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Tax Revenue and Economic Development in Nigeria

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Abstract

This study examined the influence of tax revenue on economic development in Nigeria. The specific objectives of the study were to investigate the influence of total tax revenue on economic development; examine the influence of the government's education expenditure on economic development, and investigate the impact of the government's health expenditure on economic development in Nigeria. The study covered the period 1990 to 2022. The study adopted an Autoregressive Distributive Lag (ARDL) model which allows simultaneous estimation of the long-run and short-run effects of tax revenue on economic development in Nigeria. Empirical results revealed a positive and significant relationship between tax revenue and human development index; implying that tax revenue enhanced economic development in Nigeria within the period under study. Gross domestic product and health expenditure also stimulated economic development in Nigeria within the period under study. Government education expenditure had a negative but insignificant impact on economic development. The study concludes that tax revenue stimulated economic development in Nigeria within the period under study. Based on the findings of the study, it was recommended, among others, that the government should intensify efforts at generating more revenue from tax and channels towards promoting industrial activities that would in turn impact the welfare of the people and further stimulate economic development in Nigeria.

Keywords: Tax revenue, government expenditures, economic development, Nigeria.

1. Introduction

Governments of any country have enormous responsibilities to perform to achieve economic

growth and development. Such responsibilities include the security of life and property, provision of infrastructural facilities, stimulating the growth of the agricultural sector, and supporting social and community services such as education and health. However, the attainments of these objectives are influenced greatly by the revenue-generating capacity of the governments. Various sources of revenue exist for a government, including loans (internal and external), grants and aids, sales of licences, rents and rates, fees, fines, and taxes. While governments have the responsibility of providing the services, the citizens have the obligation of paying taxes for financing the services. Tax is a major source of government revenue. Tax is a compulsory levy imposed by the government on individuals and firms or goods and services; which are used to meet common expenses for a common purpose. From this definition, a tax has two characteristics: it is a compulsory payment, and no direct benefit is expected from the tax paid. There are two major types of tax; these are direct tax and indirect tax. Direct tax includes company income tax, petroleum profit tax, and personal income tax taxes. Indirect tax includes value-added tax, excise duties, import duties and export duties.

Taxes are considered different from other sources of government revenue because it is a compulsory levy. Taxation is a major source of funding to all three tiers of government, and it helps the governments achieve their macroeconomic objectives. Apart from raising revenue, the government imposes taxes to redistribute income, discourage the production and consumption of harmful goods, control inflation, protect infant industries, and correct adverse balance of payment. Edewusi and Ajayi (2019) maintained that taxes are frequently levied to limit the creation of certain products and services, protect new and local businesses, reduce the level of income disparity in society, regulate businesses and keep inflation under control.

According to Ofishie (2015), tax implies a redistribution of wealth from the private to the public sector of the economy to help the nation achieve some of its economic and social objectives. Tax is therefore a policy tool for achieving economic growth and development. While economic growth implies an increase in the output of an economy between two accounting periods, economic development is the distribution of the output of growth to the people such that there is a reduction in unemployment, a reduction in poverty and a decline in income inequality in the economy. In the words of Todaro and Smith (2011), 'Economic development is conceived of as a multidimensional process involving major changes in social structures, popular attitudes, and national institutions, as well as the acceleration of economic growth, reduction in inequality, and the eradication of poverty'.

Nigerian governments generate revenue from many forms of tax. This includes: i) Personal Income Tax which is guided by the Personal Income Tax Cap P8 LFN 2004 - The rate of the tax ranges from 1% to 24% depending on the amount of chargeable income. Individuals are subject to a minimum tax rate of 1% of gross income where the income is less than N300, 000 per annum. ii) Company Income Tax which is governed by the Company Income Tax Act (CITA), CAP C21, LFN 2004. Company income tax is imposed on the profit of a company from all sources. The tax rate is 30% of the total profits of a company. iii) Value Added Tax (VAT) is governed by the Value Added Tax Act Cap V1, LFN 2004. VAT is a consumption tax paid when goods are purchased and services rendered. It is a multi-stage tax born by the final consumers. VAT is charged at the rate of 7.5%. iv) Tertiary Education Tax (EDT) is governed by the Tertiary Education Trust Fund Act 2011. The rate of the tax is 2% of assessable profit. The tax is an allowable deduction in computing the assessable profits of companies engaged in upstream petroleum operations. Funds derived from the tax are used for the rehabilitation, restoration and consolidation of tertiary education in Nigeria by the Tertiary Education Trust Fund (TETFUND).

