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COMPREHENSIVE ANALYSIS OF THE EFFECT OF OIL AND NON-OIL REVENUES ON ECONOMIC DEVELOPMENT IN NIGERIA

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ABSTRACT

Revenue generation as the funding source for Nigeria's development activities was challenging mainly due to mismanagement of funds by the Government, tax avoidance, and corrupt practices. Due to the COVID-19 pandemic, global crude oil prices decline tremendously, as well as a crash in the global economy. The challenges make Nigeria's federal government over-dependent on oil-generated revenues to experience several setbacks in achieving its development goals. However, for the last decade, the Government has also diversified the economy and focus on the non-oil area. Thus, this study examined the effects of generating oil and non-oil revenues on Nigeria's economic development from 1989 through 2018 using secondary data extracted the statistical bulletin of the Central Bank of Nigeria. The study employed the model for analytical co-integration and error correction. Similar analytical processes were applied to the multivariate data on components of oil and non-oil revenue, exchange rates, and real gross domestic products. Results generated indicated that the oil revenue harms real gross domestic products in Nigeria, but this is the same with effects reported from non-oil revenue. Nonetheless, Nigeria's exchange rate gives a positive sign and statistical significance for real gross domestic products. Consequently, the study concludes that the continuing decline in global crude oil prices, resistance from insurgents in Nigeria's oil-producing area, the profligate expenditure of the Nigerian Government, the global COVID-19 health pandemic, among other factors, are harming the economic development of Nigeria.

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1. INTRODUCTION

In a market economy such as Nigeria, the justification for revenue generation stems from policy responsibilities, including but are not limited to economic stability, income redistribution, and service delivery in the form of public goods (William, 2006). The Government needs to leverage all revenue sources at the national and international levels to fulfill these obligations (*Bohanon, Horowitz, and McClure, 2014).* For optimum results, revenues generated from these different sources have to be used efficiently. The purpose of revenue generation is to enhance the welfare of a country's citizens, emphasizing promoting economic development by providing necessary facilities for improved public services through appropriate administrative and structural systems. Revenue generation as a revenue stream for Nigeria's development activities was a challenging problem mainly due to various insurgency forms, including evasion, neglect, and unethical activities. These activities are considered sabotaging the economy and are readily presented as reasons for the country (Algoni and Agrawwal, 2017). A daunting issue was the collection of taxes as a means of funding for development activities in Nigeria, mainly due to different forms of evasion, including resistance, fraud, and unethical practices. The Federal Government's over-reliance on the oil sector is harmful to the economy as oil revenues decline. The Government must, therefore, diversify the economy and concentrate on the non-oil industry. The Government expressed this frustration and therefore promised to increase the non-oil revenue (Abata, 2014). The Government has used taxation as one of the income-generating tools. The well-designed tax system can help developing countries prioritize their spending, build stable institutions, and enhance democratic accountability (Braütigam and Knack, 2004). The success or failure in any taxation scheme depends on how well it is handled. Despite the remarkable achievement recorded in the collection of revenues, it has not been fully utilized by the Government in developing economic activities. With this persistence variation, the location of the revenue base, the real gross domestic product and its subsequent rate of development, cannot be mistaken, in the light of global economic uncertainties (IMF, 2015) and, more recently, the fluctuation in the international crude oil price due to the effects of COVID-19 pandemic with its devastating impact on revenue generation (El-Erian, 2020). Good economic policy is vital for achieving sustainable economic development and increased revenue generation (Irfan, 2020).

The Government of Nigeria has abandoned the agricultural sector, and power sector neglect has adverse effects on manufacturing. The proliferation of tax evasion in the Nigerian tax system has also decreased the income from tax revenue, which eventually affects government spending (Ojijo and Oluwatosin, 2018). The *number*of people classified as *unemployed* increased from *17.6 million*in the*fourth quarter*of *2017*to *20.9 million*in the*third quarter*of *2018*(National Bureau of Statistics, 2018). This situation concerns Nigeria's contribution to economic development from the generation of oil and non-oil revenues. While there have also been reports on the contribution of revenue generation to the Nigerian economy's development, the majority have often differentiated the oil and non-oil revenue components. Therefore, this study aims to analyze the contributions of oil and non-oil revenue generation to economic development in Nigeria. It also addresses the following objectives of examining the impact of revenues generated through oil and non-oil on economic development in Nigeria and identified deficiency factors in Nigeria's depleting economic development.

2. REVIEW OF THE LITERATURE

2.1 Framework for conceptualization

2.1.1 Oil Revenue

Crude oil has become Nigeria's most crucial non-renewable energy source. Currently, the sector accounts for more than 90% of the country's foreign exchange earnings and about 80% of recurrent and capital expenditure (Adewusi, 1998; The World Bank, 2017). Hence, this sector's revenues are significant for the country's economic development. "Nigeria has about 37 billion barrels of condensate reserve and produces about 2 million barrels of quality crude oil per day" (Miller and Sorrell, 2006). The oil reserves and development are too short of development envisaged in the 20:2020 visions set by the Government. There are a substantial 183 trillion cubic feet of the country's natural gas reserves, representing 3 percent of the world. Approximately 50 percent of the 8 billion cubic feet of gas produced every day goes to export, while 13 percent is flared. Although the vision and purpose of the Government continue to pursue economic diversification, the oil sector continues to be the primary source of revenue for this, as well as sustaining the country for the foreseeable future (Adewusi, 1998; Bentley, Mannan and Wheeler, 2007). Hence, Nigeria's budget's most important source of income is from oil revenue. Those include, though not limited to, revenue from the export of crude oil, petroleum income tax receipts, and revenue from the domestic sale of crude oil.

