EFFECT OF TAX REVENUE ON ECONOMIC DEVELOPMENT IN NIGERIA

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Abstract

In the current global trend of advancing technology and growing competition, improvement of human capital has become imperative for every nation since it plays an indispensable role on sustainable economic development. This study examined the effect of tax revenue on economic development in Nigeria during the period 1994 -2016. Data were obtained from the Central Bank of Nigeria, Office of the Federal Inland Revenue Service and Annual Abstract of statistics of the National Bureau of Statistics. This study was based on time series data. The Augmented Dickey Fuller test, Multple linear regression, Multicollinearity test, Granger Causality test, Johansen cointegration test and Error correction model were employed in the analysis of the data. The findings of this study showed that tax revenue has a statistically significant relationship with primary school enrolment, life expectancy and per capita income, in Nigeria at 5% level of significance respectively. On the basis of the findings, it was recommended among others that since tax revenue has been proven to contribute to economic development in Nigeria, Government should ensure that the tax revenues are expended judiciously in order to ensure that marginal benefits are accrued for all members of the economy.

Keywords: Tax Revenue, Economic Development, Primary School Enrolment

Background of the Study

Notwithstanding the fact that power to tax is coterminous with the boundary of the sovereign's jurisdiction, taxation in a state may affect economic life in other states, and may influence the economic indices and the development trajectory of taxing state in diverse ways. For example, a tax policy that is oriented towards incentives and exemptions is a base for revenue loss and from the development perspective the lost revenue is lost development opportunity (Abiahu &

Amahalu, 2017). The existence of high corporate tax rate in a country or state relative to others is a disincentive to foreign capital movement; and may cause outflow of capital or its shift to jurisdictions with less burdensome tax regime. Tax policy is also part of the rationale behind the competition to attract investment (Aniyie, 2015). The primary function of a tax system is to raise enough revenue to finance essential expenditures on the goods and services provided by government; and tax remains one of the best instruments to boost the potential for public sector performance and repayment of public debt (Okoye & Ezejiofor, 2014). In the current global trend of advancing technology and growing competition, improvement of human capital has become imperative for every nation since it plays an indispensable role on sustainable economic growth (Barro, 1991; Sala-i-Martin *et al.*, 2004). Thus, the role of human capital on economic development has been regarded as an investment by School of Human Capital since the early 1960s.

Economic development is the basis of increased prosperity. Investment in new capital (both human and physical), the implementation of new production techniques and the introduction of new products are the fundamentals of the growth process. Through its effect on the return to investment or the expected profitability of research and development, taxation can affect what choices are made and, ultimately, the rate of growth (Myles 2000). The responsibility shouldered by the government of any nation, particularly the developing nations, is enormous. The need to fulfill these responsibilities largely depends on the amount of revenue generated by the government through various means. Taxation is one of the oldest means by which the cost of providing essential services for the generality of persons living in a given geographical area is funded. Globally, governments are saddled with the responsibility of providing some basic infrastructures for their citizens. Functions or obligations the government may owe her citizens include but are not restricted to: stabilization of the economy, redistribution of income and provision of services in the form of public goods (Abiola & Asiweh, 2012).

In Nigeria, tax revenue has accounted for a small proportion of total government revenue over the years. This is because the bulk of revenue needed for development purposes is derived from oil. Crude oil export has continued to account for over 80% of the total federal government revenue, while the remaining 20% is contributed by non-oil sector in which taxation is a part. For instance, Oil sector share in total revenue was 54.4% in 1972 against 45.6% share from non oil sector the same year. By 1974 oil share of total revenue had reached 82.1% while only 17.9% accrued from non oil sector. Following the glut in the world oil prices in the later part of the 1970s, the oil share in total revenue fell to 61.8% in 1978 while non oil sector's share rose to 38.2%. And since 1984, the oil sector share in total revenue has continued to rise, though with occasional falls in between periods. By 2006, oil share of total revenue had reached 88.6% against non oil share of 11.4%. As at 2014, oil sector share in total revenue stood at 78.8% while non-oil sector accounted for just 21.3% of the total revenue (CBN, 2015). Against these backdrops, it is necessary to verify the effect of taxation on economic development in Nigeria.

Statement of the Problem

In Nigeria, tax revenue has accounted for a small proportion of total government revenue over the years compared with the bulk of revenue needed for development purposes that is derived from oil. The serious decline in the prices of oil in recent times has led to a decrease in the funds available for distribution to the federal, state and local governments (Afuberoh & Okoye, 2014). Consequently, dependence on oil as a particular or main source of revenue in Nigeria has become risky and not beneficial for sustainable economic growth.

One of the reasons for Nigeria's unemployment, high level of poverty, unsustainable growth is that technical know-how and skills usually come with foreign physical capital which is yet insufficient for diverse and varied requirements of Nigeria's growth and development (Amahalu, Nweze & Obi, 2017). Moreover, less developed countries in which Nigeria inclusive are characterized by economic backwardness which manifests itself in low labour efficiency, factor immobility, limited specialization in occupations, deficient supply of entrepreneurship and customary values and traditional social institutions that minimize the incentives for economic change. In addition, the economic quality of population remained low when there is little knowledge of natural resources that are available and where alternative production techniques, necessary skills, the supply of entrepreneurship and other opportunities to boost growth and development is inadequate. In fact, without an improvement in the quality of people or human factor, no progress is possible. The trajectory to progress is through schooling, learning, on-job-training, advances in health and growing stock of information of the economy which is apparently insufficient in Nigeria. More so, despite the immense efforts of government to improve the quality of people's life and also enhance their human's capabilities, it has not yielded the desired results basically as a result of insufficient funds and policy somersault.

It could be deduced that there are few studies in Nigeria on relationship between taxation and economic development with diverse result (for instance, Obaretin, 2016; Akor & Ekundayo, 2016; Ojong, Oger & Oka, 2016,). This situation has continued to create a division among scholars, both theoretically and empirically. However, at the empirical level some scholars arrived at the conclusion that there exists a positive and significant relationship between taxation and economic development. Such scholars include Bloom and Canning (2008), who argued that the two-way causality relationship between health and development poses a great difficulty in measuring the economic impact of health yet different studies have been conducted using different measures of heath on development with appreciable significant results. This study focuses exclusively on health impact on development in order to determine whether or not health matters for the development of the Nigerian economy. The empirical evidence of positive and significant long-run relationship between health and economic development is not in doubt. Others like Adeyemi & Ogunsola (2016) explored the relationship between human capital indices (education and health) and economic development in Nigeria. The study employed ARDL Co-integration analysis to estimate the relationship among the variables used in the study.

The study established long-run co-integration among the variables. The findings from the study revealed that there is positive long-run relationship among secondary school enrolment, public expenditure on education, life expectancy rate, gross capital formation and economic development but it is statistically insignificant. The results also showed that there is negative long-run relationship among primary, tertiary school enrolment, public expenditure on health and economic development. Other scholars like Anaduaka and Eigbiremolen (2014) employed the augmented Solow human-capital-growth model to investigate the impact of human capital development on national output, a proxy for economic development, using quarterly time- series data from 1999-2012. Empirical revealed a negative relationship between human capital development and output level.

What is clear from the above is that there is no consensus in the taxation cum development literature. It is this apparent contradiction in the empirical literature that prompted this study. Thus from the foregoing there is a clear evidence of a gap in economic development measurement, hence this present study seek to bridge the gap by focusing exclusively on economic development indices using primary school enrolment, life expectancy, per capita income, infant mortality, gross fixed capital formation and labour force which previous studies have not exclusively used. More so, in an attempt to bridging the gap in knowledge, the scope of this present study covered a period of twenty-three (23) years spanning from 1994-2016 in order to establish contemporary empirical findings.

