



The Analysis of Relationship between Taxes Collected by the Federal Government and Economic Growth in Nigeria

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Abstract

This study investigates the long term connection between the federal government taxes collection regime and economic growth of Nigeria. Sequence data was sourced from Apex Bank bulletin and descriptive statistics was employed to study the statistical properties of the data. The Jarque-Bera test statistic for all the tax instruments indicates that we can assume normality of the independent variables at 5% level of significance. Stationarity check was carried out using Augmented Dickey Fuller (ADF) test and the results showed that all the adaptable were immobile at level while stationarity was achieved at first order differencing. Co-integration test was equally put through to confirm the existence of possible continuing balance connections amid the adaptable over time and the result implies that the perceived connections between the predictors' variables and economic growth are sustainable over time. The study therefore recommends that concerted efforts should be made to increase revenue collection from taxes by the federal government to augment the dwindling resources from a mono-economy source (oil revenue) in order to impact positively on Nigerian economic growth and development.

Keywords: Augmented, Co-integration, Economic-Growth, Collected-Taxes, Stationary

Introduction

The major duty of every leader the world over is to provide safety, liberty, well-being, and comfort for its citizens (Ofoegbu et al., 2016). The 1999 charter of Nigeria states that “the administration owns the duty of providing maximal well-being, liberty and cheerfulness of its subjects”. To carry out this primary duty and other subsidiary duties effectively, every government needs adequate funding. Unfortunately, the resources relied on by the government continue to dwindle from year to year (Ofoegbu et al, 2016). According to Ibanichuka et al., (2016), tax creates very valuable income to the government. Akkhor and Ekundayo (2016) submitted that tax collection in Nigeria in line with the existing statutes is imposed by all the arms of government, that is, central, state, and municipality with each having its domain or territory audibly written in lucid language, the duty and charges authorized list for assessment. In modern civilization however, taxes are the most crucial means of funding, and one of the strongest or robust instruments employed in the expansion of reasonable and social affairs in the financial system and also lessens the disparity or imbalance of earnings allocation (Meghna and Meera, 2019).

Taxation in summary is the shift of income or wealth from the private ownership to the civic so as to enable the government to carry out some, if not all of the country's economic and social objectives. The objectives may be to provide social amenities regularly especially in the educational, health, transport sector, and capital accumulation (Abomaye-Nimenibo et al., 2018). They further submitted that divergent kinds, forms and categories of taxes exist but the

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usual categorization in Nigeria is classifying taxpayer as direct and indirect. The direct tax is imposition on persons, firm's earnings or wealth, examples are; personal income tax, company income tax, petroleum profit tax, capital gains tax. But whilst levying on goods and services, then it is refer to as indirect tax; for instance, custom and excise duties, and value added tax.

Ibanichuka *et al* (2016) further stressed that there are several taxes that are collected federally such as follows; Company Income Tax (CIT), Petroleum Profit Tax (PPT), Value Added tax (VAT), Personal Income Tax (PIT), Customs and Excise Duties (CED), Capital Gains Tax (CGT) Stamp Duties (SD), and Withholding Tax (WHT) amongst others. The arm of central administration that is accountable for imposition and accumulation of such levies, apart from customs and excise duties is Federal Inland Revenue Service (FIRS). The collection of customs and excise duties is handled by the Nigeria Customs Service. For the purpose of this study however, Federal Government collected taxes considered include; Company Income Tax (CIT), Value Added Tax (VAT), Petroleum Profit Tax (PPT), and Customs and Excise Duties (CED) that are within the jurisdiction of the Central Administration alone managed and controlled by the Federal Inland Revenue Service (FIRS).

The company income tax is charged at the rate of 30% on the total/entire profit posted by organizations (Adegbeie and Fakile, 2011). Value Added Tax is levied on conspicuous consumption the burden is to be borne by the end user but gathered at every phase or level of manufacturing and allocation (Omodero et al., 2016). Though, VAT Decree 102 was introduced in on 1st December 1993, but administratively, it was fully operational from 1st January, 1994. Petroleum Profit Tax has been defined as a regulation which foists tax on incomes from the petroleum operations in the country and gives for the evaluation and accumulation therefrom and for the motives attached thereupon (Yahaya and Bakare, 2018). According to Abomaye-Nimeniboet *al* (2018), customs duty is a vital wellspring of earnings for the Central Administration which is payable by importers of specified goods. Customs and excise duties account for the totality of import and export duties collected by the customs and excise department. Excise taxes are charges imposed by government on specific commodities produced in a country at differing rates. These charges are being imposed on domestic products produced locally as distinct from imported goods and are mainly imposed for revenue generation purposes, they further submitted.

