

Assessment of the Impact of Government Revenue Mobilisation on Economic Growth in Nigeria

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ABSTRACT

Inadequate revenue generation impedes economic growth. The issue has lacked attention from academics. Therefore, this study focuses on the relationship between revenue generation and economic growth in Nigeria. It employed time series data sourced from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS) from 1981-2018. The study used multiple regression to estimate the impact of government revenue mobilization on economic growth in Nigeria. Findings revealed that domestic debts and non-oil revenue positively and significantly impact economic growth, while external debts and oil revenue were otherwise. The study concluded that government revenue impacts economic growth. Consequently, the study recommends economic diversification through strategic programs to enhance growth rather than remaining a mono-economy. Furthermore, it recommends that the government review the existing revenue mobilization strategy—especially the diverse non-oil revenue bases to ensure improved revenue remittances. The study also recommended formulating policies that will guarantee better utilization of domestic and foreign loans to increase productivity and enhance revenue mobilization. It is also recommended that borrowing be considered a last resort to fund government projects, and where it is unavoidable, such borrowing should be limited to domestic debt.

ABSTRAK

Pendapatan yang tidak memadai menghambat pertumbuhan ekonomi. Hal ini menunda perumusan keputusan pemerintah tentang pengeluaran. Isu tersebut kurang mendapat perhatian dari kalangan akademisi. Oleh karena itu, penelitian ini berfokus pada hubungan antara pendapatan dan pertumbuhan ekonomi di Nigeria. Penelitian ini menggunakan data deret waktu yang bersumber dari Bank Sentral Nigeria dan Biro Statistik Nasional Nigeria dari 1981-2018. Penelitian ini menggunakan regresi berganda untuk memperkirakan dampak mobilisasi pendapatan pemerintah terhadap pertumbuhan ekonomi di Nigeria. Temuan penelitian mengungkapkan bahwa utang dalam negeri dan pendapatan non-minyak berdampak positif dan signifikan terhadap pertumbuhan ekonomi, sementara utang luar negeri dan pendapatan minyak berdampak sebaliknya. Berdasarkan temuan, penelitian menyimpulkan bahwa pendapatan pemerintah berdampak pada pertumbuhan ekonomi. Oleh karena itu, studi ini merekomendasikan diversifikasi ekonomi melalui program-program strategis yang ditujukan untuk meningkatkan pertumbuhan daripada tetap menjadi ekonomi tunggal. Pemerintah juga harus meninjau strategi mobilisasi pendapatan yang ada – terutama berbagai basis pendapatan non-minyak untuk memastikan distribusi pendapatan yang lebih baik. Kajian ini juga merekomendasikan perlunya merumuskan kebijakan yang akan menjamin pemanfaatan yang lebih baik dari pinjaman dalam dan luar negeri dengan tujuan untuk meningkatkan produktivitas dan meningkatkan mobilisasi pendapatan. Pinjaman harus dianggap sebagai upaya terakhir untuk mendanai proyek-proyek pemerintah, dan jika tidak dapat dihindari, pinjaman tersebut harus dibatasi pada utang dalam negeri.

1. INTRODUCTION

The process of economic growth of a nation relates to the ability of the nation to generate adequate revenue and ensure effective utilization of such Revenue (Okwori & Sule, 2016). However, the revenue and its sources, how they are mobilized, and how future changes in the sources of these revenues impact the overall economic growth have remained inconclusive, delaying decision formulation on government expenditure. The inappropriateness in revenue mobilization has led several nations into avoidable debts. Similarly, Sriyono (2014) noted that poor acceleration of investments through stabilization arising from weak revenues mobilization might account for poor economic performance. This is appears worsened with the recent pandemic, Covid-19, leading several countries into financial difficulties, and even some nations experienced an economic slump. All state budgets aim to address the Covid-19 pandemic problem, especially the budget for discovering this virus vaccine and giving succor to citizens in affected areas (Hambali, 2020). While Nigeria continuously experiences upturns in revenue generation from various sources, like oil and gas, it relies mainly on loans to finance its budget over the years. The economy, however, is still characterized by stunted gross domestic product (GDP) and high indebtedness (Central Bank of Nigeria, 2020). The economy accounts for high unemployment, low per capita income, low investment, high inflation rate, and unfavorable balance of payment. For instance, the unemployment rate jumped from 4.2 percent in 1999 to 22.6 percent in 2018 and later moved up to 23.1 percent in the first quarter of 2019, and in 2020, it rose to 27 percent (National Bureau of Statistics, 2020). The inflation rate increased from 6.6 percent in 1999 to 16.5 percent in 2017 and later dropped to 12.1 percent in 2018 and 13 percent in 2020 (National Bureau of Statistics, 2020). The trend raises the question of whether government-generated revenues impact economic growth. Following this view, this study first investigated the impact of aggregate government revenue on economic growth in Nigeria, and secondly, it evaluated revenue patterns and trends in Nigeria.

Notwithstanding, there are few attempts to deepen the understanding of the correlation between revenue sources in Nigeria and economic growth (see Okwori & Sule, 2016; Egbunike et al., 2018). These studies have concluded that there is no adequate revenue collection system in Nigeria that

could ascertain matching income with expenditure. This manifestation, most time, puts the government under pressure to meet its obligations to the citizenry. In other words, the inconclusiveness of studies on revenue and economic growth nexus is of vital concern to researchers and policymakers because inadequacy of revenue hinders the government from financing its economic, social, and political obligations, which constitute a cardinal objective. This, in turn, serves as a catalyst for growth.

The literature reveals that tax revenue, amidst many sources of government funds, constitutes the primary source of government revenue globally (see Mudayen & Maridjo, 2018; Ama & Omodero, 2017; Okwori & Sule, 2016; Nwosu & Okafor, 2014). Conversely, various studies have also identified oil proceeds, grants, national savings, aid, and debts as essential sources of government revenue (Okwori & Sule, 2016; Onyele & Nwokoacha, 2016). According to Nzotta (2007), the tax system constitutes one of the very effective and efficient ways of generating internal revenue for the government. Buttressing this claim, Onyele & Nwokoacha (2016) state that taxes consist of the key sources to finance the federation account, allocated to the three tiers of government.

Onyele & Nwokoacha (2016) referred to taxation as a practice in which residents of any given nation or society are mandated legally to pay a required portion of their earnings to carry out administrative and developmental activities in the society. While tax is expected to serve as a buffer to government expenditure, it has come with a few challenges discussed in the literature. They include accountability, professionalism, and awareness of municipals on the necessities and advantages of taxation in business and personal lives, including facilitation of savings and investments, promoting economic activity, and creating strategic competitive benefits (Kiabel & Nwokah, 2009).