2.1.2 Non-oil Revenue

Non-oil revenue is the profits of goods sold in international markets except for crude oil (Manama, 2016). The non-oil sector comprises other types of activities beyond the oil and gas fields, or not directly related to them (Kromtit and Gukat, 2016). The non-oil revenue sector consists of industries such as the manufacturing sector, telecommunications services, tourism, real estate, banking, building, and health. Exports of non-oil goods produced in the farming, mining, quarrying, and industrial sectors of the country are taken out to generate revenues for economic development (Elechi, Kasie and Chijindu, 2016).

2.1.3 Economic Development

Economic development is the increase in the total output produced by a country (Ayres and Warr, 2009), reflecting an increase in the potential of an economy to provide goods and services, relative to a timeframe. Economic development refers only to the sum produced by the products and services, which is calculated either in nominal terms, without inflation, or in real terms, adjusted for inflation, such as rising percentage of GDP. Development in the country's economy tracks monetary progress and looks at no other developmental factors (Illyaset al., 2010). Economic development can either be negative or positive. Negative growth is associated with an economic downturn and stagnant wages. “Gross national product is sometimes used as an alternative to gross domestic product” (Ayres et al., 2006). The figures may be quoted in a single currency to compare different nations, either dependent on prevailing exchange rates or purchasing power parity.

2.1.4 Revenue Generation of Nigerian Government

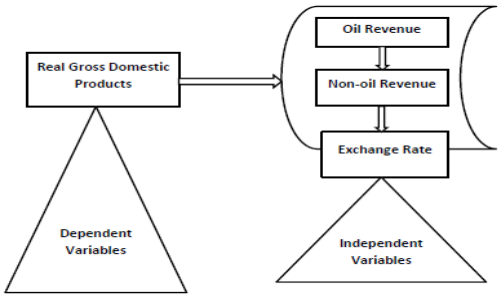


Fig. 1. Revenue Generation and Economic Growth in Nigeria Model.

The economic development of a nation relies on how much government revenue it raises to provide infrastructure facilities (Appah, 2010). The Federal Government received its revenue from various sources, including internal and external sources. These sources may also be classified as oil and non-oil revenue (Worlu and Emeka, 2012). It has been noted that the amount of revenue generated from non-oil by the Federal Government over the years is grossly inadequate concerning the country's ever-increasing needs for financial, political, and infrastructural development. In the last three decades, Nigeria's economy has thrived mainly on oil revenues (Odusola, 2006).Nigeria runs a monolithic economy that is well beyond government control under the international oil price system, thereby exposing the economy to fluctuations in the global market, distorting budget forecasts, and making meaningful changes impossible. The amount of external debt in the Federal Government's budget is a fall from dwindling oil revenue, which has plunged into abysmal low international market prices.Over the years, the reliance on external sources of revenue for development purposes has proven unproductive in many countries. Those countries that have experienced rapid and infrastructural development around the world have been found to have leveraged revenue from an efficient tax system. Reinforcing the framework for improved internal revenue generation is crucial to the anticipated development in non-oil revenue. Therefore, without an improvement in the collection of revenues, the total expenditure would decline; debt would rise, and the fiscal room would diminish (Yue, 2018).The reasons for the reform and the decision to establish a national tax policy can be traced back to the current tax system's essence and some of its challenges (Okafor, 2012). Government dependence on oil revenue is a result of which income from other sources had received little or no publicity. The Federal Government is now renewing its pledge to diversify the economy by paying attention to the non-oil revenue sector to establish a stable and sustainable income source for funding development projects.

2.1.5 Challenges of Revenue Generation

Tax evasion is a general term for attempts by individuals, businesses, trusts, and other institutions to escape tax in some way (Nwachukwu, 2006). Tax evasion typically involves taxpayers intentionally misrepresenting or disguising their specific state of affairs to tax authorities to reduce their tax liability. For specific, it entails misleading tax reporting, such as claiming fewer wages, dividends, or earnings than deductions generated or overstated. Aside from being a moral crime, tax avoidance often amounts to a violation of tax laws. “Tax evasion is described as a deliberate and willing activity whereby full taxable income is not disclosed to pay less tax” (Soyode and Kajola, 2006). "It is an intentional violation of tax laws, and it is evident in situations where tax liability is fraudulently reduced, or false claims were filled on the revenue tax form" (Ayua, 1999). It has been observed from comparing the different meanings given in the literature that paying less tax or not at all than what one is legally obliged to define as tax evasion. "In comparison, tax avoidance is an act of doing everything possible to minimize the tax charged within the limits of the tax law; therefore, the main difference is the legality of the payer's action." (Algoni and Agrawwal, 2017). “Tax evasion is also an outright dishonest action whereby the taxpayer endeavors to reduce his tax liability through the use of illegal means” (*Egbunike, 2018)*. Tax evasion can be accomplished through a deliberate act of omission or commission that is criminal acts under the tax laws. Such violations include the tax on profit, failing to submit returns, the oversight of return items, seeking exemption in personal income tax, understatement of income, reporting fraudulent transactions, overstatement of expenditures, and failure to react to queries (Olayungbo&Olayemi, 2018).

It is also a fact that the economic development and regional or national crisis cannot go simultaneously as a general concept. Hence, the disruption of crude oil exploration facilities by the Niger Delta militants had significant effects on Nigeria's economy as a whole (Victor &Olaopa, 2009). Nigeria reportedly lost 211,000 barrels a day of crude oil and reduced its oil production by 455,000 barrels per day due to militant attacks. In contrast, exports of the same goods were reduced by 20 percent annually (UNDP, 2006). Owing to the shutdown of gas supply to the primary power stations, as the militancy activities persisted, national power production was reduced by more than 25 percent (Olasupo, 2013). These were direct evidence of declining revenue generation from crude oil exploration by the Nigerian Government.The spread of COVID-19 since its first discovery in late 2019 has exacerbated worldwide economic difficulties, disrupting global supply chains (Baldwin &Weder, 2020). Hence, it has reduced the worldwide demand for oil products and, thus, a decline in the Government's revenue from crude oil.The fall in oil prices significantly infuriates demand in Nigeria, where oil and gas are the economy's most important market, thus depleting government-generated oil revenues. These restrictions will intensify the economic effects of COVID-19 and make it more difficult for the Government to deal with the crisis (Onyekwena&Ekeruche, 2020).