In Gwa and Kase (2018)'s view, economic growth signifies an extension in the worth of outputs and utilities manufactured by a nation over a given time period and scholars employ an expansion in the state's Gross Domestic Product (GDP) in calculating it. Consequently, there is possibility of having gainful expansion i.e. growth without necessarily having industrialization in the short-term or middling (Hadjimicheal et al., 2014). To calculate or estimate economic growth, scholars usually scrutinize or explore the worth in actual or real Gross Domestic Product (RGDP) from a year to another year (Chigbu, 2014). Economic growth can be proxies using contrasting gainful criteria as follows; Gross National Product (GNP), Market Capitalization, Gross Domestic Product (GDP), and Per Capita Income. However, for the purpose of this study, economic extension is proxies using Gross Domestic Product (GDP) between periods 1999 through 2017.

Though, government responsibilities have been increasing over time in Nigeria due to booming citizenry and evolution in technology. However, resources available from oil as the

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only main source of earnings to Nigeria continue to decline on daily basis due to the consequential shrink in the price of our black gold, oil lately. This has caused decline in the quality of life of the people in Nigeria as well; there has been difficulty having access to quality education, problem of access to improved healthcare delivery, non-availability of employment opportunities for the teeming population of the youth, no access to clean and portable water, and safety of being and properties, to mention but a few. Ibadin and Oladipupo (2015) affirmed that over reliance on earnings from oil as the principal spring of Nigeria earnings has become dangerous and not favourable for continuous economic upswing or upturn. The immoderate reliance of our nation on a mono-product (crude oil) earnings possess serious consequences if not checked as the economy may be facing the risk of getting stranded unless bold measures are made towards getting another source of revenue base internally (Dickson and Rolle, 2014).

The major question raised from the foregoing therefore is whether the persistent relationship between Federal Government collected taxes and economic growth is sustained for an extremely long time? The study therefore intends to test the following hypothesis;

H₀: There is no persistent relationship between Federal Government collected taxes and economic growth for an extremely long period of time.

Scope of the Study

The research work is covering revenue earned through; CIT, PPT, VAT and CED (explanatory variables), and economic growth proxied as Gross Domestic Product for the period 1999 to 2017. Period chosen helps to estimate the impact of CIT, PPT and VAT on economic growth of Nigeria since democratically elected government took over in 1999 to 2017 (eighteen years of democracy in the country).

Implications of the study

This research work will help the authority in formulating fiscal policies that is beneficial to the economy generally. It will also help in strengthening relevant administrative agencies in their operations, such as Federal Inland Revenue Service, Joint Tax Board, the Apex Bank in Nigeria, Federal Bureau of Statistics etc. This research work will equally assist government in developing and harnessing other sources of internally generated revenue in order to boost earnings and guide against over reliance on oil income.

Conceptual Review

Sherrif and Agrawal (2017) opine that using tax as a tool of budgetary policy to attain economic upswing in most economically developing nations cannot be dependable because of decreasing size of income creation. It is significant to note that a tax structure should be designed in a manner that it subscribes to economic upswing through income mobilization. Taxation in brief is the pass-on of earnings or wealth from the private ownership to the state so as to allow the public to carry out some, if not all of the nation's economic and human wellbeing.

Ojo (2008) opines that taxation is a postulation and method of levying tax on subjects and that tax itself is a mandatory charge that is needed to be contributed by every subject. It is normally regarded as a public responsibility and the levying is anticipated to accumulate revenue which should be employed in providing basic amenities, both general and safety as well as initiate circumstances for the business security of humans. Therefore, taxation is a

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central pole of a nation's administrative structure for financing and expansion (Abomaye-Nimenibo *et al*, 2018).

Abomaye-Nimenibo (2017) sees tax as a compulsory commitment paid by both living and lifeless/non-living soul to the administration who makes use of it for different or diverse undertakings and dissenting or non-compliance is punishable under appropriate or existing laws. He posited further that tax is an involuntary payment made by a resident of a state in obedience to levy imposed by a constituted authority of a sovereign state at a particular period of time. Therefore, taxation plays a crucial part in fostering and enhancing economic and social activities and growth. It is through taxation that the administration makes sure that funds are directed towards key projects in the community while giving aid to the weakly citizens. A tax structure is adjudged as the functional medium or process of generating funds within the structure or country while guaranteeing conducive atmosphere for the growth and development of the country's wealth (Abomaye-Nimenibo *et al*, 2018).

According to Ajakaye (2000), the company income tax has become a crucial wellspring of revenue in many developed nations of the world. It is levied on incomes or earns of organizations arise in, obtained from, put into, cleared in or collected in the country. Company income tax is charged at a rate of 30% on the entire profit of the firm (Adegbie and Fakile, 2011). Company Income Tax is payable only to the Federal Government and the assessment is on preceding year basis (PYB). It is noteworthy that any organization should submit its yearly reports to the tax board latest, six (6) months after the end of its reporting date in line with the dictates of the subsisting enactment.

