of two models, the unadjusted Gross Domestic Product (GDP) and the adjusted Gross Domestic Product (RGDP). “The first model addresses the relationship that exists between tax revenue and economic growth in Nigeria when GDP is unadjusted for inflation and thereafter the second model investigates the relationship that exists between tax revenue and economic growth when GDP is adjusted for inflation.” The results are present below:

Table 2: Model 1- Descriptive Statistics

	GDP_BILL_ N_000	RGDP_BILL_ N_000	PPT	VAT_BILL_	CIT	CED
Mean	10.46329	7.366505	5.699595	4.217069	5.009459	5.168711
Median	10.45731	7.544317	6.073205	4.556303	5.053078	5.330996
Maximum	14.05580	7.838994	6.505329	5.750431	5.983875	5.406462
Minimum	9.246026	5.055805	2.215638	2.502427	3.605083	4.257559
Std. Dev.	0.939579	0.712594	0.944474	1.210993	0.680530	0.311513
Skewness	2.152172	-2.726962	-2.195444	-0.409740	-0.385537	-1.500359
Kurtosis	9.615609	9.237790	8.375568	1.546130	2.229033	4.248923
Jarque-Bera	64.88923	71.51595	50.18398	2.901337	1.238483	11.00429
Probability	0.000000	0.000000	0.000000	0.034414	0.538353	0.004078
Sum	261.5822	184.1626	142.4899	105.4267	125.2365	129.2178
Sum Sq. Dev.	21.18743	12.18697	21.40875	35.19609	11.11489	2.328961
Observations	25	25	25	25	25	25

Source: Researchers’ compilation (2020)

The model 1 describes the data that was collected with respect to the variables Gross Domestic Product, Real Gross Domestic Product, Petroleum Profit Tax, Value Added Tax, Company Income Tax and Custom and Excise Duty respectively. “From the table above GDP was found to have a mean value of 10.46, the standard deviation which measures the spread of the distribution stood at 0.93. The JarqueBera statistics which measures the normality of the distribution stood at 64.88 with associate probability of 0.00 respectively. RGDP was found to have a mean value of 7.367. The standard deviation which measures the spread of the distribution stood at a value of 0.71. The JarqueBera statistics which measures the normality of the distribution stood at a value of 71.5 with an associate probability value of 0.00 respectively. The second variable which is petroleum profit tax was found to have a mean value of 56.99 and a standard deviation value of 0.944. The JarqueBera statistics was found to have a value of 50.18 with an associate probability value of 0.00, therefore, indicating that the variable is normally distributed. Concerning value-added tax, an examination of the Jarquebera statistic that was found to have a value of 2.90 with a probability value of 0.00, therefore, indicates that the variable is normally distributed so, therefore, the possibility of an outlier in the model does not exist. Concerning all

other variables, an examination of their critical JarqueBera values alongside with the probability values, therefore, indicates that on the average the variables are normally distributed and the possibility of an outlier does not exist in the model.”

Model 1a: Unit Root Test

“To ascertain the stationary state of our time series variable the unit root test was carried out using the ADF statistics and the results are presented below:

Table 3: Model 1- Unit Root Test

VARIABLES	ADF	CRITICAL VALUE	Prob	REMARK	VARIABLE	ADF	CRITICAL VALUE	Prob	REMARK
RGDP	-0.7146	-2.9604	0.8285	Non-stationary	D(RGDP,2)	-4.6830	-2.9639	0.0008	Stationary
GDP	-1.428974	-2.9639	0.5549	Non-stationary	D(GDP,2)	-9.8476	-2.9640	0.0000	Stationary
CIT	8.327669	-2.9919	1.0000	Non-stationary	DCIT,2)	-18.605	-2.9678	0.0001	Stationary
PPT	3.320032	-2.991878	1.0000	Non-stationary	D(ppt,2)	-4.0127	-3.0049	0.0058	Stationary
VAT	-1.908123	-3.004861	0.3227	Non-stationary	D(VAT,2)	-7.5411	3.0207	0.0000	Stationary
CED	-0.335089	-2.960411	0.9083	Non-stationary	D(CED,2)	-7.5863	-2.9678	0.0000	Stationary

Source: Researcher’s Compilation, (2020)

From the result of the unit root test carried out on each of the variables in the mode to ascertain their level of stationarity, it can be observed that all the variables appear to be non-stationary at levels with respect to their critical values and P-value respectively but later became stationary after second difference. This, therefore, indicates that two or more cointegrating equation exist in the model, It is therefore important to carry out Engle and Granger cointegration test which is given below:

