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**Research Paper**

# Oil Revenue and Sustainable Economic Development in Nigeria (1981 – 2020)

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***ABSTRACT***
*The research paper on the contribution of oil revenue on sustainable economic development in Nigeria (1981 – 2020); the objective is to investigate if oil revenue has contributed significantly to sustainable economy development in Nigeria. The study made use of secondary data from CBN statistical bulletin and multi regression method was applied for data analysis. Oil revenue was used as predictor variable and for sustainable economy development in Nigeria was proxies with recurrent expenditure, capital expenditure and consumer price index (CPI) as the dependent variable. The result shows that oil revenue has not contributed significantly to sustainable economic development in Nigeria. The researchers recommend that capital expenditure be increased and recurrent expenditure be reduced to the minimum level.*

***KEYWORD:*** *Oil Revenue, Sustainable Economic Development, Recurrent Expenditure, Capital Expenditure, Consumer Price Index*

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## I. INTRODUCTION

Nigeria is classified as middle – income country with estimated 188 million population by UN. Having a sustainable economy development is very vital for the well being of the over 188 million people. In the 1960s agriculture accounted for 63.8% of the GDP composition and crude oil accounted for only 0.31%, which is the lowest after building and construction at 4.25%.

By 1970, oil and gas sector gained prominence and economic relevance and value of output; annual production reach 395.8mn barrels, which propel the oil industry sector to be address as the mainstay of the economy. In 1979 the oil sector contribution to GDP was 25.5% from 0.31% in the 1960, while agricultural sector moved to 22% of GDP from 63.8% in 1960.

In 1980s agriculture contribution to GDP dropped to 11.8% and oil fell below 7% , due to price correction cycles in the global oil market. The national revenue was adversely affected, leading to short-fall in national income from 13.29bn in 1981 to 11.43bn, 10.51bn and 11.25bn in 1982, 1983 and 1984 respectively. Capital expenditure was not excluded from the effect of the price correction in the global oil market. This raises a lot of questions about the future of Nigeria after oil.

The issues of economic diversification become a national issue and most importantly how to re-invest the proceeds from oil and gas sector into the various sectors of the economy, to ensure sustainable economy growth and development in Nigeria. The argument hold on the assumption that oil and gas production in it millions barrels per day, is reducing the national oil and gas reserve and the need to preserve this wealth for generations yet unborn becomes the challenges facing Nigeria from the first day oil and gas was discovered in commercial quantity.

Various reforms and programmes where initiated by different administration in other to address poverty and ensure sustainable economic growth and development. Some of the programmes are:
-Operation Feed the Nation (Agriculture)
- Free and Compulsory Primary Education (Education)

- Green Revolution (Agriculture)
-Low Cost Housing (Housing)
-River Basin Development Authorities (Agriculture)
-National Agricultural Land Development Authority (Agriculture)
-Agricultural Development Programmes (Agriculture)
- Agricultural Credit Guarantee Scheme (Agriculture)
-National Directorate of Employment (Job Creation)
- Sovereign Wealth Fund
-Petroleum Trust Fund (Education, Health, Rural Development)
-National Poverty Eradication Programme (Poverty Alleviation)
-National Economic Empowerment and Development Strategy (NEEDS)
- Subsidy Reinvestment Programme
- N-Power
- YouWin etc.

All these programmes are to constantly stimulate the economy and involve huge capital expenditure financing to achieve them. We all know how they end and the protocols that are attached to them.

Nigeria budget is benchmarked on global oil price and local production. The researchers believed that is very vital to measure the contribution of oil and gas revenue on sustainable development.

In the course of the research, the researchers where faced with questions, but the core one being: What is the contribution of oil revenue to sustainable economic development? Finding answers to the above questions lead the researchers to formulate and test the following hypothesis:

Ho: Oil revenue has not significantly contributed to sustainable economic development in Nigeria.

The result of the test of hypothesis will help in establishing if oil revenue has contributed to significantly to sustainable economy development in Nigeria. And will help in guiding policy statement in government expenditure and organized private sectors.

