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The Growth Implications of Non-Oil Tax Revenue in Nigeria

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ABSTRACT: This study examined the effect of non-oil tax revenue on Nigerian GDP. Historical data from 2011 to 2019 on a quarterly basis on Gross Domestic Product (GDP), trade openness, and inflation were sourced from the Central Bank of Nigeria (CBN); Data on non-oil tax Federal tax revenue (comprised of company income tax, value added tax, education tax, capital gain tax stamp duty and national information development levy) were sourced from Federal Inland Revenue Service (FIRS). Augmented Dickey-Fuller unit root test was employed to test for the stationarity of the variables. Autoregressive Distributed Lag (ARDL) methodology was employed as an econometric tool of data analysis. The result revealed that non-oil tax revenue impacted positively and significantly on GDP in both short run and long run. Bound test revealed that there was a valid long-run relationship between non-oil tax revenue and GDP. The result shows that if VAT and CIT rose by one percent, the average value of GDP was up by 1.25% and 12.2% in the long run. The short-run result showed that one percent rise in CIT, the average value of GDP goes up by 2.4%. Conclusively, it was discovered that non-oil tax revenue can spur economic growth and development in Nigeria. It is high time Nigeria diversify its economy and revenue generation to non-oil tax revenue.

KEYWORDS: Mono-Economy, Diversify, IGR, Non-oil tax revenue, GDP.

I. Introduction

Revenue from the oil sector is the key that holds Nigeria's economy. The sector is closely linked with the financial sector and all other sectors because capital expenditures in any other sector in Nigeria can be traced to resources generated from the oil industry (Obasi, 2016). Revenue from the oil sector can then be said to be the fuel and bedrock for the sustenance of Nigeria's economy. Hence, fall in the oil price international market is devastating to all systems and its negative impact in terms of inflation, unemployment, and the inability of the government to pay workers' salaries among others. For Nigeria to overcome the present financial challenges, just like the International Monetary Fund (IMF) and World Bank have advised, the country must look inward and increase its Internally Generated Revenue (IGR) from non-oil.

Tax revenue is the most reliable and sustainable source of government revenue in many advanced countries in recent times. According to the International Center for Tax and Development (ICTD), tax revenues account for more than 80% of total government revenue in about half of the countries in the world and more than 50% in almost every country (INSIGHT: Tax Revenue Mobilization in Nigeria July 1, 2020). But in Nigeria, tax revenue accounted for 20% proportion of government revenue over the years, while 80% of the revenue is from crude oil (Odusola, 2006). Nigeria Statistic Bureau (2018) data revealed that more than 80% of Nigeria's export earnings are coming from sales of crude oil and its associates. This is against what was obtained in 1960s/70s when non-oil exports accounted for more than 66% of Nigeria's total exports and contributed immensely to the growth of Nigeria's economy (Ogunkola & Adewuyi, 2008). Hence tax revenue contribution to GDP is still very low. According to the Organization of Economic Corporation Development (OECD), revenue statistics for 2020 Nigeria's Tax-to-GDP ratio in 2018 (6.3%) was lower than the average of the 30 African countries in

Revenue Statistics in Africa 2020 (16.5%) by 10.2 percentage points and also lower than the Latin America and the Caribbean (23.1%).

It is high time Nigeria began to reduce her dependency on oil revenue by growing her revenue from taxation. Apart from being a source of revenue for the government, taxes are instruments to achieve the macroeconomic objectives in the areas of fiscal and monetary policies. Tax revenue facilitates economic growth and development and provides the government with stable resources. It is also a means of addressing inequalities in income distribution when utilized to provide affordable social amenities, basic infrastructure, and other utilities. Tax revenue can be used to minimize the negative impacts of volatile booms and recessions in the economy, correct market failures when it is necessary, and help to complement the efforts of monetary policy in order to achieve economic stability.

Presently, Nigeria economy is in critical shape, facing challenges of revenue shortage which is putting the country in the terrible corner of seeking loans from anywhere that is available in the world without considering conditions and attachment for repayment. Tax revenue from non-oil can bail the country out of this predicament.