Table 4: Test for Cointegration: Engle and Granger (Model 1a)

Date: 06/23/20 Time: 05:30				
Series: GDP_BILL_N_000 PPT CIT VAT_BILL_ CED				
Sample (adjusted): 1994 2018				
Included observations: 25 after adjustments				
Null hypothesis: Series are not cointegrated				
Cointegrating equation deterministic: C				
Automatic lags specification based on Schwarz criterion (maxlag=4)				
Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
GDP_BILL_N_000	-4.861886	0.0649	-25.91419	0.0325
PPT	-5.345588	0.0290	-26.44695	0.0265
CIT	-1.479563	0.9869	-8.260071	0.9220
VAT_BILL_	-2.457619	0.8388	-10.85346	0.8004
CED	-2.941470	0.6544	-11.44054	0.7587

Source: Researchers Compilation, (2020)

The above represent test for cointegration using Engle and Granger. From the cointegration result presented it was observed that both Tau-statistic and Z statistics indicates the variables are cointegrated when measured at 5%. This implies the presence of a long run relationship among variables.

Table 5: Engle and Granger Test (Model 1b)

Date: 06/25/20 Time: 00:36				
Series: RGDP_BILL_N_000 PPT CIT VAT_BILL_CED				
Sample (adjusted): 1994 2018				
Included observations: 25 after adjustments				
Null hypothesis: Series are not cointegrated				
Cointegrating equation deterministics: C				
Automatic lags specification based on Schwarz criterion (maxlag=4)				
Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
RGDP_BILL_N_000	-3.252891	0.5141	-16.30023	0.4193
PPT	-5.393713	0.0267	-26.25911	0.0285
CIT	-3.458158	0.4247	-16.41077	0.4116
VAT_BILL_CED	-1.697421	0.9751	-5.208008	0.9861
	-4.059421	0.2114	-16.20271	0.4262

Source: Researchers Compilation, (2020)

The result of the cointegration tested carried out to ascertain if there is a long run relationship between the variables in the second model showed that both Tau-statistic and Z statistics indicates the variables are cointegrated when measured at 5%. This implies the presence of a long run relationship among variables

Table 6: Model 1b: Pacimonious Error Correction Model

Dependent Variable: DGDG				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PPT)	0.150096	0.083754	1.792103	0.0899
D(VAT)	-0.174598	0.080998	-2.155581	0.0449
D(CIT)	-1.150594	0.383793	-2.997957	0.0077
D(CED,2)	1.254753	0.707237	1.774162	0.0930
ECM(-1)	-1.113624	0.377916	-2.946747	0.0086
C	0.095483	0.111847	0.853694	0.4045
R-squared	0.750089	Mean dependent var		0.085046
Adjusted R-squared	0.680669	S.D. dependent var		0.859030
F-statistic	10.80511	Durbin-Watson stat		1.681201

Source: Researchers Compilation, (2020)

From the result of the analysis conducted, Petroleum profit tax was found to have a positive impact on economic growth when inflation was unadjusted for. It was also found to be non-statistically significant when tested at 5% critical level. Value added tax was found to exhibit a negative impact on the growth of the economy when the growth measure was unadjusted for inflation. It was also found to be statistically significant when tested at 5% critical level. This therefore indicates that on the average a unit change in the levy imposed on consumption will lead to a 0.17 decrease in the growth of the economy. Company income tax was found to have a negative impact on the growth of the economy. It was also found to be statistically significant when tested at 5% critical level. This therefore indicated that on the average the amount derived from the taxes levied on companies will actually not have a significant impact on the growth of the economy when inflation was unadjusted for. Custom and excise duty was found to impact positively on economic growth when the growth measure was unadjusted for inflation but was found to be non-statistically significant when tested at 5% critical level.”

From the result above it was discovered that the error term with one period lag represented by $ECM(-1)$ which was discovered to have a negative coefficient, suggesting that the model has the ability to adjust from disequilibrium to equilibrium in a given period. It therefore indicates that the system corrects its previous period dis-equilibrium at a speed of 1.1% annually.

