

Federally Collected Tax Revenue and Economic Growth of Nigeria: A Time Series Analysis

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Abstract

This study evaluates the reforms in federally collected tax revenues and how they affect economic growth rate in Nigeria between 2000 and 2011. The study adopted causal descriptive research method and the data were drawn from annual reports of the Central Bank of Nigeria (CBN) and Federal Inland Revenue Services (FIRS) bulletins. The data analysis was based on the Johansen Co-Integration test showing that a long-run meaningful relationship exists between Federally Collected Tax Revenue (FTCR) and Gross Domestic Product (GDP) of Nigeria. Specifically, Custom and Excise Duties (CED) and Value-Added Tax (VAT) and Petroleum Profit Tax (PPT) Granger caused growth rate Gross Domestic Product (GDP). This implies that reforms in these tax revenue components will bring the desired improvement in the tax system and will greatly enhance revenue to the government for the implementation of her policies and programmes. These reforms can be targeted at reducing tax avoidance and evasion. The study therefore recommends that policies that enhance tax compliance, such as reduction in the rates of taxes, should be put in place and this will stimulate economic growth and development in the short and long run. Also, regular monitoring of the tax payers for tax compliance as well as increased education of the tax payers will further stimulate increase in revenue generated through the tax system.

Keywords: Tax Revenue, Central Bank Nigeria, Federal Inland Revenue, Economic Growth

1.0 Introduction

Taxation is known globally as a very strong and powerful weapon of fiscal policy and as such government of nations put structures in place to maximize revenue accruable from its various tax components. The structure of tax should be such that it is broadened enough to generate revenue to finance government expenditure and various other programmes of government. The growth and development of any nation is predicated upon the availability of funds as well as other human and material resources. Economic growth can be achieved by four important determinants namely: human resources, national resources, capital formation and technological development (Dwivedi, 2004). Efficient use of these resources will help to speed up the political, economic and social activities in the country. The revenue needed is not always available, and so a potent and certain source of revenue from a well-structured tax system will obviously create the required revenue for realizing the set objectives.

Nigeria being predominantly a mono-product economy, at present generates bulk of her revenue from sale of oil. Oil companies are also made to pay the stipulated tax while other sectors (non-oil sector) are barely harnessed. This abnormal dependence on oil for the revenue of government is generating tension in government circles since the fortunes of oil have been on the decline following global oil crisis. Furthermore, the revenue potentials of the informal sector of the economy has also not been properly identified and harnessed. If this important sector, which has been lying idle, is assisted by the relevant government authorities, the revenue from it would add up to increase the overall revenue of the government. The inclusion of the informal sector, through a broaden tax system, will help to stimulate economic growth and development, create employment and stabilize the economy.

Tax is a compulsory payment made by individuals and organizations to the government in accordance with predetermined criteria for which no direct or specific benefit is received by the taxpayer (Offiong, 2013). The imposition of taxes often helps to regulate the production and consumption of goods and services; helps protect infant industry and curb inflation. Tax is a compulsory payment, backed by laws and paid according to predetermined rate. The provision of basic amenities to the citizens is financed mainly from government revenue of which taxes ought to contribute significantly. When social amenities are provided to the taxpayers it encourages voluntary compliance, stimulate business activities that in turn pay taxes and provide revenue to the government. Other services government renders/provides include maintenance of law and order, defense against external

aggression, regulation of trade and business to ensure social and economic maintenance. Despite these, the economic effect of tax appears to still be at the micro levels. Tax serves as incentive to work when the marginal rate of tax is low and vice versa.

Tax reform has been a regular exercise by the government. Every administration tries to show significant interest in developing ways and means of generating more revenue in order to meet electoral promises and to provide the needed infrastructure. The reform is expected to bring about increase in government revenue that will stimulate economic growth. Several studies pertaining to tax reforms in Nigeria have been carried out. These studies concentrate on economic growth undermining public generated revenue, not much has been done in the area of federally collectible tax revenue and economic growth. Experience has shown that expectation and the actual result of tax reform seems to be apart. Many a times, the objective of engaging on a particular tax reform are rarely achieved and therefore this study seeks to examine the effect of federally collected tax revenue, which arose from various tax policy reforms, on the economic growth of Nigeria from 2000 and 2011.