Nigeria needs more revenue to finance its increasing budget and to rebuild the country's infrastructure that has been putrefy. Basing the annual budget on benchmarks oil price that is unstable and debt can be overcome by developing non-oil sectors and generating adequate revenue from non-oil tax revenue. There is a need for governments at all levels to generate adequate revenue from non-oil sectors. Financing the economy with non-oil tax revenue is far better in terms of stability and predictability. This study, therefore, seeks to answer the following fundamental questions:

i. Is there any relationship between total non-oil tax revenue and Gross Domestic Product (GDP) in Nigeria?
ii. Is this relationship based on tax types like company income tax and value added tax, the two leading non-oil federal tax revenue in Nigeria?

In order to answer the above questions, the study's main objectives are to do the following:

i. Examine the effect of total non-oil tax revenue on GDP.
ii. Test for the relationship between Gross Domestic Products, Company Income Tax, and Value Added Tax.

Based on the objectives stated above, the following hypothesis will be tested:

1) There is no significant positive relationship between non-oil tax revenue and economic growth in Nigeria.

2) There is no significant positive relationship between total Company Income Tax, Value Added Tax, and GDP in Nigeria.

The above study is defensible in the sense that various studies have been carried out on the relationship between taxes and economic growth in Nigeria and the impact of taxes on economic growth in Nigeria and several other developing countries. However, there are few known papers that study the impact and relationship between non-oil tax revenue and economic growth in Nigeria; which is urgently needed to soften the current financial challenges facing the country. The study will show how extremely urgent for the country to diversify its revenue generation from unpredictable and fluctuating oil revenue to non-oil tax revenue that is more reliable and predictable.

The paper consists of five sections. After this introduction, section II features on literature reviews. Methodology and theoretical supporting the study are in section III. Data analysis and interpretations of results are in section IV. Section V is on summary, conclusion and policy recommendation of the study.

II. Literature Review

2.1 Conceptual Literature

According to Investopedia (2021), economic growth is an increase in the production of economic goods and services, compared from one period of time to another. It can be measured in nominal or real adjusted for inflation terms. Aggregate economic growth is measured in terms of gross national product (GNP) or gross domestic product (GDP). Britannica sees economic growth as the process by which a nation's wealth increases over time. It has also been described as the sustained increase in per capita national output or net national product over a long time.

The Robert Solow Neo-classical growth model posits that growth depends on capital accumulation – increasing the stock of capital goods to expand productive capacity and the need for sufficient saving to finance increased allocation of resources towards investment.

Bencivenga and Smith (1991) asserted that economic growth will increase if more savings are channeled into activity with high productivity while reducing the risk associated with liquidity needs. Nnanna (2004) stated that the rate of output growth is determined by the accumulation of capital, the efficiency of resource utilization, and the ability to acquire and adopt modern technology.

Wikipedia defined government revenue or national revenue as the money received by a government from taxes and non-tax sources to enable it to undertake government expenditure. Illyas and Siddiqi (2010) stated that public/government revenue can be classified into two tax and non-tax revenue. Tax revenue is the taxes on the incomes of individuals and corporate bodies and the consumption of goods and services. Non-tax revenue is other income to the government apart from taxes which may include dividends or profit from government-owned enterprises or agencies and capital receipts or loans from within or external international institutions and any other sources available to the government in raising funds to finance its activities.

Nigeria oil revenue includes proceeds from sales of crude oil, royalties, and petroleum profit tax. Non-oil revenue includes company income tax, value added tax, capital gain tax, and income or proceeds generated from the commodities that are sold in the international market like agricultural products and others excluding crude oil (petroleum product).