Objectives of the Study

The broad objective of this study is to ascertain the effect of tax revenue on economic development in Nigeria. The specific objectives are to;
1.   Determine the effect of tax revenue on primary school enrolment (SE) in Nigeria;
2.   Ascertain the effect of tax revenue on life expectancy (LEX) in Nigeria;
3.   Examine the effect of tax revenue on per capita income (PCI) in Nigeria;

Research Hypotheses

The following hypotheses are formulated for this study and are stated in null form:

Ho$_1$:   Tax Revenue has no significant effect on primary school enrolment in Nigeria

Ho$_2$:   Tax Revenue has no significant effect on life expectancy in Nigeria

Ho$_3$:   Tax Revenue has no significant effect on per capita income in Nigeria

Conceptual Review

Taxation and Economic Development

Public expenditure by any governmental authority whether central, regional or local, is financed primarily through tax revenues. The impact of such taxes on economic growth can only be positive if the taxes levied create the right incentives (depending on economic activities) for the efficient allocation of resources in a country (Amahalu, Abiahu, Nweze & Obi, 2017). In addition, in order to improve the welfare of its citizens, a prudent government adopts fiscal policies with a

tax structure that maximizes positive externalities, and that minimize negative externalities, such as pollution and corrupt practices. The relationship between taxation and economic development has been studied with different findings (for instance, Jibrin, Blessing and Ifurueze, 2012; Saheed, Abarshi, & Ejide, 2014)

Taxation

Taxation is a compulsory but non-penal levy by the government through its agent on the profits, income, or consumption of its subjects or citizens. It is also viewed as a compulsory and obligatory contribution made by individuals and organization towards defraying the expenditure of government (Onaolapo, Aworemi & Ajala 2013). Ebimobowei and Ogbonna (2012) posit that it is a charge levied by the government on the income or wealth of a person or corporate organization for the common benefit of all. The term does not include specific charges made against a particular person or properties for current or permanent benefits and privileges accruing only to those paying such charges. Similarly, Oboh and Isa (2102) define taxation as the transfer of real economic resources from private sector to the public sector to finance public sector activities. It may be inferred from the foregoing that taxation is the transfer of financial resources from private economic agents like households and corporate bodies, to the public sector to finance the development of the society.

Personal Income Tax

Personal income tax is a levy imposed by the government of a country on its citizens, individual or entities known as the taxpayers. The levy imposed on the taxpayers is such that it varies with the level of income or profits of the taxpayers. Taxes imposed on the personal income of an individual taxpayer is termed "Personal Income Tax". Thus, personal income tax signifies taxes imposed on the personal income of the individual. These taxes are imposed on the income of the individual on a basis of 'Pay as You Earn" (PAYE) and the individual taxpayer must be an employed person and expected to file returns on a yearly basis (Aguolu, 2014).

Company Income Tax

Company Tax is established by the Companies Income Tax Act (CITA) CAP C21 2004 LFN for both resident and non-resident companies in Nigeria. Companies are taxed on the basis on certain expenditure in determining whether they are incurred wholly, exclusively, necessarily or reasonably in earning the income. All companies in Nigeria are liable to pay companies Income Tax on their global profits accruing in, brought into, derived from or received in Nigeria. However, the Companies Income Tax Act (CITA) defines company in a broader sense. It defines a company as any company or corporation (other than corporation sole) established by or under any law in force in Nigeria or elsewhere. The tax rate applied to small companies is 20% on the taxable profit instead of the 30% of a normal trade or business.

Value Added Tax

VAT is established by the Value Added Tax Act Cap VI, 2004 LFN. This Act replaced the Sales Tax in operation under the Federal Government legisled decree No. 7 of 1986. The Value Added Tax is a special type of indirect tax in which a sum of money is levied at each stage of production and distribution of a product or service. VAT refers to the tax on the value added. The value added of a firm is the difference between a firm's sales and its purchases of inputs from other firms. In other words, it is the amount of value a firm contributes to a good or service by applying its own factors of production namely land, labor, capital and entrepreneurial ability. In Nigeria VAT is charged at a flat rate of 5% on selected items of goods and services. Though, exemption are granted in respect of medical and pharmaceutical products, basic food items such as maize, rice, and fish infant food items, educational materials (laboratory equipment). Baby products, agricultural equipment such as those for soil preparation or cultivation etc.

Petroleum Profit Tax in Nigeria

Petroleum profit tax Act is a legislation which imposes tax upon profits from the mining of petroleum in Nigeria and provides for the assessment and collection thereof and for the purposes connected therewith. The applicable law is the Petroleum Profits Tax Act (PPTA), which was first enacted in 1959 with retrospective effective date of 1 January, 1958. This principal Act and all amendments thereto have been re-enacted as Chapter P13 of the Laws of the Federation of Nigeria (LFN) 2004. Petroleum profit tax (PPT) is a tax applicable to upstream operations in the oil industry. It is particularly related to rents, royalties, margins and profit sharing elements associated with oil mining, prospecting and exploration leases. It is the most important tax in Nigeria in terms of its share of total revenue contributing 95 and 70 percent of foreign exchange earnings and government revenue, respectively. Due to the importance attached to oil exploration and production by the Federal Government of Nigeria, the taxation of profit of companies engaging in such operation became inevitable under a tax act different from the companies income tax act.

Export Duty

The export duty represents a tax which is applied to the exported goods, by the customs authorities of a country. This is a part of the international trade policy of a country, used to raise state revenue. The export tax or customs tariff is based on the value of products or their weight or dimensions. Export duties consist of general or specific taxes on goods or services that become payable when the goods leave the economic territory or when the services are delivered to non-residents; profits of export monopolies and taxes resulting from multiple exchange rates are excluded (OECD, 2001).

Harper (2017) defined export duty as a government tax paid on goods exported from a country. Tax levied on exports of basic commodities entering into world trade, such as rubber, copper, palm oil, sisal, tea, cocoa and coffee. To complement its export promotion drive, the Federal

Government of Nigeria, has, over the years, set up various incentive schemes for companies whose business is export focused. The incentives range from tax exemption to duty drawbacks as well as other forms of grants.

Import Duty

Import duty is a tax collected on imports by the customs authorities of a country. It is usually based on the value of the goods that are imported. Depending on the context, import duty may also be referred to as customs duty, tariff, import tax and import tariff.

Import duty and taxes are due when importing goods into Nigeria whether by a private individual or a commercial entity. The valuation method is CIF (Cost, Insurance and Freight), which means that the import duty and taxes payable are calculated on the complete shipping value, which includes the cost of the imported goods, the cost of freight, and the cost of insurance.

School Enrolment

School enrolment rates measure the number of students enrolled at a given level relative to the population of the age group who, according to national regulation or custom, should be attending school at that level.

Life Expectancy

Life expectancy is defined as the average number of years that a person could expect to live if he or she experienced the age-specific mortality rates prevalent in a given country in a particular year. It does not include the effect of any future decline in age-specific mortality rates. Each country calculates its life expectancy according to somewhat varying methodologies.

Per Capita Income

Per Capita income is a measure of the amount of money earned per person in a certain area. It can apply to the average per-person income for a city, region or country, and is used as a means of evaluating the living conditions and quality of life in different areas. It can be calculated for a country by dividing the country's national income by its population.

Economic Development

Economic development is about positioning the economy on a higher growth trajectory. Economic development is the product of long-term investments in the generation of new ideas, knowledge transfer, and infrastructure, and it depends on functioning social and economic institutions and on cooperation between the public sector and private enterprise. Economic development depends on education so that workers can more fully participate in the economy, social and cultural patterns of behavior that encourage initiative and engagement, and co-operation rather than adversarial relationship between government and business.

Taxation and School Enrolment

Mba, Mba, Ogbuabor and Ikpegbu (2013) evaluated the relevance of human capital development on the growth of the economy pin pointing the relationship that exists between them. In this study, the ordinary least square (OLS) technique was adopted. The GDP was used as a proxy for economic growth; Per Capital Real Gross Domestic Product, primary school enrolment, public expenditure on education and health, life expectancy, stock of physical capital as proxy for human capital. From the analysis, it was deduced that there is a strong positive relationship between human capital development and economic growth.

Taxation and Life Expectancy

Eigbiremolen and Anaduaka (2014) employed the augmented Solow human-capital-growth model to investigate the impact of human capital development on national output, a proxy for economic growth, using quarterly time- series data from 1999-2012. Empirical results show that human capital development, in line with theory, exhibits significant positive impact on output level. This implies that human capital development is indispensable in the achievement of sustainable economic growth in Nigeria, as there is an increase in economic performance for every increase in human capital development. The results further reveal a relatively inelastic relationship between human capital development and output level.

Taxation and Per Capita Income

Chude and Chude (2013) investigated the effects of public expenditure in education on economic growth in Nigeria over a period from 1977 to 2012, with particular focus on disaggregated and sectoral expenditures analysis. Government expenditures are very crucial instruments for economic growth at the disposal of policy makers in developing countries like Nigeria. The results indicated that total expenditure education is highly and statistically significant and have positive relationship on economic growth in Nigeria in the long run.