These problems also apply to the Nigerian context. For example, Okwori & Sule (2016) identified Nigeria as one of the most regressive developing nations concerning harnessing revenues owing to weak governance, corruption, and mismanagement. Supporting this claim, Onyele & Nwokoacha (2016) identified poor tax administration, in addition to a high rate of evading tax among taxpayers (corporate and individual bodies) and heavy reliance on oil proceeds, as a critical source of government revenue that has

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resulted to fiscal deficit and erratic economic performance. These identified problems have precluded the channel of the nation's resources obtained from taxation and other revenue sources into lasting advancements in a self-supporting economy like Nigeria.

According to Alade (2017), government revenue sources comprise privatization proceeds, taxes, interest received, sale proceeds of goods, the commission received, and rent received. In addition, the study noted that public revenue is an essential tool of fiscal policy. Despite these sources outlined and their expected contributions to the economy, Sanni (2007) noted that the fiscal operations of Nigeria over time have led to changing degrees of deficit finance, which had immense implications on the economy. So, the nation is constantly confronted with a rising budget deficit, causing a gap between public expenditure and generated revenue. According to the Central Bank of Nigeria (2020), deficit financing remained high at N117.2 billion in 2007, N47.4 billion in 2008, and N810 billion in 2009. In 2010 the country recorded yet another increase in the deficit of N1105.4 billion. In 2011, it increased to N1158.5 billion and N975.8 billion in 2012. The deficit financing recorded in 2016, 2017, and 2018 were N2673.8 billion, N3609.4 billion, and N3628.1 billion, respectively.

According to Oniha (2020), Nigeria's debt profile since President Buhari came to power in 2015 is as follows: N1.4 trillion in 2015; N2.3 trillion in 2017; N1.6 trillion in 2018; and N1.6 trillion was proposed for 2019. Presently Nigeria owes N24.4 trillion, out of which 68.2 percent of the debt is domestic (Sahara reporters.com, 2019). The statistic shows that the oil GDP growth rate in Nigeria stood at 7.8 percent for the period spanning 1986-1993, dropped to 0.5 percent between 1994-1999, 4.8 percent between 2000-2002, and later increased to 6.4 percent for the period covering 2003-2008 and 8.1 percent and 10 percent in 2016 and 2017 respectively (National Bureau of Statistics, 2020). The growth rate of non-oil GDP between the same periods was respectively 5.8 percent, 3 percent, 3.5 percent, and 8.8 percent, with the corresponding total GDP growth rate between 1986-1993 standing at 6.2 percent, 1994-1999 at a rate of 2.3 percent, 2000-2002 at 4.8 percent and 2003-2008 at 6.4 percent. It is germane to understand that total oil proceeds generated were reported as N1413.7 billion in March 2019. This recorded a decrease from the previous sum of N1465.3 billion for December 2018. The oil revenue reached an all-time high amount of N2642.8 billion in September 2011 and a record low of N537.1

billion in June 2016, while non-oil revenue was reported at N946.9 billion in December 2018. This recorded an increase from the previous number of N814.5 billion in December 2017. The non-oil reached an all-time high amount of N1125.9 billion in September 2013 and a record as low as N138.9 billion in March 2005 (Central Bank of Nigeria, 2020).

This is an obvious indication that our capacity to generate revenue exclusively depends on oil proceeds even during several adjustments and applications of different types of tax revenue regulations. This situation signals a high level of ineptitude in tax administration in Nigeria. It conflicts with the tax-and-spend hypothesis advanced by Friedman (1978). The hypothesis states that "changes in government revenue bring about changes in government expenditure to bring growth in the economy." Also, Simeon et al. (2017) avowed that the failure or success of a tax system relies on the degree to which it is appropriately managed and how tax law is appropriately interpreted and executed.

Furthermore, Oriakhi & Osemwengie (2013) ascribed the shortcomings to an extraordinary extent of tax evasion, corrupt practices in the administration of the tax system, and misguided tax exemptions. Notwithstanding the remarkable growth recorded in revenues from oil, the question remains whether the government has fully applied generated revenue for the general development of economic activities. Given this, Storey (1953) asserted that "before independence, there have been cases of official misuse of resources for personal enrichment." Evolving from this persistent discrepancy, one would be right to quiz the outlook of generating revenue- the Gross Domestic Product (GDP) and its associated rate of growth within the framework of the 2009 global economic recession, the 2014 economic recession in Nigeria, and currently the instability of crude oil prices in the global market with its disturbing impact on revenue base.

Arowoshegbe (2017) and Ojong et al. (2016) note that it is indispensable to bring about improved sources of revenue generation to ensure workable economic growth. Buttressing this assertion, Awujola et al. (2014) argue that the ability to sustain a fiscal deficit profile is vital to stimulating growth. On so many occasions, when the expected revenue is more significant than expenditure, it is expected that the economy will be stimulated. Unfortunately, Nigeria's situation is reversed, given the extreme and over-bloated governance cost. Consequently,

Oyeleke & Ajilore (2014) asserted that in the long run, considering the current trend, Nigeria might be unable to endure the degree of its fiscal deficit.

This study presented an explicit thought on Nigeria's revenue mobilization and economic growth nexus. Findings seek to assist policymakers in making a decision relating to revenue mobilization. In addition, this study adds to knowledge by revealing the workings of the economy in terms of the interaction between revenue generation and economic growth. Researchers and policymakers will find this study relevant to decision-making on revenue generation and its applications to ascertain economic growth. The remainder of this study is discussed in six sections. Section two gave an overview of tax and taxation in Nigeria. Sections three and four respectively reviewed the literature and presented the research methodology. Estimations and results are presented in section five, and section six presents the summary, conclusions, and recommendations.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

There are a few taxation theories available in public economics. These theories guide governments (national, regional, and local) on how to generate revenue from different sources to fund public-sector expenditures. It argues that several governments generate funds through several sources to provide public services or finance transfer payments. Therefore, these theories offer explanations and guide government taxation and procedure therein. According to Okwori & Sule (2016), taxation is the most common revenue source in various world economies. Consequently, this study is guided by the dynamic theory of taxation, public spending, and debt theory.

Dynamic Theory of Public Spending, Taxation, and Debt (DTPSTD)

The DTPSTD theory is built on a tax smoothing technique for fiscal policy initiated by Barro (2002). It argues that government surpluses and deficits budget is used as a buffer to avert tax rates from a sharp change. The theory advocates for political jurisdiction upon which policy choices are decided by the legislature, which has been elected from a well-defined geographical constituency. The legislature could generate revenues in two ways—borrowing from the capital market and proportional tax on labor income. Bond purchases and interest earnings are other means that the legislature uses to finance future public spending. Public goods

benefiting the citizens are financed with public revenues. It is also used to fund targeted district-specific transfers. The transfers are referred to as pork-barrel expenditure. The value of public good to the citizens is stochastic. It reflects shocks like natural disasters or wars.

