

FEDERAL GOVERNMENT FINANCING: IMPLICATIONS ON PUBLIC EDUCATIONAL GROWTH IN NIGERIA

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Abstract: Finance is the blood in the heart of any organization and sector and as such proper funding is required to ensure the growth of any system. Thus, this study examines the implication of government revenue on public educational growth in Nigeria, from 1981 to 2021. Annual time series data were obtained from the Central Bank of Nigeria's statistical bulletin. The Robust Least Squares was applied in the impact analysis. This was in addition to the Pearson correlation test of relationship. Empirical findings of the study reveal the existence of a long-run relationship between government financing and public educational growth in Nigeria. Furthermore, the study found that oil revenue and non-oil revenue have positive and significant impact on public educational growth in Nigeria. It can therefore be concluded that government revenue spurs public educational growth in Nigeria. The study recommends that Nigeria's Government should align with international standard on funding of education by increasing the current allocation and spending on the educational sector in Nigeria.

Keywords: Public education, Educational growth, Federal government financing, Oil and non-oil revenue, Robust Least Squares.

1. INTRODUCTION

In any nation, education governs a country's progress and possibilities of economic development. The high quality of education will guarantee the societal stability and reassures personal success, professional and social development. To attain the aforementioned, government financial resources

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must be accomplished by effectively utilizing of resources Educational growth is an important requirement for the development of a democratic society. Hence all successful countries place great emphasis on proper effective education management (Abuselidze, 2022).

Countries like Germany which is the largest contributor to education continues to allocate the major share of its finance on postsecondary education, particularly on scholarships for students from developing nations to study in German higher education institutions (Hares & Rossiter, 2021). Amaghionyeodiwe (2019) noted that similar to other parts of Africa, the government provides funding for education in the West African region and it distributes its public education resources in accordance with the priorities and needs of the nation. Likewise in Nigeria, basic education is financed concurrently by federal, state, and local governments, with separate financing mandates and obligations for each tier. The federal government contributes 50% while the state and local government as 30% and 20% respectively (Global Partnership for Education, GPE, 2021).

However, over the years, the education sector in Nigeria has suffered from inadequate financing due to several reasons. For instance the COVID-19 pandemic puts a burden on national economies and budgets, making it more important than ever to safeguard domestic education budgets and guarantee that national governments continue to place a high priority on education (GPE, 2021). In 2020, the federal government of Nigeria allocated 568 billion naira (about USD 1.5 billion) on education. The pandemic however, caused this budget to be reduced to 509 billion naira (about \$1.34 billion). This resulted in loss of jobs by temporary staff members and also increased school fees in various institutions thereby increasing education disparity (GPE, 2021).

Furthermore, the federal government of Nigeria proposed the sum of $\mathbb{N}1.79$ trillion for the education sector in the 2023 budget, representing about 8.8 per cent of the total \mathbb{N} 20.5 trillion proposals (Suleiman, 2022). This budgetary allocation to education is the highest to the sector since 2015. Nevertheless, this is less than half of the percentage proposed by UNESCO for expenditure on the sector (Suleiman, 2022). In addition to the challenges facing educational in Nigeria, attacking educational facilities in Northeast Nigeria have killed countless students and teachers and ruined infrastructure worth billions of naira. The damage requires funding to repair, hire more teachers, and improve security to ensure the safety of lives and properties (GPE, 2021).

It is therefore imperative to examine the impact of federal government financing on public educational growth in Nigeria. Consequently, the study has the objectives of investigating the impact of oil revenue and non-oil revenue on public educational growth in Nigeria. This paper is divided, into five parts. The first section presents the introductory part while the literature review was presented in the second aspect. The methodology, results and discussion were presented in the third and fourth sections while the conclusion and recommendations was presented in the last section.

2. LITERATURE REVIEW

The global best practice for basic education financing comprises a combination of both traditional and the innovative financing options. However, the degree of adoption of the innovative financing appears to vary across countries (Chukwuka, *et al.*, 2017). The international campaign for increasing mobilization of funding public education and fulfil the basic human right of free and compulsory universal basic education at least in the elementary stages are yet accomplish. However, rising population and high global economic uncertainties have limited the ability of various countries to meet this important global objective. Despite the effort of international donors and multilateral agencies to bridge the funding gap for basic education in developing countries, education financing gap is still wide in several countries, including Nigeria (Chukwuka, *et al.*, 2017).