'Taxo' is a Latin word that means to estimate the value or compute the value (Lewis, Short, Andrews, & Freund, 1975). Tax is a compulsory levy imposed by the government of a country on her subject or property to provide social amenities and create conditions for the economic prosperity of the society (Azubike, 2009). Chigbu and Njoku (2015) defined tax as a major source of revenue for every economy and it's usually an instrument used in reducing the gap between the rich and the poor. Also, Afuberoh and Okoye (2014) see tax as a compulsory levy by the government through its agencies on the income, consumption, and capital of its subjects. These levies are made on personal income, such as salaries, business profits, interests, dividends, discounts, and royalties as well as company profits, petroleum profits, and capital gains. Ishola (2020) stated that payment or collection should possess attributes to be called tax. The attributes are, that it must be a compulsory payment imposed by the government on the people residing in the country. Hence any person who refuses to pay a tax is liable to punishment, unlike a levy that is voluntary which is a contribution or donation. It must be for common use that is public utility services to benefit all people. In addition, it must not be levied in return for any specific service that is no individual can ask for any special benefit from the State in return for the tax paid by him.

2.2. Empirical Review

Empirical studies from Nigeria and other African countries on tax revenue and economic growth (proxy by GDP) revealed that there is a positive and significant relationship between non-oil revenue and GDP.

Medee and Nenbee (2011) studied the econometric analysis of the impact of fiscal policy variables on Nigeria's economic growth (1970-2009) using Vector Auto-regression and Error correction mechanism techniques claimed that, tax revenue has effects on the Gross Domestic Product both at the short and long run, meaning that tax revenue has positive impact on the economic growth in Nigeria. Gacanja (2012) did an empirical case study in Kenya on tax revenue and economic growth. His results revealed a positive relationship between economic growth and tax revenues.

Muriithi (2013) examined the relationship between government revenue and economic growth in Kenya. His European Journal of Accounting, Auditing and Finance Research study showed that there is a direct relationship between income tax (non-oil revenue) and economic growth. He further concluded that, increase in VAT leads to positive effects on the rate of economic growth.

Other authors including Okafor (2012), Ude and Agodi (2014), Abata (2014), Ayuba (2014), Ude and Agodi (2014), Igwe *et al.* (2015) Nweze and Greg (2016), Lyndon and Paymaster (2016), Akwu and Oliver (2016) Ogar and Oka (2016), Okwara and Amori (2017) revealed in their works that tax revenue has positive impact on GDP. Okafor (2012) studied tax revenue generation and Nigerian economic development cover the period 1981-2007. A simple hypothesis was formulated in the null form which states that there is no significant relationship between federal collected tax revenue and the GDP in Nigeria. The regression result indicated a very positive and significant relationship.

Ude and Agodi (2014) investigated the time series roles of non-oil revenue variables on economic growth in Nigeria for period of 1980-2013. They discovered that, non-oil revenue variables analysed are agricultural revenue and manufacturing revenue and interest rate have significant impact on economic growth in Nigeria. Ayuba, (2014) investigated the impact of non-oil revenue on economic growth in Nigeria, using secondary data collected from the CBN Statistical Bulletin from the period 1993 - 2012. His results showed that, non-oil tax revenue impacted positively on economic growth in Nigeria.

Abata (2014) wrote on the impact of tax revenue on Nigeria economy using descriptive survey design and simple random sampling technique. His findings revealed that, tax revenue has a significant impact on Federal Government Budget implementation and revenue generated in Nigeria. Ihendinihu *et al* (2014) investigated long-run equilibrium relationships between tax revenue and economic growth in Nigerian between 1986 and 2012. Their results indicated that, total tax revenue has a significant effect on economic growth; explaining about73.4% of the total variation in RGDP. CIT, EDT and OTR were discovered to have significant effects on economic growth; sustaining long-run equilibrium relationships with RGDP.

Ude and Agodi (2014) looked at the impact of tax revenue on the economic growth in Nigeria from 1994-2015. The result revealed that non-oil income has significant impact on GDP. They recommended that government should diversify revenue source from crude oil to non-oil sectors of the economy.