The amount in the fund is distributed among universities, polytechnics and colleges education in the ratio of 2:1:1 respectively.

Other forms of tax in Nigeria include withholding tax (5% to 10%), National Information Technology Development levy (1% of profit before tax), stamp duty, and petroleum profit tax. Nigeria derives huge revenue from various tax sources. Federal Inland Revenue Service (FIRS) reports that, in 2022, a total of ₦10.1 trillion was realized from all tax sources; out of which ₦ 4.2 trillion was from petroleum profit tax and ₦5.9 trillion was from non-oil taxes. Despite the huge revenue realized from the various tax sources, Nigeria faces a series of macroeconomic ills such as rising cost of living, worrisome unemployment and poverty situation, infrastructural decay, and staggering economic growth. Also, as contained in human development reports of the United Nations Development Programme (2021), Nigeria is grouped among countries with low human development and was ranked 163th out of 191 countries.

Given this scenario, it is not clear whether the huge revenue realized from the various tax sources has been translated to economic growth and development in Nigeria.

Objectives of the Study

It is for the above reasons that this study sets out to examine the influence of tax revenue on economic development in Nigeria.

The specific objectives of the study are to:

(i) examine the influence of total tax revenue on economic development in Nigeria;

(ii) investigate the influence of gross domestic product on economic development in Nigeria;

(iii) examine the influence of government expenditure on education on economic development in Nigeria;

(iv) investigate the impact of the government's health expenditure on economic development in Nigeria.

2. Review of Related/Empirical Literature

The impact of tax revenue on Nigeria's economic development from 1994 to 2016 was studied by Okeke *et al.* (2018). The data was analysed using the Error Correction Model (ECM), the Granger Causality test, and the Johansen cointegration test. Their results revealed a positive and significant correlation between tax revenue and life expectancy, per capita income, and enrolment in primary school. They concluded that tax revenue played a role in Nigeria's economic development during the study period and they suggested that tax revenues be used wisely to make sure that everyone in the economy benefits.

Ofoegbu *et al.* (2016) used annual time series data for the years 2005 to 2014 to investigate the impact of tax revenue on Nigeria's economic development. For their analysis, they employed the ordinary least square (OLS) regression technique. The results indicated a strong and positive correlation between the total revenue from taxes and economic growth. The results also showed that the relationship between tax revenue and economic development in Nigeria was not as strong when measured using the human development index (HDI) as it was when using the gross domestic product (GDP). This suggests that the GDP provides a more accurate picture of the relationship between tax revenue and economic development in Nigeria. Thus, the researcher concludes that tax revenue in Nigeria can be used as a tool for economic development. They argued that the human development index, not GDP, should be the foundation for any tax policy developed for economic development.

Ideh, A. O. (2019) evaluated the correlation between tax revenue components and economic development in Nigeria spanning the years 2003-2017. Value-added tax, petroleum profit tax, personal income tax, corporate income tax, and customs and excise duties were among the tax revenue components evaluated in the study. Real GDP and the Human Development Index (HDI) were used to gauge economic development. Utilising the Autoregressive Distributed Lag method, the data were examined. He discovered a negative correlation between real GDP and the petroleum profit tax. The human development index and the petroleum profit tax were also found to be negatively correlated. The value-added tax and HDI likewise had an adverse relationship. There was a positive correlation observed between the index of development and

both personal and corporate income taxes. He suggested allocating a sizeable amount of the money received from the petroleum profit tax and other tax components to the development of infrastructure.