## II. EMPIRICAL REVIEW OF LITERATURE

Government expenditure can be categorized into either recurrent or capital expenditure Modebe et.al (2012). Barro and Grilli (1994) as quoted by Modebe et.al (2012) say government spending includes all government consumption and investment but excludes transfers payment to a state.

Gilbert and Kehinde (2017), study on government expenditure and economic growth in Nigeria: an analysis with dynamic ordinary least square; established that in the long run, government can make use of expenditure on administration and nominal exchange rate to influence economic growth in Nigeria.

The study on government expenditure revenue nexus reconsidered for Nigeria: does structural break matter? By Taofik (2018) uses data from 1970 to 2015 and it utilizes the Lee and Strazicich (2003 and 2004) unit root test. The result shows negative relationship between government expenditure and revenue.

Bonmwa and Ishmael (2017), research on empirical analysis of government expenditure and economic growth in Nigeria for the period of 1981 – 2016. The data of recurrent and capital expenditures were tested using two separate models. The researchers used an ordinary least square technique with error correction specifications. Their findings conclude that expenditure has not translated into meaningful economic growth in Nigeria.

Antonio (2013), examined the composition of government expenditures and economic growth in Bolivia. The period of the study covers 1965 – 2010 and used 2000 as the based year for all the variables. The data series was transformed to the logarithmic form to achieve stationarity in variance. The study investigates government expenditure on health, defense, education and infrastructure, as a means to stimulate economic growth. Their study concludes that government expenditure has good impact on economic growth in Bolivia.

Cornelius et.al (2016), work on government expenditure and its implications on Nigeria economy. The objective of the study examines the effect of recurrent expenditure on the growth of Nigeria economy and to examine the link between capital expenditure and the growth of Nigeria economy. The findings show a significant relationship between recurrent, capital and aggregate expenditure with growth and development of Nigeria economy. The study made use of ordinary least square. They established that "economic growth represents the expansion of a country's potential GDP or output".

Pascual Saez et.al (2017) presents a review on the relationship between growth and the size of the public sector (expenditure). This is presented below:

**Table 1.** Literature Review on the Relationship between Growth and the Size of the Public Sector

| Authors | Data | Conclusion |
|---|---|---|
| Rubinson (1977) | Cross country sample. | A larger government size promotes economic growth by reducing the "dependence" especially in the poorer, less developed contexts. |
| Landau (1983) | Cross-sectional study of over 100 countries in the period 1961-76 | Negative relationship between the growth rate of real per capita GDP and the share of government consumption expenditure in GDP. |
| Kormendi and Meguire (1985) | Study based on post-war data from 47 countries | No significant cross-sectional relationship between the growth rate of real GDP and the growth rate or the level of the share of government consumption spending. |
| Grier and Tullock (1989) | Study of 115 countries | Negative relationship between the growth rate of real GDP and the growth rate of the government share in GDP. |
| Ram (1986) | Study based on information of 115 countries from 1960 through 1980. | The overall impact of government size on growth is positive in almost all cases. |
| Barro (1991) | Study of 98 countries for the period 1970-1985. | Negative relationship between the output growth rate and the share of government consumption expenditure. |
| Hsieh and Kon (1994) | Study based on historical data for the Group of Seven countries. | The relationship between government spending and growth can vary significantly across time and across the major industrialized countries that presumably belong to the same growth club. |
| Lin (1994) | Cross-country study over 25 years. | Government size has a positive impact on economic growth in the short-run but not in the intermediate run. |
| Basil Dalamagas (2000) | Greek data for the period from 1948 to 1994. | There exists a negative relationship between government size and economic growth. |
| Afonso and Tovar (2011) | A panel of 108 countries from 1970-2008 | A negative effect of the size of government on growth |

Source: Pascual Saez et.al (2017)

Pascual Saez et.al (2017), research was on government expenditure and economic growth in the European Union countries, is a cross countries study over the period of 1994 – 2012. And the result of the study obtained was based on regression and panel techniques. They concluded that government expenditure is not clearly related with economic growth in the European Union.