Government Revenues are all the earnings or income accrued to the government to finance its obligations. Revenue means all the amount of money that the government externally sourced. For instance, those revenues originate from "outside the government net of refunds," other amending transactions, issuing of debt proceeds, intra-governmental transfers, private or agency trust transactions, and proceeds from the sale of investments.

There are two primary revenue sources in Nigeria: oil and non-oil revenues (Ihendinihu et al., 2014). Oil revenue is the sum of money generated from crude oil sales to both consumers within a country and people in foreign countries. Oil revenue, therefore, includes joint venture cash (JVC) called royalty, Petroleum Profit Tax (PPT), Nigerian National Petroleum Corporation's (NNPC) earnings from direct sales, oil rent, sales of gas, proceeds from the domestic market, pipeline licenses, crude oil sales, penalty from gas flared, Value Added Tax (VAT) on domestic crude oil, and excise duties. Non-oil revenues, on the other hand, include revenues that are not derivable from oil or related to oil. They include Company Income Tax (CIT), customs and excise duties, VAT, sales tax, levies, personal income tax, grants, public debt, education tax, and aids (Central Bank of Nigeria, 2020).

Egbunike et al. (2018) identified taxes and non-taxes as the two significant sources of revenue. According to the study, taxes are the principal and first sources of public revenues. They refer to tax as a compulsory levy or payment that the government imposes on the citizens to generate income to finance its obligations. The government collects revenue through direct and indirect taxes. Direct taxes include corporate tax, personal income tax, capital gain tax, and wealth tax. Indirect taxes include custom duties, excise duty, value-added tax (VAT), and service tax (Okafor, 2012). Other types of revenue collected by the government include non-tax revenues. The non-tax revenues are revenues collected by the government from other sources different from tax. The non-tax revenues, among others, are penalties, fines, excess from public enterprises, fees, gifts, grants, and deficit financing (Okwori & Sule, 2016).

In this study, the sources of revenue are limited

not to oil and non-oil revenues or tax and non-tax revenues. The study also captured public debts as one of the sources of revenue for the government. Public debts consist of foreign and domestic borrowings. This includes loans from domestic financial institutions, multilateral establishments, and foreign grants (Okwori & Sule, 2016). Local and State governments are allowed to issue debt instruments. A debt instrument that is presently in issue includes Nigerian treasury bills, treasury bonds, and federal government development stocks. Development stocks are negotiable and marketable among the treasury bills, but treasury bonds and means advances are unmarketable, but it is solely held by the Central Bank of Nigeria (Onyeiwu, 2011). Nigeria's internal debt aims to evade the likely risks associated with external borrowings, motivated by increasing government expenditures vis-a-vis dwindling government revenues to complement the domestic savings for productive activities via infrastructural expansion and managing other macroeconomic environments of the nation (Igbodika et al., 2016). Nigeria's foreign debts come majorly from multilateral agencies. The agencies, among others, include the London Club of Creditors, Bilateral and Private Sector Creditors, Paris Club of Creditors, and Promissory Note Holders.

Nweze & Edame (2016) defined economic growth as an increase in the country's economic capacity to manufacture goods and services required to better the well-being of the people over time. Conventionally, economic growth is calculated as the percent rising rate in the real GDP. It is commonly measured in real terms, using inflation-adjusted terms. The inflation-adjusted element nets out the impact of inflation on the general price level of the produced goods and services. According to Nwanna & Nkiruka (2019), economic growth could be negative or positive. Following their study, negative economic growth means that the economy is shrinking. A shrinking economy is associated with economic depression and recession. On the other hand, positive economic growth means an increase in productivity, economic output, and money supply.

There are a few theories explaining economic growth. The theories focus on growth and explain growth as a function of the productivity of factors of production. According to the theories, economic growth is a function of the number of production factors. The production factors are decided by total labor productivity growth, population change, rise in the land, and investments. According to Okwori

& Sule (2016), the Harrod-Domar model reveals that a GDP growth rate equals the Savings-Capital Output ratio. Similarly, the Kaldor distribution model reveals that the growth process depends on the savings-income ratio.

This study also selected a few related empirical studies investigating the relationship between government revenue and economic growth. Ismaila & Imoughele (2015) employed the OLS regression method to examine how oil revenue impacted the economic growth of Nigeria from 1986-2012. The study found that oil revenue has significantly contributed to the Nigerian economic growth. Akinlo (2012) examined how oil was essential in the Nigerian economic development from 1960 to 2009. Employing a multivariate VAR model, he found that oil adversely affected the manufacturing sub-sectors. Similarly, Baghebo (2012) investigated how petroleum impacted Nigerian economic growth. The study, employing data covering 1980-2011, found a long-run association between oil revenue and Nigerian economic growth. Worlu & Nkoro (2012) used secondary data from 1980 to 2007 to assess the impact of tax revenue on the Nigerian economic growth. They used a three-stage least squares estimation technique and found that tax revenue stimulates economic growth through infrastructural development.

Ude & Agodi (2014) employed cointegration and ECM on time series data spanning 1980-2013 to examine the role of non-oil revenue on the Nigerian economic growth. The non-oil revenue variables included manufacturing revenue and agricultural revenue. The study found that interest rate and revenues from manufacturing and agricultural sectors significantly impacted economic growth in Nigeria. Furthermore, the result revealed a long-run equilibrium relationship in the model and short-run dynamic adjustment with a speed of 0.52 to restore equilibrium.

Muriithi (2017) employed a descriptive research design to investigate the connection between the Kenyan government revenue and economic growth. The study reported an inverse relationship between import duty and economic growth. He argued that a rise in excise duty impedes the economic growth rate, and income tax led to a continuous rise in revenue that the government obtained. In addition, this study found a direct relationship between economic growth and income tax. It also noted that a rise in the VAT rate would positively impact economic growth. The conclusions showed a positive relationship between economic growth and government revenue, though at a slow pace.

While the empirical findings on the relationship between government revenue and economic growth reviewed in this study are dated back to data obtained in 2013, this study adds to knowledge by considering an assessment of the impact of government revenue mobilization on economic growth in Nigeria from 1981-2018.

3. RESEARCH METHOD

This study employed both descriptive and quantitative techniques to examine government revenue's impact on Nigeria's economic growth. The study employed an expo-facto research design because the data set is historical. This choice of this research design follows Okwori & Sule (2016), that argued in favor of an expo-facto research design to be suitable for a historical date.

The literature and availability of data influence the choice of data. The availability informs the choice of the cut-off date of data that corresponds with the variables of interest. Annual secondary data, which has been sourced from the Central Bank of Nigeria and the National Bureau of Statistics for the period, 1981 to 2018, are used in this study. Variables including non-oil Revenue, oil revenue, public debt, and GDP for the same period are considered in this study. The choice of these macroeconomic variables is in line with the literature (see Okwori & Sule, 2016).