Nwakanma and Nnamdi (2013) used data from 1970 to 2010 to study taxation and national development in Nigeria. For their analysis, they used the regression technique of ordinary least squares. Their research revealed a negative correlation between corporate tax and the human development index, while a positive correlation was found between the petroleum profit tax, company income tax, excise tax and an index of national development.

The relationship between Nigeria's total tax revenue and unemployment from 1986 to 2016 was examined by Ironkwe and Agu (2019). Stata version 13 was utilised to analyse the data using multiple regression analysis. The findings suggested that tax revenue worsens the unemployment situation by showing a substantial positive relationship between total tax revenue and unemployment in Nigeria. They suggested that the government allocate funds for its social welfare programmes so that taxpayers would benefit.

Ewa *et al.* (2020) looked at how tax revenue affected the growth of the Nigerian economy. They investigated the effects on economic development of three tax revenue streams: value-added tax, petroleum profit tax, and company income tax. The results of the ordinary least square regression analysis showed that the tax revenue streams under investigation and economic development had a positive correlation. The study found that the value-added tax and company income tax significantly boosted the growth of the gross domestic product. The petroleum profit tax had an insignificant but favourable effect. The authors claim that the negligible estimates demonstrated the indifference of taxpayers towards paying taxes as well as the existence of tax leaks brought on by administrative inefficiencies and corruption within the tax authority.

The effect of tax revenue on economic growth in Nigeria from 1981 to 2017 was evaluated by Aliyu and Mustapha (2020). The relationship was estimated using ARDL regression techniques. Petroleum profit tax, value-added tax, and government domestic debt were found to be significantly and positively correlated with GDP. Customs, excise taxes, and company income taxes all significantly and negatively impacted economic growth. The researchers suggested that the government step up its efforts to raise tax revenue. Egbunike *et al.* (2018) analyzed to investigate the impact of total tax revenue on the economic growth of Ghana and Nigeria. The ordinary least square (OLS) regression technique was employed as an analytical tool. The impact of tax revenue on the gross domestic product of Ghana and Nigeria was found to be positive. According to the researchers, appropriate measures should be implemented to guarantee that tax revenue is used efficiently to support economic growth.

The impact of tax revenue on government capital expenditure and economic growth in Nigeria was investigated by Osho *et al.* (2019). They assessed the impact of value-added tax, petroleum profit tax, and company income tax on capital expenditures by the Nigerian

government. The value-added tax had an insignificant positive relationship with total government capital expenditure, while companies' income tax had a positive relationship with capital expenditure and the petroleum profit tax hurt government development project financing. These findings were based on their analysis using the OLS regression technique. However, they concluded that tax revenue is not adequately spent on capital expenditure; and recommended that utilization of tax revenue on public goods will encourage the payment of tax by taxpayers.

Gurdal *et al.* (2020) used annual data from 1980 to 2016 to examine the relationship between tax revenue, government spending, and economic growth in Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States of America. Two distinct panel causality approaches were employed in the study to facilitate comparisons. The results of the time domain panel causality test indicated that there was unidirectional causality from tax revenue to government expenditure, but bidirectional causality between economic growth and government expenditure. There was no correlation between tax revenue and economic growth. However, long-run causality between economic growth and government spending was demonstrated by frequency domain causality results, as well as bidirectional short- and long-run causality between tax revenue and economic growth.

Hakim (2020) looked into the effects of direct and indirect taxes on total tax revenue and economic growth in a panel of 51 countries between 1992 and 2016. The dynamic panel generalised method of moments (GMM) estimation was used to estimate the data. The findings showed that while indirect taxes had an insignificant but positive influence on economic growth, direct taxes had a significant and negative relationship with it. Additionally, the study discovered that while indirect taxes had a negligible impact on overall tax revenue, direct taxes made a substantial and positive contribution. The study concluded that while direct taxes, such as those on income, profits, and capital gains, are more effective at raising tax revenue in a nation, they are detrimental to economic growth.