According to Micah and Alasin (2017), the law allows the Federal Inland Revenue Service to evaluate and levy firms to tax on a just and rational proportion of income using the below circumstance; whenever the trade files no assessable incomes, whenever the trade files assessable incomes which, in the belief of the tax authority are below anticipated to come-up from the trade, whenever the accurate total of the assessable incomes of a firm cannot be determined. According to Naomi and Sule (2015), company income tax is imposed on the profit of entire organizations functioning in the state with the exception of those particularly privileged under the enactment. There are various attentions in the enactment on the difference between Nigerian and non-Nigerian organizations. A Nigerian firm can be described as those registered under the Company and Allied Matters Act, or whichever ratification restored by that enactment. The chargeable incomes of suchlike firm are measurable to the nation's tax regardless of if completely, the income was obtained amid, put into or collected in Nigeria.

Value Added Tax is imposed on conspicuous utilization the burden of which is borne by the end user but gathered at every phase or level of manufacturing and allocation (Omodero, Okafor, Azubuike and Ekwe, 2016). Authority believed that VAT is not possible to dodge or escape. In Nigeria, as stressed further by Omodero *et al* (2016), the programmes concerning the VAT structure commenced with ratification of the scheme of a research on indirect taxation in November, 1991. The resolution of undertaking the scheme was released to the country in 1992 forecast statement made by the then military leader. According to them, the commencement or inauguration of VAT in 1993 symbolizes the phase down of the sales tax which was introduced in 1986. In Nigeria, VAT is imposed uniformly at 5% on selected

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items and services rendered, though some items were exempted like, medications, staple foods, books etc according to Njoku (2015).

Petroleum operation according to Usman and Adegbite (2015), fundamentally entails petroleum survey, evolution, producing and vending of crude oil. Petroleum Profit Tax has been defined as an enactment which foists levy on incomes received through extracting of crude oil in country which allows estimation and assemblage therefrom and for the motives attached involved (Yahaya and Bakare, 2018). Petroleum Profit Tax is charged at the rate of 85% for international sales and 65.75% for local sales. According to Ihendinihu et al., (2014), petroleum profits tax is supported with two contrasting lawful connections in the joint Operating Agreement and the Production Sharing Contract not carefully guarded by tax enactment.

According to Akhor et al., (2016), custom duty is an instance of indirect taxes and comprises of export and import tariffs, though, import tariff is normally accentuated in nations where import prevalent, like ours. They went further that customs duties represent an ancient type of present tariff in the nation which was initiated in 1860 as import tariffs. It's normally levies on the nation's importation imposed on the worth of the importation or on the definite sum conditional on standard. While export tariff is levied on the items going out to other nations, import tariff on the other hand is imposed on the items being imported from other nations. However, excise duties are prorated levy on the productivity of assembled items which is managed by the state's custom services (Ekeocha et al., 2012). To Abomaye-Nimeniboet *al* (2018), customs duty is a vital means of earnings for the Central Administration which is payable by importers of specified goods. Customs and excise tariffs make totality of import and export duties collected by the customs and excise department. Excise taxes are charges imposed by government on specific commodities produced in a country at differing rates. These charges are being imposed on domestic products produced locally as distinct from imported goods and are mainly imposed for revenue generation purposes, they further submitted.

Jones and Ekwueme (2016) described economic growth as the expansion or growing in the aggregate or volume of conspicuous consumption manufactured in the nation's economy or in a financial system over a period of time. According to them it is commonly computed as the ratio or proportion of expansion in actual aggregate or total national output, and growth or expansion is calculated in actual or genuine word i.e. inflation-modified expression so as to remove the impact of inflation on the estimation or valuation of goods/products and utilities manufactured. To Saheed et al., (2014), economic upswing is a procedure by which the real/actual per capita or per head earning of a nation escalates over a long time, which can equally be described as the expansion over a period of time of an economy's scope to manufacture these items and services required in ameliorating the subject's welfare in enlarging numerals and multiplicity. Growth is usually computed in real or actual expressions, i.e. inflation adjusted terms so as to fend off the upshot of escalation in the price of items and services manufactured in a state (Ihendinihu *et al*, 2014).

In Gwa and Kase (2018)'s opinion, economic growth signifies an extension in the worth of outputs and utilities manufactured in a nation in a given period of time and scholars utilize an expansion in nation's Gross Domestic Product (GDP) in calculating it. Therefore, there is possibility of having economic expansion i.e. growth without necessarily having industrial

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development in the short-run or medium term (Hadjimicheal et al., 2014). Economic upswing may be proxies utilizing contrasting gainful barometers varying from Gross/total National Product (GNP), Market Capitalization, Gross/total Domestic Product (GDP), and Per/Each Capita/Average Income. However, for the purpose of this study, economic growth/upswing is proxies by utilizing Gross/Total Domestic Product (GDP).

Empirical Review

Abomaye-Nimenibo et al., (2018) examined the tax revenue contributions to economic upswing in the country from 1980 to 2015 using regression model (OLS) as the main analytical technique on the secondary data collected within the periods under review. The results confirmed a long time correlation amongst changeable considered while the short-run regression finding showed that Petroleum Profit Tax (PPT) and Company Income Tax (CIT) does not have remarkable correlation with economic upswing in country and the study recommends that authority should make sure that tax revenue is used judiciously in the provision of social amenities like good education, housing, good transportation network, qualitative health care service, steady power supply, good road network that will enhance economic upswing and industrialization in the country.