2.2 Theoretical Framework

2.2.1 Adam Smith'sResource Endowment Theory of Development

Adam Smith's "Absolute cost advantage" and David Ricardo's "Comparative cost advantage," among others, were the key proponents of this theory, arguing that countries should specialize in manufacturing and exporting products where they have a comparative advantage. Comparative advantage theory suggests that by providing a lower overall cost, commodities that a country has in abundance can be quickly produced; a country gains the most significant economic benefit. “This was the reason behind why some counties produce agricultural and mineral products, while others produce industrial goods”

(Igbaesere, 2013).“The Heckscher-Ohlin model states that countries produce and export the products which require the use of its abundant productive factors intensely” (Feenstra, 2004). The model is based on assuming that there would be identical preferences for two countries with the same products and technology, free trade in goods, and different factors.

2.2.2 Adam Smith'sTheory of Economic Development

The history of economic development theories can be taken from Adam Smith's book, Wealth of Nation. In his book, he illustrated the view that economic development depends on the division of labour. Classical economists such as Ricardo, Malthus, and Mill further followed the picture given by Smith. Harold and Dormar proposed a more critical theory about economic development in the late 1930sThe model offers production theory for the long term. It focuses on the need for steady economic development. According to them, capital accumulation is an essential factor in an economy's development; capital accumulation generates income and increases the economy's capacity for output. Newly generated revenue from the mass of capital increases the demand for goods and services. According to the theory, an essential condition for economic development is that the demand created as a result of newly generated revenue should be sufficient to completely absorb the production provided by the new investment. If the order is not wholly consumed, the production power will be surplus or idle. In the long run, the condition should be entirely satisfied consecutively.

2.3 Review of the empirical framework

Several empirical types of research on revenue-generating economic growth in Nigeria have been performed. Egbunike, Emudainowo, and Gunardi (2018) reviewed tax revenue and economic growth: A case study of Nigeria and Ghana. Multiple regressions were used to analyze the results. The finding indicates a positive effect of the tax revenue on Nigeria and Ghana's real gross domestic products, supporting previous studies. Jina, Lawrence, and Bezum (2017) examined the causal relationship between petroleum income tax and economic development in Nigeria from 1999 to 2015. Relevant data was gathered from the Statistical Bulletin of the Central Bank of Nigeria. Simultaneously, the ordinary least square econometric technique (Q correlogram, co-integration, and granger tests) was employed for the analysis. Results showed that petroleum income tax has a vital and robust relationship with economic development.However, over the years, under consideration, it does not trigger economic development to granger.Using the econometrics co-integration and ECM approaches, Emmanuel and Charles (2015) investigated the effect of taxation on the Nigerian economy from 1994 to 2012. The results revealed that between tax components and dependent variables (GDP and unemployment), there are definite relations. But the individual explanatory variables did not significantly contribute to the development of the economy; also, the explanatory variables did not contribute substantially to the decline in Nigeria's high rate of unemployment and inflation over the period under study.Eyisi, Oleka, and Bassey (2015) used the OLS approach to examine the impact of taxation on macroeconomic performance in Nigeria for the period 2002 to 2011.

The outcome showed that the tax revenue had a significant effect on economic development. Tax revenues also have a negative and essential impact on the unemployment rate. Ude and Agodi (2014) studied the effect of non-oil revenue variables as time series on Nigeria's economic development. Thus, this study expands literature in this field by using co-integration methodology alongside an error correction mechanism to examine the effect of non-oil revenue on Nigeria's economic development. From 1980 until 2013, the study used annual reports. The non-oil revenue variables examined are the revenue from agriculture and manufacturing. Results show that agricultural revenue, income from manufacturing, and the interest rate has a significant effect on Nigerian economic development. Results also show a long-run equilibrium relationship and short-run dynamic adjustment to restore equilibrium with a pace of about 52 percent.Abiola and Asiweh (2012) used the case of Nigeria to research the effect of tax administration on government revenues in a developing economy.In conclusion, the study concluded that diversification of revenue streams is essential for economic development if Nigeria wants to rank among equals in improving the lives of its people. It is of view that focusing on oil and gas revenues in Nigeria means placing all eggs in one basket. The rapid technological progress in these modern days will in no way make the use of such natural resources as oil and gas redundant, and probably replacing the same with solar energy, which is more environmentally friendly.

3. METHODOLOGY

3.1 Sample and Sampling Techniques

The study sample is the Nigerian economy, which was determined by its real gross domestic products, oil and non-oil revenues for 30 years (1989-2018). Judgmental sampling methodology has been introduced for the apparent reason that gathering revenue is a government business; the information is classified and not easy to obtain from them. Thus, the FIRS certified Central Bank of Nigeria documents were chosen to provide the data to be analyzed.

3.2 Data Analysis Technique

The study employed the co-integration model and error correction model. Test stationarity of the time series, the Augmented Dickey-Fuller (ADF) test was applied. Co-integration has been used to check the long-term relationship between the process variables and the ECM to address the pitfall of the short-run process. The ECM approaches the

anomalies, which can influence the model of regression. It is important to note that, due to volatility in economy activities from which most data is extracted, data from time series is prone to error. Therefore, the use of these econometric methods can help decide how the factors considered in this study have influenced Nigeria's real gross domestic products.