The need for government to reform tax system/policies in line with changing realities is becoming imperative in view of falling oil prices. In Nigeria, the reform of tax laws and policies appear not to have yielded the desired results. The various components of federally collected tax revenue require a high degree of reforms to reduce revenue loss occasioned by tax avoidance and evasion and maladministration of the component. It is for this purpose that this study sets to evaluate the impact of these federally collectible tax revenues (Custom and Excise Duty, Value Added Tax, Company Income Tax and Petroleum Profit Tax) on Nigeria's economic growth using the Gross Domestic Product as proxy. This study appears timely owing to the persistent dwindling of revenue accruable from sale of oil.

1.1 Objectives of the Study

The main objective of the study is to examine the effect of the growth rate in these federally collectible tax revenues (Custom and Excise Duty, Value Added Tax, Company Income Tax and Petroleum Profit Tax) on Nigeria's economic growth. The specific objectives therefore include:

- i) To examine the effect of the growth rate in revenue from Customs and Excise Duty on the growth rate in Gross Domestic Product of Nigeria.
- ii) To evaluate the effect of the growth rate in revenue from Value Added Tax on the growth rate in Gross Domestic Product of Nigeria.
- iii) To identify the effect of the growth rate in revenue from Companies Income Tax on the growth rate in Gross Domestic Product of Nigeria.
- iv) To ascertain the effect of the growth rate in revenue from Petroleum Profit Tax on the growth rate in Gross Domestic Product of Nigeria.

2.1 Review of Related Literature

2.1.1 Conceptual Review:

Nature and scope of Taxes: Anyanwu (1997) defined taxation as the compulsory transfer or payment (or occasionally of goods and services) from private individuals, institutions or groups to the government. The main purpose of tax is to raise revenue to meet government expenditure and to redistribute wealth and management of the economy (Ola, 2001; Jhingan, 2004; Bhartia, 2009). According to Nzotta (2007), four key issues must be understood for taxation to play its functions in the society. First, a tax is a compulsory contribution made by the citizens to the government and this contribution is for general common use. Secondly, a tax imposes a general obligation on the tax payer. Thirdly, there is a presumption that the contribution to the public revenue made by the tax payer may not be equivalent to the benefits received. Finally, a tax is not imposed on a citizen by the government because it has rendered specific services to him or his family. Thus, it is evident that a good tax structure plays a multiple role in the process of economic development of any nation which Nigeria is not an exception (Appah, 2010).

Objectives/importance of Taxation

Anyanwu (1993) opines that there are three basic objectives of taxation. These are to raise revenue for the government, to regulate the economy and economic activities and to control income and employment. Also, Nzotta (2007) while agreeing with Anyanwu (1993) notes that taxes generally have allocation, distributional and stabilization functions. The allocation function of taxes entails the determination of the pattern of production, the

goods that should be produced, who produces them, the relationship between the private and public sectors and the point of social balance between the two sectors. The distribution function of taxes relates to the manner in which the effective demand over economic goods is divided, among individuals in the society. While stabilization of function of taxes seeks to attain high level of employment, a reasonable level of price stability, an appropriate rate of economic growth, with allowances for effects on trade and on the balance of payments (Nzotta, 2007).

Cannons of Taxation

According to Anyafo (1996), the principles of taxation mean the appropriate criteria to be applied in the development and evaluation of the tax structure. Such principles are essentially an application of some concepts derived from welfare economists. In order to achieve the broader objectives of social justice, the tax system of a country should be based on sound principles. Jhingan (2004), Bhartia (2009) and Osiegbu *et al.* (2010) listed the principles of taxation as equality, certainty, convenience, economy, simplicity, productivity, flexibility and diversity.