In further studies, Igwe *et al.* (2015) examined the impact of non-oil export to economic growth in Nigeria for the period 1981-2012. Findings from the VEC analysis reveal that in both the short and long runs, non-oil export determines economic growth. Also, the co-integration analysis indicates a long run relationship between non-oil export and economic growth over the period under study.

Akwu and Oliver (2016) studied empirical analysis effects of tax revenue on economic development of Nigeria using annual time series data for the period 2005 -2014. Lyndon and Paymaster (2016) examined the impact of companies' income tax, value-added tax on economic growth (proxy by gross domestic product) in Nigeria,

using secondary time series panel data from 2005 to 2014. Their results of the analysis showed that both company income tax and value-added tax have positive impact on economic growth. Nweze and Greg (2016) investigate the relationship between GDP (proxy for economy), oil revenue, and government expenditure in Nigeria using statistical data from 1981 to 2014. Their results showed that both oil revenue and government expenditure have a positive relationship to GDP in the short run, but in the long run it was only government revenue that showed a positive relationship while oil revenue displayed a negative sign.

Also, Okezie and Azubike (2016) examined the role of non-oil revenue to total government and economic growth in Nigeria from 1980 to 2014. The result revealed a positive and significant contribution of tax revenue to economic growth and a positive but slightly insignificant contribution to government revenue.

All the above-mentioned studies and others worked on economic growth and government revenue or economic growth and tax revenue and few on economic growth and non-oil revenue, but **none has narrowed it down to non-oil tax revenue** hence there is a need for this study. Revenue from oil formed a larger segment of Nigeria's revenue since the early 1970s, and oil market price is falling and rising for the past two decades which makes the economy not predictable and dependable. It is imperative to study that part of Nigeria's revenue that is not coming from oil. This study is justified to study economic growth and non-oil tax revenue in Nigeria.

III. Methodology

3.1. Theoretical Framework

The study is based on ***Socio-political theory of taxation***. This is a tax system that is directed towards the welfare of the society as a whole (Chigbu *et al.*, 2012). It is a tax system that was designed not to serve individuals but one that cures the ills of the society as a whole.

Ogbonna and Appah (2012) stated that it is the reasoning that justifies the imposition of taxes for financing state activities and for the provision of a basis for apportioning the tax burden between members of the society.

3.2. Methodology:

The study will be quantitative. Augmented Dickey-Fuller unit root test is employed to test for the stationarity of the variables. To investigate the rich dynamic impact of Non-oil Federal Tax Revenue (NOFTR), Value Added Tax (VAT), Company Income Tax (CIT), Inflation Rate (INF), and Trade Openness (TO) on the Nigerian economy (GDP as proxy); an Autoregressive Distributed Lag (ARDL) methodology is employed as an econometric tool of data analysis. The ARDL optimal lags specification is selected using the information criteria using the E-views econometric package.

3.3. Research Design:

The main objective of this study is to establish the relationship between economic growth proxied by GDP (dependent variable), and Non-Oil Federal Tax Revenue (independent variables). A linear regression model will be employed for purposes of establishing the relationship and investigate the hypothesis of the impact of Non-Oil Federal Tax Revenue, Company Income Tax and Value Added Tax on GDP.

3.4 Research Data and Source:

Secondary data from the Central Bank of Nigeria (CBN) and the Federal Inland Revenue Service (FIRS) will be used in this study. One of the main independent variables (Non-Oil Federal Tax Revenue), Value Added Tax (VAT) is available for the public on the FIRS page as of 2011 even though VAT collection started in 1994. Since FIRS' collection report is on a quarterly basis, all other data will be quarterly from 2011 to 2019. Another restriction is that data collection will stop at the last quarter of 2019 because the GDP for the last quarter of 2020

is not yet available on the CBN page. 2011 to 2019 making 9 years, on a quarterly basis will be 36 points to run the data analysis.