Odhiambo and Olushola (2018) investigated the connection between taxation and economic upswing in a naturally endowed nation like Nigeria making use of data sourced from the nation's Apex Bank (CBN), for the period 1986 to 2015 which was analyzed by employing Ordinary Least Square model. Empirical findings showed that tax collection posses a notable effect on actual GDP rate of growth but tax contribution's percentage to the rate of economic growth fails the best proportion given the magnitude of commercial undertakings and worth of entire productivity. The study recommended that the authority should organize a suitable tax structure with priority on widening the taxable items or economic activities or appraising up the tax rates so as to intensify the tax attempt and also ensure best subscription of tax collection regarding economic upswing and industrialization.

Nwaiwu and Macgregor (2018) investigated the impact and connection between tax income and economic upswing in Nigeria for forty (40) years period (1975 to 2015) employing the Pearson Product Moment correlation coefficient and Multiple Linear Regression model on time sequence (secondary) data gathered from CBN statistical bulletin. The results revealed that there is confirmation of deficient funds administration, the act that has denoted our firms and also public governance. The research work however recommended that tax income considered to be paid using online method or straight into the account belonging to the government agencies in-charge.

Egbunike et al., (2018) carried out a study in Nigeria and Ghana on tax earnings and economic upturn using time series data sourced from the Apex Banks in both Nigeria and Ghana Statistical Bulletin for a period of seventeen (17) years. The research work employed Granger causality in assessing the causality within tax and economic upturn and to test the connection in between tax earnings and Gross Domestic Product by adopting regression (OLS) model. The results showed a favourable effect of tax earnings on the Gross Domestic Product of both countries affirming earlier works. The research work however recommended appropriate action in making sure that the yield from that tax is efficiently employed in developing and growing their wealth. It was however recommended that tax is a good source of earnings; hence the tax structure in the two nations should be taking serious.

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Terzungwe and Eya (2017) evaluated the effect of tax collection on economic upswing of the nation employing secondary data sourced from CBN, FIRS, the nation's treasury and other relevant agencies of the Administration. The data sourced were analyzed by adopting appropriate economics frameworks viz; Augmented Dickey Fuller Test, Johansen co-integration test and error correction model and the results revealed all variables were stationary or fixed at first contrast and co-integrated. However, results also revealed a long period pragmatic correlation within Company income/earnings Tax and Petroleum Income Tax but Value Added Tax and Personal Income Tax were adversely connected to economic upswing. It was however recommended that authority should boost the collection of value added tax and personal income tax in order to contribute and impact more on the economic upswing of Nigeria.

Nkhalamo and Sheefeni (2017) examined the connection between taxation and economic upswing in Namibia making use of time series techniques such as unit root, cointegration, impulse response functions and variance decomposition within the vector auto-regression framework utilizing quarterly data for the period 2001 to 2015. The unit root test results revealed a combination of order of integration. However, the cointegration test showed no existence of long-term correlation among the indicators. Therefore, the long-term analysis could not be conducted, but only the short-run analysis. The results of the impulse response functions revealed an instant adverse consequence on economic upswing arising through upsets in tax. Moreover, the forecasting error variance breakdown showed tax being accountable for fair variation in economic upturn in Namibia.

In a study carried out by Onakoya and Afintinni (2016) on taxation and economic upswing in the country, the study investigated co-integration correlation within tax earnings and economic upswing in Nigeria from 1980 to 2013 using secondary data for thirty years obtained from the Central Bank of Bank (2014) bulletin. Findings showed a long term correlation subsisted between taxation and economic upswing in the country and the study recommended long-lasting establishment reorganization in the state customs so as to stop the obvious escape-valves and the tax collection process employed by revenue officers have to be absolve from dishonesty and misappropriation. The study also recommended that the Central, state and local authorities should immediately re-model and computerized all its tax structure. Gatawa et al., (2016) studied the effect of VAT on the activities level in Nigeria from the inception of VAT in 1994 to 2014 using data collected at the Apex financial institution in the country (CBN) statistical bulletin. Analysis was done through the use of Johansen Co-integration and the study confirmed evidence of a remarkable buoyant effect of VAT on economic growth. Also, other income received by the government that comprise the entire receipts from oil and supplementary revenue into the nation's distributable pool account aside from VAT revenue were all confirmed haven positive relationship with economic upswing throughout the period under review. The research work however recommended strengthened of VAT and entire recognized managerial escape routes must be blocked so that its earnings to endure to support and promote more remarkably to economic upswing in Nigeria and that accountability and clarity of resources administration of the entire revenue collected should be encouraged.