The study employed an OLS to estimate the parameters of the regression models and how these parameters impact economic growth. The study found these techniques advantageous, based on the time-series nature of our data, as suggested in the literature. Furthermore, the Best, Linear, Unbiased, Estimator (BLUE) that characterizes the techniques supports the choice of this technique.

The study used the e-views statistical application to regress the criterion variable, GDP, against the four predicting variables (DD, ED, NOIL, and OIL) to address how well these variables predict economic growth. It employed a least-squares algorithm to minimize residual or the sum of the squared errors of prediction across the sample. The implicit form of the model is expressed as:

$$Z_t = f(DD, ED, NOIL, OIL) \quad (1)$$

The explicit form of the model shall be

$$Z_t = \alpha_0 + \alpha_1 DD_t + \alpha_2 ED_t + \alpha_3 NOIL_t + \alpha_4 OIL_t + v_t \quad (2)$$

$$\text{Given that } Z_t = GDP_t \quad (3)$$

where GDP is dependent variable. The independent variables are External Debt (ED), Domestic Debt (DD), Non-Oil (NOIL) Revenue, and Oil Revenue (OIL). While α_0 is the regression constant (intercept); α_1 , α_2 , α_3 , and α_4 represented the regression coefficients of the explanatory variables and v_t denoted error term.

Equation 3 is used to predict and estimate GDP on the criterion variable for any occurrence from the population whose scores on DD, ED, NOIL and OIL are given. Thus, the estimated regression can be expressed as:

$$\hat{Z} = a_0 + a_1 DD_t + a_2 ED_t + a_3 NOIL_t + a_4 OIL_t + v_t \quad (4)$$

The regression coefficients α_1 , α_2 , α_3 , and α_4 are the coefficient or multipliers of the DD, ED, NOIL, and OIL, respectively, used to compute the predicted GDP. α_0 is the intercept or constant in the equation. It also represented the predicted value of Z when the predictor variables are theorized to be causally prior to Z. Coefficients α_1 , α_2 , α_3 , and α_4 are interpreted in terms of the causal impact of the predictor on the criterion or the predicted change in Z for a unit change in α_1 , α_2 , α_3 , and α_4 . In the case of these multiple predictors, α_1 , α_2 , α_3 , and α_4 are partial regression coefficients in the model. They indicate the causal effect of one predictor on Z with the other predictors (that is, statistically controlled).

Stationarity Tests

Stationarity tests are conducted using the Augmented Dickey-Fuller (ADF) version. The ADF test augmented the Dickey-Fuller (DF) test version. It assumed that the error term is not serially or auto-correlated with the explanatory variables. Therefore, given a simple AR (1) model, thus:

$$\Phi_t = \xi \Phi_{t-1} + \mu_t \quad (5)$$

where Φ_t is a variable of interest, ξ is a coefficient, and μ_t is a disturbance or error term. If $\xi=1$, there is a unit root in a variable. Therefore, the model would not be stationary.

The regression model testing for a unit root with intercept and time trend can be expressed as:

$$\Delta \Phi_t = \delta + \theta_t + \xi \Phi_{t-1} + \mu_t \quad (6)$$

where Δ denotes the first lag operator, δ denotes constant, θ denotes the coefficient of a time trend. The model is estimated, and testing for a unit root is done by testing $\xi=0$.

The procedure to test for ADF remains the same as that of DF. It is only that the ADF includes a lag of the explained variable of the model.

$$\Delta\Phi_t = \delta + \theta_t + \xi\Phi_{t-1} + \zeta_t\Delta\Phi_{t-1} + \zeta_p\Delta\Phi_{t-p} + \mu_t \quad (7)$$

where Δ denotes the first lag operator, δ denotes a constant, θ denotes the time trend coefficient, and p denotes the lag order of the autoregressive procedure. The unit root test is carried out under the null hypothesis, stating that $\xi=0$ as against the alternative hypothesis that $\xi<0$:

The Phillips Perron (PP) test is built on the DF test of the null hypothesis, $\xi=0$ in

$$\Delta\Phi_t = \zeta\Phi_{t-1} + \mu_t \quad (8)$$

where Δ denotes the first lag operator.

Like the ADF test, the issue of autocorrelation associated with the DF test is addressed (Phillips and Perron, 1988). While the ADF test addressed this issue by introducing lags of $\Delta\Phi_t$, the Phillips-Perron (PP) test makes a non-parametric correction to the t-test statistics. A key advantage of the Philip-Perron (PP) test over the ADF is that PP is more robust to deal with heteroskedasticity and serial correlation in the error term.

Variables and Descriptions

This section describes those variables employed in the study. The variables are domestic debts, external debts, oil revenue, economic growth, and non-oil revenue (see Table 1). *Domestic debt* is the portion of the country's debt obtained from corporations or financial institutions (Alade, 2017). *External debt* is the country's debt obtained from foreign sources like financial institutions, government, and foreign corporations (Onyele & Nwokoacha, 2016; Alade, 2017). *Economic growth* is the increase in the number of goods and services manufactured in the country at a time (Onyele & Nwokoacha, 2016; Rotimi & Ngalawa, 2017). *Oil Revenue* is collections from gas and crude oil exports. It also includes proceeds from domestic crude oil sales, royalties, and receipts from petroleum profits tax (Onyele & Nwokoacha, 2016; Alade, 2017). *Non-oil* revenue is proceeds that are not realized from oil (Onyele & Nwokoacha, 2016; Alade, 2017). It consists of companies' income tax, value-added tax, custom and excise duties, personal income tax, education tax, public debt, levies, aids, and grants.

Table 1. Summary of variables

Variables	Abbreviation	Description/Measurements
Domestic Debt	DD	Annual and logged
Oil revenue	OIL	Annual and logged
Gross Domestic Products	GDP	Annual and logged
Non-oil Revenue	NOIL	Annual and logged

Table 2 presents the descriptive statistic of variables. The mean and median constitute the first two descriptive statistics of measures of central

tendency for the variables employed in this study. The OIL has the maximum standard deviation against DD, which has the least standard deviation.

Table 2. Descriptive statistics of variables

	DD	ED	GDP	NOIL	OIL
Mean	2.7652	2.7282	4.4597	5.1671	5.6735
Median	2.9268	2.8015	4.3628	5.2859	5.9750
Maximum	4.1063	4.8907	4.8439	6.6027	6.9483
Minimum	1.0488	0.3673	4.1392	3.4748	3.8605
Std. Dev.	0.9271	0.9106	0.2437	1.0810	1.0740
Skewness	-0.2912	-0.6094	0.3444	-0.2121	-0.4886
Kurtosis	1.9093	3.6052	1.6300	1.5735	1.7764
Jarque-Bera	2.4207	2.9325	3.7227	3.5065	3.8826
Sum	105.0809	103.6721	169.4702	196.3526	215.5954
Sum Sq. Dev.	31.8020	30.6849	2.1978	43.2419	42.6834

Source: Authors' computation, the data from Central Bank of Nigeria (2020).