3.3 Model Specification

The study used model co-integration methods and error correlation to analyze the secondary data collected from the Central Bank of Nigeria's Statistical Bulletin between 1989 and 2018 (30 years). An econometric model was built in line with the conceptual, theoretical, and empirical literature reviewed to capture the relationship between economic growth and revenue variables in Nigeria to accomplish the aims of this study. Specifically, this research adopted the Okwori and Sule (2016) empirical model, whose concept is RGDP = f (oil, non-oil, dd, ed) but with slight modification. The model used for this study states that economic development depends on oil, non-oil revenues, and exchange rates. The exchange rate has been used as a variable of control. The functional relation and the resulting model are as mentioned below:

$$RGDP = \alpha_i + \beta_i LOIL + \beta_i LEXC + \mu t \quad (1)$$

$$RGDP = \alpha + \beta LOIL + \beta LEXC + \mu t \quad (2)$$

$$RGDP = \alpha_3 + \beta_3 LDEBT + \beta_3 LEXC + \mu t \quad (3)$$

Where

LRGDP is Real Gross Domestic Products by logarithm;
LOIL is the natural Oil Revenue logarithm;
LNOIL is the natural Non-oil Production logarithm,
LDEBT is the natural Debt logarithm,
LEXC is the natural Exchange Rate Logarithm,
μt is the expression of errors.

4. RESULTS AND DISCUSSION

4.1 Annual Data Sets

Table 1. Data set of the Logarithm of Oil Revenue, Non-oil Revenue, Real Growth Domestic Products and Exchange Rate

Years	LNOIL	LOIL	LRGDP	LEXC
1989	1.17	1.59	4.24	1.88
1990	1.42	1.86	4.29	1.85
1991	1.26	1.92	4.28	1.78
1992	1.42	2.22	4.29	1.70
1993	1.49	2.21	4.30	1.74
1994	1.62	2.20	4.30	2.00
1995	2.13	2.51	4.31	2.20
1996	2.06	2.61	4.33	2.32
1997	2.22	2.62	4.34	2.37
1998	2.14	2.51	4.35	2.44
1999	2.35	2.86	4.35	1.85
2000	2.50	3.20	4.37	1.84
2001	2.96	3.23	4.40	1.89
2002	2.70	3.09	4.46	1.89
2003	2.70	3.32	4.50	1.86
2004	2.75	3.53	4.54	1.87
2005	2.89	3.68	4.57	1.93
2006	2.83	3.72	4.60	1.96
2007	3.10	3.65	4.63	1.95
2008	3.13	3.81	4.66	2.00
2009	3.22	3.50	4.70	1.96
2010	3.28	3.73	4.74	2.00
2011	3.35	3.95	4.76	2.00

2012	3.42	3.90	4.78	2.05
2013	3.47	3.83	4.80	2.07
2014	3.52	3.83	4.83	2.10
2015	3.49	3.58	4.84	2.29
2016	3.47	3.43	4.83	2.48
2017	3.51	3.61	4.84	2.49
2018	3.55	3.68	4.87	2.52

Table 1 above showed an approximate data point for each variable over the years analyzed. The data presented are on oil revenue, non-oil revenue, real growth domestic products, and exchange rate. As stated for preliminary values, these results are converted using a logarithm to divide them into simpler units rather than into billion.

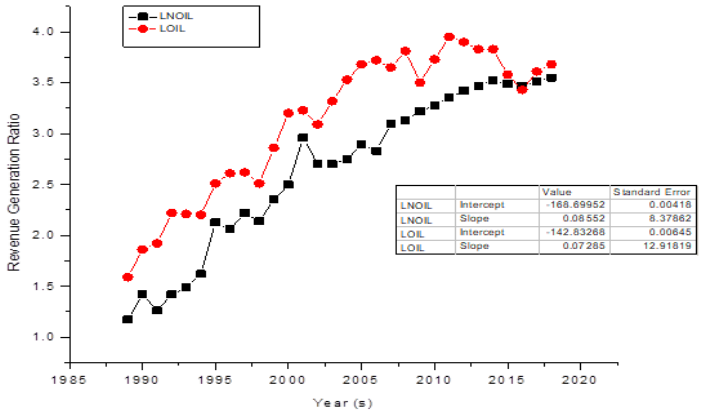


Fig. 2. Nigerian oil- and non-oil revenues ratio chart (1989 to 2018)

4.2 Descriptive Statistic Data

Table 2. Descriptive Statistic Results of the Logarithm of Oil Revenue, Non-oil Revenue, Real Growth Domestic Products, and Exchange Rate

	LNOIL	LOIL	LRGDP	LEXC
Mean	2.63733	3.11267	4.53667	2.04267
Standard Error	0.14191	0.12917	0.03992	0.04319
Median	2.79000	3.37500	4.52000	1.98000
Standard Deviation	0.77730	0.70747	0.21865	0.23657
Sample Variance	0.60419	0.50051	0.04781	0.05597
Kurtosis	-0.99960	-0.85960	-1.61244	-0.48319
Skewness	-0.55219	-0.68539	0.19287	0.79598
Range	2.38000	2.36000	0.63000	0.82000
Minimum	1.17000	1.59000	4.24000	1.70000
Maximum	3.55000	3.95000	4.87000	2.52000
Sum	79.12000	93.38000	136.10000	61.28000
Count	30.00000	30.00000	30.00000	30.00000
Confidence Level (95.0%)	0.29025	0.26417	0.08165	0.08834

