Education Expenditure and Access to Education: Case Study of United Nations Educational, Scientific and Cultural Organization Declaration in Nigeria

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ABSTRACT

In recognition of importance of access to education, national leaders and international development agencies met in 1990 in Jomtien, Thailand and committed themselves to universalizing access to primary schooling by 2000. Recognizing that the success of the access to education agenda requires a significant and well-targeted increase in financing, United Nations Educational, Scientific and Cultural Organization (UNESCO) declared a benchmark of at least 26% of total public expenditure to education. Nigeria despite being a member of UNESCO, allocates persistently below, 6% of her budget to education since the UNESCO Declaration in 1990. It is also worrisome to note that as at 2014, 40% of Nigerian children aged 6-11 do not attend any primary school, 30% of pupils drop out of primary school and only 54% transit to secondary schools (Federal Ministry of Education, 2014; and UNICEF, 2015). Could it be that, poor education spending is the reason for poor student's enrolment in Nigeria? If education spending had increased up to 26% of the total budget, is there reason(s) to believe that access to basic education will also increase and, if so, by how much? To answer these pertinent questions, secondary times-series data were obtained from both local and international sources and 26% allocation to education was projected from the existing total expenditure outlay for the period 1990-2015 in line with UNESCO declaration. Ganger causality tests was conducted and ordinary least square regression estimation technique was used in estimating the impacts from both actual education expenditure and that of projected 26% expenditure on access to all levels of education. The results point to three conclusions: First, there is strong and positive relationship between education expenditure and access to all levels of education in Nigeria. Second, 26% expenditure on education as prescribed by UNESCO would have had 19-times impact on access to primary school enrolment, more than 2-times impact on secondary school enrolment and 9-times impact on access to tertiary education, and on average 10-times access to all levels of education in Nigeria. Third, urbanization is symbiotic with access to education in Nigeria. Accordingly, the study recommended that that government should adhere to the UNESCO declaration of 26% budget allocation to education. Government should intensify urbanization of Nigeria enclaves by building infrastructures such as schools, hospitals, road network, markets, industries, etc.

Keywords: Education Expenditure, School Enrolment, United Nations Educational, Scientific and Cultural Organization Declaration
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1. INTRODUCTION

There is increasing evidence that education matters, not only for the personal development of individual learners, but also for the broader economic performance of countries. As the world has entered the age of the knowledge economy, education and human capital generally play a critical and reminiscent role in driving economic development world over (World Education Forum, 2015; Cuesta et al., 2015; Anyanwu and Erhijakpor, 2007; and Omotor, 2004).

Education has both intrinsic and instrumental values. It is desirable not only for the individual but also for the society as a whole. Education as private good benefits directly those who receive it, which in turn affects the individual's future income stream. At the aggregate level, a better educated workforce is thought to increase the stock of human capital in the economy and increase its productivity. Hence, it is universally acknowledged and proven fact that education is a basic social need and essential lever for full development of individuals and the society (Obi et al., 2013; Mukherjee, 2007).

In most developing countries, improving the widening access to education especially basic education is a cardinal objective of their governments. Education is seen as a right and responsibility to be guaranteed to all generations. As noted by Hanushek (1996), "no improvement is possible with unimproved people" and access to quality education is indispensible for improvement.

In education, the term access typically refers to the ways in which educational institutions and policies ensure or at least strive to ensure that students have equal and equitable opportunities to take full advantage of their education. This means being proactive in identifying the barriers that many encounter in accessing education opportunities and identifying the resources needed to overcome those barriers. Access to basic education lies at the heart of development. Lack of educational access, and securely acquired knowledge and skill, is both a part of the definition of poverty, and a means for its diminution. Sustained access to meaningful learning that has utility is critical to long term improvements in productivity, the reduction of inter-generational cycles of poverty, demographic transition, preventive health care, the empowerment of women, and reductions in inequality (World Education Forum, 2015).

In recognition of importance of access to education, national leaders and international development agencies met in 1990 in Jomtien, Thailand and committed themselves to universalizing access to primary schooling by 2000. They met again, in 2000 in Dakar, Senegal and reviewed progress that had fallen short of expectations, and moved the target to 2015. Recognizing that the success of the access to education agenda require a significant and well-targeted increase in financing; particularly in those countries furthest from achieving quality education for all at all levels; United Nations Educational, Scientific and Cultural Organization (UNESCO) declared a benchmark of allocating efficiently at least 26% of total public expenditure to education (UNICEF, 2015).