The causal relationships between tax revenue and economic growth in Ghana were investigated by Takumah and Iyke (2017). In place of the traditional Granger causality test, the researchers used the Toda-Yamamoto test in their analysis. Strong evidence of a unidirectional causal flow from tax revenue to economic growth in Ghana was discovered by them using a quarterly dataset covering the years 1986Q1–2014Q4. They suggested that the country's tax base be widened to raise more money through taxes. The effect of taxes on Nigeria's economic development from 2003 to 2017 was examined by Olaoye *et al.* (2019). The HDI served as a stand-in for economic development. The analysis employed the Vector Error Correction Model (VECM) and the Autoregressive Distributed Lag (ARDL) bounds test. The research findings indicated that the tax on corporate income had a noteworthy adverse effect on economic development, while the tax on petroleum profits had a marginally negative effect. Conversely, the value-added tax had a substantial benefit on economic development. They concluded that taxes had a substantial, long-term impact on Nigeria's economic growth. The researchers suggested that since corporate income tax rates are harmful to the nation's economic growth, the government should lower them.

Using yearly data from 1996 to 2017, Okonkwo and Chukwu (2019) studied government tax revenue and economic development in Nigeria. They discovered that the human development index in Nigeria was positively impacted by total tax revenue, though the estimate was not significant. They employed the Vector Autoregressive (VAR) model in their analysis. They suggested that to encourage economic development; the government should raise taxes and spend more on infrastructure and education. Ghana, Nigeria, Sierra Leone, and the Gambia are members of the West African Commonwealth. Nwakaego and Chimobi (2021) investigated the

effect of tax revenue on the human development index of these countries. Using the ordinary least square regression technique, data on direct and indirect tax revenues were analysed. The findings demonstrated that although direct tax revenue had a significant and favourable impact on the human development index of West African Commonwealth nations, indirect tax revenue had a significant and negative impact. Therefore, the researchers urged the governments of these nations to make sure that indirect tax revenues are sufficiently utilised to raise living standards through the implementation of effective policies and maintaining a culture of tax revenue accountability.

Using time series data from 2000 to 2021, Adefolake and Omodero (2022) evaluated the impact of tax revenue on Nigeria's economic growth. They specifically assessed the impact of value-added tax, company income tax, and hydrocarbon tax on Nigeria's economic expansion. For the analysis, the study used the Vector Error Correction Model. Researchers discovered that while hydrocarbon taxes and company income taxes had a significant negative impact on Nigeria's economic growth, value-added taxation (VAT) had a positive and significant impact. A study conducted by Bank-Ola (2021) looked at the effect of value-added tax on Nigeria's economic growth between 1999 and 2019. Time series data were applied to the Auto-Regressive Distributed Lag (ARDL) model. According to the analysis's findings, VAT has a short-term, negative, and significant impact on economic growth, while its long-term impact was positive but insignificant. In the long run, interest rates had a significant negative impact on economic growth, while inflation had a significant positive impact. The study found that there is a long-term positive correlation between Nigeria's economic growth and value-added tax.

The relationship between VAT and economic growth in Nigeria was examined by Chigbu and Ali (2014). Based on an annual data sample spanning from 1994 to 2012, the study demonstrated the positive impact of VAT on real GDP-proxied economic growth using the Engle and Granger cointegration technique. They maintained that the government must implement measures aimed at improving productivity to augment the VAT's contribution to Nigeria's economic growth. The impact of Value-Added Tax (VAT) on China's economic growth was examined by Ayoub and Mukherjee (2019). A time series data covering the years 1985–2016 was used for the study. The population as a whole, the number of employed people, the consumer price index, and value-added tax were the independent variables while gross domestic product (GDP) was the dependent variable. The findings demonstrated a positive correlation between value-added tax and GDP over the long and short terms.

Value-added tax (VAT) and economic growth in Nigeria from 1994 to 2012 were the subjects of a study conducted by Ofishie (2015). For data analysis, the Ordinary Least Square (OLS) regression technique was employed. The outcome demonstrated the significant positive influence of VAT on economic growth. Additionally, a positive and significant impact of VAT on total tax revenue was found by the study. To accelerate Nigeria's economic growth, he suggested reviewing tax incentives that would draw in both domestic and foreign investors. Ehigiamusoe and Lean (2015) used the Autoregressive Distributed Lagged (ARDL) bounds testing approach to investigate the causal relationship between Value Added Tax (VAT) and economic growth in Nigeria. The study's evidence demonstrates that value-added taxes and economic growth have a long-term cointegrating relationship and that, during the study period, value-added taxes accelerated economic growth in Nigeria.