Naomi and Sule (2015) studied the potential of Company Income Tax as another financing tool for provable development in Nigeria employing data collected for the period of 1987 to

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2013 which was analyzed with Ordinary Least Square (OLS) model and Cointegration test to determine the long-term correlation within Company Income/earnings Tax and income mobilization in the country and as well estimating the impact of main macro-economic determinants such as; foreign direct investment, rate of interest, dishonesty perception index, inflation rate, and exchange rate. Findings revealed that increasing the contribution of Company Income Tax by 1%, expand income creation by 0.42%. Also, macroeconomic determining factor of Company Income Tax depicts that there is a long-term correlation with foreign direct investment, interest rate, and dishonesty perception index proxied by CPI. The research work however recommended that whereas Company Income Tax has appeared future reliable means of other earnings, circumstances for firms to thrive so that taxes from them can be helpful and should be put in the long-period.

Theoretical Framework

The research work is hinged on the Benefit theory of taxation. The Benefit theory of tax collection by Cooper (1994) opines that levies should be raised on taxpayers based on the satisfaction derived there from. This theory believed that taxpayers must be requested to suffer tax imposition in fraction to the utilities or satisfactions they enjoy from the amenities supplied by the administration. The notion is centered on the premise that there is fundamentally an interchange or lawful interconnection between tax-payers and the nation. Therefore, the more satisfactions a taxpayer receives from the affairs of a nation, the more he supposed to bear tax burden to the authority, thus a ‘quid pro quo’ is presumed to exist. The nation supplies definite items and services to the inhabitants of the community while they subscribe to the worth of delivery of those items and services in ratio to the satisfaction received or utility derived.

Thus, the benefits received present the basis for the distribution of the tax burden in specific manner. Though, Anyanfo (1996) contends that taxes should be allotted on the premise of satisfactions accrued from administration outlay, however, in this quid pro quo put up, there is no room for matters like fair allocation of earnings and resources. This theory therefore fails to observe the feasible usage of the tax blue print for assisting economic growth or stabilization. Also, the incapability to estimate the satisfactions derived by a taxpayer from the amenities supplied by the administration has made this theory inappropriate.

Hypotheses Testing

Hypotheses formulated for the purpose of this study is given below

H₀: There is no long run relationship between federal government collected taxes and Nigeria economic growth

H₁: There is long run relationship between federal government collected taxes and Nigeria economic growth

Methodology

This section addresses the issue that relate to the methodology of the study with particular reference to the choice of design and strategies, data collection, the nature and form of data required, the data analysis method and the parameters to be estimated, and the design to test the hypothesis formulated.

Existing data is considered most appropriate for this study because it is not possible to directly manipulate it because the events have already taken place and therefore the research

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is been conducted after the data or fact. Therefore, secondary data for the period 1999 through 2017 were obtained from the Nigerian Apex Bank Bulletin.

Model Specification

The econometric model specified for this research is given as

$$GDP = f(CIT, VAT, PPT, CED) + \varepsilon \quad (1)$$

When this model is written explicitly, it becomes

$$GDP = \beta_0 + \beta_1 CIT + \beta_2 VAT + \beta_3 PPT + \beta_4 CED + \varepsilon \quad (2)$$

Where GDP is gross domestic product, CIT is company income tax, VAT is value added tax, PPT is petroleum profit tax and CED is customs and exercise duties.

Analytical Method

The analytical techniques employed in this research are as follows;

i. Jarque-Bera test:- This is an excellent or quality test to know if data have the imbalance(skewness) and flatness (kurtosis) suiting a common allocation. The test is titled after Carlos Jarque and Anil K. Bera. The test statistic JB is described thus:

$$JB = \frac{n-k+1}{6} \left(S^2 + \frac{1}{4} (C - 3)^2 \right) \quad (3)$$

ii. Augmented Dickey Fuller test:- A statistical test for stationarity or test for unit root has been suggested by Dickey and Fuller (1979). The test is employed for the parameter ρ in the additional regression:

$$\Delta_1 X_t = \rho X_{t-1} + \alpha_1 \Delta_1 X_{t-1} + \varepsilon_t \quad (4)$$

Where Δ_1 indicates the differencing mechanist i.e. $\Delta_1 X_t = X_t - X_{t-1}$

The applicable null hypothesis is $\rho = 0$ i.e. the actual sequences is adjustable (non-stationary) and the substitute is $\rho > 0$ i.e. the actual sequences is unvarying. Once significance for the test statistic is calculated, it could be contrasted to the analytical value for the Dickey-Fuller test. If the test statistic is lower than the analytical value, then the null hypothesis of $\rho = 0$ is rejected and no unit root is present.

The test statistic is given as

$$DF = \frac{\hat{\rho}}{SE(\hat{\rho})} \quad (5)$$

iii. Co-integration Test:- The discovery that scores of large historical-series may carry a unit root has prompted the evolution of the theory of non-stationary time series analysis. Engle and Granger (1987) argued that a cramped coalition of two or more unvarying series may be unvarying. If for instance an unvarying cramped coalition subsists, the non-static historical series could be said to cointegrated. The unvarying cramped coalition is referred to as Cointegration equation and can be clarified as a long –term balance correlation amongst indicators.