The sources of fund in education are generated from different sources. The major one at all levels of government is public revenue from oil and nonoil revenue. Education funds are reported to be distributed among primary, secondary and tertiary educational levels in the proportion of 30%, 30% and 40% respectively (Ubogu & Veronica, 2018). The fundamental rational for public funding of education is to equip people with the requisite knowledge, skills and capacity to enhance the quality of life and increase productivity and capacity to gain knowledge of new techniques for production so as to be able to participate evocatively in the development process (Ubogu & Veronica, 2018).

Educational funding refers to outflow of resources from federal, state and local government to the education sector. Educational funding is that division of public finance that accesses the government revenue and expenditures of the public sector to achieve the desired goals in educational system (Musa & Maji, 2018). It is significant to note that educational expenditure is a feature of educational finance that deals with how the amount allocated through

money budgeted to the education sector is spent. Expenditure on education is determined by the government revenue either from oil revenue and nonoil revenue which is classified into capital and recurrent expenditure. Capital expenditure on education sees as the investment on real assets such as building of schools, facilities like social and economic infrastructures that contribute to the learning while recurrent expenditure on education refers to the amount allocated to the payment of lecturers/teachers' salaries and maintenance of existing facilities (Musa & Maji, 2018).

Theoretically, this study underpinned by pure theory of public expenditure which propounded by Samuelson (1950). He was particularly concerned with the allocation of resources between the public and private sectors. According to Samuelson, there are two types of goods (private good and public good). Public good is a good whose consumption does not diminish its availability to other consumers that all enjoy in common. He further upholds that there is rivalry in the consumption of private goods not in the consumption of public goods. He further emphasis that education is not a pure public good but a social service which yields direct and indirect benefits to the individuals, the society and the economy as a whole. Therefore government has a vital role to carry out in ensuring satisfactory provision of education. According to Odusola (1998), the duty of funding education in Nigeria has solely been that of the public sector. Education is an costly social service and requires adequate financial provision from all tiers of government to meet the needs of the education sector.

Empirically, some studies have focused on the subject matter of educational finance. For instance, **Babarinde**, *et al.* (2022) explores the effect of oil revenue and public debt on public educational investment in Nigeria for the period, 1981 to 2021. The study applied Canonical Cointegrating Regression (CCR) technique in the analysis of the annual time series data retrieved from Central Bank of Nigeria's statistical bulletin. Empirical findings of the study confirm the existence of a long-run relationship among oil revenue, public debt and public educational investment in Nigeria. Furthermore, oil revenue was found to exert positive but non-significant effect on public educational investment and both public debt and non-oil revenue positively and significantly affect public educational investment in Nigeria. The study concluded that public debt and non-oil revenue are significant factors promoting public educational investment in Nigeria.

Abdulmajeed, *et al.* (2022) study the relationship between international trade and public educational investment in Nigeria for the period, 1981 to

2021 by applying Ordinary Least Squares (OLS) regression and pairwise Granger causality test to the annual time series data obtained from Central Bank of Nigeria's statistical bulletin. The study revealed the existence of a longrun relationship between international trade and public educational investment in Nigeria. Furthermore, import and export trades positively and significantly affect public educational investment with both export and import trades having unidirectional causal relationship with public educational investment in Nigeria. The study concludes that international trade is a catalyst to public educational investment in Nigeria.

Abuselidze (2022) study the disadvantages of the higher education funding system and develop some recommendations for solving problems. The study findings indicate that in order to assess the effectiveness of the expenditure by state, there have been studied some educational programs on which state funding is extended. The study includes an assessment of the level of academic achievement of state-funded educational program students and their employment prospects. As a result of the research, we have a clear idea of how effective the state funding programs for higher education in Georgia are and in what direction the changes are to be implemented.

Thomas (2020) assesses the trends and nature of public funding of higher education in Nigeria. The theoretical review of the study supported the increase in public investment in higher education for many reasons. First, most societies believe that education is a public service; hence, its provision is not and needs not be justified on economic ground alone. More so, schooling, especially at the tertiary level, has a large number of direct beneficial effects beyond raising economic output, such as lowering child mortality, hedging options and nonmarket returns among others. The study however recognises the fact that government alone cannot provide all the resources needed to increase access into and promote quality of higher education, thus the need for alternative financial mechanisms to complement public funds in higher education.

Abubakar, *et al.*, (2019) investigates how education has been seen by the Federal Government of Nigeria and how it can use to mound an individual and nation in general positively. The study depended upon the secondary source of data where data from books, projects, journals, and other related documents were consulted. The study concludes and recommends the boasting or improving and development of the educational system in Nigeria such as funding, the motivation of the teachers, provision of a guideline, organizing seminar, workshop, conference, etc.