3.4 Model specification

The model used in this study is simply stated as, GDP is a function of Non-Oil Federal Tax Revenue (NOFTR), Value Added Tax (VAT), Company Income Tax (CIT), Inflation Rate (INF), and Trade Openness (TO) respectively. It is presented in an algebraic form as shown in equation (1) below;

$$\boldsymbol{gdp_t = f(noftr, vat_t, cit_t, inf_t, to_t)} \qquad \mathbf{(1)}$$

Where:

NOFTR: is the total non-oil federal tax revenue. State tax revenue was not considered because they are not significant and not available. Every state in the country depends on monthly federal allocation to run the state activities. Non-Oil Federal Tax Revenue (NOTR) comprises Company Income Tax (CIT), Value Added Tax (VAT), Education Tax (EDT), Capital Gain Tax (CGT), Stamp Duty (SD), and National Information Development Levy (NIDL).

VAT: Value Added Tax. This is a consumption tax. The current rate in line with the 2019 finance Act is 7.5%

CIT: Company Income Tax. This is a tax on company's profit. It is 30% of the total profit of a company.

INF: Inflation (Inflation rise in price of goods and services. It was included because it has to go along with consumption)

TO: Trade Openness. This is also included because it has to do with export and import which play a major role on company's activities.

The assumed econometrical form of the stated model in equation (1) is defined below;

$$\mathbf{ln}\boldsymbol{GDP_t = a_0 + a_1 lnnoftr_t + a_2 lnVAT_t + a_3 lnCIT_t + a_4 Inf_t + a_5 To_t + u_t} \mathbf{(2)}$$

The coefficient of variables signifies the elasticity of the variable with respect to the GDP respectively. However, it has to be defined clearly that equation 2 above is a long-run equation that stated explicitly the linear relationship between the dependent and the independent variables. Ideally, there is always a short run dynamic that drives a particular system to a steady-state (long-run) if exists and we transform equation 3 into a short-run form by first differencing it. However, doing this throws away rich information about the long run. In this sense, there is a need to represent the equation in an error correction form so that both short-run and long-run information are retained. Based on applied econometric literature, the ultimate single equation model to achieve this objective is the ARDL model; hence equation 3 is presented in a generalised ARDL-ECM form below;

$$\begin{aligned}\nabla \mathbf{ln}\boldsymbol{GDP_t} = &\sum_{i=1}^{T} \boldsymbol{\partial_{1i}} \nabla \mathbf{ln}\boldsymbol{GDP_{t-i}} + \sum_{i=0}^{T} \boldsymbol{\partial_{2i}} \nabla \mathbf{ln}\boldsymbol{NOFTR_{t-i}} + \sum_{i=0}^{T} \boldsymbol{\partial_{3i}} \nabla \mathbf{ln}\boldsymbol{VAT_{t-i}} + \sum_{i=0}^{T} \boldsymbol{\partial_{4i}} \nabla \mathbf{ln}\boldsymbol{CIT_{t-i}} \\ &+ \sum_{i=0}^{T} \boldsymbol{\partial_{5i}} \nabla \boldsymbol{Inf_{t-i}} + \sum_{i=0}^{T} \boldsymbol{\partial_{6i}} \nabla \boldsymbol{To_{t-i}} \\ &+ \boldsymbol{\theta}(\mathbf{ln}\boldsymbol{GDP_{t-1}} - \boldsymbol{a_0} - \boldsymbol{a_1} \mathbf{lnNOFTR}_{t-1} - \boldsymbol{a_2} \mathbf{ln}\boldsymbol{VAT_{t-1}} - \boldsymbol{a_3} \mathbf{ln}\boldsymbol{CIT_{t-1}} - \boldsymbol{a_4 Inf_{t-1}} \\ &- \boldsymbol{a_5 To_{t-1}}) + \boldsymbol{u_t} \mathbf{(3)}\end{aligned}$$

Since a change in the log of expression is equivalent to the growth of such an expression; hence, equation 3 above is now the Error Correction Model that shows the relationship between real the GDP, Value Added Tax, Company Income Tax, Inflation Rate, and Trade Openness both in the short-run and the long-run.

