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PUBLIC EXPENDITURE IN EDUCATION AND ECONOMIC GROWTH IN NIGERIA

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ABSTRACT

The paper investigated the impact of public expenditure on education on economic growth in Nigeria from 1980-2017. In doing this, the study estimated a growth model. The estimated model has government capital and recurrent expenditure on education as the explanatory variables while real gross domestic product is the dependent variable. The study used data from the Central Bank of Nigeria statistical bulletin and applied the econometrics methods of OLS and granger causality test. The OLS results showed that the coefficients of government capital and recurrent expenditure on education were statistically significant and positively related to real gross domestic product. Also, the pairwise granger causality results showed unidirectional causation between government capital expenditure on education and real gross domestic product as well as government recurrent expenditure on education and real gross domestic product. In the light of these discoveries, it was suggested amongst others that, government should increase her financing in the education sector, principally in the tertiary education on innovative research work to advance quick development for industrial changes and subsequently economic growth and development in Nigeria.

1. INTRODUCTION

Government expenditure as a component of aggregate demand encompasses all spending at each level of government to meet the goal of stable and long-run growth. Thus, government expenditure influences the distribution of income and wealth in the economy (Gbanardo, 2007). Government expenditure also refers to the expenditure incurred by public authorities such as central, state and local governments to satisfy the collective social wants of the people (Ajie, Akekere & Ewubare, 2014). This is essentially spending made by the administration of a nation on residents' needs, such as pension, education, provision of infrastructures among others. Meanwhile, public expenditure was highly limited in most economies of the world before the mid-twentieth century due to the act of "free enterprise" of the market powers. But the lingering great depression of the 1930s rained doubts about the effectiveness of the forces of demand and supply in allocating resources. This incited Keynes (1936) to call attention to the significance of public expenditure in determining the degree of income and distribution in the economy.

Keynes (1936) contended that expansion in government spending can be a powerful tool to invigorate total demand for a dormant economy and to achieve desired consequences for the private sector. Thus,

government could turn around financial downturns by acquiring cash from the private sector and afterward restoring the cash to the private sector through different spending programs. On the other hand, endogenous growth models such as Barro (1990), anticipated that merely those useful administration expenditures will directly affect the long-run growth rate.

Meanwhile, one of the aspect of government spending that will bring about growth and development is human capital, particularly investment in education to provide a better quality of life for every citizen of any nation. Also, a well-educated populace has better life expectancy and lower youngster death (Cochrane, 1986; Sackey, 2005). Accordingly, education ought not to be understood as only the securing of skill or different abilities or the planning of individual for the work advertise. It must be viewed as a procedure wherein an individual is locked in for all intents and purposes from cradle to the grave (Kalu, 2001).

Over the years, Nigerian's problem has been government low level of investment in education. For instance, recent statistics from the ministry of finance and CBN publications showed that despite the increase in the yearly budgetary allocation in Nigeria, only 7.2 % in 2011, 8.4% in 2012, 8.7% in 2013, 8.4% in 2014, 4.2% in 2016 and 4.4% in 2018 of the Nigerian annual budget was allocated to the education sector against the 26 percent UNESCO recommendation (CBN, 2018). Since the nation cannot appropriate at least 20% to the education sector on the yearly basis, there is no doubt that there will be decrease in literate level and hence an increase in the illiteracy level. Also, the issue of poor funding in the tertiary institution will has reduce the quality of research and development. The aftermath effect of this is production of unskillful and unemployable graduates. Similarly, Inimino, Tubotamuno and Shaibu (2017) opined that "the educational sector in Nigeria faces growing deficit when likened with the nation's population, demographic structure and the increasing number of schools". Hence, government's policy aimed at empowering the public with the needed skills to produce goods and services has notreceived adequate consideration. Also, the issue of poor funding is well noticed in the inadequate number of public schools built across the nation as well as the numbers of teachers and lecturer employed to teach/lecture in those schools. Due to the inadequate learning rooms in all the public institution of learning, overcrowding in classrooms from primary to universities has been the order of the days. The students-tutor ratio remains very high at the primary and secondary schools (far above 40:1) and in the universities (far above United Nations Educational, Scientific and Cultural Organization-UNESCO's 8:1) and available academic staff, particularly in the university system, is completely insufficient (Inimino, Tubotamuno & Shaibu (2017)). The penalties of poor funding in the education sector cannot be underscored. This is because, the poor funding of education sector which reflects in the area of poor state of the infrastructural facilities, poor remuneration and staffing amongst other has resulted to recurrent strikes by virtually all the academic unions such as; Nigerian Union of Teachers (NUT), Academic Staff Union of both the Universities and polytechnics (ASUU & ASUP) and Non- Academic Staff Union of both the Universities and Polytechnics. The above state of affair has the tendency to increase the rate of illiteracy and reduce the marginal productivity of the workers in the nation. This will, in turn, lead to low; real income, savings and investment. It is this worrisome situation that necessitated this research work "the effect of public education expenditure on economic growth in Nigeria". The objectives of this paper were to; evaluate the impact of both capital and recurrent public education expenditure on economic growth in Nigeria between 1980 and 2017. The paper is divided into five sections, namely, introduction, empirical examination of government expenditure and economic growth, methodology, results and discussion as well as concluding remark.