Theoretical Review

This study is anchored on Endogenous growth theory:

Endogenous or New Growth Theory

Endogenous growth theory or new growth theory was developed in the 1980s, as a response to criticism of the neo classical growth model. The endogenous growth theory holds that policy measures can have an impact on the long – run growth rate of an economy. Endogenous growth

economists believe that improvements in productivity can be linked to a faster pace of innovation and extra investment in human capital. Endogenous growth theorists stress the need for government and private sector institutions and markets which nurture innovation, and private incentives for individuals to be inventive. The theory also provides a central role for knowledge as a determinant of economic growth. Lucas proposes the following production technology:

$$Yt = AK\beta t\ (ut\ ht\ Lt)1\text{-}\beta\ h\gamma a,t$$

where Y, A, K and L are, once again, output, technology, capital and labour, while u is the fraction of an individual's time allocated to work, h is the skill level or human capital of the representative agent, and ha is the average human capital in the economy. The level of technology, A, is assumed to be constant (so that it could in principle be dropped from the expression or subsumed within the capital term).

Empirical Review

Adeyemi and Ogunsola (2016) examined the impact of human capital development on economic growth in Nigeria using time series data spanning from 1980 to 2013 which were sourced from the World Bank Indicator and National Bureau of Statistics. It was set out to explore the relationship between human capital indices (education and health) and economic growth. The study employed ARDL Co-integration analysis to estimate the relationship among the variables used in the study. The study established long-run co-integration among the variables. The findings from the study revealed that there is positive long-run relationship among secondary school enrolment, public expenditure on education, life expectancy rate, gross capital formation and economic growth but it is statistically insignificant. The results also showed that there is negative long-run relationship among primary, tertiary school enrolment, public expenditure on health and economic growth.

The major objective of the study carried out by Greg and Agboro (2014) was to examine the determinants of public expenditure on Infrastructural facilities in education and economic growth in Nigeria based on time series data on variables considered relevant indicators of economic growth and public expenditure. A public expenditure model was constructed and tested using the ordinary least squares (OLS) technique. A dummy variable was introduced to test the expenditure variability between regime changes (military and civilian) to ascertain which regime allocated more funds to the educational sector in Nigeria during the period under the study. Data for the study was obtained from the Central Bank of Nigeria, NBS and the World Bank. Results of the analysis showed that public expenditure on education has a significant impact on economic growth.

Omankhanlen, Joshua, Emmanuel, Uchechukwu, (2014) investigated the Nigerian Government Expenditure on Human Capital Development. The level of human capital development, which is a reflection of the level of health and education of a nation affect the level of economic activities in that nation. The unit root test was conducted to determine whether the variables are stationary

or not using Phillip Peron test. The findings of the study revealed that there has been significant reduction in the efficiency of government expenditure since 1990 up till 2011 which has been on decreasing level.

Methodology

Research Design

The research design employed in this study is the Longitudinal Research Design, since the data is time series data.

Sources of Data

The nature of data for this study was essentially secondary data and are time series in nature. The scope of this study spanned from 1994-2016, a 23-year period. The data were sourced from the of Central Bank of Nigeria (CBN), Statistical Bulletin Office of the Federal Inland Revenue Services (FIRS), Federal Inland Revenue Service (FIRS), World Bank Statistical Bulletin and Annual Abstract of Statistics from the National Bureau of Statistics (NBS).

Research Variables

Independent Variables

The independent variable in this study is taxation which will be decomposed into:
i)   Petroleum Profit tax (PPT): Obtained from Federal Inland Revenue   Service (FIRS) statistical bulletin (various issues).
ii)   Company Income Tax (CIT): Obtained from Federal Inland Revenue   Service (FIRS) statistical bulletin (various issues).
iii)   Value Added Tax (VAT): Obtained from Federal Inland Revenue   Service   (FIRS) statistical bulletin (various issues).
iv)   Personal Income Tax (PIT): Obtained from Federal Inland Revenue   Service (FIRS) statistical bulletin (various issues).
v)   Export Duty (EXDT): Obtained from Federal Inland Revenue   Service   (FIRS) statistical bulletin (various issues).
vi)   Import Duty: Obtained from Federal Inland Revenue   Service   (FIRS) statistical bulletin (various issues).

Dependent Variables

The dependent variable is economic development, which is proxied by:
i.   School Enrolment (SE): Collected from Central Bank of Nigeria Statistical Bulletin, World Bank Statistical Bulletin and National Bureau of Statistics (various issues).
ii.   Life Expectancy (LEX): Collected from Central Bank of Nigeria Statistical Bulletin, World Bank Statistical Bulletin and National Bureau of Statistics (various issues).

iii.   Per Capita Income (PCI): Collected from Central Bank of Nigeria Statistical Bulletin, World Bank Statistical Bulletin and National Bureau of Statistics (various issues).

Model Specification

This study specifies a functional relationship between economic development and taxation. Generally the model is specified as:

$$Y = \beta_0 + \beta X_1 + \mu$$

Where:

Y   =   Economic development (Dependent Variable)
X   =   Taxation (Explanatory/Independent Variable)
β_0 =   Constant term (Intercept)
β =   Coefficient of taxation
μ =   Error term (Stochastic Term)

Explicitly, the equation can be defined as:

Economic development   = f (taxation) $+ \mu$

Representing the equations with the variables of the construct, hence the equations below are formulated:

$$SE = \beta_0 + \beta_1 PIT + \beta_2 CIT + \beta_3 VAT + \beta_4 PPT + \beta_5 EXDT + \beta_6 IMDT + \mu \quad \text{- equ (1)}$$
$$LEX = \beta_0 + \beta_1 PIT + \beta_2 CIT + \beta_3 VAT + \beta_4 PPT + \beta_5 EXDT + \beta_6 IMDT + \mu \quad \text{- equ (2)}$$
$$PCI = \beta_0 + \beta_1 PIT + \beta_2 CIT + \beta_3 VAT + \beta_4 PPT + \beta_5 EXDT + \beta_6 IMDT + \mu \quad \text{- equ (3)}$$

A Priori expectation

The theoretical (a priori) expectations about the signs of the coefficients are as follows: $\beta_0 > 0$, $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$, $\beta_5 > 0$, $\beta_6 > 0$

It is expected that the sign of the coefficients of PIT, CIT, VAT, PPT, EXDT and IMDT should be positive. This is because, an increase in the amount of PIT, CIT, VAT, PPT, EXDT and IMDT will lead to an increase in SE, LEX, PCI, other factors being equal.

Decision Rule

Accept the alternative hypothesis, if the P-value of the test is less than 0.05. Otherwise reject.

Data Presentation

Test of Reliability

The researcher tested for stationarity unit root test in order to fulfill the economic theory which states that variables that must enter a regression model must undergo a stationarity test in order

to achieve a realistic (non spurious) result at 1%, 5% or 10% level of significance. The result for the test is shown below in table 1.

The data used in this study had unit root problem, consequently, the data were detrended using Augmented Dickey-Fuller Test. The result of the differenced data in order to solve the unit root problem is shown in table 1.

Table 1: Differenced Result

Variables	Test Statistic	Test Critical Values			Status	Prob.
	ADF	1% level	5% level	10% level	Stationary	
CIT	-11.42380	-3.808546	-3.020686	-2.650413	1(1)	0.0000
EXDT	-8.897032	-3.857386	-3.040391	-2.660551	1(1)	0.0000
IMDT	-7.299352	-3.788030	-3.012363	-2.646119	1(1)	0.0000
LEX	-6.849698	-3.788030	-3.012363	-2.646119	1(1)	0.0000
PCI	-4.457424	-3.788030	-3.012363	-2.646119	1(1)	0.0202
PIT	-5.022744	-3.788030	-3.012363	-2.646119	1(1)	0.0007
PPT	-4.608579	-3.788030	-3.012363	-2.646119	1(1)	0.0017
SE	-4.655992	-3.788030	-3.012363	-2.646119	1(1)	0.0015
VAT	-4.014750	-3.788030	-3.012363	-2.646119	1(1)	0.0287

Source: Researcher's computation using E-view 9.0, 2018

Table 2: Test for Multicollinearity

Variance Inflation Factors
Date: 03/05/18   Time: 10:17
Sample: 1994 2016
Included observations: 22

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	9.19E-05	2.167063	NA
DPIT	0.004834	2.842265	2.326432

DCIT	0.004144	1.527954	1.429024
DVAT	0.040166	4.356373	2.157837
DPPT	0.001819	1.453145	1.399233
DEXDT	0.001430	2.116305	1.867467
DIMDT	0.001842	1.819340	1.467553

Source: Researcher's computation using E-View 9.0, 2018

Interpretation

Table 2 shows that the variance inflation factor (VIF) is less than 10. This is an indication of non existence of multicollinearity among the variables in the model (Kothari & Garg, 2014)

Test of Hypotheses

Test of Hypothesis I

Ho1: Tax Revenue has no significant effect on SE in Nigeria.