Theoretical Framework

This study is based on some theories of taxation. The theories are the Laffer curve theory of taxation, the socio-political theory of taxation, and the Keynesian economic theory. In this

section, we also review empirical literature on taxation and economic development indicators.

Laffer Curve Theory of Taxation

Professor Arthur Laffer, an American economist, developed the Laffer curve theory in 1974. The relationship between tax revenue and tax rate is explained by the theory. According to the theory, there are two ways that a change in the tax rate can impact tax income. They are economic and arithmetic effects. The direct correlation between tax rate and tax revenue is explained by the arithmetic effect, which suggests that a decrease in the tax rate would result in a decrease in tax revenue and vice versa. The economic impact has a multiplier effect and is longer-lasting. Taxpayers will spend their increased income as a result of a tax cut. Demand growth generates more business activity, which in turn boosts output and employment. According to the economic effect, a lower tax rate will positively impact output, employment, willingness to work, and the tax base. Professor Laffer showed that initially, tax revenue rises with higher tax rates; however, tax revenue declines with further rate increases by the government.

Therefore, a tax rate higher than what Professor Laffer called the prohibitive range deters effort, which ultimately results in low productivity. Low productivity will therefore have a detrimental impact on industrial growth, which will eventually narrow the tax base and lower tax collections. Consumer demand for goods and services is decreased by high tax rates on their income. The decline in the demand for products and services will consequently have a detrimental impact on the expansion of the relevant industries and the overall economy. According to the Laffer curve theory of taxation, the government must exercise caution when determining the tax rate to maximise tax revenue. Economic development will result from the government using tax money more wisely, which will lower the unemployment rate, reduce poverty, and narrow the gap between rich and poor.

Socio-political Theory of Taxation

According to the socio-political theory of taxation, social and political goals should be the main factors taken into account when selecting a taxation system. Adolf Wagner was the one who introduced the theory. The socio-political theory of taxation has also been supported by Karl Marx, Max Weber, James Boyce, David Ricardo, and Robert Michels. The theory posits that the purpose of a tax structure is to remedy social ills rather than to benefit individuals. Wagner opted for a tax policy that lowers income disparities and argued for a contemporary welfare approach (Chigbu *et al.,* 2012). In a similar vein, Ironkwe and Agu (2019) contended that the socio-political theory of taxation specifically supported the use of taxes to lessen income disparities among members of society. Therefore, tax laws and how they are applied can have a big impact on a country's ability to grow economically.

Benefits Received Theory of Taxation

Knut Wicksell (1994) developed this theory, and Erik Lindahl (1996) popularised it. Proponents of the theory contend that taxpayers and the government have an exchange relationship. According to this relationship, the government is tasked with the responsibility of providing goods, services, security and infrastructure to the people. In exchange, the people are expected to pay taxes proportionate to the benefits they receive from having access to the government's social amenities, infrastructure, goods, and/or services (Trotman-Dickenson, 1996; Bhartia, 2009; Ihenyen and Mieseigha, 2014). This theory is pertinent to our research because all governments should use their tax money to fund social services and basic infrastructure that are necessary for the sustenance of economic growth and development. In light of this, the study

investigates the relationship between economic development and the tax revenue received from various sources.

Keynesian Economic Theory of Government Regulation

John Maynard Keynes, a British economist developed this theory during the 1930s Great Depression. Richard Kahn, Austin Robinson, Piero Sraffa, John Hicks, James Meade, Joan

Robinson, and Baron Kahn are among the proponents of Keynesian economics. This theory's main premise is that the economy can be stabilised by government action. In the 1930s, John Maynard Keynes led a revolution in economic theory that challenged the then-dominant belief that an economy's full employment and equilibrium are maintained by the automatic stabilising mechanisms of free markets. Keynes's theory's central claim is that an economy's aggregate demand is its primary engine. Keynes went on to say that self-balancing mechanisms in free markets do not result in full employment. Keynesian economists defend the use of public policies by the government to achieve price stability and full employment. Interest rates, tax rates, and social programmes are the three primary indicators that governments should keep a careful eye on, according to Keynesian economic theory (Omodero and Adefolake, 2022). This suggests that the creation and application of tax policies can lead to economic development.