The Jarque-Bera test suggested that the sample is normally distributed. This is because the p-value of the Jarque-Bera test is significant. Therefore, the

alternative hypothesis is accepted while the null hypothesis is rejected. The Jarque Bera test result in Table 2 revealed that the null hypothesis is accepted

for the distribution. As a result, the variables are described to be distributed normally in the following sequence (from the minimum to the maximum): DD (2.42), ED (2.93), NOIL (3.51), GDP (3.72), and OIL (3.88). The probability value of the Jarque-Bera test is significant, then the null hypothesis is rejected, and the alternative is accepted.

Based on empirical studies and theories, the explanatory variables are expected to have a direct relationship with the explained variable. Therefore, it could be mathematically expressed as $\alpha_1 > 0$, $\alpha_2 > 0$, $\alpha_3 > 0$ and $\alpha_4 > 0$. Increased Revenue from OIL, NOIL, and public debts (decomposed into DD and ED) serving as government funding sources is expected to increase GDP.

4. DATA ANALYSIS AND DISCUSSION

This section presents and discusses tests and findings from various empirical studies. These tests included the unit root test, multiple logistic regression, diagnostic tests (Cusum Stability and

Recursive Estimates), and Wald test. The results provide an economic interpretation of the econometrics results. The results obtained from the OLS regression procedures assisted in answering the research questions in this study. In addition to answering these questions, the technique serves as a basis for thinkable policy recommendations. Consequently, the chapter is organized into two main parts- descriptive and econometric analyses.

Descriptive Analyses

The descriptive analysis presented a trend of the relationship among variables used in the study. Specifically, it depicted the pattern of links between economic growth and government revenue. The econometric analysis helped to establish whether government revenue influenced economic growth. However, the econometric analysis investigated how government revenue impacted economic growth.

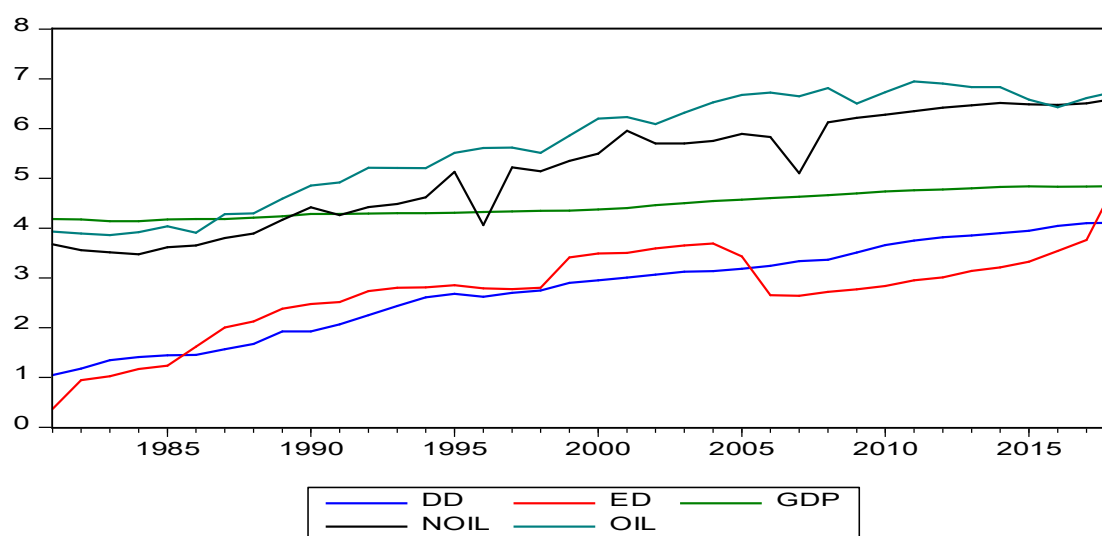


Figure 1: Data Trends

Source: Authors' computation, the data from Central Bank of Nigeria (2020).

Figure 1 shows the trend of the domestic debts (DD), external debts (ED), GDP, non-oil revenues (NOIL), and oil revenues (OIL) for the period under study. The figure shows that while the other variables steadily grew over time, the GDP sluggishly grew over the covered period. In 1981, for example, the GDP, OIL, NOIL, DD, and ED were 4.18, 3.93, 3.67, 1.05, and 0.37, respectively. While OIL, NOIL, DD, and ED remarkably grew by 23.5 percent, 20.2 percent, 83.5 percent, and 573.8 percent, respectively, in 1990, the GDP sluggishly grew by just 2.4 percent. These variables

continuously and positively trended for the period. By the end of 2018, While OIL, NOIL, DD, and ED jumped to 71.5 percent, 79.7 percent, 291.5 percent, and 1231 percent, the GDP recorded an upward trend and growth of 15.8 percent for the entire period studied.

Test for Unit Root

The result of the ADF and PP tests for unit roots are presented in Tables 3, 4, 5, and 6. It shows that DD, ED, GDP, NOIL, and OIL are integrated series of order I(1).

Table 3. Augmented-Dickey Fuller (ADF) test - Intercept only

Variables	Level t-Statistic	Prob	Order of Integration	1 st Difference t-Statistic	Prob	Order of Integration
DD	-1.9787	0.2945	I(0)	-4.7520	0.0005*	I(1)
ED	-1.3188	0.6106	I(0)	-3.1521	0.0315*	I(1)
GDP	-0.0278	0.9497	I(0)	-3.3950	0.0177*	I(1)
NOIL	-0.7911	0.8096	I(0)	-10.7532	0.0000*	I(1)
OIL	-0.7911	0.8096	I(0)	-6.0689	0.0000*	I(1)

*) denotes variable stationary at 5 percent

Table 4. Augmented-Dickey Fuller (ADF) test - Trend and intercept

Variables	Level t-Statistic	Prob	Order of Integration	1 st Difference t-Statistic	Prob	Order of Integration
DD	-1.6096	0.7693	I(0)	-5.0032	0.0014*	I(1)
ED	-1.3583	0.8562	I(0)	-4.7888	0.0200*	I(1)
GDP	-1.5039	0.8091	I(0)	-3.3195	0.0793	I(1)
NOIL	-5.0028	0.0613	I(0)	-10.608	0.0000*	I(1)
OIL	-5.2349	0.0908	I(0)	-5.2349	0.0008*	I(1)

*) denotes variable stationary at 5 percent

Tables 3 to 6 show that all the variables used are not stationary at I(0) but I(1). This is determined by comparing the ADF and PP tests (in absolute terms)

with the critical value at 1 percent, 5 percent, and 10 percent significant levels.