Nigeria is a member of the United Nation (UN) and by implication UNESCO. In spite calls and declarations for increased expenditures on education to a tune of 26% by UNESCO, it has been shown that education spending in Nigeria has been inadequate, as it has underperformed that of other developing nations like Ghana who spends 20% of its expenditure on education, Bostwana who spent a historical average of 21%, Kenya who spent 20% and Uganda who spent 15%, while Nigeria spent only 3%, in recent time. Over the last decade, Nigeria's population has grown exponentially, with children under 15 years of age accounting for about 45% of the country's population. Accordingly, the burden on education and other sectors has become overwhelming. 40% of Nigerian children aged 6-11 do not attend any primary school with the Northern region recording the lowest school attendance rate in the country, particularly for girls. It is still estimated that about 4.7 million children of primary school age are still not in school. Many of those enrolled in school do not complete the primary cycle. 30% of pupils drop out of primary school and only 54% transit to secondary schools. The prospects of Nigeria achieving Education for all still remain a frail (UNICEF, 2015).

In view of the above observations, it is pertinent to examine whether the low budgetary allocation to education can explain poor educational access in Nigeria. If yes, by a how much or how elastic is responsiveness of education access to changes in budgetary allocation to education? And what would have been the impact of allocating 26% of the budget to education as required by UNESCO. These pertinent issues if unravel can inform federal and state policy debates about how best to improve access to education in Nigeria.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. Empirical Literature Review

This section reviews empirical literature that has estimated the impact of public education expenditure on school outcome/ enrolment in both developing and developed countries. Accordingly, Gupta et al. (2002) used ordinary least square (OLS) and two stages least squares regression on a cross section of data from 50 developing and transitional economies. Their findings indicate that greater public spending on primary and secondary education has a positive impact on widely used measures of education attainment such as gross enrolment in primary and secondary education, gross enrolment in secondary education and persistence through grade four.

Ebejer and Ulrike (2009) measured the efficiency of public spending in Malta by applying two alternative non-parametric techniques: The full disposal hull and the data envelopment analysis. Using a cross-country analysis of EU member states, they estimated the efficiency scores of three output indicators each for expenditure on education and health. The findings show that whereas public expenditure in Malta appears relatively efficient at the primary and secondary levels of schooling, it is less so at the tertiary level.

Gibbons et al. (2011) exploit differences in funding between schools on local authority boundaries in London, who face similar costs and pupil intakes, to assess whether intake was causally affected by spending in the early to late 2000s. Their strategy uses the fact that closely neighboring schools with similar pupil intakes can receive markedly different levels of core funding if they are in different education authorities .They found that, higher funding does lead to higher student intakes.

Baldacci et al. (2003) and Gupta et al. (2002) found that social spending is an important determinant of education outcomes. Their studies find that the effect of social spending on education outcomes is stronger in cross-sectional samples than when the time dimension is also added. They also found that education spending has a greater effect on social indicators than health outlays.

Anyanwu and Erhijakpor (2007) used panel data of African countries from 1990 to 2002 and studied the relationship between government expenditure on education and education enrolments, with illustration from Nigeria and other South Africa, Algeria, Nigeria, and Egypt (SANE) countries at the primary and secondary school levels. The results show that government expenditure on education has a positive and significant direct impact on primary

and secondary education enrolment rates. Among the SANE, Nigeria has the greatest positive influence on increasing both primary and secondary education enrolment rates.

Obi et al. (2013) examines government education spending and education outcome in Nigeria from 1970 to 2013. Employing augmented Dickey Fuller unit root test and OLS technique, the study revealed that public education spending has a positive and significant effect on education outcome such as primary and secondary school enrolment in Nigeria. Accordingly, they recommended among other things, that government should spend more on education.

Ude and Ekesiobi (2014) carried out an empirical investigation of states social spending and social outcomes with specific emphasis on education in Nigeria. The study employed panel data from 36 states of the federation. The panel data spanned from 2009 through 2013. The study applied fixed effects and random effects models. Each of the education outcomes were modelled against states spending on education and controlled for states spending on health and states per capita expenditure. Their results show that states spending on education have a significant impact on total primary enrolment, total secondary enrolment and adult literacy enrolment in Nigeria using fixed and random effects but significant using only fixed effect on total tertiary enrolment in Nigeria.

At the same time, a number of studies have found insignificant or very weak linkages between public education outlays and education indicators Jayasuriya and Wodon (2003), Al-Samarrai (2003) and Okeke (2014).