As for those metrics or units of measurement, the descriptive is measured, as shown in Table 2. For each variable, the total observation (count) is 30, reflecting the years (1989 to 2018) for this analysis. The mean values are 2.63733, 3.11267, 4.53667, and 2.04267 for non-oil revenue, oil revenue, real growth domestic product, and exchange rate. It means that all the variables during the sampling period have a growing tendency. Within the sampling range, the maximum value for non-oil revenue is 3.55000 in 2018. The maximum value for oil revenue is 3.95000 in 2011, the maximum real gross domestic

product value in 2018 was 4.87000, and the maximum exchange-rate value in 2018 was 2.52000. The non-oil revenue has the most significant range value from 1.17000 to 3.55000, with an associated standard deviation of 0.77730. The values show that the most unpredictable among the factors is non-oil revenue. It can be observed that the real growth domestic product has the lowest range value from 4.24000 to 4.87000, with an associated standard deviation of 0.21865. It indicates that the real growth domestic products are the least volatile of variables. Specific essential examples of these factors are the ratings for skewness and kurtosis. The skewness scores are favorable for the exchange rate (0.79598) and real gross domestic product (0.19287) since their scores are more significant than zero.In contrast, the skewness scores for oil revenue (-0.68539) and non-oil revenue (-0.55219) are negative since their scores are less than zero. The kurtosis scores show the pattern of distribution of all variables showing no excess kurtosis. It also implies that there is no evidence of outlier in all the variables. The confidence level (95%) for oil revenue, non-oil revenue, real growth domestic products, and exchange rates is 0.26417, 0.29025, 0.08165, and 0.08834. The values reported support the normal distribution of all variables.

4.3 Analysis of Empirical Data

4.3.1 Kolmogorov-Smirnov Test (Normality)

The Kolmogorov-Smirnov test was used to determine the origin of the sample from a specific distributed population. That will be based on the empirical distribution (LNOIL, LOIL, LRGDP, and LEXC). The test for Kolmogorov-Smirnov is described by:

$$D = \max_{1\le i\le N}\left(F(Y_i) - \frac{i-1}{N}, \frac{i}{N} - F(Y_i)\right) \qquad (4)$$

Where F is the distribution's cumulative theoretical distribution, which must be continuous. Given N (count) ordered data points Y1, Y2… YN. If the test statistics D are more significant than the statistical table's critical value, the distribution model hypothesis will be rejected. To this study, the hypotheses accepted or rejected are:

Ho1: Oil revenue has no significant impact on Nigeria's economic development.

Ho2: Non-oil revenue does not have a significant impact on Nigeria's economic development.

Ho3: The exchange rate does not have any significant impact on Nigeria's economic development.

Table 3. Kolmogorov-Smirnov Test's Data

	Expected	(Rank-1)/n	NORMSINV	Actual (LNOIL)	DIFF (LNOIL)	Actual (LOIL)	DIFF (LOIL)	Actual (LRGDP)	DIFF (LRGDP)	Actual (LEXC)	DIFF (LEXC)
1	0.03333	0.00000	-1.83391	0.00302	0.00302	0.088925388	0.088925388	0.087423774	0.087423774	0.245850249	0.2458502
2	0.06667	0.03333	-1.50109	0.00837	0.02497	0.158644348	0.125311014	0.129634924	0.096301591	0.207702366	0.174369
3	0.10000	0.06667	-1.28155	0.00441	0.06225	0.178041483	0.111374817	0.120226934	0.053560268	0.133431502	0.0667648
4	0.13333	0.10000	-1.11077	0.00837	0.09163	0.295667511	0.195667511	0.129634924	0.029634924	0.073741018	0.026259
5	0.16667	0.13333	-0.96742	0.01091	0.12243	0.29123943	0.157906097	0.13954096	0.006207627	0.100378236	0.0329551
6	0.20000	0.16667	-0.84162	0.01743	0.14923	0.286842557	0.12017589	0.13954096	0.027125706	0.428436606	0.2617699
7	0.23333	0.20000	-0.72791	0.08242	0.11758	0.434938284	0.234938284	0.149949619	0.050050381	0.746994646	0.5469946
8	0.26667	0.23333	-0.62293	0.06838	0.16495	0.485974271	0.252640937	0.172283386	0.061049947	0.8794643	0.646131
9	0.30000	0.26667	-0.52440	0.10351	0.16315	0.491104539	0.224437873	0.184207604	0.082459063	0.916769863	0.6501032
10	0.33333	0.30000	-0.43073	0.08459	0.21541	0.434938284	0.134938284	0.196632472	0.103367528	0.953478899	0.6534789
11	0.36667	0.33333	-0.34069	0.14051	0.19282	0.612737972	0.279404639	0.196632472	0.136700861	0.207702366	0.125631
12	0.40000	0.36667	-0.25335	0.19325	0.17342	0.765428706	0.398762039	0.222957709	0.143708957	0.195808034	0.1708586
13	0.43333	0.40000	-0.16789	0.41457	0.01457	0.777110242	0.377110242	0.26597284	0.13402716	0.259354805	0.1406452
14	0.46667	0.43333	-0.08365	0.27985	0.15349	0.719837557	0.286504224	0.362932431	0.070400903	0.259354805	0.1739785
15	0.50000	0.46667	0.00000	0.27985	0.18682	0.810097517	0.34343085	0.433412283	0.033254383	0.220013243	0.2466534
16	0.53333	0.50000	0.08365	0.30411	0.19589	0.874602855	0.374602855	0.506081578	0.006081578	0.232732507	0.2672675
17	0.56667	0.53333	0.16789	0.37648	0.15685	0.910104426	0.376771093	0.560583379	0.027250046	0.316947368	0.216386
18	0.60000	0.56667	0.25335	0.34474	0.22192	0.918168732	0.351502066	0.613958784	0.047292118	0.363379706	0.203287
19	0.63333	0.60000	0.34069	0.49286	0.10714	0.903679012	0.303679012	0.665257774	0.065257774	0.347636115	0.2523639
20	0.66667	0.63333	0.43073	0.50977	0.12356	0.93430515	0.300971817	0.713643107	0.080309773	0.428436606	0.2048967
21	0.70000	0.66667	0.52440	0.56029	0.10637	0.866463217	0.19979655	0.772467444	0.105800777	0.363379706	0.303287
22	0.73333	0.70000	0.62293	0.59349	0.10651	0.920096912	0.220096912	0.823797779	0.123797779	0.428436606	0.2715634
23	0.76667	0.73333	0.72791	0.63136	0.10197	0.954366839	0.221033506	0.846468618	0.113135285	0.428436606	0.3048967