3. Method of Study

The ex-post facto (after-the-fact) research design is used for the study as secondary sources of data are explored. The study adopts an econometric method of data analysis involving the use of the Autoregressive Distributive Lag (ARDL) model. Annual time series data covering the period of 1990 to 2022 is used in the study. The choice of the period for the study is informed by the availability of data for our independent variable (HDI), which was introduced by the United Nations Development Programme (UNDP) in 1990.

Model Specifications

Tax revenue is expected to influence economic growth and development through government expenditure on economic activities. In this study, economic development is proxied by the Human Development Index (HDI). The model is specified as:

$$HDI = f(TRG, GDP, GEE, GEH, FDI) \quad \text{3.1}$$

The HDI has three components: health, education and income. However, as Nwakaego and Chimobi (2021) noted, development goes beyond these three factors to encompass others such as environmental sustainability and investment. The econometric form of the model is presented in equation 3.2 which is our operational model.

$$HDI_t = \beta_o + \beta_1 TRG + \beta_2 LogGDPt + \beta_3 LogGEE_t + \beta_4 LogGEH_t + \beta_5 FDI_t + \mu_i \quad \text{3.2}$$

Where:

HDI = Human Development Index

TRG = Tax Revenue as a percentage of GDP

GDP = Gross domestic product

GEE = Government expenditure on education

GEH = Government expenditure on health

FDI = Foreign direct investment as a percentage of GDP

This model allows us to analyse the relationship between tax revenue, economic development, and other factors influencing HDI in Nigeria, controlling for other variables. The intercept term is β_0 whereas β_1, β_2, β_3, β_4 and β_5 represent the respective coefficient estimates of the explanatory variables. The parameters β_1, β_2, β_3, β_4 and β_5 are expected to be positive (β_1, β_2, β_3, β_4, $\beta_5 > 0$).

Description of Variables/Sources of Data

Human Development Index (HDI): This is a summary measure of achievements in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. HDI is a proxy for development in the model. Due to the paucity of data on HDI for Nigeria, which would not be sufficient for a time series analysis of this nature, data on HDI was constructed by the researcher. Following the United Nations Development Programme (UNDP), HDI was calculated as a geometric mean of the indices of health, education and income.

Tax Revenue (TRG): This variable represents total tax revenue collected by the Nigerian government from various forms of taxation, such as personal income tax, corporate profit tax, sales tax and property tax, and taxes on consumption, and imports, among others. Tax revenue is expected to positively influence economic development as it provides the government with funds for investment in infrastructure, healthcare, education, transportation and social welfare programmes. TRG is total tax revenue expressed as a percentage of GDP.

Gross Domestic Product (GDP): GDP represents the total value of goods and services produced within the country's borders over a specific period. It is a common measure of economic development and it is expected to have a positive effect on HDI. Higher GDP generally indicates greater economic activity and a higher standard of living.

Government Expenditure on Education (GEE): This variable represents the amount of money spent on education by both the government and the private sector. Education is a key determinant of human development, as it enhances individual capabilities and skills. Higher education expenditure is expected to positively influence HDI by improving literacy rates, skill levels, and overall human capital.

Government Expenditure on Health (GEH): This variable represents the amount of money spent on healthcare services and infrastructure. Access to quality healthcare is crucial for improving life expectancy and overall well-being. Higher health expenditure is expected to positively influence HDI by reducing mortality rates, improving health outcomes, and increasing productivity.

Data on gross domestic product (GDP), government expenditure on education (GEE), and government expenditure on health (GEH) were obtained from the Central Bank of Nigeria's statistical bulletin (2022). Data on foreign direct investment (FDI) was sourced from World Development Indicators (WDI). Tax revenue as a percentage of gross domestic product (TRG) was calculated by the researcher.