II. EMPIRICAL EXAMINATION OF GOVERNMENT EXPENDITURE AND ECONOMIC GROWTH

Various investigations have concentrated on the connection between government education expenditure and economic growth in developed underdeveloped and developing countries. The results of such studies differs. For instance, Inimino, Tubotamuno and Shaibu (2017) analyzed the effect of state-funded on education on economic growth in Nigeria with the utilization of ECM and Granger Causality test. The ECM result uncovered that government capital education expenditure and government recurrent education expenditure have significant relationship with economic growth. But a unidirectional causation exists between government capital education expenditure and GDP, government recurrent education expenditure and GDP as well as gross capital formation and GDP. Also, Ojewumi and Oladimeji (2016) empirically examined the effect of government funding on the growth of education in Nigeria. The data used spanned from 1981 to 2013 and were obtained mostly from the publications of World Bank, Central bank of Nigeria. OLS econometrics technique was used to analyze the data. The major finding showed that the impact of both capital and recurrent expenditure on educational growth were negative in Nigeria for the studied period.

Gylych, Modupe and Semiha (2016) used OLS to scrutinized education and economic growth in Nigeria. The study revealed statistically significant relationship between GDP and the explanatory variables (capital expenditure on education, recurrent expenditure on education, primary school enrolment and secondary school enrolment) exception of primary school enrolment. Also, Imoughele and Ismaila (2013) inspected the impact of government spending in education on monetary development in Nigeria from 1980 to 2010 with the utilization of Johansen cointegration, unit root test and ECM. The observational outcomes demonstrated that there is for quite some time run connection between total national output and interest in Nigeria instruction. Also, the study showed that Nigeria recurrent and capital educational expenditure had a direct and insignificant effect on Nigeria economic growth. Lawal and Wahab (2011) analyzed the connection that is built up among instruction and financial development in Nigeria. Time arrangement information was gathered somewhere in the range of 1980 and 2008, and Ordinary Least Squares procedure was utilized to evaluate the model. It was found that training ventures have immediate and huge effect on financial development in Nigeria. Also, Babatunde and Adefabi (2005) examined long time connection among education and monetary development in Nigeria somewhere in the range of 1970 and 2003 through the use of Johansen co-combination procedure and ECM. The results showed long run connection between education and monetary development. An accomplished workforce appears to fundamentally impact on monetary development both as a factor in the production function and factor profitability.

Srinivasan (2013) analyzed the causal nexus between government expenditure and financial development in India with the use of cointegration and granger causality approaches from 1973-2012. The Cointegration test result affirms the presence of log run balance connection between government expenditure and financial development in India. The observational outcomes dependent on the causality test showed single direction causality runs from financial development to government expenditure. Loto (2011) inspected the effect of sectoral government consumption on financial development in Nigeria for the period, 1980-2008 and applied Johansen co-mix procedure and ECM. The outcomes induced that in the short run, consumptions on agriculture and training was contrarily identified with financial development. Notwithstanding, uses on wellbeing, national security, transportation, and correspondence were decidedly identified with monetary development, however the effects were not measurably critical. Bakare (2012) uses Spearman rank correlation coefficient

approach to deal with the demand for education and economic growth in Nigeria. His findings revealed that there is positive correlation between demand for education and economic growth. Also, Adelakun (2011) on human capital improvement and financial development in Nigerian detailed that complete government consumption on wellbeing and education and the enrolment pattern of tertiary and elementary school as intermediary for human capital has a robust association with monetary development. Dauda (2010) examined investment in education and GDP in Nigeria from 1977 to 2007 with Johansen co-integration and error correction techniques. The result showed that educational capital has positive and significant effect on GDP.