H1: Tax Revenue has significant effect on SE in Nigeria.

For the purpose of finding the relationship between PIT, CIT, VAT, PPT, EXDT IMDT and SE, the above hypothesis was tested and the regression equation is as follows:

$$SE = \beta_0 + \beta_1 PIT + \beta_2 CIT + \beta_3 VAT + \beta_4 PPT + \beta_5 EXDT + \beta_6 IMDT + \mu \quad - \quad \textbf{Ho1}$$

Table 3   Multiple Regression Analysis showing the relationship between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DSE

Dependent Variable: DSE
Method: Least Squares
Date: 03/05/18   Time: 23:29
Sample (adjusted): 1995 2016
Included observations: 22 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.093745	0.166878	0.561757	0.5826
DPIT	0.019444	0.069133	4.281259	0.0002
DCIT	0.008240	0.014657	3.562153	0.0023
DVAT	0.052503	0.179104	3.293142	0.0034
DPPT	0.049394	0.042585	5.159879	0.0000
DEXDT	0.022434	0.037581	0.596962	0.5594

DIMDT	0.073161	0.041429	5.765964	0.0000

R-squared	0.725998	Mean dependent var	0.001818
Adjusted R-squared	0.683603	S.D. dependent var	0.029054
S.E. of regression	0.030245	Akaike info criterion	-3.905633
Sum squared resid	0.013721	Schwarz criterion	-3.558483
Log likelihood	49.96196	Hannan-Quinn criter.	-3.823855
F-statistic	87.29964	Durbin-Watson stat	1.855262
Prob(F-statistic)	0.000000		

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Regression Coefficient Result

The following regression equation was obtained from table 4.6 above:

DSE = 0.093745 + 0.019444DPIT + 0.008240CIT + 0.052503VAT + 0.049394PPT + 0.022434DEXDT + 0.073161DIMDT

Using the above model, it is possible to determine the relationship between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DSE. Holding all other factors constant, an increase in one unit of the independent variable results into a corresponding increase in one unit of School Enrolment (SE), this means that a positive relationship exists between the explanatory variables and SE.

The slope coefficients show that that the probability values: $P(x_1=0.0002<0.05; x2=0.0023<0.05; x3=0.0034; x4=0.0000; x5=0.5594; x6=0.0000)$ are less than the critical P-value of 0.05 but for export duty. This implies that PIT, CIT, VAT, PPT have a positive significant relationship with SE at 5% significant level while EXPD has a positive and non-significant relationship with SE.

Results in table 3 indicate that the adjusted R-squared for the model is 0.68, meaning that the regression model used for this study is a good predictor. The independent variables explained 68% of the variation in SE. Only 32% of variation in SE is not explained by the regression model. The Durbin-Watson value of 1.855262 indicates the absence of serial correlation in the model.

From the test of coefficients result in table 3, the probability value of the F-statistics = 0.000000 implies that the regression model is significant in predicting the relationship between the independent variables and the dependent variable. The significance between the variables is less than α=0.05. This result indicates that the overall regression model is statistically significant and is useful for prediction purposes at 5% significance level.

Decision Rule:
Accept H_1 if the P-Value of the test is less than α-value (level of significance) at 5%.

Decision:

The P-Value of the test Prob(F-statistic) = 0.000000 is less than the α-value of 0.05; therefore H_1 is accepted and Ho is rejected.

Conclusion:

Since the p-value of the test is less than 0.05, then there exists enough evidence to reject the null hypothesis and conclude that tax revenue has a positive and statistically significant relationship with secondary school enrolment at 5% significant level.

Table 4 Granger Causality Test showing the Causality between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DSE

Pairwise Granger Causality Tests
Date: 03/05/18   Time: 23:37
Sample: 1994 2016
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DPIT does not Granger Cause DSE	20	3.91451	0.0019
DSE does not Granger Cause DPIT		1.94302	0.1777
CIT does not Granger Cause DSE	20	4.36222	0.0001
DSE does not Granger Cause CIT		0.50307	0.6145
DVAT does not Granger Cause DSE	20	4.53270	0.0007
DSE does not Granger Cause DVAT		0.21215	0.8112
DPPT does not Granger Cause DSE	20	7.06686	0.0000
DSE does not Granger Cause DPPT		0.05922	0.9427
DEXDT does not Granger Cause DSE	20	3.13394	0.0029
DSE does not Granger Cause DEXDT		1.25355	0.3137
DIMDT does not Granger Cause DSE	20	3.94641	0.0001
DSE does not Granger Cause DIMDT		0.03364	0.9670

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Post Regression Analysis

Table 4 shows that there is a unilateral causality between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DSE since the P-values are statistically significant at 5% level. Moreover, at two (2) lags there is a statistically significant relationship between DPIT, DCIT, DVAT, DPPT, DEXDT,

DIMDT and DSE. On the other hand, there is no reverse causation from DSE to DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT. This reinforces the fact that DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT Granger Causes DSE. Consequently, the null hypothesis is rejected for the alternative which states that PIT, CIT, VAT, PPT, EXDT, IMDT has a statistically significant effect on DSE in Nigeria at 5% level of significance.

Table 5: Johansen Co-integration Test

Date: 03/05/18   Time: 00:07
Sample (adjusted): 1996 2016
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: DSE DPIT CIT DVAT DPPT DEXDT DIMDT
Lags interval (in first differences): No lags
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.903606	185.6430	125.6154	0.0000
At most 1 *	0.894372	136.5175	95.75366	0.0000
At most 2 *	0.809329	89.31312	69.81889	0.0007
At most 3 *	0.767517	84.51179	57.85613	0.0004
At most 4 *	0.675538	63.87413	49.79707	0.0058
At most 5 *	0.660510	50.32110	45.49471	0.0068
At most 6 *	0.543426	33.93234	30.84146	0.0343

Trace test indicates 7 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.903606	49.12553	46.23142	0.0239
At most 1 *	0.894372	47.20439	40.07757	0.0067
At most 2 *	0.809329	44.80133	38.87687	0.0087
At most 3 *	0.767517	40.63766	37.58434	0.0096
At most 4 *	0.675538	37.55303	35.13162	0.0028
At most 5 *	0.660510	35.88757	34.26460	0.0152
At most 6 *	0.543426	33.92347	30.84166	0.0343

Max-eigenvalue test indicates 7 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Diagnostic Result

In table 5, the Johansen co-integration test was used to determine the existence of long-run equilibrium relationship among the variables under study. The Trace Statistic value and Max-Eigen Statistic are shown to be greater than the critical values at 1% and 5% levels, thus indicating 7 co-integrating equation at 5% levels. Therefore, the null hypothesis is rejected and its concluded that there exists long run equilibrium relationship between the dependent variable (SE) and independent variables (DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT). This implies that the regression model is not spurious and the conclusion thereof is valid.