The purpose of the Cointegration test is to establish if a set of non-static series is cointegrated or not. As clarified, the existence of a co-integrating relationship shall set-up the base of a model specification for this research.

The co-integrating equation and long run model is specified as

$$ECT_{t-1} = \ln GDP_{t-1} + \xi_1 \ln CED_{t-1} + \xi_2 CIT_{t-1} + \xi_3 PPT_{t-1} + \xi_4 VAT_{t-1} + C \quad (6)$$

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iv. Vector Error Correction (VEC) Technique

The presence of co-integrating relationship forms the basis of the use of Vector Error Correction Model. Eviews econometric software version 9 was used for data analysis, implement Vector Error Correction (VECM)-based co-integration tests using the methodology developed by Johansen (1991, 1995).

Results and Discussions

Results

The line graphs below showed some irregular features and variations in the econometric variables employed for this research. This is a clear case of lack of stationarity which is mostly associated with time series data. Though it could be evidenced that tax collections have been on the increased over years but without any definite pattern which can be said to be stochastic in nature.

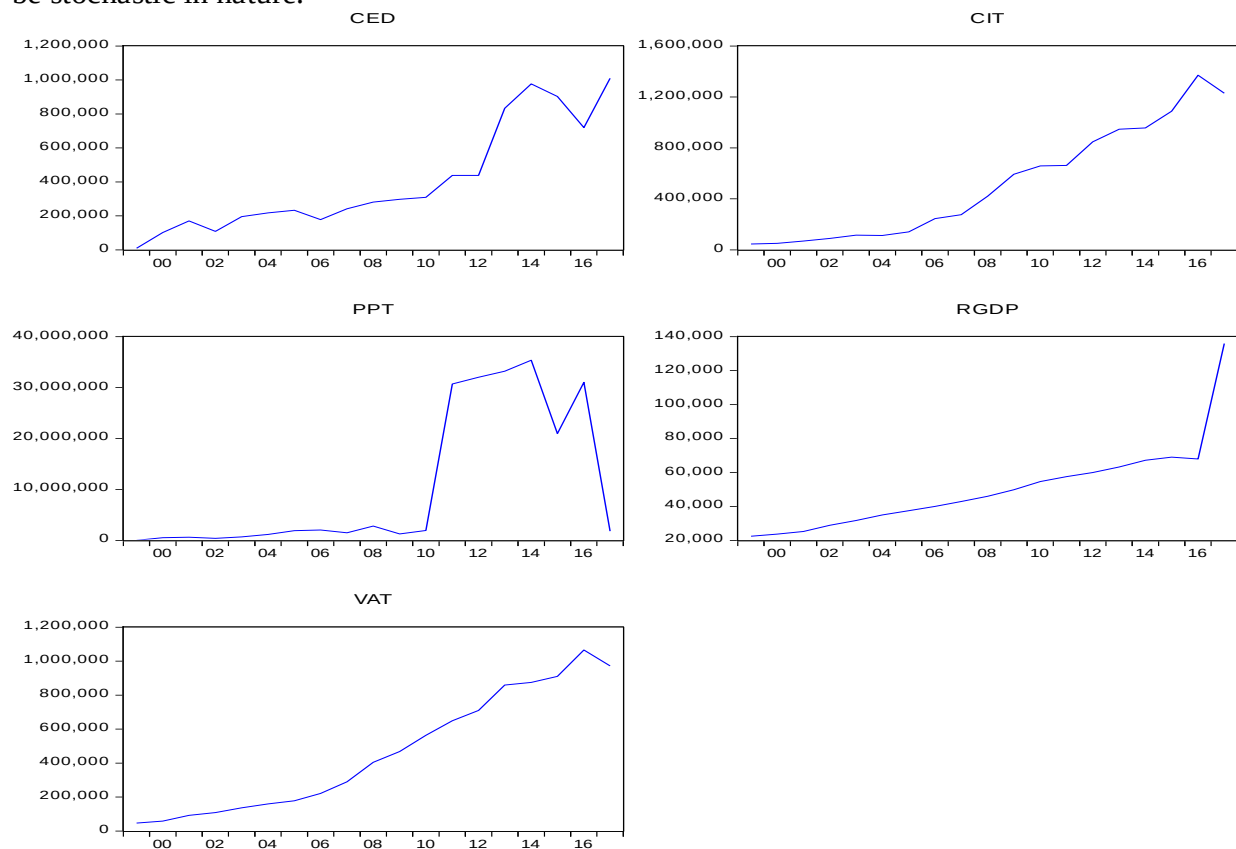


Figure 1: Line chart showing movement of CED, CIT, PPT, RGDP and VAT over time

Table 1: Descriptive statistics and Normality Test of measured Variables (N=19)