24	0.80000	0.76667	0.84162	0.66801	0.09866	0.947857965	0.181191298	0.867118666	0.100452	0.512364697	0.254302
25	0.83333	0.80000	0.96742	0.69325	0.10675	0.937531223	0.137531223	0.885771444	0.085771444	0.545991627	0.2540084
26	0.86667	0.83333	1.11077	0.71761	0.11572	0.937531223	0.10419789	0.910128443	0.07679511	0.595746743	0.2375866
27	0.90000	0.86667	1.28155	0.70311	0.16356	0.887386838	0.020720171	0.917321944	0.050655277	0.852104106	0.0145626
28	0.93333	0.90000	1.50109	0.69325	0.20675	0.846081583	0.053918417	0.910128443	0.010128443	0.967745634	0.0677456
29	0.96667	0.93333	1.83391	0.71282	0.22052	0.894595291	0.038738043	0.917321944	0.016011389	0.97068238	0.037349
30	1.00000	0.96667		0.73177	0.23490	0.910104426	0.056562241	0.936306144	0.030360523	0.978190363	0.0115237
					LNOIL		LOIL		LRGDP		LEXC
				Max.	0.23		0.40		0.14		0.6534789

Table 3 shows the empirical analysis of data from the Kolmogorov-Smirnov test of normality. The null hypothesis was accepted since all the values of *D* (0.23, 0.40, 0.14, and 0.65) for *LNOIL*, *LOIL*, *LRGDP*, and *LEXC* respectively are less than unity and thus less than the critical values. The data for this analysis could, therefore, be said to be generally distributed because *D* is less than the essential values recorded.

4.3.2 Augmented Dickey-Fuller Test

Table 4. Results of the ADF Unit Root Test

Variables	Prob.	ADF-Stat.	Critical value (5%)
D (LEXC)	0.0031	-3.860433	-2.546345
D (LNOIL)	0.0000	-5.783829	-2.546345
D (LOIL)	0.0004	-4.856197	-2.546345
D (LRGDP)	0.0256	-2.420745	-2.546345

Each variable was subjected to a root-unit test using the Augmented Dickey-Fuller test to check for stationarity. Table 4.4 above indicates that the absolute values of ADF statistics are at 5 percent higher than the absolute critical value. It is confirmed by the probability values given that they are less than 5 percent in the above table. Both variables in level form were not constant, but in their first variations, they are all combined in order 1. There is, therefore, no case of mixed integrations; co-integration measures are consequently valid.

4.3.3 Johansen MultivariateTest

Table 5. Results of JMT co-integration test

Hypothesized (No. of CES)	Eigenvalue Test	Trace Test	Critical Value (0.05)	Prob. **
None*	0.855306	152.81220	87.72380	0.0000
At most 1*	0.644721	81.88374	70.79610	0.0039
At most 2	0.437518	39.05453	45.83525	0.0773
At most 3	0.299104	22.37663	24.79211	0.2401
At most 4	0.165015	11.50865	16.43798	0.1945
None*	0.855306	80.78426	34.81061	0.0000
At most 1*	0.644721	34.76205	28.39620	0.0218
At most 2	0.437518	31.74210	15.65010	0.1408
At most 3	0.299104	16.67650	18.92410	0.2633
At most 4	0.165015	11.50865	16.43798	0.1945

It is explicitly apparent in table 5 that all variables were stationary at the first difference. It is a prerequisite for the co-integration test of Johansen Multivariate to examine the co-integration relationship. As a consequence of the co-integration analysis, the p-value (0.0000) of the trace test for the null hypothesis of no co-integration relationship is less than 0.05, shown in Table 5, indicating that the null hypothesis may be rejected. The trace test value (74.48250) is higher than the critical 0.05 values of 65.49215, affirming that the null hypothesis cannot be accepted since there is no co-integration relationship between the variables. The result further shows that the p-value of the trace test corresponding to "At most 1" is 0.0039, which is less than 0.05, which implies that in the null hypothesis along with one equation or relationship of co-

integration between the variables may also be rejected.Furthermore, the value of the trace test corresponding to "At most 1" is 81.88374, which is higher than the critical value of 0.05 at that point is 70.79610, suggesting that it may be rejected. It is because there is a null hypothesis of a co-integrating relationship between variables, "At most 1." However, the results show that the value of trace test "At most 2, At most 3 and most 4" are 39.05453, 22.37663, and 11.50865, respectively, which are less than the corresponding critical values of 45.83525, 24.79211 and 16.43798. It means that the variables only have two co-integrating relationships. It is also confirmed by the associated values of probability that exceed 5 percent.Moreover, the trace test result conforms to the Eigenvalue test as well. As shown by both co-integrating analyses, there are at most two co-integrating relationships between the oil revenue variables, non-oil revenue, the exchange rate, and real gross domestic product. There is proof, therefore, that the variables have a long-term relationship.

4.3.4 Long Run Multiplier Effects

Empirically, based on the co-integration test, as shown in Table 6, it has been demonstrated that the baseline models have a long-term relationship among the interest variables. It, therefore, serves as a basis for testing the hypotheses on whether there is a positive or negative multiplier effect in each model from the set of covariates to the stated variable. The analyses are on revenues from oil and non-oil revenues and the exchange rate.