Abdulrasheed (2017), investigated the causality between government expenditure and government revenue in Nigeria. The study made use of aggregate public expenditure and total revenue from CBN statistical bulletin ranging from 1986 – 2015. The study established long run unidirectional relationships of Spend-Tax between government revenue and expenditure in Nigeria.

The work of Shakirat (2018), looked into government spending on infrastructure and economic growth in Nigeria. The study made use of GDP, government expenditure on transport and communication, education, health, agricultural and natural resources data from second and primary sources. The secondary data was collected from CBN statistical bulletin, unit root test and co-integration using Augmented Dickey – Fully and Philip – Porron model. Weighted least square was used to test the data. Primary data was collected and a statistical random sampling to select samples and descriptive statistic was used for data analysis. The result shows significant effects on economic growth from government spending on transport and communication, education and health infrastructure and spending on agricultural and natural resources indicating a significant inverse effect.

## III. RESEARCH METHODOLOGY

### 3.1 RESEARCH DESIGN AND MODEL SPECIFICATION

The research paper adopted the ex-post facto research design in this study. Secondary data was used for the research and collated from the Central Bank of Nigeria Statistical Bulletin, while the four variable regression models was used to test the contribution of oil revenue on sustainable economic development from 1981 – 2016.

The researchers, initial data range is 1981 – 2020, but it was limited to 2016 because the data of 2017, 2018, 2019 and 2020 when confirmed with other sources were contradictory and therefore, to achieve the objective of the research, the researchers stopped at 2016.

Sustainable economic development was disaggregated into recurrent expenditure, capital expenditure and consumer price index (CPI).

The model for the multiple regression analysis is given as:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu$ ……. (1)

Where:

Y = Dependent Variable

$\beta_0$ = Equation Constant

$\beta_1, \beta_2, \beta_3$ = Coefficients of Explanatory Variables

$\mu$ = Error Term

Given the multiple regression function and the proxies for:

Oil Revenue = OR

Recurrent Expenditure = RE

Capital Expenditure = CE

Consumer Price Index = CPI

The objective is to investigate the contribution of oil revenue on sustainable economic development in Nigeria.

The equation function is given as:

OR*f* (RE, CE, CPI) ……. (2)

Equation (2) is substituted into equation (1). As follows:

$OR = \beta_0 + \beta_1 RE + \beta_2 CE + \beta_3 CPI + \mu$ …….. (3)

Decision rule: we accept if P-value < 0.05, otherwise reject.

### 3.2 OPERATIONAL VARIABLES

Oil Revenue (Dependent Variable), most scholars used GDP and aggregate revenue. Oil is the mainstay of Nigeria economy and its revenue is very vital to national budget. Therefore the researchers, used oil revenue to investigate firsthand how the coming of oil has helped us achieve economic development sustainability.

Recurrent and Capital Expenditure (Explanatory Variables), recurrent consist of expenditure on goods and services that does not result in the creation of more wealth, this includes: wages and salaries, consumables, depreciations etc. while capital expenditure, is spending on assets for the creation of more wealth.

Consumer Price Index, this measure changes in the price level of market basket of consumer goods and services purchased by households. The CPI is a statistical estimate constructed using the price of a sample of representative items whose prices are collected periodically.

## IV. DATA PRESENTATION AND ANALYSIS

The data for analysis is presented in table 2 below:

**Table 2:** Oil Revenue, Recurrent Expenditure and Capital Expenditure (N' Billion) and Consumer Price Index

| YEARS | OIL REVENUE | RECURRENT EXPENDITURE | CAPITAL EXPENDITURE | CONSUMER PRICE INDEX |
|---|---|---|---|---|
| 1981 | 8.56 | 4.85 | 6.57 | 0.46 |
| 1982 | 7.81 | 5.51 | 6.42 | 0.53 |
| 1983 | 7.25 | 4.75 | 4.89 | 0.66 |
| 1984 | 8.27 | 5.83 | 4.10 | 0.77 |
| 1985 | 10.92 | 7.58 | 5.46 | 0.83 |
| 1986 | 8.11 | 7.70 | 8.53 | 0.88 |
| 1987 | 19.03 | 15.65 | 6.37 | 0.98 |
| 1988 | 19.83 | 19.41 | 8.34 | 1.51 |
| 1989 | 39.13 | 25.99 | 15.03 | 2.27 |
| 1990 | 71.89 | 36.22 | 24.05 | 2.44 |
| 1991 | 82.67 | 38.24 | 28.34 | 2.75 |
| 1992 | 164.08 | 53.03 | 39.76 | 3.98 |
| 1993 | 162.10 | 136.73 | 54.50 | 6.26 |
| 1994 | 160.19 | 89.97 | 70.92 | 9.82 |
| 1995 | 324.55 | 127.63 | 121.14 | 16.98 |
| 1996 | 408.78 | 124.29 | 212.93 | 21.95 |
| 1997 | 416.81 | 158.56 | 269.65 | 23.82 |
| 1998 | 324.31 | 178.10 | 309.02 | 26.20 |
| 1999 | 724.42 | 449.66 | 498.03 | 27.93 |
| 2000 | 1591.68 | 461.60 | 239.45 | 29.87 |
| 2001 | 1707.56 | 579.30 | 438.70 | 35.51 |
| 2002 | 1230.85 | 696.80 | 321.38 | 40.08 |
| 2003 | 2074.28 | 984.30 | 241.69 | 45.70 |

| | | | | |
|---|---|---|---|---|
| 2004 | 3354.80 | 1032.70 | 251.30 | 52.56 |
| 2005 | 4762.40 | 1223.70 | 519.50 | 61.95 |
| 2006 | 5287.57 | 1290.20 | 552.39 | 67.05 |
| 2007 | 4462.91 | 1589.27 | 759.32 | 70.66 |
| 2008 | 6530.60 | 2117.36 | 960.89 | 78.84 |
| 2009 | 3191.94 | 2127.97 | 1152.80 | 87.94 |
| 2010 | 5396.09 | 3109.38 | 883.87 | 100.00 |
| 2011 | 8878.97 | 3314.51 | 918.55 | 110.84 |
| 2012 | 8025.97 | 3325.16 | 874.83 | 124.38 |
| 2013 | 6809.23 | 3689.06 | 1108.39 | 134.92 |
| 2014 | 6793.82 | 3426.90 | 783.12 | 145.80 |
| 2015 | 3830.10 | 3831.95 | 818.37 | 158.94 |
| 2016 | 2693.91 | 4178.59 | 634.80 | 183.89 |
| 2017 | | | 979.5 | 214.30 |
| 2018 | | | | |
| 2019 | | | | |
| 2020 | | | | |

Source: CBN Statistical Bullet

Studying table 2 above, the researchers noted that the government spending is more on recurrent expenditure, than capital expenditure.

**Table 3**. Summary Statistics, using the observations 1981 - 2016

| Variable | Mean | Median | Minimum | Maximum |
|---|---|---|---|---|
| OR | 3516.43 | 570.615 | 7.25000 | 52287.6 |
| RE | 1068.57 | 313.880 | 4.75000 | 4178.59 |
| CE | 368.122 | 255.670 | 4.10000 | 1152.80 |
| CPI | 46.6661 | 27.0650 | 0.490000 | 183.890 |
| Variable | Std. Dev. | C.V. | Skewness | Ex. Kurtosis |
| OR | 8774.62 | 2.49532 | 4.95842 | 25.0685 |
| RE | 1375.25 | 1.28700 | 1.07738 | -0.364890 |
| CE | 372.300 | 1.01135 | 0.654128 | -0.940645 |
| CPI | 52.5800 | 1.12673 | 1.07208 | 0.0496972 |

Source application Software: Gretl (2021)

The summary statistics in table 3, shows that the mean and median displayed a high level of consistency, as their values are within the range of minimum and maximum values of the series. The standard deviation is low. All the series are rightly skewed. They are all positive and it shows that all the series are symmetrical around the mean. Kurtosis of oil revenue 25.0685 is more than 3, it imply that is not normally distributed.