	CED	CIT	PPT	RGDP	VAT
Mean	403272.6	521961.6	10524070	50453.48	461521.1
Median	281300.0	420600.0	1904900.	46012.52	404500.0
Maximum	1010000.	1370000.	35343000	135881.9	1065800.
Minimum	8790.000	46200.00	16430.00	22449.41	47100.00
Std. Dev.	319843.5	442600.8	14232661	25914.60	351722.6
Skewness	0.840034	0.479665	0.878526	1.843396	0.348718

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Kurtosis	2.247972	1.855290	1.872419	7.223807	1.615039
Jarque-Bera	2.682305	1.765953	3.450613	24.88444	1.903591
Probability	0.261544	0.413550	0.178118	0.000004	0.386047

Table 2: Augmented Dickey Fuller (ADF) Unit Root Results at levels and first difference

Variable	ADF Test @ Levels	ADF Critical Values	Test @ First Difference	ADF Critical Values @ 1%	Remark
CED	-0.217283	3.857386 (0.9199)*	-3.976664	-3.886751 (0.0084)**	Order 1 Integration
CIT	0.206922	-3.959148 (0.9632)*	-4.143635	-3.886751 (0.0060)**	Order 1 Integration
PPT	-1.649747	-3.857386 (0.4382)*	-4.101698	-3.886751 (0.0065)**	Order 1 Integration
VAT	-1.947709	-3.959148 (0.3039)*	-4.188880	-3.886751 (0.0055)**	Order 1 Integration
RGDP	1.613070	-3.920350 (0.9987)*	-4.457502	-3.886751 (0.0033)**	Order 1 Integration

*signifies P-values @levels;

**signifies P- values @first order difference

Table 3: Co-integration Results

Hypothesized No. of CE(s)	Eigen Value	Trace Statistics	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
Unrestricted Cointegration Rank Test (Trace)					Unrestricted Cointegration Rank Test (Maximum Eigenvalue)		
None *	0.99432	185.868	69.8189	0.0000	87.91475	33.87687	0.0000
At most 1 *	0.938614	97.95333	47.85613	0.0000	47.43979	27.58434	0.0000
At most 2 *	0.881306	50.51354	29.79707	0.0001	36.23052	21.13162	0.0002
At most 3	0.473521	14.28302	15.49471	0.0755	10.90623	14.26460	0.1590
At most 4	0.180150	3.376785	3.841466	0.0661	3.376785	3.841466	0.0661

Max-eigenvalue test specifies 3 co-integrating eqn(s) at the 0.05 level

* indicates rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4: Normalized Co-Integrating Coefficients

Variables	Coefficients	T-statistics	Log likelihood = -1032.615
CED	-0.120438 (0.00391)	-26.6905	
CIT	0.054143 (0.00983)	5.5079	
PPT	0.000888 (5.5e-05)	16.1455	

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VAT	-0.030070 (0.01515)	-1.9807
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Standard error in parenthesis ()

Source: Extracted from E-views Output, Version 9

Table 5: Johansen Co-Integration Long Run Estimates

	$\ln GDP_{t-1}$	$\ln CED_{t-1}$	CIT_{t-1}	PPT_{t-1}	VAT_{t-1}	C
ECT_{t-1}	1.0000	-95.10405	-0.000340	-1.73E-07	0.000622	1069.653
Standard Errors		(5.78490)	(8.8E-05)	(5.6E-07)	(0.00013)	
T-statistics		[-16.4401]	[-3.86570]	[-0.31081]	[4.81988]	

Critical value = 1.771 @5% level of significance

Substituting the model coefficients, we have

$$ECT_{t-1} = 1.000 \ln GDP_{t-1} - 95.10405 \ln CED_{t-1} - 0.00034 CIT_{t-1} - 0.000000173 PPT_{t-1} + 0.000622 VAT_{t-1} + 1069.653$$

(7)

Table 6: Vector Error Correction Estimates

Variables	CointEq1	S.E	T-statistics
$\Delta(\ln(GDP))$	0.000180	0.00063	-0.28334
$\Delta(\ln(CED))$	0.009659	0.00096	10.0698
$\Delta(CIT)$	-260.9953	392.309	-0.66528
$\Delta(PPT)$	7539.639	45555.8	0.16550
$\Delta(VAT)$	-168.6897	238.069	[-0.70857]

Source: Extracted from E-views Output, Version 9

$$\Delta \ln(GDP) = 0.00018 ECT_{t-1} + 0.009659 \Delta \ln(CED) - 260.9953 \Delta(CIT) + 7539.639 \Delta(PPT) - 168.6897 \Delta \ln(VAT)$$

(8)

Discussions

Table 1 revealed brief explanation of the researched data. The average value of CED, CIT, PPT, RGDP and VAT were estimated coupled with the maximum and minimum values of the variables over time for the nineteen (19) years period. In addition, the variables were subjected to normality test so as to know their behavioural pattern. The Jarque-Bera test statistic for CED (2.682305), CIT (1.765953), PPT (3.450613) and VAT (1.903591) with corresponding P-values of 0.261544, 0.413550, 0.178118 and 0.386047 respectively indicates that we can assume the normality of the independent variables at 5% level of significance. However, RGDP series was found to be non-normal since its P-values of $0.000 < 0.05$. Although, the non-normality of the response variable do not violate the assumption of checking the series for co-integration as shown from the J-statistics and peakedness of the selected variables.