Table 6: Error Correction Model

Vector Error Correction Estimates
Date: 03/05/18   Time: 09:29
Sample (adjusted): 1996 2016
Included observations: 21 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
DSE(-1)	1.000000
DPIT(-1)	0.090996
	(0.08116)
	[1.12123]
DCIT(-1)	-0.076799
	(0.07419)
	[-1.03520]
DVAT(-1)	0.426663
	(0.24161)
	[1.76589]
DPPT(-1)	-0.325988
	(0.05230)
	[-6.23309]
DEXDT(-1)	-0.302219
	(0.04315)
	[-7.00331]

DIMDT(-1)	0.615865						
	(0.04893)						
	[12.5857]						
C	-0.040246						

Error Correction:	D(DSE)	D(DPIT)	D(DCIT)	D(DVAT)	D(DPPT)	D(DEXDT)	D(DIMDT)
CointEq1	-0.257665	0.128805	0.174533	-0.112757	0.696013	-0.351787	-1.777108
	(0.05000)	(0.39960)	(0.24939)	(0.07197)	(0.45704)	(0.65294)	(0.40263)
	[-5.15283]	[0.32233]	[0.69982]	[-1.56677]	[1.52288]	[-0.53878]	[-4.41378]
C	0.000476	0.002857	0.008571	-0.000952	-0.020952	-0.020476	-0.017619
	(0.00626)	(0.05003)	(0.03123)	(0.00901)	(0.05722)	(0.08175)	(0.05041)
	[0.07606]	[0.05711]	[0.27450]	[-0.10570]	[-0.36615]	[-0.25047]	[-0.34951]
R-squared	0.582891	0.005439	0.025129	0.114417	0.108783	0.015048	0.506255
Adj. R-squared	0.560938	-0.046907	-0.026180	0.067807	0.061877	-0.036792	0.480269
Sum sq. resids	0.015640	0.998767	0.389029	0.032395	1.306507	2.666556	1.013944
S.E. equation	0.028690	0.229274	0.143092	0.041292	0.262228	0.374627	0.231010
F-statistic	26.55167	0.103899	0.489755	2.454782	2.319159	0.290279	19.48144
Log likelihood	45.82825	2.182732	12.08283	38.18201	-0.637477	-8.128495	2.024371
Akaike AIC	-4.174119	-0.017403	-0.960270	-3.445905	0.251188	0.964619	-0.002321
Schwarz SC	-4.074640	0.082075	-0.860791	-3.346427	0.350667	1.064097	0.097157
Mean dependent	0.000476	0.002857	0.008571	-0.000952	-0.020952	-0.020476	-0.017619
S.D. dependent	0.043299	0.224079	0.141255	0.042767	0.270738	0.367920	0.320436

Determinant resid covariance (dof adj.)	3.26E-14
Determinant resid covariance	1.62E-14
Log likelihood	124.8486
Akaike information criterion	-9.890343
Schwarz criterion	-8.845821

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Diagnostic Result

This study employed the use of time series data for a period of 23 years ranging from 1994-2016. The multiple regression model was specified and then the residuals generated. The residuals were tested at first level and found to be stationary at 5% critical level. Thereafter, the Error Correction Model (ECM) was used. Meanwhile, the variables were individually tested for stationary at first difference; and they were found to be stationary on first difference. However the residuals found stationary, suggest that the variables were co-integrated in the long run.

Table 6 shows that the linear trend between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DSE is cointegrated, that is, there is a long-term or equilibrium relationship between the dependent and independent variables. Of course, in the short-run there may disequilibrium and

the equilibrium error (error term) could be tied to the short-run behaviour of SE to its long-run value. This therefore gave rise to the formulation and subsequent use of the Error Correction Model (ECM).

An examination of the F-stat. which explains the overall significance of the model with a probability of 0.0000, indicating that the model is statistically significant and that the model has the ability of explaining the actual behaviour of the dependent variable in the long run.

Statistically, the ECM is significant, suggesting that DSE adjusts to PIT, CIT, VAT, PPT, EXDT, IMDT with a lag.

Test of Hypothesis II

H_{o2}: Tax Revenue has no significant effect on LEX in Nigeria

H_2: Tax Revenue has significant effect on LEX in Nigeria

Model Specification

$LEX = \beta_0 + \beta_1 PIT + \beta_2 CIT + \beta_3 VAT + \beta_4 PPT + \beta_5 EXDT + \beta_6 IMDT + \mu$ -   **H_{o2}**

Table 7:   **Multiple Regression Analysis showing the relationship between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DLEX**

Dependent Variable: DLEX
Method: Least Squares
Date: 03/05/18   Time: 00:55
Sample (adjusted): 1995 2016
Included observations: 22 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001917	0.001596	1.201503	0.2482
DPIT	0.002924	0.011574	2.252657	0.0040
DCIT	0.007508	0.010717	4.700587	0.0003
DVAT	-0.002581	0.033362	-0.077369	0.9394
DPPT	-0.002529	0.007100	-3.356184	0.0067

DEXDT	0.005321	0.006295	0.845305	0.4112
DIMDT	0.006507	0.007144	0.910795	0.3768
R-squared	0.787391	Mean dependent var	0.003182	
Adjusted R-squared	0.637652	S.D. dependent var	0.004767	
S.E. of regression	0.005085	Akaike info criterion	-7.471730	
Sum squared resid	0.000388	Schwarz criterion	-7.124580	
Log likelihood	89.18903	Hannan-Quinn criter.	-7.389952	
F-statistic	63.76511	Durbin-Watson stat	1.049061	
Prob(F-statistic)	0.003427			

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Regressed Result

The regressed coefficient correlation result in table 4.7 shows the existence of a positive relationship between DPIT ($\beta_1 = 0.002924$), DCIT ($\beta_2 = 0.007508$), DEXDT ($\beta_5 = 0.005321$), DIMDT ($\beta_6 = 0.006507$) and DLEX; a negative association exist between DVAT ($\beta_3 = -0.002581$), DPPT ($\beta_4 = -0.002529$) and DLEX. The probability values of the slope coefficient show that $P(x_1 = 0.0040; x_2 = 0.0003; x_3 = 0.9394; x_4 = 0.0067; x_5 = 0.4112; x_6 = 0.3768)$. This implies that DPIT and DCIT have a positive and statistically significant relationship with DLEX at 5% level of significant, a negative and non-significant relationship exist between DLEX and DVAT, a negative but statistically significant relationship exist between DLEX and DPPT at 5% significant level, while a positive but non-significant relationship exist between DEXDT, DIMDT and DLEX.

Furthermore, the adjusted R- squared which is the coefficient of determination shows the magnitude of variations caused on DSE by the explanatory variables to be about 64%. This indicates that about 64% variation in school enrolment is attributed to the influence of the explanatory variables while the remaining 36% is caused by other explanatory factors outside this model and this is captured by the error term.

The Durbin-Watson value of 1.049061 indicates the absence of serial correlation in the model. The value of Prob(F-statistic) at 0.003427 indicates that the overall regression model is statistically significant and is useful for prediction purposes at 5% significance level.

Model Specification:

DLEX= 0.001917 + 0.002924DPIT + 0.007508DCIT - 0.002581DVAT - 0.002529DPPT + 0.005321DEXDT + 0.006507DIMDT

The model shows that for there to be one unit increase in DLEX, there will be 0.002924, 0.007508, 0.005321 and 0.006507 multiplying effect of DPIT, DCIT, DEXDT and DIMDT. And

for there to be one unit increase in DLEX, there will be 0.002581 and 0.002529 multiplying effect decrease in DVAT and DPPT respectively.

Decision Rule:
Reject H_o if the P-value of the test is less than α-value (level of significance) at 5%, otherwise accept H_1.

Decision:
The P-value of the test (Prob > F = 0.003427) is less than 0.05. In view of the rule of thumb, H_1 will be accepted and H_0 rejected.

Conclusion:
Since the p-value of the test is less than 0.05, then there exists enough evidence to reject the null hypothesis and conclude that taxation has a positive and statistically significant effect on life expectancy in Nigeria at 5% significant level.

Table 8: Granger Causality Test showing the Causality between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DLEX

Pairwise Granger Causality Tests
Date: 03/05/18   Time: 00:56
Sample: 1994 2016
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DPIT does not Granger Cause DLEX	20	4.26926	0.0006
DLEX does not Granger Cause DPIT		1.99149	0.1710
DCIT does not Granger Cause DLEX	20	5.66477	0.0000
DLEX does not Granger Cause DCIT		0.07148	0.9313
DVAT does not Granger Cause DLEX	20	3.68700	0.0084
DLEX does not Granger Cause DVAT		0.14350	0.8675
DPPT does not Granger Cause DLEX	20	3.85394	0.0008
DLEX does not Granger Cause DPPT		1.02996	0.3809
DEXDT does not Granger Cause DLEX	20	4.96102	0.0002
DLEX does not Granger Cause DEXDT		0.03574	0.9650
DIMDT does not Granger Cause DLEX	20	5.88342	0.0000
DLEX does not Granger Cause DIMDT		1.95614	0.1758

Source: Researcher's computation using E-View 9.0, 2017

Interpretation of Post Regression Analysis

Table 8 shows that there is a unilateral causality between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DLEX since the P-values are statistically significant at 5% level. Moreover, at two (2) lags there is a statistically significant relationship between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DLEX. On the other hand, there is no reverse causation from DLEX to DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT. This establishes the fact that DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT Granger Causes DLEX. Consequently, the null hypothesis is rejected for the alternative which states that DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT has a statistically significant effect on DLEX in Nigeria at 5% level of significance.