Table 5. Phillip Perron (PP) test- Intercept only

Variable	Level Adj t-Statistic	Prob	Order of Integration	1 st Difference t-Statistic	Prob	Order of Integration
DD	-2.1105	0.2418	I(0)	-4.6691	0.0006*	I(1)
ED	-1.4210	0.5615	I(0)	-3.2126	0.0274*	I(1)
GDP	0.6845	0.9902	I(0)	-3.2426	0.0255*	I(1)
NOIL	-0.6624	0.8438	I(0)	-13.1740	0.0000*	I(1)
OIL	-1.4356	0.5544	I(0)	-6.0689	0.0000*	I(1)

*) denotes variable stationary at 5 percent

Table 6. Phillip Perron (PP) test- Trend and Intercept

Variables	Level Adj t-Statistic	Prob	Order of Integration	1 st Difference t-Statistic	Prob	Order of Integration
DD	-1.5049	0.8098	I(0)	-4.9941	0.0014*	I(1)
ED	-2.0865	0.5360	I(0)	-4.8231	0.0187*	I(1)
GDP	-2.5708	0.2949	I(0)	-5.2059	0.0090*	I(1)
NOIL	-4.1100	0.1010	I(0)	-13.1838	0.0000*	I(1)
OIL	-0.8699	0.9489	I(0)	-6.7853	0.0000*	I(1)

*) denotes variable stationary at 5 percent

OLS Estimation

Four predicting variables of economic growth are considered. The predictors are DD, ED, NOIL, and

OIL. Consequently, the study obtained the regression equation below (see details in appendix 1):

$$\hat{Z} = 3.81 + 0.31DD_t - 0.1ED_t + 0.07NOIL_t + 0.05OIL_t \quad (9)$$

Model 4.1 revealed that a one-point rise in the perceived domestic Revenue (DD) is expected to cause a 31 percent increase in economic growth when the external debt (ED), non-oil Revenue (NOIL), and

oil revenue (OIL) are constantly held. This aligned with the a priori that increasing domestic debt enhances economic growth since the principal component is mobilized within the economy. The

interest element is returned to the same economy for further circulation and enhancing transactions within the economy. Earlier studies like Babu et al. (2015) and Titus et al. (2016) also documented a similar finding.

Similarly, the model revealed that a 1-point rise in the perceived non-oil Revenue (NOIL) produced a 6.5 percent increase in economic growth when the perceived domestic debt (DD), external debt (ED), and oil revenue (OIL) are held constant. This outcome aligned with the a priori that increased non-oil revenue positively impacted economic growth. The findings also aligned with Al Rasasi et al. (2019) and Ojong et al. (2016), who argued that an increase in NOIL led to a rise in economic growth. When DD, NOIL, and OIL are held constant, a one-point rise in external debt (ED) yields a projected 10 percent decrease in economic growth. This suggests that external borrowing could harm economic growth, especially if it is not prudently managed.

It has been noted that the previous administration used borrowing to finance frivolous contracts, politics, and other white elephant contracts. Conversely, the negative impact of the ED on economic growth may not be unconnected with some conditionalities associated with it, which in most cases, such conditionalities are outside the control of the borrowing nation and could impede economic growth. For instance, conditionalities like the openness of the economy (liberalization) and currency devaluation were conditions for obtaining an external loan by General Ibrahim Babangida's led administration. Unfortunately, these conditionalities worked against the Nigerian economy. The OIL revenue also showed a negative impact on economic growth. When DD, ED, and NOIL are held constant, a one-point rise in oil revenue (OIL) yielded a projected 5 percent decrease in economic growth. Contrary to our expectations, this outcome suggests that oil revenue may not impact economic growth positively. This finding is similar to Nweze & Edame (2016), who reviewed that oil revenue negatively impacts Nigerian economic growth. This is not surprising, as it may not be unconnected with the paradox of resource curse and Dutch Disease documented in Hamilton (2013) and Otaha (2012). Dutch Disease connotes the negative impact of oil on

an economy, causing a sharp rise in the inflow of foreign currency (see Hasanov, 2013). Hence, the currency inflows result in currency appreciation but make the country's other products less price competitive on the export market.

Squared Multiple Correlations (R^2)

The multiple correlation coefficients mean the correlation between the predicted \hat{Z}_t (economic growth) and the predictors. It is calculated for the participants in the study by using Equation 4.1 and the Z regressand. In this study, the R^2 and adjusted R^2 are 94.8 and 94.2. This indicates that DD, ED, NOIL, and OIL jointly accounted for about 94 percent of the variance in economic growth. Buttressing this, the F-statistic and its probability revealed a reliable evaluation of 151.8 and less than 1 percent significance level to support our claim. Furthermore, the Durbin Watson results fall within an acceptable range that the model is suitable to determine the effect of government revenue mobilization on economic growth.

Coefficient Diagnostic Tests: Wald Test

The section examined the existence of a short-run association moving from the set of the explanatory variables to GDP using the Wald test technique with a null hypothesis of no short-run cointegration amid the variables. The benchmark hypotheses of the Wald test are specified below:

- H_0 : Short-run cointegration does not exist among the regressors and regressand
- H_1 : Short-run cointegration exists among the regressors and regressand

The decision rule is that we accept H_0 when P-Value is higher than 5 percent or reject H_1 when P-Value is smaller than 5 percent. As displayed in Table 7, the Wald test indicates that the model's endogenous variables are jointly significant. The outcome showed a short-run relationship, moving from the explanatory variables to the explained variable at the p-value of 1 percent. This suggested that the null hypothesis be rejected and the alternative hypothesis accepted.

Table 7. Wald Test Results

Test Statistic	Value	DF	Prob.
F-statistic	57.50540	(7, 799)	0.0000
Chi-square	311.2476		0.0000
Null Hypothesis (H_0): $C(1)=C(2)=C(3)=C(4)=0$			
Null Hypothesis Summary:			
Normalized Restriction (=0)		Value	Std. Error
DD		0.0397	0.0397
ED		0.0112	0.0015
NOIL		-0.0102	0.0218
OIL		-0.4445	0.0162

Residual Diagnostics: Serial Correlation LM test

In this section, the study examined whether there is a serial correlation among the variables. The test is conducted to enable us to rely on the outcome of the model of GDP used in this study.