Table 6. RGDP-Oil Revenue Treated for Long Run Multiplier Effects

	Coefficients	*Standard Error*	*t-Stat*	*Prob.*
LOIL (-1)	-0.292669	(0.04850)	[-11.2548]	0.0000
LEXC (-1)	0.434401	(0.15586)	[2.5676]	0.8158

Table 6 above indicated the 0.92669 and 0.434401 oil revenue and exchange rate coefficient, respectively, with the corresponding t-Stats -11.254827 and 2.567639. It implies that, in the long run, adverse multiplier effects run from oil revenue to real growth domestic products. In contrast, the positive multiplier effects run from the exchange rate to real growth domestic products. Also, a one percent rise in oil resulted in a 29.26 percent decrease in real gross domestic products. By comparison, a one percent rise in the exchange rate would cause an increase in real gross domestic products of 43.44 percent.

Table 7. RGDP-Non-oil Revenue on Long-run Multiplier Impact

	Coefficients	*Standard Error*	*t Stat*	*P-value*
LNOIL (-1)	-0.441731	(0.01596)	[-23.7486]	0.0000
LEXC(-1)	0.634401	(0.05586)	[6 .5676]	0.9450

Table 7 indicates the non-oil revenue and exchange rate coefficients are -0,441,731 and 0,634401, respectively, with corresponding t-Stats of -23.7486 and 6.5676, respectively. It implies that, in the long run, there are adverse multipliers effects run from non-oil revenue to real growth domestic product, and positive multiplier effects vary from the exchange rate to real growth domestic products. Thus, a one percent shift in non-oil revenue leads to a 44.17 percent decrease in real growth domestic products while a one percent rise in the exchange rate causes a 63.44 percent increase in real growth domestic products.

4.3.5 Short Run Dynamic Relationship

It has since been established that variables are not static rather dynamic within the framework of the short-run situation since their present values depend on the other benefits. Based on this stylized fact, attempts were made to investigate the short-term dynamic relationship between the covariates and explained the variables of two models specified for this study. The tables below (Tables 8 and 9) show the dynamics for short runs and the criteria for modification.

Table 8. RGDP-Oil Revenue Treated for Short-Run Dynamics with Adjustment Parameters.

	Coefficients	*Standard Error*	*t-Stat*	*Prob.*
D (LOIL (-1))	-0.017472	(0.01228)	[-1.25482]	0.0420
D (LOIL (-2))	-0.024960	(0.01155)	[1.05990]	0.1643
D (LEXC (-1))	0.017472	(0.01228)	[0.96497]	0.4739
D (LEXC (-2))	0.249600	(0.01584)	[1.56763]	0.7643
ECM	-0.105602	(0.01584)	[4.83492]	0.0000

The table reveals the adjustment parameter of -0.105602 with the probability value of 0 percent. It implies two fundamental relationships: first, long-run causality or influence runs from oil revenue and exchange rate to real growth domestic products. Secondly, 10.56 percent of disequilibrium is being corrected within a year. It suggests that 10.56 percent of imbalance in economic development is fixed and adjusted when oil revenue and exchange rate jointly changes by one percent. The coefficient of oil revenue at present value is negative and at lag 1. It affirms that both current and previous oil benefits have a negative short-run dynamic influence on real growth domestic products. It is arguably in conformity with the proposition that economic development does not improve as a result of abundant resources in the economy as specified by the theory of resource cause. Also, the result shows that the coefficients of the exchange rate at current value and lag 1 are positive. It confirms that the exchange rate at present value and previous value have positive but insignificantly effect on real growth domestic products positively.

Table 9. RGDP-Non-oil Revenue Treated for Short-Run Dynamics with Adjustment Parameters

	Coefficients	*Standard Error*	*t-Stat*	*Prob.*
D (LNOIL (-1))	-0.018024	(0.01248)	[-1.12272]	0.0492
D (LNOIL (-2))	-0.000391	(0.01211)	[-0.00671]	0.5384
D (LEXC (-1))	0.048125	(0.01215)	[2.54025]	0.8938
D (LEXC (-2))	0.023522	(0.01213)	[2.61832]	0.9739
ECM	-0.154292	(0.01927)	[-6.64582]	0.0000

Table 9 above reveals the adjustment parameter of -0.154292 with the probability value of 0 percent. It implies two essential relationships, which are first, long-run causality or influence runs from non-oil and exchange rate to real growth domestic products. Secondly, 15.42 percent of disequilibrium is being corrected within a year. It suggests that 15.42 percent disequilibrium in economic development is fixed and or adjusted when non-oil and exchange rate jointly changes by one percent. The coefficients of non-oil at present value and previous values are negative. It affirms that both current and prior values of non-oil have a negative short-run dynamic influence on real growth domestic products. It is arguably in conformity with the proposition that economic development does not improve as a result of abundant resources in the economy as specified by the theory of resource cause. Also, the result shows that the coefficients of the exchange rate at current value and lag 1 are positive. It, therefore, confirms that the exchange rate at present value and previous value have positive but insignificantly effect on real growth domestic products positively.

4.3.6 Residual Model Results

The study performs vector residual serial correlations, heteroscedasticity, and normality to check the correction model error. The test serves as the standard post-estimation and the model's classical inference. Based on each of the models, the effect of these post estimates is stated. For each residual, the residual model results are discussed below:

Table 10. Normality for RGDP-Oil Relation Residual

Items	Jarque-Berra	Df	Prob.
1	0.028148	2	0.8954
2	0.117492	2	0.9122
3	6.002591	2	0.0386
Joint	6.148231	6	0.4019

Table 11. Normality for RGDP-Non-oil Relation Residual

Items	Jarque-Berra	Df	Prob.
1	1.864271	2	0.4246
2	6.579822	2	0.5319
3	134.5907	2	0.0000
Joint	143.034793	6	0.4019

It is shown from Table 11 that the residuals of the first and second models, which specify the relationship between real domestic product development, oil, and non-oil revenue, respectively, do not conform to the normality hypothesis. It is because the Jarque-Berra joint test probability is less than 5 percent for each residual model. Besides this, the study reports serial correlation findings, as shown in Tables 4.12 and 4.13 below.