Table 9: Johansen Co-integration Test

Date: 03/05/18   Time: 00:59
Sample (adjusted): 1996 2016
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: DLEX DPIT DCIT DVAT DPPT DEXDT DIMDT
Lags interval (in first differences): No lags
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.940036	191.1100	125.6154	0.0000
At most 1 *	0.901446	132.0158	95.75366	0.0000
At most 2 *	0.872290	83.35557	80.81889	0.0000
At most 3 *	0.777988	72.28220	67.85613	0.0000
At most 4 *	0.750809	70.12791	58.79707	0.0006
At most 5 *	0.655383	61.36501	55.49471	0.0009
At most 6 *	0.597054	45.43944	43.84146	0.0413

Trace test indicates 7 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.940036	79.09427	66.23142	0.0000
At most 1 *	0.901446	68.66019	60.07757	0.0000
At most 2 *	0.872290	61.07337	58.87687	0.0000
At most 3 *	0.777988	56.15428	47.58434	0.0060
At most 4 *	0.750809	47.76291	41.13162	0.0073
At most 5 *	0.655383	46.21062	39.26460	0.0182

At most 6 *	0.597054	45.43944	43.84146	0.0413

Max-eigenvalue test indicates 7 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Diagnostic Result

In table 9, the Johansen co-integration test was used to determine the existence of long-run equilibrium relationship among the variables under study. The Trace Statistic value and Max-Eigen Statistic are shown to be greater than the critical values at 1% and 5% levels, thus indicating 7 co-integrating equation at 5% levels. Therefore, the null hypothesis is rejected and it is concluded that there exists long run equilibrium relationship between the dependent variable (DLEX) and independent variables (DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT). This implies that the regression model is not spurious and the conclusion thereof is valid.

Table 10: Error Correction Model

Vector Error Correction Estimates
Date: 03/05/18   Time: 09:33
Sample (adjusted): 1996 2016
Included observations: 21 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
DLEX(-1)	1.000000
DPIT(-1)	-0.024076
	(0.00389)
	[-6.19088]
DCIT(-1)	-0.022162
	(0.00355)
	[-6.23426]
DVAT(-1)	0.071362
	(0.01158)
	[6.16387]
DPPT(-1)	-0.013297
	(0.00251)
	[-5.30603]
DEXDT(-1)	-0.014914

	(0.00207)						
	[-7.21253]						
DIMDT(-1)	0.011838						
	(0.00234)						
	[5.04869]						
C	-0.003169						

Error Correction:	D(DLEX)	D(DPIT)	D(DCIT)	D(DVAT)	D(DPPT)	D(DEXDT)	D(DIMDT)
CointEq1	-0.942147	18.01670	7.031221	-0.595958	16.86437	-13.91925	-21.36381
	(0.18921)	(6.84789)	(4.77717)	(1.52047)	(8.85588)	(12.7389)	(10.3348)
	[-4.97942]	[2.63099]	[1.47184]	[-0.39196]	[1.90431]	[-1.09265]	[-2.06717]
C	0.000476	0.002857	0.008571	-0.000952	-0.020952	-0.020476	-0.017619
	(0.00119)	(0.04295)	(0.02996)	(0.00954)	(0.05555)	(0.07990)	(0.06482)
	[0.40126]	[0.06652]	[0.28607]	[-0.09987]	[-0.37721]	[-0.25627]	[-0.27181]
R-squared	0.566157	0.267034	0.102347	0.008021	0.160273	0.059121	0.183609
Adj. R-squared	0.543323	0.228457	0.055102	-0.044188	0.116077	0.009602	0.140641
Sum sq. resids	0.000562	0.736065	0.358215	0.036288	1.231023	2.547236	1.676524
S.E. equation	0.005438	0.196825	0.137308	0.043702	0.254540	0.366149	0.297049
F-statistic	24.79464	6.922084	2.166311	0.153630	3.626408	1.193892	4.273172
Log likelihood	80.75317	5.387361	12.94931	36.99073	-0.012605	-7.647817	-3.255813
Akaike AIC	-7.500302	-0.322606	-1.042792	-3.332450	0.191677	0.918840	0.500554
Schwarz SC	-7.400824	-0.223127	-0.943313	-3.232972	0.291155	1.018318	0.600032
Mean dependent	0.000476	0.002857	0.008571	-0.000952	-0.020952	-0.020476	-0.017619
S.D. dependent	0.008047	0.224079	0.141255	0.042767	0.270738	0.367920	0.320436

Determinant resid covariance (dof adj.)	1.32E-15
Determinant resid covariance	6.57E-16
Log likelihood	158.4849
Akaike information criterion	-13.09380
Schwarz criterion	-12.04928

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Diagnostic Result

This study employed the use of time series data for a period of 23 years ranging from 1994-2016. The multiple regression model was specified and then the residuals generated. The residuals were tested at first level and found to be stationary at 5% critical level. Thereafter, the Error Correction Model (ECM) was used. Meanwhile, the variables were individually tested for stationary at first difference; and they were found to be stationary on first difference. However the residuals found stationary, suggest that the variables were co-integrated in the long run.

Table 10 shows that the linear trend between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DLEX is co-integrated, that is, there is a long-term or equilibrium relationship between the dependent and independent variables. Of course, in the short-run there may disequilibrium and the equilibrium error (error term) could be tied to the short-run behaviour of DLEX to its long-run value. This therefore gave rise to the formulation and subsequent use of the Error Correction Model (ECM).

An examination of the F-stat. which explains the overall significance of the model with a probability of 0.0000, indicating that the model is statistically significant and that the model has the ability of explaining the actual behaviour of the dependent variable in the long run. Statistically, the ECM is significant, suggesting that DLEX adjusts to PIT, CIT, VAT, PPT, EXDT, IMDT with a lag.

Test of Hypothesis III

Ho$_3$: Tax Revenue has no significant effect on PCI in Nigeria.

H$_3$: Tax Revenue has significant effect on PCI in Nigeria.

Model Specification

PCI = $\beta_0 + \beta_1 PIT + \beta_2 CIT + \beta_3 VAT + \beta_4 PPT + \beta_5 EXDT + \beta_6 IMDT + \mu$ -   **Ho$_3$**

Table 11:   Multiple Regression Analysis showing the relationship between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DPCI

Dependent Variable: DPCI
Method: Least Squares
Date: 03/05/18   Time: 07:58
Sample (adjusted): 1995 2016
Included observations: 22 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.113134	0.124932	-0.905564	0.3795
DPIT	-0.072558	0.050803	-4.428204	0.0000
DCIT	-0.016924	0.023707	-4.713877	0.0000
DVAT	0.141595	0.147566	0.959537	0.3525
DPPT	0.050604	0.031485	4.607255	0.0000

DEXDT	-0.001085	0.024598	-0.044110	0.9654
IMDT	0.026081	0.018759	3.390324	0.0007

R-squared	0.673417	Mean dependent var	0.013182
Adjusted R-squared	0.522784	S.D. dependent var	0.023981
S.E. of regression	0.022461	Akaike info criterion	-4.500705
Sum squared resid	0.007567	Schwarz criterion	-4.153556
Log likelihood	56.50776	Hannan-Quinn criter.	-4.418927
F-statistic	21.48893	Durbin-Watson stat	1.931313
Prob(F-statistic)	0.002483		

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Regressed Result

Table 11 shows a negative and statistically significant relationship between DPIT, DCIT and DPCI, a positive and non-significant relationship between DPCI and DVAT, a positive and statistically significant relationship between DPPT, DIMDT and DPCI at 5% significant level, while a negative and non-significant relationship exist between DPCI and DEXDT. The prob. (F-statistic) which is used to test the overall significance of a model reveals that the tested variables have a collective, statistically significant relationship at 5% level of significance.