4. Data Analysis and Discussion of Findings

This section deals with data presentation, analysis as well as discussion of findings emanating from the data analysis.

Unit Root Test

Augmented Dickey-Fuller (ADF) statistics are used to test for the stationarity of the time series

variables used in the study. The analysis is done by taking note of the three alternative assumptions of data-generating processes: intercept, intercept with trend and none; and the result is presented in Table 4.2.

Table 4.2 Unit Root Test Results of Variables in the Model

Variable	ADF Test Statistic	5% Critical Value	Order of Integration
HDI	-5.556079	-2.960411	I(1)
TRG	-4.152337	-2.963972	I(1)
GDP	-5.797297	-3.562882	I(1)
GEE	-4.397345	-2.960411	I(1)
GEH	-4.143195	-3.557759	I(0)
FDI	-3.192461	-2.957110	I(0)

Source: Computed by the Researcher Using E-Views 10.0

The result shows that of the six variables used in the study, two (GEH, FDI) were stationary at level; they were integrated of order zero; that is I(0) while the other four variables (HDI, TRG, GDP, GEE) were stationary at their first differences; they were integrated of order one; that is I(1). The order of integration of the variables was taken at the points where their ADF test statistics (in absolute terms) were greater than their respective 5% critical values. This mixed order of integration justifies the application of the Autoregressive Distributive Lag (ARDL) model for the analysis. The ARDL model is considered appropriate as it is more suited for the I(1) and I(0) series; and also its ability to correct serial or autocorrelation among variables in the model.

Cointegration Test

The existence of a long-run relationship among the variables in the model was investigated using the ARDL bound testing approach, and the result is presented in Table 4.3.

Table 4.3: ARDL Bounds Test for Co-integration

Test Statistic	Value	Sign. Level	Lower Bound I(0)	Upper Bound I(1)
F- Statistic	6.383	10%	2.508	3.763
K	5	5%	3.037	4.443
HDI = f (TRG, GDP, GEE, GEH, FDI)		1%	4.257	6.040

Source: Researcher's computation: E-views10

The F- statistics value of 6.38 is greater than the lower and upper bound values of 3.12 and 4.60 respectively at a 5% level of significance. Thus, the null hypothesis of no cointegration is rejected; implying that there exists a long-run relationship among the variables in the model. The result clearly shows that a long-run relationship exists among the human development index, total tax revenue, gross domestic product, government expenditure on education, government expenditure on health and foreign direct investment within the period under study, even at a 1% level of significance.

Long-run and Short-run Estimation Results

Given the fact that the variables are cointegrated, the long-run and short-run estimates will be examined. An advantage of the ARDL model over other models like the Vector Autoregression (VAR) model is that it simultaneously estimates the long-run and short-run relationships among variables. Tables 4.4 and 4.5 show the long-run and the short-run estimates.

Table 4.4 ARDL Long-run Estimation Result

Variable	Coefficient	Std. Error	t-statistic	Prob.
TRG	0.011733	0.002119	5.537045	0.0027
Log(GDP)	0.063073	0.021221	2.972213	0.0065
Log(GEE)	-0.013728	0.016009	-0.857491	0.3993
Log(GEH)	0.012554	0.002244	5.594462	0.0289
FDI	0.000366	0.004079	0.089696	0.9292

Table 4.5 ARDL Short-run Estimation Result

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	0.044662	0.009539	-4.681936	0.0001
CointEq(-1)*	-0.601388	0.061064	-4.935596	0.0000