To run regression analysis, various data assumption of regression model must be check if the data analysis is satisfied. The Durbin Watson Statistic of 2.052028 reveals autocorrelation among the variables. Linearity is checked by scatter diagram.“Condition of regression analysis at least 0.3 correlations should be present among variables” Chauhan and Amit (2014).

**Table 4:** Correlation coefficients, using the observations 1981 - 2016
5% critical value (two-tailed) = 0.3291 for n = 36

| OR | RE | CE | CPI | |
|---|---|---|---|---|
| 1.0000 | 0.2880 | 0.3471 | 0.3112 | OR |
| | 1.0000 | 0.8768 | 0.9838 | RE |
| | | 1.0000 | 0.8650 | CE |
| | | | 1.0000 | CPI |

Source application Software: Gretl (2021)

The table above shows positive correction coefficient of all the variables in the research study. This show a strong relationship among the variables and variable are suitable for conducting regression analysis.

**Table 5:** OLS, using observations 1981-2016 (T = 36)
Dependent variable: OR

| *Coefficient* | *Std. Error* | *t-ratio* | *p-value* |
|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Const | -434.179 | 2238.7 | -0.1939 | 0.84745 |
| RE | -5.66985 | 6.08272 | -0.9321 | 0.35825 |
| CE | 9.44216 | 8.01947 | 1.1774 | 0.24772 |
| CPI | 140.002 | 152.45 | 0.9184 | 0.36531 |

| | | | |
|---|---|---|---|
| Mean dependent var | 3516.425 | S.D. dependent var | 8774.616 |
| Sum squared resid | 2.31e+09 | S.E. of regression | 8489.299 |
| R-squared | 0.144206 | Adjusted R-squared | 0.063975 |
| F(3, 32) | 1.797388 | P-value(F) | 0.167523 |
| Log-likelihood | -374.6379 | Akaike criterion | 757.2758 |
| Schwarz criterion | 763.6099 | Hannan-Quinn | 759.4866 |
| Rho | -0.031616 | Durbin-Watson | 2.052028 |

Source application Software: Gretl (2021)

The adjusted $R^2$ or coefficient of determination of 0.06 (table 5) shows that about 6% of the variation in oil revenue is explained by the predictor variables recurrent expenditure, capital expenditure and consumer price index. The unexplained variation of about 94% is a result of variables outside the model. This implies that there is poor/weak correlation between oil revenue and sustainable economic development in Nigeria.

**HYPOTHESIS RESULT**

The hypothesis for the study: Oil revenue has not significantly contributed to sustainable economic development in Nigeria. Was tested and the result shows that p-value for RE is 0.35825, CE is 0.24772 and CPI is 0.36531 when compared with the critical value of 0.05 (0.35825, 0.24772, 0.36531> 0.05). We therefore accept the null hypothesis that oil revenue has not significantly contributed to sustainable economic development in Nigeria irrespective of the large amount earned (Pascual Saez et.al 2017, Taofik 2018, Shakirat 2018).

## V. CONCLUSION

Oil revenue has contributed so much to the national income to the extent that the whole budget is benchmarked on the global oil price and local production. The quantity taken from the earth and the effect on environment called for concern if the future generation will see the oil revenue working in Nigeria as in other countries like United Arab Emirate. We lose torch of the groundnut production, palm oil and cocoa. They are all like fairly tale to those born from 70s. Will that be the fate of oil?

The need to investigate the contribution oil revenue on sustainable economic development is very vital to avoid the grave mistake of our glory days in agriculture which has been restricted to the textbook and stories. Even as we strive to meet our present needs, we must not make it hard or impossible for the future generations to meet their needs likewise. On this premise the researchers made the following recommendations:

- More investment should be committed to capital expenditure.
- Recurrent expenditure should be kept low as possible.
- Poverty alleviation programmes with practical skills development should be designed and implemented to reduce present day poverty.
- Capital expenditure programmes that will stimulate the economic in general should be sponsored.
- Economic diversification is very vital to reduce dependence on oil.

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