Decision Rule:

Reject H_o if the P-value of the test is less than α-value (level of significance) at 5%, otherwise accept H_1.

Decision:

The P-value of the test (Prob > F = 0.002483) is less than 0.05. In view of the rule of thumb, H_1 will be accepted and H_0 rejected.

Conclusion:

Since the p-value of the test is less than 0.05, then there exists enough evidence to reject the null hypothesis and conclude that taxation has a positive and statistically significant effect on Per Capita Income in Nigeria at 5% significant level.

Table 12: Granger Causality Test showing the Causality between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DPCI

Pairwise Granger Causality Tests
Date: 03/05/18   Time: 08:00
Sample: 1994 2016
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DPIT does not Granger Cause DPCI	20	2.40272	0.1244
DPCI does not Granger Cause DPIT		0.86574	0.4407
CIT does not Granger Cause DPCI	20	5.60218	0.0200
DPCI does not Granger Cause CIT		2.61037	0.1065
DVAT does not Granger Cause DPCI	20	10.3535	0.0021
DPCI does not Granger Cause DVAT		0.59746	0.5628
DPPT does not Granger Cause DPCI	20	7.43824	0.0063
DPCI does not Granger Cause DPPT		0.19524	0.8247
DEXDT does not Granger Cause DPCI	20	5.84286	0.0019
DPCI does not Granger Cause DEXDT		0.02049	0.9797
IMDT does not Granger Cause DPCI	20	8.22479	0.0031
DPCI does not Granger Cause IMDT		0.58628	0.5687

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Post Regression Analysis

Table 12 shows that there is a unilateral causality between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DPCI, since the P-values are statistically significant at 5% level. Moreover, at two (2) lags there is a statistically significant relationship between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DPCI. On the other hand, there is no reverse causation from DPCI to DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT. This establishes the fact that DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT Granger Causes DPCI. Consequently, the null hypothesis is rejected for the alternative which states that DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT has a statistically significant effect on DPCI in Nigeria at 5% level of significance.

Table 13: Johansen Co-integration Test

Date: 03/05/18   Time: 08:03
Sample (adjusted): 1996 2016
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: DPCI DPIT CIT DVAT DPPT DEXDT IMDT
Lags interval (in first differences): No lags

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.903178	142.4423	125.6154	0.0001
At most 1 *	0.758175	133.0987	115.7536	0.0017
At most 2 *	0.729121	103.5953	109.8189	0.0028
At most 3 *	0.655088	96.17179	107.8513	0.0031
At most 4 *	0.589403	90.97225	89.79707	0.0034
At most 5 *	0.543867	79.13211	65.49471	0.0040
At most 6 *	0.509404	71.06393	53.84166	0.0043

Trace test indicates 7 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.903178	99.03245	86.23142	0.0003
At most 1 *	0.758175	94.81034	80.07757	0.0005
At most 2 *	0.729121	87.42774	78.87687	0.0012
At most 3 *	0.655088	81.19954	77.58434	0.0023
At most 4 *	0.589403	78.05904	61.13162	0.0031
At most 5 *	0.543867	73.84928	58.26460	0.0039
At most 6 *	0.509404	71.06393	53.84166	0.0043

Max-eigenvalue test indicates 7 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Diagnostic Result

In table 13, the Johansen co-integration test was used to determine the existence of long-run equilibrium relationship among the variables under study. The Trace Statistic value and Max-Eigen Statistic are shown to be greater than the critical values at 1% and 5% levels, thus indicating 7 co-integrating equation at 5% levels. Therefore, the null hypothesis is rejected and it is concluded that there exists long run equilibrium relationship between the dependent variable (DPCI) and independent variables (DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT). This implies that the regression model is not spurious and the conclusion thereof is valid.

Table 14: Error Correction Model

Vector Error Correction Estimates
Date: 03/05/18   Time: 09:37
Sample (adjusted): 1996 2016
Included observations: 21 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
DPCI(-1)	1.000000
DPIT(-1)	2.097585
	(0.48435)
	[4.33069]
DCIT(-1)	0.150167
	(0.44276)
	[0.33916]
DVAT(-1)	-4.832991
	(1.44197)
	[-3.35167]
DPPT(-1)	1.361898
	(0.31213)
	[4.36328]
DEXDT(-1)	1.275744
	(0.25754)
	[4.95350]
DIMDT(-1)	-3.490667
	(0.29204)

	[-11.9528]						
C	0.224726						

Error Correction:	D(DPCI)	D(DPIT)	D(DCIT)	D(DVAT)	D(DPPT)	D(DEXDT)	D(DIMDT)
CointEq1	0.012794	-0.148015	-0.014458	0.011013	-0.182934	0.166439	0.377551
	(0.01040)	(0.07254)	(0.05038)	(0.01508)	(0.08719)	(0.12584)	(0.07493)
	[1.22968]	[-2.04060]	[-0.28698]	[0.73054]	[-2.09804]	[1.32267]	[5.03858]
C	0.000476	0.002857	0.008571	-0.000952	-0.020952	-0.020476	-0.017619
	(0.00652)	(0.04544)	(0.03156)	(0.00944)	(0.05462)	(0.07882)	(0.04694)
	[0.07307]	[0.06288]	[0.27162]	[-0.10085]	[-0.38362]	[-0.25977]	[-0.37538]
R-squared	0.073718	0.179763	0.004316	0.027321	0.188095	0.084313	0.571950
Adj. R-squared	0.024966	0.136593	-0.048089	-0.023872	0.145364	0.036119	0.549421
Sum sq. resids	0.016947	0.823705	0.397335	0.035582	1.190237	2.479035	0.879036
S.E. equation	0.029865	0.208214	0.144611	0.043275	0.250288	0.361214	0.215093
F-statistic	1.512113	4.164043	0.082358	0.533684	4.401767	1.749453	25.38732
Log likelihood	44.98553	4.206174	11.86102	37.19703	0.341180	-7.362850	3.523540
Akaike AIC	-4.093860	-0.210112	-0.939145	-3.352098	0.157983	0.891700	-0.145099
Schwarz SC	-3.994382	-0.110633	-0.839667	-3.252620	0.257461	0.991178	-0.045621
Mean dependent	0.000476	0.002857	0.008571	-0.000952	-0.020952	-0.020476	-0.017619
S.D. dependent	0.030245	0.224079	0.141255	0.042767	0.270738	0.367920	0.320436

Determinant resid covariance (dof adj.)	2.56E-14
Determinant resid covariance	1.27E-14
Log likelihood	127.3643
Akaike information criterion	-10.12993
Schwarz criterion	-9.085408

Source: Researcher's computation using E-View 9.0, 2018

Interpretation of Diagnostic Result
This study employed the use of time series data for a period of 23 years ranging from 1994-2016. The multiple regression model was specified and then the residuals generated. The residuals were tested at first level and found to be stationary at 5% critical level. Thereafter, the Error Correction Model (ECM) was used. Meanwhile, the variables were individually tested for stationary at first difference; and they were found to be stationary on first difference. However the residuals found stationary, suggest that the variables were co-integrated in the long run.

Table 14 shows that the linear trend between DPIT, DCIT, DVAT, DPPT, DEXDT, DIMDT and DPCI is co-integrated, that is, there is a long-term or equilibrium relationship between the dependent and independent variables. Of course, in the short-run there may disequilibrium and the equilibrium error (error term) could be tied to the short-run behaviour of DPCI to its long-run

value. This therefore gave rise to the formulation and subsequent use of the Error Correction Model (ECM).

An examination of the F-stat. which explains the overall significance of the model with a probability of 0.0000, indicating that the model is statistically significant and that the model has the ability of explaining the actual behaviour of the dependent variable in the long run. Statistically, the ECM is significant, suggesting that DPCI adjusts to PIT, CIT, VAT, PPT, EXDT, IMDT with a lag.

Findings, Conclusion and Recommendation

Findings

Based on the analysis of data, the following findings emerged:
1.   That Tax Revenue significantly affects School Enrolment (SE) in Nigeria at 5% level of significance.
2.   That Tax Revenue significantly affects Life Expectancy (LEX) in Nigeria at 5% level of significance.
3.   That Tax Revenue significantly affects Per Capita Income (PCI) in Nigeria at 5% level of significance.