Equity Principle: This principle states that every taxpayer should pay the tax in proportion to his income. The rich should pay more and at a higher rate than the other person whose income is less (Jhingan, 2004). Anyafo (1996) states that it is only when tax is based on the payer's ability to pay that can it be considered equitable or just. Sometimes this principle is interpreted to imply proportional taxation.

Certainty Principle: This principle of taxation states that a tax which each individual is bound to pay ought to be certain, and not arbitrary. The time of payment, the manner of payment, the quantity to be paid ought to all be clear and plain to the contributor and every other person (Bhartia, 2009).

Convenience Principle: This principle states that the time and manner should be convenient to the taxpayer. According to Anyafo (1996), this principle of taxation provides the rationale for Pay-As-You-Earn (PAYE) system of tax.

Economy Principle: This one states that every tax should be economical for the state to collect and the taxpayer to pay (Appah, 2004; Jhingan, 2004; Bhartia, 2009). Anyafo (1996) argues that this principle implies that taxes should not be imposed if the cost of their collection exceeds their benefits.

2.1.1 Theoretical Review

Benefit Received Theory

This theory proceeds on the assumption that there is basically an exchange relationship between taxpayers and the state. The state provides certain goods and services to the members of the society and that contributes to the cost of these supplies in proportion to the benefits received (Bhartia, 2009). Anyafo (1996) argues that taxes should be allocated on the basis of benefits received from government expenditures.

Socio-Political Theory

This theory of taxation states that social and political objectives should be the major factors in selecting taxes. The theory advocated that a tax system should not be designed to serve individuals, but should be used to cure the ills of society as a whole.

Cost of Service Theory

This theory is similar to the benefits received theory. It emphasizes the semi-commercial relationship between the state and the citizens to a greater extent. In this theory, the state is being asked to give up basic protective and welfare functions. It is to scrupulously recover the cost of the services and therefore this theory implies a balanced budget policy.

Economic Growth

According to Dwivedi (2004), economic growth is a sustained increase in per capita national output or net national product over a long period of time. It implies that the rate of increase in total output must be greater than the rate of population growth. Another quantification of economic growth is that national output should be composed of such goods and services which satisfy the maximum want of the maximum number of people. Economic growth can be determined by four important determinants namely, human resources, national resources, capital formation and technological development. The theories of economic growth can be examined under the Harrod-Domar theory of growth, Kaldor model of distribution, Pasinetti model of profit and growth, Joan Robinson's model of capital accumulation, Meade's Neo Classical model of economic growth and the Slow model of long run growth. All these

model of economic growth represent the various views of scholars on the most suitable explanation of economic growth. However, the percentage growth in Gross Domestic Product (GDP) was adopted in this paper as it is the most popularly adopted proxy for economic growth.

3.0 Empirical Review

Several empirical studies have been conducted on the impact of taxes on economic growth. The empirical studies of Anyanwu (1997), Engen and Skinner (1996), Tosun and Abizadeh (2005) and Arnold (2011) provided different explanations of taxes on economic growth. Engen and Skinner (1996) in their study of taxation and economic growth of U.S. economy, large sample of countries and use of evidence from micro level studies of labour supply, investment demand, and productivity growth. Their result suggests modest effects on the order of 0.2 to 0.3 percentage points' differences in growth rates in response to a major reform. They stated that such small effects can have a large cumulative impact on living standards. Tosun and Abizadeh (2005) in their study of economic growth of tax changes in OECD countries from 1980 to 1999 reveal that economic growth measured by GDP per capita has a significant effect on the tax mix of GDP per capita. It is shown that while the shares of personal and property taxes have responded positively on economic growth, shares of the payroll and goods and services taxes have shown a relative decline. Arnold (2011) in their study found that short term recovery requires increase in demand while long run growth requires increase in supply. A short term concession can be hard to reverse; this implies that policies to alleviate this crisis could compromise long run growth. These studies notwithstanding, no empirical investigation on the effect of federally collected tax on economic growth of Nigeria exist. This gap in literature is what this paper sets to fill.