Jayasuriya and Wodon (2003) used stochastic frontier analysis to estimate health and education efficiency frontiers for a sample of 76 countries for the period 1990-98. The study utilised primary enrolment rate as the output variable and real GDP per capita, adult illiteracy, and education expenditure per capita (private and public) as input variables. The findings suggest that neither education expenditure nor regional differences have a statistically significant impact on net primary enrolment.

In case studies of Botswana, Malawi and Uganda, by Al-Samarrai (2003), on the whole, confirm his cross-country findings that the link between public spending and primary school access is weak. In the country case studies, this was explained as follows. As per pupil expenditures declined at the same time that access was increasing. The negative relationship between access and spending apparent in Malawi and Uganda is partly due to the fact that the education service offered changed greatly over that period. Therefore, increasing access to the same type of schools and intensity of use cannot be achieved through reductions in per pupil spending. However, this contrasts the results of Deolalikar (1997) who used household data for Kenya and found positive and significant relationship between school spending and primary school enrolment.

Okeke (2014) used vector error correction mechanism to investigate the impact of government expenditure on total school enrolment and under-5 mortality rate in Nigeria in the period 1980-2010. The results suggest that government health expenditure significantly reduces under-5 mortality rate while government expenditure on education did not significantly affects total school enrolment.

It has been argued, however, that there may be a slightly stronger link between resources and achievement in developing countries, because education systems in developing countries tend to be so severely under-resourced compared to developed countries that marginal increases in resourcing are likely to have much larger impacts on education outcomes than in developed countries. Reviews of the micro-based literature do suggest that a greater proportion of studies in developing countries report a positive impact on education achievement than in developed countries (Hanushek, 1996).

To still show how mixed results in literature on this subject is, François (2005) presented a survey of the large empirical literature in economics that has sought to examine the relationship between educational expenditures and outcomes in both developed and developing countries. The main feature of his literature was the remarkable lack of consensus about the results of standard studies using the "education production function" conceptual framework, whether at the macro or at the micro level. He pointed out that experimental evidence that has recently started to accumulate may provide more reliable guidance to policy interventions aimed to improve education access and achievement. He further stressed that the ability of economists to adequately model the functioning of schools could be further enhanced by making use of insights from other social sciences, e.g., social psychology and sociology, pertaining to the behavior of teachers and students. Although they remain quite marginal to the field, recent behavioral economics papers may provide a basis for such a renewal of the economics of education.

The mixed findings evident from the literature reviewed above suggest that indeed public spending and other inputs in the education system might have some inherent heterogeneity, implying that what holds in a given region or nation may not hold in another. In the light of above, this study examines importantly what the impact of spending 26% of the total budget on education would be on access to education in Nigeria. This would be unique and very important contribution to the existing literature on this subject in the context of Nigeria.

2.2. Theoretical Framework
The theoretical frame work of this study lies on "education production function." The function has to do with drawing an analogy between education and the production process of a firm. Inputs have often been assumed to be exogenous determinants of outcomes. Hence, the empirical analysis of the relationship between educational expenditures and outcomes relies on the estimation of an equation such as:

$$y = f(X, W, Z) + u \qquad (1)$$

Where, y the explained or dependent variable, is an educational outcome/enrolment, and X, the explanatory or independent

variable such as educational expenditures or a specific input; W and Z are vectors control variables including school and family characteristics, respectively, and u is a statistical residual that represents, among other things, unobserved determinants of the outcome under consideration.

Estimation of such an equation gives its coefficients a descriptive value that is the coefficients represent the correlation between each right-hand side variable and y; the interpretation of the coefficient on X as measuring its causal impact on y requires the adoption of some theoretical framework and empirical identification strategy (François, 2005).

3. METHOD

3.1. Data Sources and Limitation
The data employed in this study were obtained from secondary sources including the local and international agencies. The local agencies included Central Bank of Nigeria (CBN) Statistical Bulletin (CBN, 2008; 2009), National Bureau of Statistics (various issues) and the World Bank. The empirical analysis covers the period 1990-2015 (26 observations).

The secondary time series data employed in this study include time series data on our policy variables. Namely: Primary school enrolment (PEN), secondary school enrolment (SEN), tertiary education enrolment(TEN), actual government expenditure on education (EXEDU) and a projected 26% expenditure on education ($EXEDU_{26}$) as well as control variables such as urban population (URB) as a measure of urbanization.