Due to the stochastic nature associated with the series of all the considered variables as evidenced in figure 1, fundamentally therefore, such sequences are tried for the assurance of unit root. The results of the unit root stationarity/static test in tables 4.2 were conducted using Augmented Dickey Fuller (ADF) approach. The finding of the ADF test reveals that all the

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adaptable/changeable were not static at level (P-values >1%, 5%, and 10% significance level).

As a result of the non-stationarity of the entire series, further test of integration was applied at first order differencing. It is confirmed that all the adaptable achieved a stationary trend procedure after the first order differencing with all their P-values <1%, 5%, and 10% significance level using Augmented Dickey Fuller approach. Therefore the null hypothesis of unit root could no longer be accepted for the variables at this level. This implies that the series could be considered as suitable at order 1 procedure.

Hinged on the unit root test results, the study advanced in testing for the subsistence of various co-integration amid the changeable. It is pertinent to note that if there subsists an unvarying definite coalition of non-static random adaptable/changeable, the adaptable/changeable combined could be assumed to be cointegrated. Thus, the Johansen and Jesulius (1992) co-integration method was employed in ascertaining if cointegrating connection subsists amidst variables measuring economic growth and taxation in country. This approach employed the pair of the trace and maximum Eigen value statistic in establishing the importance or else of the co-integrated sequence as advocated by the results of the unit root test. Evidence from the trace and maximum Eigen statistic as revealed on table 3 topmost showed at least three co-integrated equation P-values of 0.0000, 0.0000 and 0.0002 independently which are less than both 1% and 5% significance levels. The reality of a co-integrated sequence from the above finding consequently suggests the existing of achievable long term connection amidst the adaptable/changeable over a long period of time. This implies that the perceived connections between the predictors' variables and economic growth are sustainable over time. Furthermore, the three co-integrated equations as reflected on the table showed sustainable long run positive relationships between the response variable (RGDP) and all the predictors' variables which are in line with most theoretical postulations.

Analysis of the normalized coefficients as shown in table 4 reveals a significant long run relationship between CED, CIT, PPT, VAT, and Economic growth in Nigeria. Specifically, percentage change in CIT, and PPT tend to 5.4%, and 0.09% incremental change in Nigerian economic growth holding other factors at constant. This indicates that the degree of the responsiveness of economic growth to changes in CIT and PPT is positively inclined and elastic within the scope of the current study. CED and VAT also shows a significant relationship with economic growth such that a unit increase in CED and VAT tends to 12% and 3% decremental rates in economic growth holding other factors at constant. Further analysis of the estimated CED and VAT coefficients shows that the degree of the responsiveness of economic growth to changes in those measures of economic growth is negatively inclined within the scope of the research study. This might be as a result of the partial remittance of CED and VAT which is due to corruption ravaging Nigeria economic growth within the time space of this study as CED and VAT should have positive contribution to economic growth.

Analysis of the co-integration long run estimates as shown in table 5 indicates that a percentage change in CED, CIT, and PPT are associated with to 95.10405, 0.00034 and 0.000000173 decremental change in RGDP on average ceteris paribus in the next one year. Also, a percentage change in VAT is associated with 0.000622 incremental changes on

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average *ceteris paribus* in the next one year. Constant of 1069.653 indicates the value of economic growth when other variables of Federal Government collected Taxes are held constant in the long run. However, significance of the estimates can be depicted from the T-statistics as the absolute values are higher than the critical value of 1.771 at 5% level of significance except for Petroleum Profit Tax (PPT), which do not significantly contribute to the model.

The result of the error correction term in table 6 suggests that the previous year's deviation from long run equilibrium is corrected at a speed of 0.018%. The implication of this is that Nigeria economic growth taking federal government collected taxes into consideration has the inertial of adjusting back to a state when acted upon by external forces.

The implication of this study is that federal government of Nigeria should continue to block leakages of tax returns especially the petroleum profit tax and value added tax as this will ultimately lead to high and sustainable economic growth in the form of increase real gross domestic product. The findings based on the data for the period 1999-2017 from both the long run and the vector error correction models provide evidence in support of earlier findings from studies in Nigeria and some other countries.

Conclusion and Recommendations

The essence of conducting this research is to scrutinize the reality of a long term connection within federal government collected tax revenue and economic upswing, and findings through the fitted model revealed that on the long run, all the variables adopted as federal government collected taxes will have positive correlation with economic growth. To this end, it was recommended that tax collection by federal government need to be focused on, improve upon and concerted efforts should be made to increase revenue collection from taxes by the federal government to augment the dwindling resources from a mono-economy source (oil revenue) in order to impact positively on Nigerian economic growth and development.

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