The benchmark hypotheses of the Wald test are specified below:

H_0 : Serial correlation does not exist among the regressors and outcome variable

H_1 : Serial correlation does exist among the regressors and outcome variable

The decision rule is that we accept H_0 when P-Value is higher than 5 percent or reject H_1 when the p-value is smaller than 5 percent. As presented in Table 8, the Wald test shows that the endogenous variables are jointly significant in each equation. The serial correlation is presented in Table 8, showing that H_0 could be accepted and therefore rejects the alternative hypothesis. This infers that there is no serial correlation affecting GDP and Nigeria's various sources of revenue.

Table 8. Breusch-Godfrey Serial Correlation LM Test

F-statistic	13.87729	Prob. F(2,31)	0.0000
Obs*R-squared	17.95050	Prob. Chi-Square(2)	0.0001

Heteroskedasticity Test

This section examined whether there is a correlation and uniformity between the model's residual and the corresponding explanatory variables.

The benchmark hypotheses of the Heteroskedasticity test are specified below:

H_0 : Correlation does not exist among the regressors, and residual

H_1 : Correlation exists among the regressors and residual

We accept H_0 when P-Value is higher than 5 percent or reject H_1 when P-Value is smaller than 5 percent. As presented in Table 9, the heteroscedasticity test revealed that all endogenous variables are jointly significant in the model. This suggested that the endogenous variables do not correlate with the residual.

Table 9. Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.599824	Prob. F(4,33)	0.0153
Obs*R-squared	11.54391	Prob. Chi-Square (4)	0.0211
Scaled explained SS	9.038022	Prob. Chi-Square (4)	0.0402

Stability Diagnostics: Cusum test

In furtherance of the diagnostic tests, the study carried out a stability test to examine the stability of

the model in equation 4.1 using the Cumulative sum (Cusum) test. The result has been presented in Figure 2, showing that the model is stable and significant.

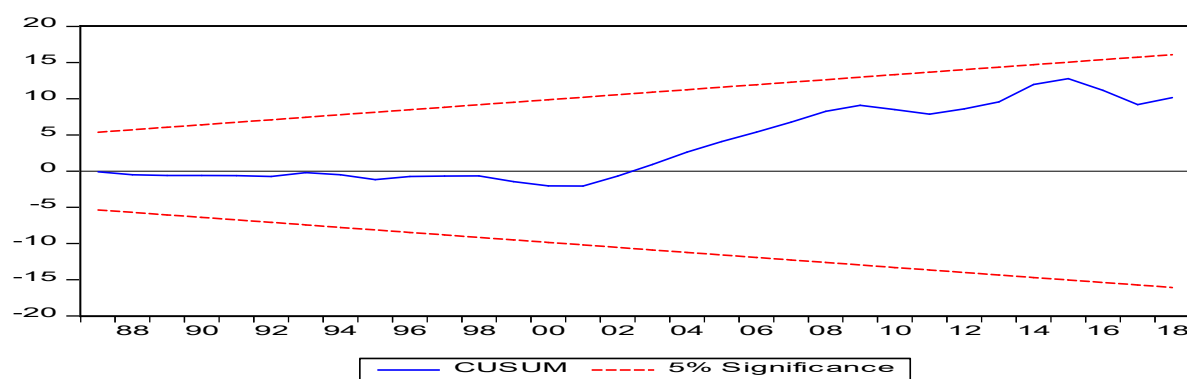


Figure 2. Cusum stability test

Stability Diagnostics: Recursive Coefficients

In a similar direction, the study carried out a recursive test, as depicted in Figure 3, to observe the significance of the various coefficient of the

explanatory variables within the model and their stability. All the coefficients are statistically significant and stable.