3.2. Model Specification
Most research literature on the effect of school expenditures on student outcomes uses an econometric estimation of a production function as discussed in chapter two. Typically, this function or equation (in logarithmic form) examines the direct impact of education spending on education access, as proxied by the primary and secondary school enrolment rates. Gross enrolment rates measure the number of primary and secondary school students as a proportion of the primary and secondary school-going age population. The coefficients from these studies can usually be expressed as elasticities. An elasticity measures how a percentage change in one variable leads to a percentage change in another variable.

Accordingly, and in analogy with the stipulated theoretical framework in equation 1 above, the following models are specified to examine the effect of government educational expenditure on primary, secondary and tertiary education enrolment rates in Nigeria.

$$PEN = f(EDUXEP\ EDUEXP_{26}, URB, U_1) \tag{2a}$$

$$SEN = f(EDUEXP, EDUEXP_{26}, URB, PEN, U_2) \tag{3a}$$

$$TEN = f(EDUEXP\ EDUEXP_{26}, URB, SEN\ U_3) \tag{4a}$$

Assuming a log linear relationship amongst the above variables, equations 2a to 4a can be re-specified in the estimable form as:

$$PEN_t = a_0 + a_1EDUEXP_t + a_2EDUEXP_{26t} + a_3URB_t + U_{1t} \tag{2b}$$

$$SEN_t = b_0 + b_1EDUEXP_t + b_2EDUEXP_{26t} + +b_3URB_t + b_3PEN_t + U_{2t} \tag{3b}$$

$$TEN_t = c_0 + c_1EDUEXP_t + c_2EDUEXP_{26t} + +c_3URB_t + c_3SEN_t + U_{3t} \tag{4b}$$

Where,

PEN = Primary school enrolment rate,

SEN = Secondary school enrolment rate,

TEN = Tertiary enrolment rate,

EDUEXP = Actual government expenditure on education,

$EDUEXP_{26}$ = A projected 26% budget allocation to education as declared by UNESCO,

URB = Urban population as a percentage of the total population used as a measure of urbanization

U = A statistical residual that represents, among other things, unobserved determinants of access to education.

Note: PEN, SEN and TEN are used to measure access to education.

3.3. Justification of Variables of the Model
A briefly explanation of how each of the explanatory (independent) variables interacts with the dependent variables is as follows:

The justification for including actual education expenditure as an independent variable is quite self-evident: If government spends more on education mainly in a poor country, it is likely that more people would have access to school; it might reduce drop-out rates in school, while leading to better education outcome. Hence, the a priori expectation is that actual government expenditure on education (EDUEXP) should be positively related with primary, secondary and university enrolment rates (Ude and Ekesiobi, 2014).

Projected 26% budget allocation to education ($EDUEXP_{26}$) as declared by UNESCO means more or greater expenditure on education than what is actually spent, this should also lead to a greater access to primary, secondary and tertiary education enrolment rates than access due to what is actually spent.

Again, increase in primary school enrolment (PEN) is expected to lead to increase secondary school enrolment (SEN), while increase in secondary school enrolment is expected to improve university enrolment. Hence, PEN should positively relate to SEN and SEN should positively relate to TEN.

Finally, urban population growth is included in the model because it can tend to suggest how standard of living changes in a nation. Generally, it is believed that when people move from rural to urban

areas they have a higher standard of living. Again since anything that changes income level could change investment in education, and education outcome, it is expedient to see how this change in location affects access to education (Anyanwu and Erhijakpor, 2007; Obi et al., 2013).

3.4. Method of Data Analysis

Ganger causality tests analysis and OLS estimation technique are used in analyzing the data. The choice of OLS is mainly because it minimizes the error sum of squares and has a number of advantages such as unbiasedness, consistency, minimum variance and efficiency. Furthermore, the models, before estimation, are subjected to multicolinearity test. After estimation, the models are subjected to tests of heteroskedasticity and autocorrelation described in the next section. Both tests are crucial so as to prevent either serial correlation or heteroskedasticity from biasing the standard errors on which inferential decisions are based. Evidence of either heteroskedasticity or autocorrelation in the model will warrant re-estimating the model by the Newey-West method, which produces heteroskedastic and autocorrelation consistent standard errors.

4. RESULTS AND DISCUSSION

4.1. Data Presentation and Descriptive Statistics

The data used in analyzing the nexus between actual government spending on education and access to education in Nigeria as well as what would have been the impact if government had allocated 26% of her budget to education is presented in Appendix Table 1. While data on total government expenditure (TOTALEXP), education expenditure (EDUEXP), primary school enrolment (PEN), secondary school enrolment (SEN) and tertiary education (TEN) were obtained from CBN Statistical Bulletin various issues and World Bank development indicator, 26% expenditure on education was projected by computing 26% of the total expenditure (EDUEXP$_{26}$) which would have been the yearly expenditure on education had Nigeria adhered to UNESCO declaration since 1990.