Musa, and Maji (2018) evaluates the impact of educational funding on national development in the 21st Century Nigeria. The study used annual time series data from 1986-2015, sourced from World Bank, Central Bank of Nigeria Statistical Bulletin and National Bureau of Statistics. The result revealed a long-run relationship among the variables with the empirical result shows that human capital and recurrent expenditure on education had a positive and statistically significant effect on economic growth in Nigeria. The study therefore recommended an urgent need to instill fiscal discipline in the education sector to checkmate the level of corruption. Also, government should increase budgetary allocation to education in the 21st century to meet up the United Nations' benchmark.

Ubogu and Veronica (2018) study the past and present situation of financing education in Nigeria, the implications of inadequate funding and possible strategies of funding education. Thus, the study suggested that all stakeholders, parents and guardians, the society in general, the private sector and non-governmental agencies must become involved in the financing of education in Nigeria.

<u>Omotor</u> (2017) examines the profile of educational expenditure in Nigeria (1977 – 1998). An education expenditure model was constructed and tested using the ordinary least squares (OLS) technique. The estimates though not overwhelmingly robust, it was discovered that federal government revenue are the singular significant determinant of educational expenditure model. It is the recommendation of this paper that other sources of financing education should be encouraged. Solis (2017) analyse the effects of financial aid on enrolment, persistence and graduation patterns of students in Chile, used national data and applied a regression discontinuity design. The study found that making loans accessible to students has a formidable positive causal effect on enrolment, and that access to loans closed the enrolment gaps for the lowest income students.

Eme and Ike (2017) assessed the comparative Nigeria's budgetary allocations to the Education sector from year 1980 to 2016. Simple percentage method was adopted in the empirical investigation. Data used are federal government recurrent Expenditure from 1980 to 2016 sourced from Central Bank of Nigeria CBN Statistical Bulletin (2000 - 2011), Budget allocations from the Budget office (1980-2016). The study showed that Nigeria's budgetary allocation was less than the 26 percent recommended by the United Nations Educational Scientific and Cultural Organisation (UNESCO) in the years

under review. The study also discovered that the allocated funds were not fully implemented by the relevant agencies. The study recommended among that country should implement at least the 26 percent target in its yearly budgets. In addition, more funds should be allocated for capital projects and there is the need for recommitment and fiscal discipline in the formulation and implementation of budgets.

Sani (2015) examines the present financial status of the universities to establish whether there is adequacy or inadequacy of funds to universities in Nigerian. The analysis is based on a secondary data and covers 2010-2011academic session and both descriptive and inferential statistic was used. The result reveals that university education is still not adequately funded to meet up with the international benchmark and best practice. The paper concludes that both private and public universities should intensify effort in revenue generation and also they should efficiently utilize the little resources available to them.

3. METHODOLOGY

This study examine the impact of federal government financing on public educational growth in Nigeria using annual time series data from 1981 to 2021 extracted from Central Bank of Nigeria statistical bulletin. The Robust Least Squares (RLS) technique was employed. The preliminary analyses of this study are descriptive statistics, unit root test via Augmented Dickey-Fuller (ADF) and Johansen cointegration test to determine the statistical relationships in term of description and stationarity among variables of study respectively.

The ex-post facto research design was adopted. In this study, oil revenue is termed as the total proceeds realised from oil and gas by the government of the federation while non-oil revenue is measured as the total amount of the government revenue other than oil revenue. Public education growth is measured as the total expenditure of government on public education. The two independent variables are public debt and oil revenue and the dependent variable is public educational investment. The functional relationship among the variables are expressed in equation (1) where public educational growth is expressed as a function of oil revenue and non-oil revenue.

$$EDUDEV_{f} = \Psi_{0} + \Psi_{1} OILREV_{f} + \Psi_{2} NOILREV_{f} + u_{f}$$
(1)

Where; EDUDEV- is public educational growth in Nigeria; OILREV= Oil revenue in Nigeria;

NOILREV = Non- oil revenue in Nigeria; Ψ_0 = intercept of the model, $\Psi_1 - \Psi_2$ are parameters of the model; μ_1 = the error term.

Theoretically, all the two explanatory variables (OILREV and NOILREV) are expected to promote public educational growth in Nigeria, ceteris paribus. Hence, $\Psi_1, \Psi_2 > 0$. This apriori expectation is based on view that oil revenue and non-oil revenue should provide needed funds for financing public education expenditures.