IV. Data Analysis and Interpretation:

4.1Unit Root Test:

To avoid the problem of spurious regression, we used the Augmented Dickey Fuller (ADF) test to examine the stationarity of the variables in the table below;

Table 4.1: ADF unit root test result

S/N	VARIABLES	STATIONARY	PROB.	F.STAS	"@5%
1	GDP	I(1)	0.0001	-20.87651	-2.95711
2	NOFTR	I(1)	0.0000	-13.24402	-2.95711
3	CIT	I(0)	0.0004	-4.81000	-2.9484
4	VAT	I(1)	0.0000	-9.68888	-2.95113
5	TO	I(1)	0.0000	-6.01307	-2.95113
6	INF	I(1)	0.0000	-5.64784	-2.95113

Source: Researcher's computation, 2021

The above table shows the Augmented Dickey-Fuller (ADF) unit root test results for the GDP (Gross Domestic Products), NOFTR (Non-Oil Federal Tax Revenue), CIT (Company Income Tax), VAT (Value Added Tax) and INF (Inflation Rate) but negative relationship with TO (Trade Openness). It can be seen from the Augmented Dickey-Fuller (ADF) unit root test result that only CIT was stationary at level i.e. I(0); while GDP, NOFTR, VAT, CIT, and TO were stationary at first difference i.e. I(1). For this reason, the adoption of an ARDL methodology is justified due to its flexible nature to dynamically accommodate the mixture of stationary and integrated.

4.2 DESCRIPTIVE STATISTICS OF DATA

Descriptive statistics summaries the basis of statistical features of the data: GDP (Gross Domestic Products), NOFTR (Non-Oil Federal Tax Revenue), CIT (Company Income Tax), VAT (Value Added Tax), TO (Trade Openness) and INF (Inflation Rate). These descriptive statistics provide a historical background for the behaviour of our data.

Table 2: Descriptive Statistics

	CIT	GDP	INF	TO	VAT	NOFTR
Mean	277.071	16511882	11.57417	0.37868	217.8128	549.617
Median	259.4924	16384636	11.3	0.36906	199.988	544.557
Maximum	556.2703	19527725	16.5	0.509104	311.943	947.3419
Minimum	112.3609	13450717	8	0.19764	152.7777	283.5037
Std. Dev.	124.6742	1550452	2.858045	0.085648	44.64225	167.0123
Skewness	0.708503	-0.058299	0.486001	-0.14988	0.696574	0.373727
Kurtosis	2.559507	2.290657	2.070978	2.040817	2.34885	2.359094
Jarque-Bera	3.302908	0.775143	2.711801	1.514833	3.547289	1.454173
Probability	0.191771	0.678703	0.257715	0.468876	0.169713	0.483315
Sum	9974.554	5.94E+08	416.67	13.63248	7841.259	19786.21
Sum Sq. Dev.	544028	8.41E+13	285.8947	0.256748	69752.56	976258.8
Observations	36	36	36	36	36	36

Source: Researcher's computation, 2021

From the table above, the Jarque-Bera test is the most essential because it is the test of normality distribution of the variables. The results, using the P-value associated with the Jarque-Bera statistics all the variables were normally distributed as the P-values were greater than 5% probability level.

4.3 CORRELATION MATRIX:

A correlation matrix is a table showing the correlation coefficients between the variables GDP (Gross Domestic Products), NOFTR (Non-Oil Federal Tax Revenue), CIT (Company Income Tax), VAT (Value Added Tax), TO (Trade Openness) and INF (Inflation Rate). Each cell in the table shows the correlation between two variables.