A descriptive statistics of the variables are presented in Table 1. The results of the mean, minimum, maximum and standard deviations of each of the variable are shown.

The minimum expenditure on education from 1990 to 2015 was 289.10 million naira and the maximum was 424,234.0 million naira, while the mean expenditure for the period was 87,855.27 million naira. Had it been that Nigeria allocated 26% of her yearly budget to education, the minimum for the period 1990-2015 would have been 15,669.58 million naira while the average spending on education for the period would have been 462,703.1. That is, more than 5-times average of what was actually allocated.

4.2. Presentation of Causality Results

Table 2a-c show the pairwise Granger causality tests. The results as depicted in Table 2 a showed that there was unidirectional causality running from actual education expenditure (EDUEXP) to primary school enrolment (PEN). That is, changes in actual education expenditure (EDUEXP) causes changes in primary school enrolment (PEN). This is because; the F-statistics for the hypothesis that, education expenditure (EDUEXP) does not Granger cause primary school enrolment (PEN) was 6.90863 with a P = 0.0056. Hence, the null hypothesis that EDUEXP does not Granger cause PEN was rejected and the alternative that education expenditure (EDUEXP) causes primary school enrolment (PEN) was accepted at <1% level of significance (0.56%) level of significance. Therefore, we are more than 99% confidence that changes in actual education expenditure (EDUEXP) causes changes in primary school enrolment (PEN).

Table 2a also reveals that, increase in education expenditure to 26% (EDUEXP$_{26}$) will cause changes in in primary school enrolment (PEN) as evidence in the F-statistic of 5.2506 and probability value of 0.0153, implying (1.53%) level of significance. Hence we are more than 97% sure that 26% increase in education expenditure (EDUEXP$_{26}$) will cause changes in in primary school enrolment (PEN). The result also showed that urbanization (URB) causes changes in primary school enrolment (PEN) at about 6.457 % level of significance.

Table 2b shows causality results with respect to secondary school enrolment (SEN). In line with the analysis of results arising from Tables 2a and b reveals that the null hypotheses that actual education expenditure (EDUEXP) does not Granger cause secondary school enrolment (SEN), projected 26% education expenditure (EDUEXP26) does not Granger cause (SEN) and that PEN does not Granger cause SEN are all rejected since their F-statistics of 6.7396, 3.1454 and 5.8564 were significance at 0.61%, 6.61% and 0.104% respectively. While the null hypothesis

Table 1: Descriptive statistics

Measures	TOTALEXP	EDUEXP	EDUEXP26	PEN	SEN	TEN	URB
Mean	1,779,627.0	87,855.27	462,703.1	2,076,8813	5,772,435.0	1,393,202.	37.70
Median	1,122,083.0	17,270.10	291,741.6	1,983,5760	5,222,867.0	1,084,517.	36.93
Maximum	4,650,000.0	424,234.0	1,209,000.	34,276,549	9,538,765.0	5,896,453.0	47.80
Minimum	60,267.60	289.1000	15,669.58	1,360,7249	3,125,192.	124,776.0	29.68
Standard deviation	1,636,341.0	140,914.7	425,448.7	6,080,824.	2,328,978.	1,415,405.	5.70
Skewness	0.583609	1.438173	0.583609	0.924411	0.477026	1.857228	0.274
Kurtosis	1.766513	3.302549	1.766513	2.812997	1.708467	6.189350	1.772
Jarque-Bera	3.124210	9.061982	3.124210	3.740874	2.793129	25.96656	1.960
P	0.209694	0.010770	0.209694	0.154056	0.247446	0.000002	0.375
Sum	46,270,313.0	2,284,237.0	12,030,281.0	5.40E+08	1.50E+08	36,223,239.0	980.20
Sum square deviation	6.69E+13	4.96E+11	4.53E+12	9.24E+14	1.36E+14	5.01E+13	813.37
Observations	26	26	26	26	26	26	26

Author's computation using E-view 8.0

Table 2a: Pairwise Granger causality tests results for primary school enrolment (PEN) equation

Null hypothesis	Observations	F-statistic	P
EDUEXP does not Granger cause PEN	24	6.90863	0.0056
PEN does not Granger cause EDUEXP		0.87093	0.4346
EDUEXP26 does not Granger cause PEN	24	5.25068	0.0153
PEN does not Granger cause EDUEXP26		1.96282	0.1679
URB does not Granger cause PEN	24	3.25127	0.0610
PEN does not Granger cause URB		0.44769	0.6457