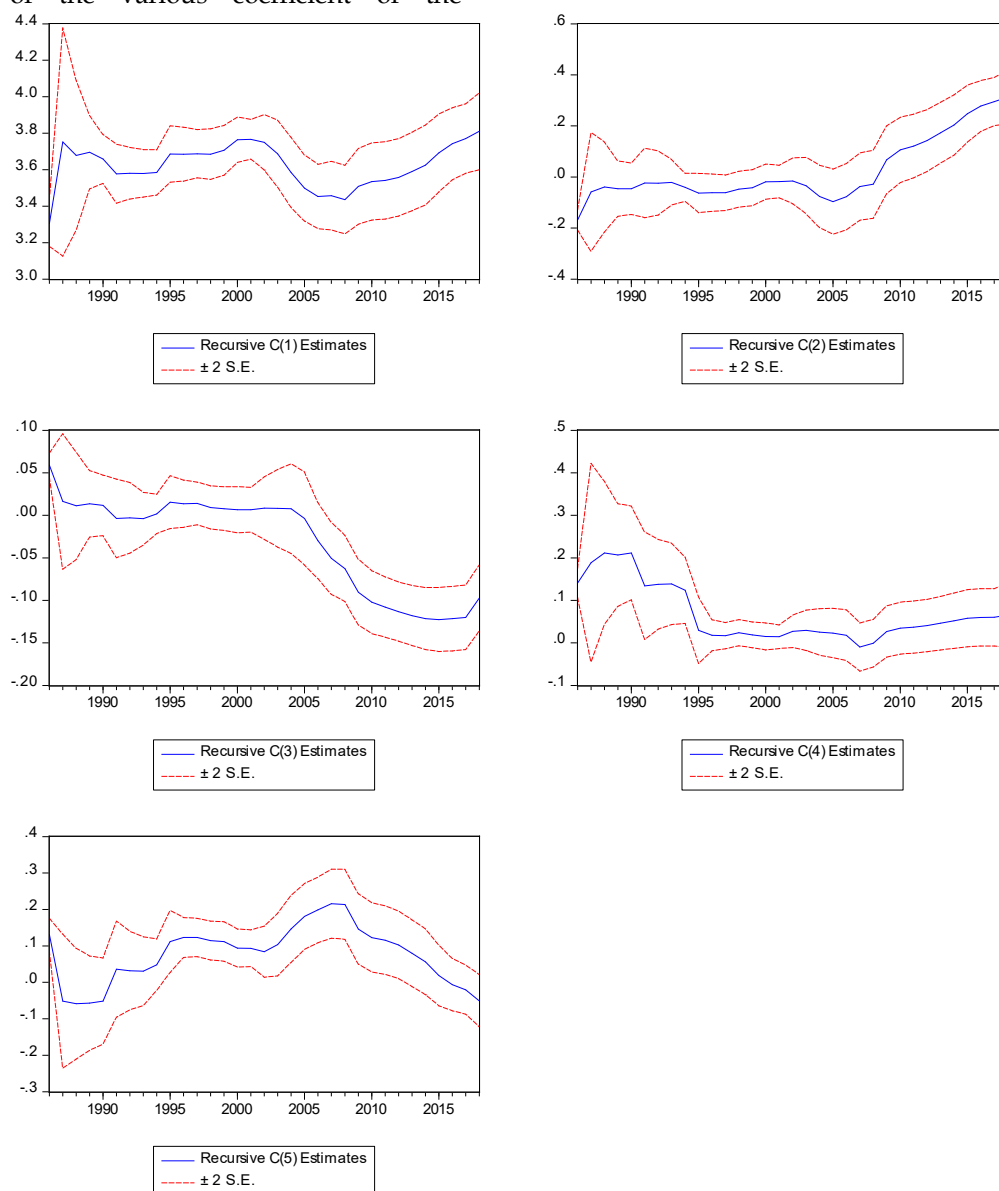


Figure 3. Recursive coefficients test

Discussions

This study employed a time-series technique to investigate the economic growth relationship with revenue mobilization in Nigeria from 1981 to 2018. The study employed a multiple regression procedure to estimate how various sources of government revenue in Nigeria impact economic growth. Specifically, the study estimated how economic growth responds to the selected variables. The variables employed in this study are GDP (dependent), and the rest formed the independent variables: external debt, domestic debts, non-oil revenue, and oil revenue. In addition, all the variables used in this study were logged as indicated in Table 1. Various diagnostic tests were carried out to ascertain and buttress the model's reliability. The tests included coefficient diagnostics (Wald test), residual diagnostics (serial correlation LM and heteroscedasticity tests), and diagnostic stability test (Cusum and recursive coefficient tests). Findings from these tests revealed sizeable support for the OLS model following the value of the t-statistic, F-statistic, and significance level. This finding supports the authors' view that the OLS model appropriately established the relationship between economic growth and selected revenue variables (Ismaila & Imoughele, 2015).

The Nigerian government manages external debt well and uses it to drive economic growth. The findings from the ADF and PP indicated that variables are stationary at I(1). Consequently, the OLS estimation was carried out, and findings from the OLS showed that the domestic debts and NOIL revenue positively and significantly impacted economic growth. The findings may indicate that donors monitor external debt more closely concerning its utilization for economic development and community welfare. This result is different from Didia & Ayokunle (2020), proving that domestic debt contributes positively to economic growth while external debt has a negative impact.

Furthermore, external debts and oil revenues significantly negatively impact economic growth. This may be connected with corruption and recklessness in managing public funds on one side and the Dutch Disease syndrome, which characterized the net oil-exporting countries, especially those among the developing countries. These results are contrary to the a priori of this model, but the probable reasons were given and clearly explained in the context of Nigeria. Theoretically, abundant natural resources, such as oil, will support economic growth. However, many countries rich in natural resources are often countries with a lower

level of social-economic stability and do not yet have adequate technology to process them (Otaha, 2012). As a result, significant oil revenues are not appropriately utilized for economic growth. Even this much revenue makes people complacent with current welfare, causing a decline in the country's future economic growth. This implies the need for the Nigerian government to diversify sources of revenue through the development of the non-oil sector (Hasanov, 2013).

Another factor that negates the impact of oil revenues on the Nigerian economy is corruption (Donwa et al., 2015; Ibraheem et al., 2013). Nigeria is ranked 155th out of 180 countries in the 2021 corruption. This widespread corruption caused oil revenues to be enjoyed by only a few people, especially those close to the rulers. Oil proceeds are not used for long-term investments that can drive economic growth, such as infrastructure and education (Sovacool, 2016). This suggests that the Nigerian government needs to implement strict anti-corruption regulations and create an anti-corruption agency that strictly enforces these regulations regardless of the status of the perpetrator or position in government or society.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

The study attended to the research questions using descriptive analysis techniques. ADF and PP procedures were employed. Consequently, data analysis was carried out by conducting unit root tests that examined whether the variables were stationary and to what degree. The results revealed that variables are stationary at I(0). Next was the OLS estimation, having found that the variables did not cointegrate. The OLS result revealed that domestic debts and NOIL revenue positively impacted economic growth. Conversely, external debts and oil revenues have a statistically significant and negative effect on economic growth. These results differed from the a priori of this model, but the probable reasons were given and clearly explained in the context of Nigeria.

The results from this empirical study have several implications for economic growth policy. Firstly, contrary to the general view that oil revenue would always positively impact economic growth, this study revealed otherwise and argued that this occurrence might be associated with the resource curse and the Dutch disease paradox. Therefore, through planned programs, policymakers should diversify the Nigerian economy instead of allowing it to stay a mono-economy. Secondly, the

government should introduce a policy that will review existing revenue mobilization machinery – especially the diverse non-oil revenue base – to ensure enhanced revenue remittance to the government purses. Furthermore, there is an urgent need to articulate policies that will promise better utilization of investments (both domestic and foreign) to increase productivity and enhance revenue mobilization. Thirdly, borrowing should be treated as the last resort by the government to improve the economy. Where it is unavoidable, such credit facilities should be limited to domestic debt (DD). However, if it requires that external debts be considered, such credit facilities should be used to enhance the real sector and productive ventures to accelerate economic activities in the country. In addition, it should be negotiated in favor of the domestic economy.

A few limitations confront this study. The main limitation of the study is related to data paucity. Initially, the study planned to use monthly data. Unfortunately, data on GDP are reported quarterly, and those of external debt, domestic debt, non-oil revenue, and oil revenue is found on an annual basis. This constrained the study from using high-frequency data but annual as available from 1981-2018. In other words, error in the estimation of the frequency characteristics of the secondary data was another limitation of the study. Therefore, this study suggests that the mixed data samples (MIDAS) estimating technique that combines both high frequency and low-frequency data should be adopted for a study like this. This may offer a more robust result that will enhance policy formation. One interesting variant of this study is an in-depth review of past techniques to investigate Nigeria's economic growth and revenue nexus. Variation in economic growth is not by domestic debt, external debt, oil revenue, and non-oil revenue alone. Therefore, it is required that other macroeconomic variables and related monetary variables may be considered to investigate the monetary policy's impact on economic growth.

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Appendix 1: Multiple Regression Result

Dependent Variable: GDP

Method: Least Squares

Date: 21/11/20 Time: 07:54

Sample: 1981 2018

Included observations: 38

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.8112	0.1055	36.116	0.0000
DD	0.3126	0.0523	5.9712	0.0000
ED	-0.0972	0.0194	-4.9994	0.0000
NOIL	0.0655	0.0377	1.7360	0.0519
OIL	-0.0509	0.0358	-1.42378	0.0163
R-squared	0.9484	Mean dependent var		4.4597
Adjusted R-squared	0.9422	SD dependent var		0.2437
SE of regression	0.0585	Akaike info criterion		-2.7144
Sum squared resid	0.1132	Schwarz criterion		-2.4989
Log-likelihood	56.5749	Hannan-Quinn criter.		-2.6378
F-statistic	151.8196	Durbin-Watson stat		2.6188
Prob(F-statistic)	0.0000			