Table 4.3: Correlation coefficients between the variables:

	CIT	GDP	INF	TO	VAT	NOFTR
CIT	1	0.402771	-0.01859	0.202242	0.462485	0.948122
GDP	0.402771444	1	0.136508	-0.2239	0.625359	0.555764
INF	-0.018593894	0.136508	1	-0.12134	0.261636	0.032676
TO	0.202242415	-0.2239	-0.12134	1	0.403472	0.229254
VAT	0.462484583	0.625359	0.261636	0.403472	1	0.61844
NOFTR	0.948122177	0.555764	0.032676	0.229254	0.61844	1

Source: Researcher's computation, 2021

From the table above, there is a positive relationship between the GDP (Gross Domestic Products), NOFTR (Non-Oil Federal Tax Revenue), CIT (Company Income Tax), VAT (Value Added Tax) and INF (Inflation Rate) but negative relationship with TO (Trade Openness).

4.4. Bound Test:

Table 4.4

ARDL Bounds Test				
Date: 05/03/21 Time: 15:37				
Sample: 2011Q3 2019Q4				
Included observations: 34				
Null Hypothesis: No long-run relationships exist				
Test Statistic	Value	K		
F-statistic	15.88451	5		
Critical Value Bounds				
Significance	I0 Bound	I1 Bound		
10%	2.26	3.35		
5%	2.62	3.79		
2.50%	2.96	4.18		
1%	3.41	4.68		
Test Equation:				
Dependent Variable: D(LNGDP)				
Method: Least Squares				

Pesaran, Shin, and Smith (2001) bounds test

Test	**Statistics**
F-stat	**15.88451**
K	**5**
Sample	**34**

Pesaran, Shin, & Smith (2001) critical values

	10%		**5%**		**2.5%**		**1%**	
	I(0)	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**
F	**2.26**	**3.35**	**2.62**	**3.79**	**2.96**	**4.18**	**3.41**	**4.68**

Source: Researcher's computation, 2021

Table 4.2 above shows the ARDL bound test result for testing for the level (long-run) relationship between the real GDP, Non-Oil Federal Tax Revenue (NOFTR), Value Added Tax (VAT), Company Income Tax (CIT), Inflation Rate (INF), and Trade Openness (TO) respectively. The null hypothesis of the test is that there is no long-run relationship between the variables. The decision rule of the test is that, if the F statistics lies between the bounds I(0) and I(1), the test is inconclusive. If it is above the upper bound I(1), the null hypothesis of no level effect is rejected. If it is below the lower bound I(0), the null hypothesis of no level effect can't be rejected. The result shows that the calculated **F-stat (15.88)** is significant and above I(1) bound at 10%, 5%, 2.5%, and 1% levels of significance; hence, we conclude that there exists a valid long-run relationship between real GDP, non-oil federal tax revenue, value added tax, company income tax, inflation rate, and trade openness. The long-run and the short-run parameters are thus presented in Table 4.3 below.

4.5. ARDL Estimates: Long-run and Short-run Estimates

Table 4.5
Estimated ARDL Parameters

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$\ln VAT_{t-1}$	0.124711	0.038101	3.273140	0.0038***
$\ln CIT_{t-1}$	0.122421	0.043346	2.824287	0.0105**
Inf_{t-1}	-0.008834	0.003249	-2.719040	0.0132**
To_{t-1}	0.554101	0.150868	3.672764	0.0015***
$constant$	15.83228	0.239633	66.06888	0.0000***
$\Delta \ln VAT_t$	0.006306	0.005355	1.177610	0.2528
$\Delta \ln VAT_{t-1}$	0.049113	0.007008	7.008332	0.0000***
$\Delta \ln CIT_t$	0.024223	0.006742	3.592710	0.0018***
ΔInf_t	0.001842	0.001123	1.640163	0.1166
ΔTo_t	0.109639	0.051490	2.129314	0.0458**
ecm_{t-1}	-0.197869	0.013451	-14.71059	0.0000***
R^2	= 0.99			
S.E	= 0.009			
Regression diagnostic test result				
LM-test	= 0.44[0.5052]			
ARCH	= 0.78[0.3779]			
RESET	= 0.39[0.5314]			

Source: Authors' computation.
(*), (**) & (***) denotes significance at 10%, 5% and 1%