Source: Researcher's computation, using E-view 8.0 econometric package

Table 2b: Pairwise Granger causality tests results for secondary school enrolment (SEN) equation

Null hypothesis	Observations	F-statistic	P
EDUEXP does not Granger cause SEN	24	6.73963	0.0061
SEN does not Granger cause EDUEXP		1.58074	0.2317
EDUEXP26 does not Granger cause SEN	24	3.14546	0.0661
SEN does not Granger cause EDUEXP26		0.29944	0.7447
PEN does not Granger cause SEN	24	5.85647	0.0104
SEN does not Granger cause PEN		1.46527	0.2560
URB does not Granger cause SEN	24	2.19957	0.1383
SEN does not Granger cause URB		2.20557	0.1376

Source: Researcher's computation, using E-view 8.0 econometric package

that urbanization (URB) does not Granger cause secondary school enrolment (SEN) was accepted since its F-statistic = 2.19957 was insignificant even at 10% as implied by its probability value of 0.1383. That is (13.83%), meaning that the calculated F-statistics is not significantly different from the tabulated F-statistic.

The result of the granger causality test for tertiary education equation as depicted in Table 2c. It revealed that there was unidirectional causal relationship between actual education expenditure and tertiary education enrolment, with changes in education expenditure causing changes in tertiary education as shown by its F-statistic of 8.58262 which is significance at 0.22% as indicated by probability value of 0.0022. In the same vein, the result showed that the projected 26% allocation to education would cause changes in tertiary education enrolment at 4.67% significance level. Secondary school enrolment (SEN) also causes tertiary education enrolment with F-statistics = 3.4365 and P = 0.0532. There is also s bidirectional causation between urbanization and tertiary education enrolment. Hence, the null hypothesis of no causal relationship between government education expenditure and access to primary, secondary and tertiary education in Nigeria is rejected. Thus, there is causal

Table 2c: Pairwise Granger causality tests results for tertiary education enrolment (TEN) equation

Pairwise granger causality tests			
Null hypothesis	Observations	F-statistic	P
EDUEXP does not Granger cause TEN	24	8.58264	0.0022
TEN does not Granger cause EDUEXP		1.40484	0.2698
EDUEXP26 does not Granger cause TEN	24	3.61457	0.0467
TEN does not Granger cause EDUEXP26		1.89634	0.1775
SEN does not Granger cause TEN	24	3.43653	0.0532
TEN does not Granger cause SEN		0.56706	0.5765
URB does not Granger cause TEN	24	5.24749	0.0153
TEN does not Granger cause URB		2.92335	0.0782

relationship between government education expenditure and access to primary, secondary and tertiary education in Nigeria.

It is important to note here that causality test only indicate whether there is causal relationship between variables. It cannot reveal the weather increase in one variable will lead to increase or decrease in the causal relationship as well as the magnitude or size of such causation. Hence, OLSs regression estimation is conducted to unravel these.

4.3. Presentation of Regression Results
The regression results for primary enrolment, secondary enrolment and tertiary education enrolment are presented in Tables 3a-c respectively.

In Table 3a, the coefficients of actual education expenditure (EDUEXP), 26% projected expenditure to education (EDUEXP$_{26}$) and urbanization (URB) had the expected positive sign and were all significant at <1% level of significance as indicated by their P = 0.000 each.

The adjusted coefficient of determination (adjusted R^2) for primary school enrolment equation was very good (0.855438), this means that about 85.54% of changes in primary school enrolment is explained by changes in independent variables (EDUEXP, EDUEXP$_{26}$ and URB). The F-statistics = 331.9438 was significant and implies the joint significance of all the variables in the PEN equation. Hence, actual education expenditure (EDUEXP) impacts significantly on primary school enrolment in Nigeria.

In the same vein, Table 3b captures the regression results for secondary school enrolment (SEN). From Table 3b, the coefficients of actual education expenditure (EDUEXP), 26% projected expenditure to education (DUEXP$_{26}$), primary school enrolment and urbanization (URB) had the expected positive sign and were all significant except primary school enrolment(PEN) which was

insignificant even at 10% as indicated by its P = 0.2690 that is, (26.9%).