Conclusion

This study determined the effect of tax revenue on indicators of economic development in Nigeria by adopting certain tax revenue measures (PIT, CIT, VAT, PPT, EXDT and IMDT) and economic development indicators (SE, LEX, PCI) over a period of 23 years spanning from 1994-2016. On the overall, the study discovered that there is association between measures of taxation (PIT, CIT, VAT, PPT, EXDT and IMDT) and economic development indicators (SE, LEX, PCI, IM, LF and GFCF) in Nigeria. The conclusion reached in this study is that taxation has a statistically significant effect on economic development in Nigeria at 5% level of significance.

Recommendations

The following recommendations are made in line with the findings and conclusion of this study:
1.   Since a fact has been established that there is a great impact of taxation on school enrolment in Nigeria. It could therefore be recommended that government should promote efficiency in the allocation of development resources through effective tax policy.
2.   The finding on taxation indicators with a period lag suggests some caution on the part of the government to identify all administrative loopholes for linkages to plug and to continue to maximize the contribution of tax revenue to life expectancy. This is important when it is realized that any action taken on either tax Revenue or life expectancy will take

a year to become effective while taking two years to slow down the impact of tax on economic development as demonstrated in tax revenues with two period lags.

3. Government should intensify effort to strengthening its source of tax revenue since it is established by the diagnostic test that tax revenue has long-run impact on per capita income in Nigeria.
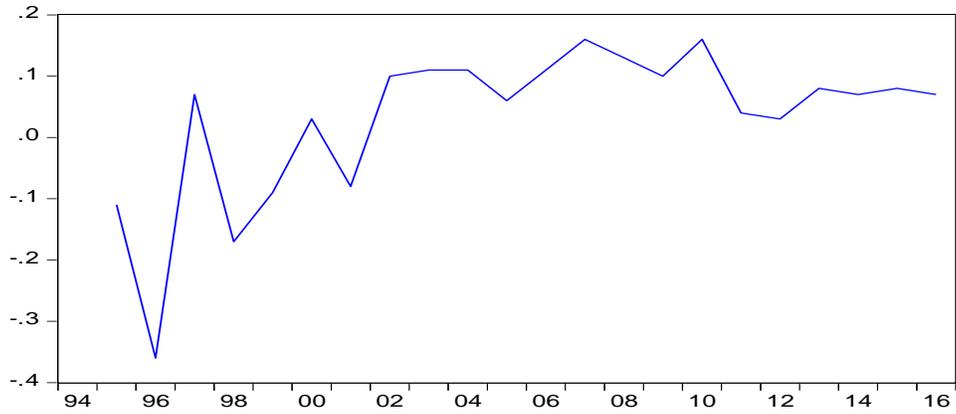
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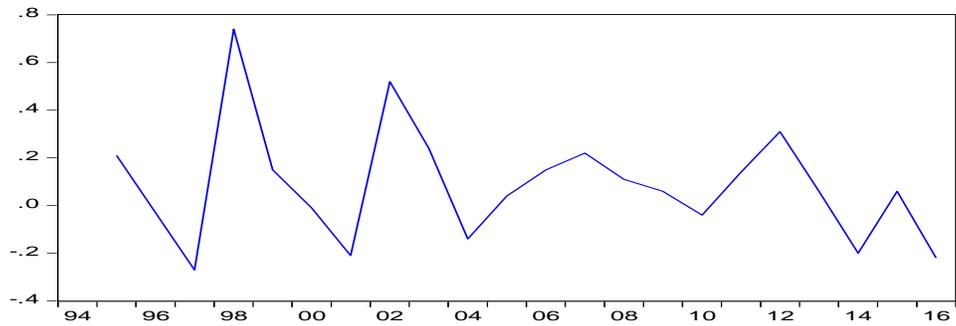
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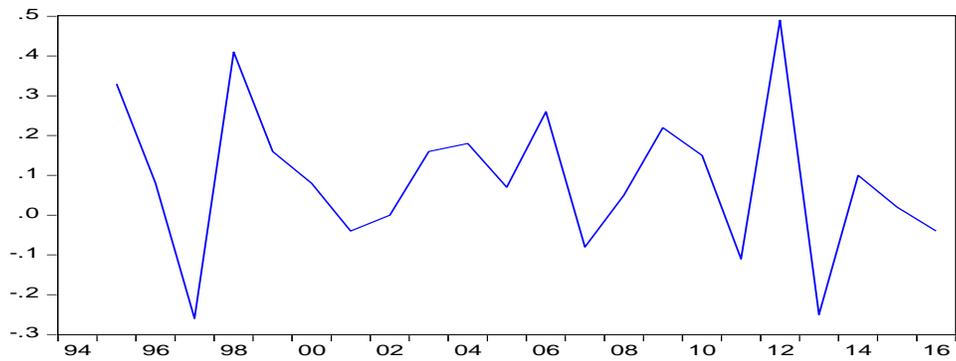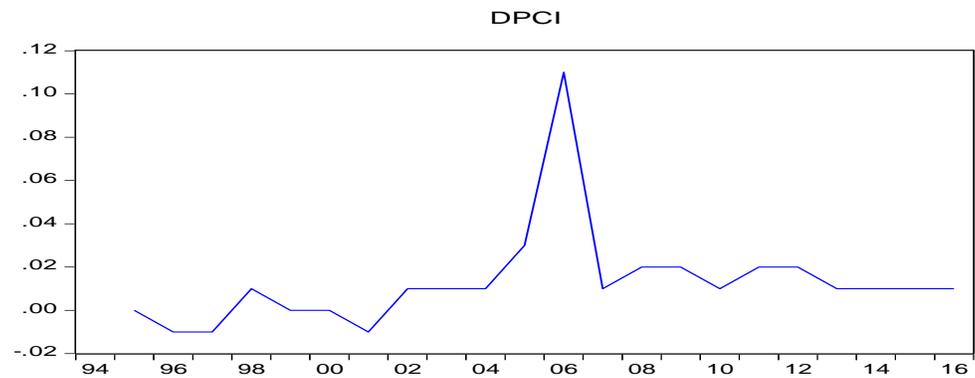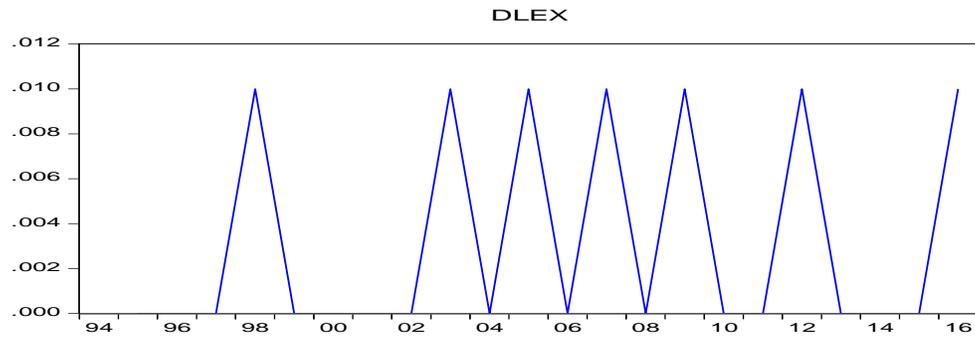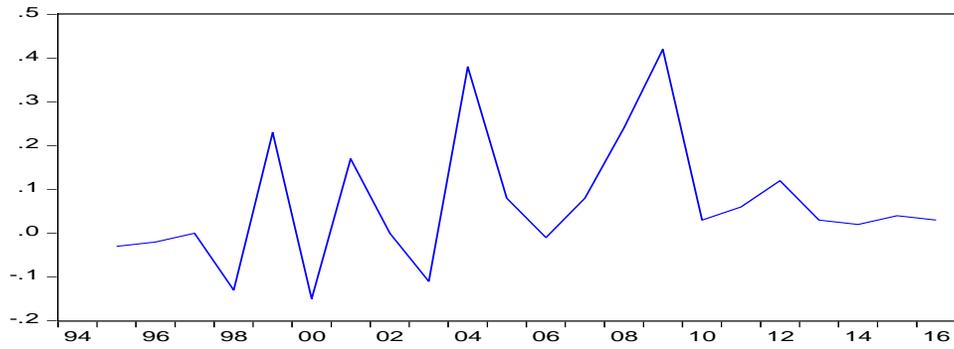
Graphical Test for unit Root

DCIT

DEXDT

DIMDT

DPIT

DPPT

DSE

DVAT