“An examination of the summary statistics revealed that the coefficient of multiple determination depicted as R^2 stood at a value of 0.75. Which gives a clear indication that the model account for 75% of the systematic variation revealed by the dependent variable economic growth (RGDP) while the remaining 25% has been captured by the stochastic error term. With respect to the F-statistics value, a significant F-test reveal that the model has the ability to explain what the practice is in real life. It also reveals that the model can be trusted in making possible forecasting and prediction about how the independent variables will influence the dependent variables. The F-stat, which account for the total significance of the model stood at a value of 10.80 with a probability value of 0.00 therefore signifying that the model is jointly statistically significant when tested at 5% critical level. The Durbin Watson statistics which is used to test for the existence of first order serial correlation between successive units of the error term, is being interpreted with respect to the rule of thumb which states that if the Durbin Watson statistics close lies between 1.5-2.4, we reject the presence of first order serial correlations and hence the regression coefficients will not be biased. With respect to the regression result conducted it was observed that that the DW statistics stood at a value of 1.68 therefore indicating that first order serial correlation does not exist in the model.”

Diagnostic Test

In line with OLS assumptions, the following diagnostics test were conducted for the regression result. They include the Lagrange Multiplier (LM) test for higher-order

autocorrelation, the Breusch-pagan-Godfrey test for heteroscedasticity, and the Ramsey RESET test miss-specification.

Table 7: Model 1c: Test for Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.092743	Prob. F(2,16)	0.3591
Obs*R-squared	2.884259	Prob. Chi-Square(2)	0.2364

Source: Researchers Compilation, 2020

“Lagrange Multiplier (LM) test for higher-order autocorrelation was used by this study because OLS models assume serial independence in the residuals. The Lagrange Multiplier test is a common test for high order autocorrelation and is fairly better than the Durbin Watson test. From the results, the hypotheses of zero autocorrelation that was present in the residuals were not rejected, because the probabilities (Prob. F, Prob. Chi-Square) was greater than 0.05. The LM test did not reveal any problem of serial correlation in the model.”

Table 8: Model 1d: Test for Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.150278	Prob. F(5,18)	0.9773
Obs*R-squared	0.961705	Prob. Chi-	0.9656
Scaled explained SS	0.473537	Prob. ChiSquare(5)	0.9931

Source: Researchers Compilation, 2020

In other to recognise the “fact that the issues in heteroskedasticity is mostly faced in cross-sectional data, the study performed the Breusch-pagan-Godfrey test on the residuals as a precaution.” The results showed probabilities above 0.05, which leads us to reject the presence of heteroskedasticity in the residuals.

Table 9: Model 2: Error Correction Models

Dependent Variable: DRGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.004324	0.037600	-0.115003	0.9099
D(PPT)	-0.032870	0.036021	-0.912524	0.3750
D(VAT)	0.094470	0.052221	1.809033	0.0093
D(CIT,2)	0.852474	0.211471	4.031163	0.0010
D(CED)	0.231283	0.332805	0.694951	0.4971
ECM(-1)	-0.566209	0.238390	-2.375139	0.0304
AR(1)	-0.930371	0.155956	-5.965618	0.0000
R-squared	0.922852	Mean dependent var		0.001850
Adjusted R-squared	0.893921	S.D. dependent var		0.843787
F-statistic	31.89890	Durbin-Watson stat		1.795362

Source: Researcher's compilation, 2020

This model takes into account the relationship that exists between tax revenue and economic growth in Nigeria when GDP is adjusted for inflation. From the result of the regression analysis above, petroleum profit tax was found to have a negative impact on economy and was not significant when measure at 5% critical level. This therefore indicates that on the average the revenue generated from petroleum activities will not have a very strong positive impact on economic growth even after deflating the economic growth measure for inflation. Value added tax was found to impact positively on economic growth, it was found to be significant when measure at 5% critical level. Company income tax was found to impact positively on economic growth and was statistically significant. This therefore implies that on the average a unit change in the revenue generated from companies will lead to a 0.85 unit increase in economic growth. Custom and excise duty was found to have a positive impact on economic growth and was not statistically significant. This therefore indicates that on the average a unit change in custom and excise duties will lead to a 0.23 unit increase in economic growth.”

“Furthermore, an examination of the error term (ECM) was found to have a negative coefficient gives a pure indication that the model has the capability of leaving its state of disequilibrium to equilibrium within a short period of time. With respect to the summary statistics it was observed that the coefficient of determination stood at a value of 0.92 therefore indicating that the model accounts for 92% of the systematic variation exhibited by the dependent variable while the remaining 8% left on accounted for is been captured by the stochastic error term. The adjusted R2 value that is adjusted for the successive inclusion of other variable to the model stood at a value of 89%. The F-statistics which measures the overall significance of the model stood at a value of 31.89 with an associate probability value of 0.00 therefore

indicating that on the average the variables are jointly statistically significant when tested at 5% critical level. The Durbin Watson statistics which account for the presence of serial correlation in the model stood at a value of 1.79 therefore indicating that the existence of first order serial correlation does not exist in this model.”