Ararat (2007) dissected the effect of education on financial development in the two biggest economies in both Russian Federation and Ukraine. This investigation evaluates the model of endogenous monetary development and regression analysis. The outcomes showed that there is no huge effect of education accomplishment on monetary development. The outcomes from the system of equation showed that an expansion in access of populace to advanced education brings positive outcomes for the per capita GDP development in the long haul.

III. METHODOLOGY

The data required for this study are time series data which consist of gross domestic product to measure economic growth in Nigeria as well as government capital and recurrent expenditure in education to measure public education expenditure. All data which spanned between 1980 and 2017 were sourced from CBN statistical bulletin. The paper employs the econometrics methods of OLS multiple regression analysis and Granger causality test to examine the impact of public education expenditure on economic growth. In doing this, it was assumed that public education expenditure positively related and impacted significantly on economic growth as stated in the apriori. This implies that a higher growth level of public education expenditure will result into an increase in economic growth.

Model Specification

The model for the study was stated thus;

$$RGDP_t = \alpha_0 + \alpha_1 GCEX_t + \alpha_2 GREX_t + \mu_t \quad (1.1)$$

Where; $RGDP_t$ = Real Gross Domestic Product, $GCEX_t$ = Government Capital Expenditure on Education, $GREX_t$ = Government Recurrent Expenditure on Education α_0 = Constant term, α_1, α_2 , are Regression Coefficient of independent variable and μ_t = Stochastic Error Term.

On the apriori, we expect $\alpha_1 > 0$ and $\alpha_2 > 0$

Unit Root Test

Before doing granger causality analysis, it is necessary to test the stationarity of the series. The Augmented Dickey-Fuller (1979) test was employed to infer the stationarity of the series. The general form of ADF is estimated by the following regression

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha_i \Delta y_i + \delta_t + U_t \quad (1.2)$$

Where: y is a time series, t is a linear time trend, Δ is the first difference operator, α_0 is a constant, n is the optimum number of lags in the independent variables and U is random error term.

The Granger Causality Test

Granger causality test shows the direction of effect between two-time series. Such effect could be bi-directional, uni-directional and independence causality. The general form of Granger causality is estimated by considering two variables RGDP and GCEX in the following regressions:

$$RGDP_t = \sum_{t=1}^n \Psi_1 GCEX_{t-1} + \sum_{t=1}^n \Omega_1 RGDP_{t-1} + \varepsilon_{1t} \quad (1.3)$$

$$GCEX_t = \sum_{t=1}^n \omega_1 GCEX_{t-1} + \sum_{t=1}^n \theta_1 RGDP_{t-1} + \varepsilon_{2t} \quad (1.4)$$

Where it is assumed that the disturbances ε_{1t} and ε_{2t} are uncorrelated, the two variables case is called bilateral causality. Also, from the RGDP and GCEX in the equations, Unidirectional Causality from GCEX to RGDP is indicated if the estimated coefficients on the lagged GCEX in (1.3) are statistically different from zero as a group (i.e., $\sum \Psi_1 \neq 0$) and the set of estimated coefficients on the lagged RGDP in (1.4) is not statistically different from zero (i.e., $\sum \Omega_1 \neq 0$).

Conversely, unidirectional causality from RGDP to GCEX exists if the set of lagged GCEX coefficients in (1.3) is not statistically different from zero (i.e., $\sum \omega_1 \neq 0$) and the set of the lagged RGDP coefficients in (1.4) is statistically different from zero (i.e., $\sum \theta_1 \neq 0$).

IV. RESULTS AND DISCUSSION

Table 1: Result of Unit Root Test for Stationarity at Level and first Difference

Variable s	ADF Test	Critical Value			Order of integration
		1% critical value	5% Critical value	10% critical value	
RGDP	6.379615	-3.670166	-2.960411	-2.619160	I(0)=Order Zero
GCEX	-4.890505	-3.670170	-2.963970	-2.619160	I(0)= Order zero
GREX	-5.580703	-3.670170	-2.963970	-2.621007	I(0) =Order zero

Source: Authors computed Result (E-view 9)

The table above presented the result of the Augmented Dicky-Fuller unit root test conducted on the variables to determine the stationarity of the variables. The results showed that all the time series were stationary at their level. That is RGDP and government recurrent expenditure in education (GREX) and government capital expenditure in education (GCEX) were integrated of order zero. Having established stationarity of the variables, both the OLS and the granger causality test were conducted.