R^2 = 0.748 Adj. R^2 = 0.732 F-statistic = 7.9381

Prob (F stat.) = 0.00 Durbin-Watson = 1.9977

The regression result showed that total tax revenue had a positive and significant relationship with economic development. The coefficient of 0.01173 with its probability of 0.0027 implies that the estimate is significant and that a unit increase in total tax revenue leads to an increase in HDI by 0.012 units. This implies that total tax revenue stimulates economic development in Nigeria within the period under study. This is in line with the a priori expectation. The finding is in agreement with that of many others including Okeke *et al.* (2018), Ufoegbu *et al.* (2016), Nwakanma and Nnamdi (2013), and Ewa *et al.* (2020); but at variant with the findings of authors such as Olaoye *et al.* (2019), and Ideh (2019). Since economic development is proxy by the human development index (HDI), revenue from petroleum profit tax raised per capita income, and increased literacy rate and life expectancy in Nigeria within the period under study. However, the extent to which tax revenue enhanced economic development is below expectation given the magnitude of tax revenue raised within the years under study. The little impact of tax revenue on economic development, therefore suggests that the revenue may not have been properly channelled toward improving the wellbeing of the people.

The coefficient of gross domestic of 0.0630 with its probability of 0.0065 indicates that with a 1% increase in GDP, the human development index (HDI) is expected to increase by 0.063 units. This positive relationship between GDP and HDI is in line with the a priori expectation. This is achievable through efficient distribution of the output of growth in the economy. Efficient resource distribution will reduce unemployment, poverty, and income inequality and then translate to economic development. Health expenditure had a positive and significant relationship with the human development index. The coefficient of 0.01255 with a probability of 0.0289 implies that a percentage increase in the government's health expenditure leads to an increase in HDI by 0.013 units. Health expenditure is expected to increase life expectancy, promote a healthy workforce and translate to economic development. Against a priori expectation, education expenditure (GEE) had a negative relationship with the human development index. The coefficient of -0.01372 implies that a 1% increase in education reduces HDI by 0.014 units; the estimate is however insignificant, judging from its probability of 0.3993. As expected, foreign direct investment (FDI) had a positive relationship with the human

development index but the coefficient is insignificant judging from the probability of 0.992; also, the coefficient of 0.000366 shows that foreign direct investment (FDI) has negligible influence on HDI.

The coefficient of the error correction term of -0.60138 with its probability of 0.00 is negative and statistically significant at the 1% level. This means that any short-run disequilibrium in the model is adjusted back to long-run equilibrium by the speed of 60.1% annually. This further confirms the existence of cointegration among the variables in the model. The R-squared (R^2) of 0.7481 implies that the explanatory variables in the model jointly explain 74.8% of the variations in the dependent variable. The Durbin-Watson statistic of 2.101 shows evidence of no autocorrelation in the model. The F-statistic value of 24.3601 with a probability of 0.000 implies that the whole estimation is significant.

5. Conclusion

A positive and significant relationship was found between tax revenue and economic development, in conformity to its a priori expectation. However, the extent to which tax revenue enhanced economic development was below expectation given the huge amount of tax revenue raised within the period under study. Gross domestic product and health expenditure also stimulated economic development in Nigeria within the period under study. Against a priori expectation, the relationship between the government's expenditure on education and economic development was found to be negative but the estimate was insignificant. A positive, negligible, and insignificant relationship was found between foreign direct investment (FDI) and economic development. The study concludes that tax revenue stimulated economic development in Nigeria within the period under study.

6. Recommendations

Based on the findings of the study, the following policy recommendations are offered to help facilitate economic development in Nigeria:

1. The government should intensify efforts at generating more revenue from tax and channel the same towards promoting industrial activities that would in turn impact the welfare of the people and further stimulate economic development in Nigeria. The revenue could be used to provide a stable power supply which in turn would attract investment from within and outside the country. An increase in industrial activities means an increase in employment and an improvement in the welfare of the people.

2. The government should spend more of the tax revenue on education and monitor the execution of the projects to ensure that the expenditures translate to economic development in Nigeria.

3. The government should invest in infrastructure by allocating more of the tax revenues for building and maintaining roads, bridges, airports and other essential infrastructures to stimulate economic activities and enhance productivity. The government should also offer tax breaks, loans, or grants to small businesses, and encourage entrepreneurship, job creation, and innovations which are essential drivers of economic growth.

4. Given the positive impact of health expenditure on economic development, it is recommended that the government should allocate more of the tax revenue for the provision of quality healthcare services to the people. This will result in healthy

workforce, enhance life expectancy and further stimulate economic development in Nigeria.

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