3.1 Methodology

The study adopts descriptive research method. The data for the study are purely secondary in nature were obtained from Central Bank of Nigeria (CBN) bulletin, Federal Inland Revenue Service and annual statistical reports. The tax revenues to be regressed on the Gross Domestic Product (GDP) are Petroleum Profit Tax, Company Income Tax, Value Added Tax, Personal Income Tax. The study adopts co-integration and error correction modeling by way of preliminary test in ascertaining the stationarity state of our time series variables. To ascertain if a common stochastic drift exist among our variables, we employed the Johansen Co-integration test. By using the co-integration and error correction model, we have combined both short-run dynamics and long run equilibrium in a broad macro-econometric modeling. The model specification is to empirically find out the effective relationship between Federally Collected Tax Revenues and Economic Growth proxied by the Gross Domestic Product (GDP). This is expressed as:

$$GDP = f(PPT, VAT, CED, CIT) \text{-----(1)}$$

Equation (1) can be re-specified in a stochastic form

$$GDP = \beta_0 + \beta_1 PPT + \beta_2 VAT + \beta_3 CIT + \beta_4 CED + U_{1t} \text{----- (2)}$$

Where U_{1t} is the Gaussian white noise

Based on a priori expectations, all the various income taxes are expected to have positive relationship with Gross Domestic Product (GDP). Thus, $\beta_i > 0$ where $i = 1,2,3,4$.

Where:

$\beta_1 - \beta_4$ = Coefficients

GDP = Gross Domestic Product

f = Function

PPT = Petroleum Profit Tax

VAT = Value Added Tax

CIT = Company Income Tax

CED = Custom and Excise Duty

4.1 Data Presentation, Analysis and Interpretation

4.1.1 Unit Root Test

In order to ascertain the stationarity state of our time series variables, we employ the unit root test. This is imperative since we are ignorant of the data generating process. The Augmented Dickey-Fuller test was employed and the results are shown in table 1 below.

Table 1: Summary of Unit Root Tests: At 99% Critical Levels

AT LEVELS			AT FIRST DIFFERENCE		
Variables	ADF	Remark	Variables	ADF	Remark
GDP	2.96	Non-stationary	DFCR	-7.289695	Stationary
CIT	3.66	Non-stationary	DCIT	-8.5677837	Stationary
PPT	2.96	Non-stationary	DPPT	-4.628360	Stationary
VAT	2.86	Non-stationary	DVAT	-6.692997	Stationary
CED	3.67	Non-stationary	DCED	-5.807121	Stationary

Source: Author's computation using E-views 7.0

The results of the unit root test using Augmented Dickey-Fuller at 1 percent level shows that all the time series variables are non-stationary at levels, but became stationary only after first differencing hence the variables have an order of integration of one. This conclusion is based on comparison of the augmented Dickey fuller statistic and the critical values provided by MacKinon (1996). Hence, he permits us to carry out the Johansen's co-integration test designed to ascertain whether a common stochastic drift exist among time series variables.

4.1.2 Co-Integration Test

Having established the time series properties of the data, the study proceeds to conduct the Johansen multivariable co-integration test by first determining the number of co-integrating vectors in the model. When time series variables are non-stationary, it is important to ascertain if a long-run meaningful relationship exist among the non-stationary series. The variables are said to be co-integrated if a long-run meaningful relationship exist among them. The Johansen's co-integration test using both trace statistic and maximum Eigen value is given in the tables below.

Table 2: Johansen Co-Integration Test

Unrestricted co-integration Rank Test (Trace)

Hypothesized No of CE(S)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob**
None	1.000000	4.482451	3.841466	0.0393

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

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

The co-integration result based on the trace test indicates that the variables are co-integrated at the 5% level. This implies that there is a long-run relationship between the variables in the model.