Diagnostic Test

Table 10: Model 2a: Test for Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.89684	Prob. F(2,12)	0.8642
Obs*R-squared	2.600728	Prob. Chi-Square(2)	0.8050

Source: Researcher’s compilation, 2020

The study utilized the Lagrange Multiplier (LM) test for higher-order autocorrelation because OLS models assume serial independence in the residuals. The Lagrange Multiplier test is a general test for high order autocorrelation and is fairly better than the Durbin Watson test. From the results, the hypotheses of zero autocorrelation that was present in the residuals were not rejected, because the probabilities (Prob. F, Prob. Chi-Square) was greater than 0.05. The LM test did not reveal any problem of serial correlation in the model.”

Table 11: Model 2b: Test for Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.838803	Prob. F(5,18)	0.5395
Obs*R-squared	4.535294	Prob. Chi-Square(5)	0.4752
Scaled explained SS	12.83640	Prob. Chi-Square(5)	0.0250

Source: Researcher's compilation, 2020

“To recognise the fact that the issues in heteroscedasticity are mostly faced in cross-sectional data, the study performed the Breusch-pagan-Godfrey test on the residuals as a precaution. The results showed probabilities above 0.05, which leads us to reject the presence of heteroscedasticity in the residuals.”

CONCLUSION AND RECOMMENDATION

Petroleum profits tax had a positive and non-significant influence on economic growth when GDP was unadjusted for inflation and a negative and not significant influence on economic growth when GDP was adjusted for inflation; Value added tax had a negative and significant influence on economic growth when GDP was unadjusted for inflation and a positive and significant influence on economic growth when GDP was adjusted for inflation; Companies income tax had a negative and significant influence on economic growth when GDP was unadjusted for inflation

and a positive and significant relationship on economic growth when GDP was adjusted for inflation in Nigeria; Custom and excise duty had a positive and not significant influence on economic growth when GDP was unadjusted for inflation and a positive and non-significant influence on economic growth when GDP was unadjusted for inflation in Nigeria.

From the finding above the study concludes that, petroleum profit tax has only positive impact when GDP is unadjusted for inflation, company income tax, has positive impact when GDP is adjusted for inflation and value added tax had positive impact when GDP was adjusted for inflation; therefore, researchers might have mixed findings when using GDP or RGDP as a proxy for economic growth in PPT, CIT and VAT. Nevertheless, for Custom and Excise Duties(CED) researchers are free to use GDP or RGDP

The study makes the following recommendations. The influence of petroleum profit tax on economic growth was found to have a positive but not significant impact when GDP was unadjusted for inflation and a negative and not significant impact when GDP was adjusted for inflation. This implies that tax generated from petroleum activities only have positive impact when GDP was unadjusted for inflation. The federal government of Nigeria should ensure that oil-spillage and other related activities that will reduce the production and oil revenue should be reduced. Custom and excise duty was found to have a positive impact on the economy when GDP was adjusted and unadjusted for inflation. This implies that levies placed on goods and services that are imported have a positive impact on the growth of an economy. Value-added tax was found to have a negative but significant influence on economic growth when GDP was unadjusted for inflation and a positive and significant impact when GDP was adjusted for inflation in Nigeria. This implies that value-added tax which is an indirect tax revenue levied on consumption is a vital tool in taxation that aids in the collection of government revenue efficiently. This, therefore, makes Value added tax a vital element with respect to revenue collected by the government thereby leading to economic growth in Nigeria. Company income tax was found to have a negative but significant impact on economic growth when GDP was not adjusted for inflation. When GDP was adjusted for inflation company income tax was found to have a positive impact on economic growth although significant. This, therefore, implies that when GDP is not adjusted for inflation, the revenue generated from companies is not major revenue that drives the growth of the economy. This can be attributed to the presence of tax loopholes such as tax evasion, tax avoidance, and corruption among tax officials. Tax authorities should ensure that tax leakages are blocked and appropriate measures taken to curb corruption among tax officials. However, when GDP is adjusted for inflation CIT becomes a major revenue.

The study made the following contribution: the introduction of adjusted and unadjusted GDP as a proxy for economic growth. To the best of the researcher's knowledge, is a new approach in investigating the impact of tax revenue and

economic growth in Nigeria; the study also revealed that using adjusted or unadjusted researchers will tend to find mixed result for PPT, VAT and CIT except for CED that revealed a positive result for both instances. This implies that researchers are free to use either GDP or RGDP to proxy economic growth for custom and excise duty.

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