The adjusted R^2 = 0.674768 for secondary school enrolment equation means that about 67.476% percent variation secondary school enrolment is explained by changes in independent variables (EDUEXP, $EDUEXP_{26}$, PEN and URB). The F-statistics = 242.45 implies the joint significance of all the variables in the SEN equation. Hence, actual education expenditure (EDUEXP) impacted significantly on secondary school enrolment in Nigeria.

Furthermore, Table 3c shows the regression results of the tertiary education enrolment. The results show that, the coefficients of actual education expenditure (EDUEXP), 26% projected expenditure to education ($DUEXP_{26}$), secondary school enrolment (SEN) and urbanization (URB) had the expected positive sign. Again all the dependent variables were significant except actual expenditure on education (EDUEXP) which was insignificant even at 10% as indicated by its P = 0.6628. Hence, actual education expenditure (EDUEXP) does not impact significantly on tertiary education enrolment in Nigeria.

Furthermore, from Tables 3a-c, the coefficient of projected 26% allocation to education ($EDUEXP_{26}$) as required by UNESCO were 30.6815, 4.6722 and 7.7634 in primary school enrolment, secondary school enrolment and tertiary education enrolment equations respectively and were all significant at least 5% level of significance in the three equations. The coefficients of the projected 26% expenditure on education when compare to coefficients of the actual expenditure of 1.5966, 2.2559 and 0.8345 in primary school, secondary school and tertiary education enrolment equations respectively, it was clear that the impact of the projected 26% expenditure on education would have been about 19-times (30.6815/1.5966) the impact of actual education expenditure on primary school enrolment, about 2-times (4.6722/2.2559) the impact of actual education expenditure on secondary school enrolment and about 9-times (7.7634/0.8345) the impact of actual education expenditure on tertiary education enrolment.

Hence, 26% expenditure on education as prescribed by UNESCO would have had 19-times impact on access to primary school enrolment, more than 2-times impact on secondary school enrolment, 9-times impact on access to tertiary education and

Table 3a: Regression results for primary school enrolment (PEN) equation (PEN is the dependent variable)

Variable	Coefficient	Standard error	t-statistic	P
EDUEXP	1.596644	0.258846	6.168301***	0.0000
$EDUEXP_{26}$	30.68153	2.910430	10.54192***	0.0000
URB	15.30099	1.668101	9.172703***	0.0000
C	−322.2374	52.49042	−6.138976***	0.0000
R^2	0.878385	Mean dependent variable		20,768,813
Adjusted R^2	0.855438	SD dependent variable		6,080,824.0
F-statistic	331.9438	Durbin–Watson statistics		1.991060
P (F-statistic)	0.000000			

Source: Researcher's computation using e-view econometrics software. *** and ** means significant at 1%, 5% and 10% respectively. SD: Standard deviation

Table 3b: Regression results for secondary school enrolment (SEN) equation (SEN is the dependent variable)

Variable	Coefficient	Standard error	t-statistic	P
EDUEXP	2.559194	1.079275	2.371215**	0.0276
$EDUEXP_{26}$	4.672247	1.660062	2.814501**	0.0104
PEN	0.093972	0.082762	1.135450	0.2690
URB	1.851874	0.422301	4.385199***	0.0000
C	11.85556	33.56239	0.353239	0.7274
R^2	0.778805	Mean dependent variable		5,772,435.0
Adjusted R^2	0.674768	SD dependent variable		2,328,978.0
F-statistic	242.4542	Durbin-Watson statistics		1.881683
P (F-statistic)	0.000000			

Source: Researcher's computation using e-view econometrics software. *** and ** means significant at 1%, 5% and 10% respectively. SD: Standard deviation

Table 3c: Regression results for tertiary education enrolment (TEN) equation (TEN is the dependent variable)

Variables	Coefficient	Standard error	t-statistic	P
EDUEXP	0.834554	1.886797	0.442312	0.6628
$EDUEXP_{26}$	7.763473	1.766844	4.393978***	0.0003
SEN	0.864792	0.330635	2.615547**	0.0162
URB	454,876.6	114441.8	3.974743***	0.0007
C	−110.5960	32.38508	−3.415030***	0.0026
R^2	0.860174	Mean dependent variable		1393202.0
Adjusted R^2	0.833540	SD dependent variable		1415405.0
F-statistic	32.29657	Durbin–Watson statistics		1.968369
P (F-statistic)	0.000000			

Source: Researcher's computation using E-view econometrics software. *** and ** means significant at 1%, 5% and 10% respectively. SD: Standard deviation

on average 10-times access to all levels of education in Nigeria. The results also emphasize the urbanization as an important determinant of access to education at all level of education in Nigeria.