Looking at the long-run result, it can be seen that the Value Added Tax and Company Income Tax the major non-oil federal revenue have significant long-run effects on the GDP in Nigeria. The result shows that if value added and company income taxes rise by one percent in the long-run, the average value of the real GDP goes up by 0.125% and 0.122% in the long-run. Also, if the inflation rate rises by one percent in the long-run, the average value of real GDP goes down by 0.88% in the long-run. Likewise, the result shows that if trade openness rises by one unit in the long-run, the average value of the real GDP increases about 55%

The error correction term (ECM) shows that the real GDP responds to the deviation from its long-run (steady) state, and it significantly adjusts to it. The value of the error correction term must be negative and strictly lies between -1≤ ECM ≤ 0 for a valid statistical and economic meaning. Table 4.3 depicts that the error correction term is correctly signed, and it shows that about 19.8% of disequilibrium in the GDP due to one-time temporary shock is corrected within a year; this is a slow of adjustment. However, the correctness and significance of the error correction term prove the estimated long-run result presented to be valid and further prove the convergence of the estimated ARDL model. The short-run result is further discussed below.

The result shows that the one-period lag effects of the value added tax play significant roles in determining the real GDP in Nigeria by increasing it by about 0.049% in the short-run. It can be seen that a rise in the company income tax has a significant positive short-run effect on the real GDP in Nigeria; if it increases by one percent, the average value of the real GDP goes up by 0.024%in the short-run. Also, the result shows that if trade openness rises by one unit in the short-run, the average value of the real GDP increases about 10.96%

The coefficient of determination shows that about 99% of the variation in real GDP is explained by the regressors, and the standard error of the regression is small which shows that the estimated regression line

slightly deviates from the true regression line. The LM and ARCH tests are carried out to test for the presence of autocorrelation and heteroscedasticity in the estimated model residuals. The regression specification test (RESET) is used to test the possibility of non-linearity of the estimated model. Consequently, based on the insignificant computed diagnostics statistics probabilities (in the square brackets); we may accept that the model is free from autocorrelation and heteroscedasticity of residuals, and the model is well-specified.

V. Conclusion and Recommendations

Convincingly, it has been established that non-oil tax revenue mainly Company Income Tax and Value Added Tax have a positive and significant effect on the Nigerian economy. Depending on Oil revenue is risky for Nigeria's economy in the near future. Pipeline vandalization, militant threats, OPEC regulations, unstable prices, new technology, and many other challenges are making revenue from oil unstable and unpredictable. With the present level of revenue, it is becoming more difficult for Nigeria to finance its debts, and the path of borrowing more is dangerous for future generations. Generating adequate revenue from non-oil sectors is a matter of urgency especially now that the debt profile of the country is rising continuously.

Till now the contribution of tax revenue to total GDP is small compared with other countries in Africa. According to OECD revenue statistics for Africa in 2019, Nigeria's tax to GDP in 2017 was 5.7%. Comparing Nigeria with 26 African Countries (including Ghana and Botswana), the OECD reported an average tax-to-GDP ratio of 17.2% (11.5% basis points higher than Nigeria's ratio). As of 2018, the nation's tax to GDP was estimated at roughly 6%. The Nigerian government needs to diversify the economy to promote non-oil sectors and to raise more tax revenue. The tax base must be expanded and the compliance level must be raised. The government should re-emphasize and strengthen the industrial revolution plan with a clear strategy to develop the non-oil sectors. Also, the government should invest in non-oil sectors to create an economic environment that will help boost the activity of manufacturing companies, agriculture, and small and medium businesses.

In conclusion, to increase taxpayers/citizens voluntary compliance, government must be accountable to the citizens for the revenue collected. Collected revenue must be judiciously used for the social needs of the people. An example of Scandinavian countries was told where we had people volunteering to pay more to the government than they were even being taxed because they did not have anything to spend the money on. They did not pay for schools or health; their roads are good and power is always constant. The people could see what they were paying. They felt the government was credible so much so that they gave more. Also, the Nigerian government must block all leakages. Corruption at all levels must be stopped.

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