4. **RESULTS AND DISCUSSION**

	EDU-DEV	OIL-REV	NOIL-REV
Mean	148.2076	2533.519	1246.581
Median	57.95664	1591.676	500.8153
Maximum	646.7475	8878.970	6397.140
Minimum	0.162154	7.253000	2.984100
Std. Dev.	193.8386	2694.562	1650.065
Skewness	1.238292	0.669370	1.338103
Kurtosis	3.330855	2.165192	3.927920
Jarque-Bera	10.66501	4.252259	13.70615
Probability	0.004832	0.119298	0.001056
Observations	41	41	41

4.1. Descriptive Analysis

Source: Authors' computation via E-views 10 (2023).

The descriptive statistics in Table 1 show that all the variables (Public educational development, oil revenue and non-oil revenue) of study average values were less than their corresponding standard deviation values signifying wide dispersion of the series from their mean. Public educational growth sorts from N0.162154billion to N646.7475billion and N7.253000billion and N8878.970billion constitute the minimum and maximum values of oil revenue in Nigeria between 1981 and 2021. The minimum and maximum values of non-oil revenue range at N2.984100billion and N6397.140billion respectively,. The skewness statistics of the oil revenue reported normality as the distribution is symmetric around the mean, whereas, public educational growth and non-oil revenue indicate mesokurtic due to normal distribution whereas, oil revenue reported lower value. The Jarque-Bera statistics reveals that aside public educational growth and non-oil revenue) of study documented the normality test.

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
OILREV	8.64E-06	3.926027	2.059673
NOILREV	2.30E-05	3.264600	2.059673
С	57.06601	1.920015	NA

4.2. Variance Inflation Factors

Source: Authors' computation using E-Views 10 (2021)

This study performed a collinearity diagnostic test to see if there is multicolinearity problem. The results indicates that the VIF with a value of 2.05 for oil revenue and 2.05 for non-oil revenue were consistently smaller than the value of 10 suggested by Neter *et al.* (1996) and Cassey and Anderson (1999). Similarly the tolerance limits of 3.92 for oil revenue and 3.26 non-oil revenue were also found to be far above the minimum threshold of 0.2. So the variables were positively correlated

4.3. Unit root tests

	Variables	ADF test (Prob)	Order	Stationarity at
	EDU-DEV	1.744698 (0.9996)	-	-
	OILREV	-1.472679 (0.5370)	-	-
Level	NONOIL	4.703240 (1.0000)	-	-
First Diff	EDU-DEV	-4.662833 (0.0005)	I(1)	1st Diff
	OILREV	-6.460439 (0.0000)	I(1)	1st Diff
	NONOIL	-6.101505 (0.0001)	I(1)	1st Diff

The unit root test result using Augmented Dicker Fuller (ADF) is presented as follows:

Source: Authors' computation via E-views 10 (2023).

Table 2 shows that all the variables (Public educational development, oil revenue and non-oil revenue) were not stationary at level at 5% significance until after first difference, Thus, all the variables become stationary[I(1)] at 5% level of significance.

4.4. Trends Analysis of Public Educational Growth in Nigeria

The trend of public educational growth in Nigeria is presented using the line graph as follows:



Source: Author's computation via E-views 10 (2023).

The trend in figure 1 indicates that public educational growth which was very low from 1985 to 1990 increase to some extent between 1990 and 1995, grew up between 1995 and 2000, rose up from 2000 and 2005, increase in growth between 2005 and 2010 but decline from 2010 to 2015. Thereafter, increase from 2015 till study period.

Trends Analysis of Oil Revenue in Nigeria

The trend of oil revenue in Nigeria is presented using the line graph as follows:



Figure 2: Trend of Oil Revenue in Nigeria 1981-2021

Source: Author's computation via E-views 10 (2023).

The trend in figure 2 indicates that oil export which was very low from 1985 to 2000 fluctuates marginally between 2000 to 2010 grew between 2015 but the growth has not been stable and can due to sporadic shocks in international oil price.

Trends Analysis of Non-oil Revenue in Nigeria

The trend of non-oil revenue in Nigeria is presented using the line graph as follows:



Figure 3: Trend of non-oil revenue in Nigeria 1981-2021 NOILREV

The trend in figure 3 indicates that non-oil revenue since 1980 to 2015 was not being stable. Begin to increase thereafter up till 2021 when it drops very sharply before it starts to rise.

Series: EDUDEV OILREV NOILREV					
Unrestricted Cointegration Rank Test (Trace)					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.	
None *	0.741072	77.40063	29.79707	0.0000	
At most 1	0.455265	24.70369	15.49471	0.0016	
At most 2 0.025637 1.012900 3.841466 0.3142					
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level					
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)					

Table 4: Johansen Unrestricted Cointegration Rank Test

Hypothesized		Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.	
None *	0.741072	52.69694	21.13162	0.0000	
At most 1	0.455265	23.69079	14.26460	0.0012	
At most 2	0.025637	1.012900	3.841466	0.3142	
Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level					
* denotes rejection of the hypothesis at the 0.05 level					

Source: Author's computation via E-views 10 (2023).