The OLS result reported in Table 2 above shows that the coefficient of determination- R^2 is 0.83, indicating that the variation in economic growth (RGDP) explained by government capital and recurrent expenditure on education is 83 percent. Therefore, the explanatory power of the model estimated is 83 percent. The DW value of approximate 1.5 which is not too far from DW benchmark of 2.0, showed that the problem of serial autocorrelation is not serious in the estimated model. Thus, the estimated model is valid for policymaking. Also, the overall model is significant at 5 percent level given the probability f-value of 0.0000 which is less than the p-value of 0.05. The implication of these findings is that, if the federal government of Nigeria can increase her spending in the education sector, there will be an appreciable growth in the Nigerian economy. This is because; improvement in the

literacy level as well as research and development will raise the standard and quality of productivity in all the sectors of the economy.

Table 2: Analysis of Multiple Regression Result at Level

Dependent Variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	225533.1	12894.48	17.49068	0.0000
GCEX	6.534574	1.149795	5.683251	0.0000
GREX	1.100145	0.298901	3.680629	0.0009
R-squared	0.830722	Mean dependent var		380297.5
Adjusted R-squared	0.926103	S.D. dependent var		217278.8
S.E. of regression	59065.05	Akaike info criterion		24.89717
F-statistic	201.5177	Durbin-Watson stat		1.495219
Prob(F-statistic)	0.000000			

SOURCE: Authors Computed Result from (E-View 9)

Meanwhile, the coefficient of government capital education expenditure variable appeared with a positive sign and statistically significant. This means that government capital education expenditure impact on economic growth. The finding validates the empirical work of Gylych, Modupe and Semiha (2016) who stated that direct and significant relationship exists between government capital spending's in education output growth in Nigeria

Moreover, the regression coefficient of government recurrent education expenditure appeared with a positive sign and statistically significant at 5 percent level. Meaning that government recurrent education expenditure impact positively and significantly on economic growth. The finding validates the empirical work of Inimino, Tubotamuno and Shaibu (2017) who when analyzing state funding averred that significant relationship exists between government recurrent spending in education growth in Nigeria

Table 3: Results of the Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
GCEX does not Granger Cause RGDP	37	11.9469	0.0017
RGDP does not Granger Cause GCEX		2.19966	0.1043
GREX does not Granger Cause RGDP	37	17.0326	0.0003
RGDP does not Granger Cause GREX		2.45496	0.0666
GREX does not Granger Cause GCEX	37	11.5813	0.0020
GCEX does not Granger Cause GREX		1.47818	0.12430

Source: Authors computed Result (E-view 9)

In order to find out the direction of the effect of government education expenditure on economic growth, we conducted the Granger causality test. The results presented in Table 3 showed unidirectional causality between the dependent and independent variables. That is, government capital expenditure in education (GCEX) granger causes economic growth (RGDP); as well as government

recurrent expenditure in education (GREX) granger causes economic growth (RGDP). This reveals that the variables are necessary condition for achieving economic growth. The findings conforms with the empirical work of Inimino, Tubotamuno and Shaibu (2017) who analyzed the effect of state-funded on education on economic growth in Nigeria and came up with the fact that unidirectional causality exists between government spending in education and economic growth in Nigeria.

V. CONCLUDING REMARK

The study examined public expenditure on education and economic growth in Nigeria. Time-series data were collected and analyzed via OLS and granger causality test. The conclusion from the empirical results suggested that public education expenditure contributes positively and significantly to economic growth in Nigeria. Therefore, the study recommends that government spending in education should be increased in real term in order to meet the UNESCO requirement of 26% of the national annual budget allocates to education sector. Also, government should spend more of capital expenditure on education. As the capital project in educational sector e.g. building of well-equipped classrooms, provision of computers and other learning facilities has greater multiplier effect on the growth of the economy than recurrent expenditure which mainly cover personnel cost. Also, government should increase her funding of tertiary education and on research and development (R&D) to promote rapid growth for industrial transition.

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