Table 12. Serial correlation test for the RGDP-Oil Relation Residual

Strings	LM-Stat.	Prob.
1	3.344276	0.8285
2	7.788988	0.6718
3	9.203884	0.3866

Table 13. Serial correlation test for the RGDP-Non-oil Relation Residual

Strings	LM-Stat.	Prob.
1	6.453928	0.7022
2	13.63388	0.1201
3	11.59669	0.3381

The result shows that in each of the models, the result is estimated to lag 3. It is explicit that the residuals of all the models conform to the classical assumption that the models' residuals are not correlated in series. It was perfect for the model and validated one of the model's premises. Tables 14 and 15 show the analysis performance of the heteroscedasticity test for the residuals of each of the models.

Table 14. Heteroscedasticity Test for RGDP-Oil Residual Model Joint Test

Chi-sq	Df	Prob.
84.41205	88	0.5267

Table 15. Heteroscedasticity Test for RGDP-Non-oil Residual Model Joint Test

Chi-sq	Df	Prob.
93.65122	88	0.2045

According to the estimates, the oil revenue model residuals and non-oil revenue are 52.67 percent and 20.45 percent. The residual of the models can be deduced as heteroscedastic since the probability in each case is greater than 5 percent. These results are consistent with classical model assumptions.The results show that the oil revenue on real gross domestic products was found to prove a negative but essential effect. It could be due to inadequate funds management and high levels of corruption in the region where income from oil revenues are mismanaged. It might also be due to oil thefts, bunkering, and insecurity in the oil-producing areas. In the oil-producing part, Nigeria loses barrels of crude oil daily, which could adversely affect revenues, foreign exchange, and external reserves. The results indicated that there is no increase in economic development as a result of the numerous challenges in Nigeria. The results have shown that an increase in non-oil revenue, along with the oil revenue plays a crucial role in economic development.

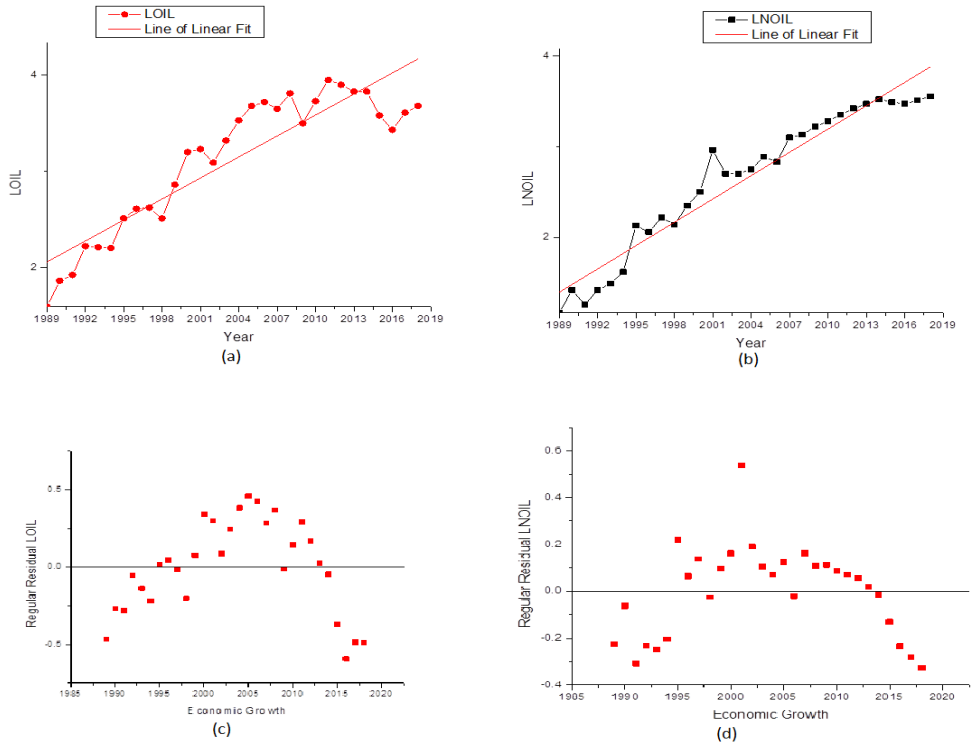


Fig. 3. Chart overview (a-d) of the annual impact of oil and non-oil revenues on Nigeria's economic development.

5. CONCLUSION

The study analyzed the impact of generating oil and non-oil revenues on economic development in Nigeria from 1989 to 2018. It applied the Kolmogorov-Smirnov normality test, the Augmented Dickey-Fuller unit root test, the Johansen Multivariate co-integration test, the Long Run Multiplier Effects, Short Run Dynamic Relationship, vector residual serial correlations, heteroscedasticity, and normality in the correction model to evaluate for errors. The time-series data on the oil and non-oil revenue components, exchange rates, and real gross domestic products were subjected to similar analytical processes. It has been reported that over-reliance on oil revenues in Nigeria harms real gross domestic products, but this is the same with non-oil revenue results. Nonetheless, Nigeria's exchange rate gives a positive sign and statistical significance for real gross domestic products. The study concludes that the continuing decline in international crude oil prices, the hostility of militants in Nigeria's oil-producing area, the Nigerian Government's profligate spending, the global health pandemic, among other factors, are undermining Nigeria's economic development.

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