Table 3 indicates the maximum eigenvalue and the Trace statistics of the Johansen unrestricted cointegration rank test. The result shows that both the Max-eigenvalue and Trace tests indicate one cointegrating equation at the 0.05 level, which implies that there is a long-run equilibrium relationship among oil revenue, non-oil revenue and public educational growth in Nigeria in the study period.

Regression Results

In order to determine the federal government financing: implications on public educational growth in Nigeria, the Robust Least Squares (RLS) technique was applied to the time series data and the results are presented in Table 4.

Dependent Variable: EDUDEV					
Variable	Coef.	Std. Error	t-Statistic	Prob.	
OILREV	0.010336	0.000589	17.56181	0.0000	
NOILREV	0.108355	0.000961	112.7393	0.0000	
С	-1.312757	1.512392	-0.868001	0.3854	
R-squared			0.840333		
Adjusted R-squared			0.831930		

Table 5: Robust Least Squares Results

Source: Author's computation via E-views 10 (2023).

As described in the regression results in Table 4, oil revenue and non-oil revenue with coefficient values of 0.010336 and 0.108355 with corresponding probability 0.0000 and 0.0000 respectively, means that oil revenue and non-oil revenue is positively signed and the relationship is statistically significant. This implies that the effect of oil revenue on public educational growth is positively significant at 1 percent level. In addition, the Robust Least Squares (RLS) analysis suggests that both oil revenue and non-oil revenue found significant elements that supporting public education growth in Nigeria in the study period.



Table 6: Post Estimation Diagnostics

The post estimation diagnostic tests' results in table 5, show generally that the model passes normality tests (with J-B's p-value (0.3503) higher than the ideal significance level). However, the stability of the model examined through the CUSUM graph, shows that the parameters are fairly stable over time. Since the plot of the graph lies within the 5% critical boundaries, therefore the nonrejection of the null hypothesis of parameter stability.

Null Hypothesis	Obs	F-Sta.	Prob.
LOGOILREV does not Granger Cause LOGEDUDEV	39	4.03764	0.0267
LOGEDUDEV does not Granger Cause LOGOILREV		0.96047	0.3929
LOGNOILREV does not Granger Cause LOGEDUDEV	39	9.73449	0.0005
LOGEDUDEV does not Granger Cause LOGNOILREV		6.96876	0.0029
LOGNOILREV does not Granger Cause LOGOILREV	39	0.04025	0.9606
LOGOILREV does not Granger Cause LOGNOILREV		1.09917	0.3447
Source: Author's computation via E-views 10 (2023)			•

Table 7: Granger Causality Model Estimation

The result of the Granger causality model of the relationship between Federal Government financing and educational growth in Nigeria is presented in Table 6. The result of the test shows that oil revenue and non-oil revenue granger-causes public educational growth but public educational growth does not Granger-cause oil revenue. The study found that there is a unidirectional causality running from oil revenue to public educational growth. However, there bidirectional causality running from non-oil revenue to public educational growth in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

This study examines the federal government financing: implications on public educational growth in Nigeria using annual time series data from 1981 to 2021 extracted from Central Bank of Nigeria statistical bulletin. In order to determine the impact of oil revenue and non-oil revenue in growing public educational system in Nigeria, the Robust Least Squares (RLS) technique was employed and the regression model was estimated after preliminary tests of test descriptive statistical, Augmented Dickey-Fuller unit root test, and Johansen cointegration test. The results of stationarity test of the variables indicated that all the variables to be stationary in first difference. Johansen cointegration test results show the existence of long-run equilibrium relationship among oil revenue, non-oil revenue and public education growth in Nigeria. The Robust Least Squares result demonstrates that oil revenue and non-oil revenue were positively significant. In addition, the Robust Least Squares (RLS) analysis suggests that both oil revenue and non-oil revenue found significant elements that supporting public education growth in Nigeria in the study period.

In conclusion, this study has established that oil revenue and non-oil revenue found key factors influence public education growing in Nigeria in the study period. Furthermore, the study found that oil revenue and nonoil revenue have positive and significant impact on public educational growth in Nigeria. It can therefore be concluded that government revenue spurs public educational growth in Nigeria. The study recommends that Nigeria's Government should align with international standard on funding of education by increasing the current allocation and spending on the educational sector in Nigeria.

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