Unrestricted co-integration Rank Test (Maximum Eigen Value)

Hypothesized No of CE(S)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob**
None	1.000000	3.981321	3.841466	0.0411

Max-Eigen value test indicates 1 cointegrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

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

The co-integration result based on the maximum Eigen value indicates that the variables are co-integrated at the 5% level since there is one co-integrating vector. Thus, a long-run meaningful relationship exists among the variables.

4.1.3 Pair Wise Granger Causality

To ascertain the nature of causality among the entire time series variable particularly between public generated revenue and the various income taxes we employ the pair wise Granger causality test. The results are shown in the table below.

Table 3: Pair Wise Granger Causality

Null Hypotheses	Obs	F-stat	Prob
CIT does not granger cause GDP	30	5.69167	0.0092
GDP does not granger cause CIT		0.20892	0.8129
CED does not granger cause GDP	30	2.57746	0.0960
GDP does not granger cause CED		0.11473	0.8921
PPT does not granger cause GDP	30	14.4670	0.00007
GDP does not granger cause PPT		0.67803	0.5167
VAT does not granger cause GDP	30	0.32274	0.7303
GDP does not granger cause VAT		0.13811	0.8724

Source: Author's Computations Using E-views 7.0

The pair wise Granger causality test shown in table 4.3 shows that the probability value of CIT being 0.0092 falls short of the critical value of 0.05, hence we accept the null hypothesis that company income tax does not granger caused Gross Domestic Product (GDP), but Gross Domestic Product granger causes company income tax since the p-value of 0.8129 is greater than the critical value of 0.05. The table further shows that Custom and Excise Duties (CED) and Gross Domestic Product (GDP) granger causes one another and the same is applicable to value added tax (VAT) custom and excised and Gross Domestic Product (GDP). Finally, Petroleum Profit Tax (PPT) does not granger caused by Gross Domestic Product (GDP). On the whole, the relationship between Custom and Excise Duties (CED) and Gross Domestic Product (GDP) on the one hand, and between Value-Added-Tax (VAT) and Gross Domestic Product (GDP) on the other hand are bi-directional, but between Company Income Tax (CIT) and Gross Domestic Product (GDP) on one hand and between Petroleum Profit Tax (PPT) and Gross Domestic Product (GDP) on the other hand is uni-directional flowing from Gross Domestic Product (GDP) to both Petroleum Profit Tax (PPT) and Company Income Tax (CIT).

4.1.4 Co-Integration and Error Correction Model

Using the Partial Stock Adjustment Model (PSAM), we obtained the Error Correction Model that is expressed in Table 4.4

Table 4: Error Correction Estimate

Variable	Coefficient	Std. Error	T-stat
DCED	22.61035	17.08890	2.231461
DCIT	1.897582	5.081004	2.136789
DPPT	2.034256	2.118196	4.467890
DVAT	4.236780	1.339379	3.245678
ECM (-1)	-0.662940	0.285187	-2.324580

$R^2 = 0.821357$; $R^{-2} = 0.801435$; S.E.E = 2153745; Durbin – Watson stat = 1.983298

Table 4.4 shows the error correction estimates with a coefficient of determination at 0.821357, showing that 82.1357 percent of the variation in Gross Domestic Product (GDP) is explained by the various income taxes. Thus, judging by the R^2 and R^{-2} , the estimated model has high explanatory power and commendable goodness of fit. The independent variables are correctly signed showing positive relationship between federally collected taxes and Gross Domestic Product (GDP) in Nigeria. Furthermore, the coefficients of the variables are statistically significant at 5 percent. Essentially, the coefficients of the error correction model (ECM) are both negative and statistically significant, showing that an established long-run relationship can be attained. The speed of adjustment is at -0.662740, showing that 66.2740 percent of the deviation of Gross Domestic Product (GDP) from its long-run equilibrium value can be recognised per annum.

4.2 Growth Proxies

Table 5: Percentage (%) Growth Rate of Key Variables

Years	GDP	PPT	CIT	VAT	CED
2000	43.46	370-	15.37	21.34	15.47
2001	3.12	21.70	30.21	58.10	68.08
2002	46.29	-44.88	28.39	18.43	6.33
2003	22.78	95.19	28.84	25.60	7.77
2004	34.45	101	13.93	19.72	11.10
2005	27.70	53.90	30.12	18.00	7.18
2006	27.40	-0.20	49.95	20.76	-23.67
2007	11.27	-16.12	34.74	34.34	35.85
2008	17.62	82.06	26.53	28.50	12.39
2009	1.71	-54.4	42.80	19.84	4.73
2010	18.18	57.59	10.91	17.35	-89.29
2011	2.36	107	7.04	16.69	5.76

Source: Author's compilation

The table shows changes in key variables. The GDP recorded positive performance over the years using 2000 as the base year. In 2000, the percentage was 43.46 and dropped to 3.12 and rose to 46.29 and dropped again to 22.78 in 2003. However, in 2004, there was significant growth and declined progressively to 2011 positively. This is assumed to be attributed to various reforms that occurred in the various federally collected taxes over the years.

Petroleum Profit Tax (PPT) growth rate profile also showed mixed performance. The negative growth profile was recorded in 2002, 2006, 2007 and 2009 with the corresponding percentages of -44.88, -0.20, -16.12, and -54.4 respectively. Positive growth rates were also recorded in other year. This was attributed to global oil price which the nation has no control over.

Company Income Tax (CIT) growth rate performance was positive through out the period covered by the study. Also, Value Added Tax (VAT) maintained the same positive growth rate with the highest growth rate of 58.10 in 2001 followed by 34.34 in 2007.

Custom and Excise Duty (CED) presented a mixed performance growth rate profile (positive and negative). The negative growth rate profile were recorded in 2006 and 2010 with a corresponding percentage of -23.67 and -89.29 respectively. While others displayed positive growth rate with 35.85 as the highest in 2007. These show the contributions of the indicators to the general Gross Domestic Product (GDP) which represents the growth rate in the country.

5.0 Conclusion and Recommendations

The objective of this paper was to empirically investigate the effect of the various federally collected taxes which had undergone some form of reforms beginning with the introduction of value-added tax in 1993 and the National tax policy of 2011 on Economic Growth of Nigeria using the Gross Domestic Product (GDP) as the proxy for economic growth. The study went further to examine the relationship between the various income taxes i.e. Custom and Excise Duties, Company Income Tax, Petroleum Profit Tax and Value-Added Tax on public generated revenue proxies by the Gross Domestic Product (GDP). In order to carry out this exercise, an annual time series data from Central Bank of Nigeria spanning for years was employed. The Johansen co-integration test showed that a long-run meaningful relationship exists between tax reform and Gross Domestic Product (GDP) in Nigeria. Essentially Custom and Excise Duties (CED) and Value-Added Tax (VAT) granger cause Gross Domestic Product (GDP).

This goes to show that tax reforms undertaken to improve the tax system, by reducing tax avoidance and evasion, reducing tax burden by scaling down the Personal Income Tax (PIT) from 25 to 17.5 percent and Company Income Tax (CIT) from 30 to 20 percent improve the ability of the government to generate more revenue through taxation. This has the potential to improve both the quantity of revenue available public expenditure, and de-link Nigeria's public expenditure from the vagaries in the international oil market, thereby hedging the economy away from oil price volatility.

However, in order to consolidate the benefits from tax reforms, effort should be made to achieve full autonomy for the Federal Inland Revenue Service (FIRS), tackle the hydra-headed monster of multiple taxation and promote accountability and transparency in government business so as to restore the confidence of the tax payer in the tax system. Essentially, Customs and excise duty and VAT granger cause Gross Domestic Product (GDP), and provide handles for the government to maximize tax revenue. Thus, the administration of VAT and CED should be improved upon with focus directed towards reducing evasion and avoidance. Furthermore, all loopholes through which government loses revenue should be blocked as the current fight against corruption should be sustained so that gains accruing from the reform policies will not end up in individual pockets.

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