4.4. Discussion of Findings
Increasing government expenditure on education to the tune of 26% as prescribed by UNESCO would have had a greater impact on access to education in Nigeria measured by enrolments in the three levels of education namely: Primary, secondary and tertiary enrolments. It is well known fact that education is one of the drivers of economic development. The more people enroll into schools, the more literate the population would be, and more possibility that these individuals would develop skills that would contribute to national development (World Education Forum, 2015; Cuesta et al., 2015; Omotor, 2004).

Our findings show that increase education spending and urbanization is crucial for increased access to education in Nigeria. This result is in tandem with earlier works by Anyanwu and Erhijakpor (2007), Obi et al. (2013), and Ude and Ekesiobi (2014) as against the results by Al-Samarrai (2003) and Okeke (2014) that government expenditure on education does not matter in respect to educational outcomes such as primary school enrolment.

In general, public education spending in developing countries is believed to be of immense importance because of the high level of poverty that often exists in these nations. Poverty limits the opportunity of individuals from attaining good education, making government sponsored or subsidized education the only avenue through which many individuals can be educated. Nigeria is not an exception here, as a huge proportion of the Nigerian schooling population relies on the subsidized public education system to be able to afford the cost of education. This study has thus shown that the declaration of 26% expenditure on education by UNESCO if adhere to by Nigeria government would provide more access to education.

There are several channels through which the observed positive effect of government spending on education outcomes materializes in reality. One part is through new schools which are built with these funds. Many rural communities in Nigeria often contend with high teacher to student ratio. Also, in some communities few numbers of schools make it difficult for some persons residing far away from the school to attend. In this situation, when government builds more schools, which warrants that more teachers be employed, the natural outcome is that more persons who initially could not attend schools would now be able to attend. Also, student teacher ratio is expected to improve, as some students would move to the new schools that are closer to them. Overall, enrolment rates will rise and student performances are expected to rise too, since lower student to teacher ratio is believed to be associated with better student performance (Obi et al., 2013).

Urbanization also has reasonable links with access to education. Often people migrate to urban areas in search of a better life. More often than not, people in urban areas have higher living standards than rural dwellers. This suggests that more people in urban areas would attend schools, and there would be better schools in urban areas. Therefore, as the population of urban dwellers rise, the outlook for education tend to increase, as more people would take advantage of the better education system in urban centers. Also more people will experience social mobility. If they were too poor to send their children to schools in the rural area, soon after migration to urban areas they would be able to afford enough to finance their children's education.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion
The results of this study point to three conclusions: First, there is strong and positive relationship between education expenditure and access to all levels of education in Nigeria. Second, increasing education expenditure to 26% of the total expenditure in line with UNESCO declaration would on average increase access to all levels of education by 10-times. Third, Urbanization is symbiotic with access to education in Nigeria.

5.2. Recommendations
i. Since the results suggest that government expenditure on education has a positive relationship with all levels of education in Nigeria, and that increasing education expenditure to 26% of the total expenditure as declared by UNESCO would increase access to education at all levels, accordingly, the study recommends that government should adhere to the UNESCO declaration on budgetary allocation to education and allocate 26% of her budget to education.

ii. Urbanization being an important determinant of access to all level of education in Nigeria, call for intensive urbanization of Nigeria enclaves by building infrastructures such as schools, hospitals, road network, markets, industries, etc.

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Appendix

Appendix Table 1: Data and data computation

Year	TOTAL EXP. (million #)	EDUEXP. (million #)	Education expenditure as % of total	EDUEXP26=26% of TOTALEXP	PEN	SEN	TEN	URB (%)
1990	60,267.60	331.7000	0.55	15,669.58	13,607,249	3,125,192	179,494.0	29.68
1991	66,589.40	289.1000	0.43	17,313.24	13,776,854	3,145,632	200,774.0	30.17
1992	92,799.40	384.1000	0.41	24,127.84	14,805,937	3,423,765	232,282.0	30.67
1993	191,229.2	1563.000	0.82	49,719.59	15,870,280	3,512,342	255,730.0	31.18
1994	160,893.2	2405.700	1.50	41,832.23	16,190,947	3,632,458	281,303.0	31.69
1995	248,768.1	3307.400	1.33	64,679.71	15,741,078	3,698,654	309,433.0	32.21
1996	337,418.1	3215.800	0.95	87,728.71	14,078,473	3,468,423	269,687.0	32.72
1997	427,679.1	3808.000	0.89	111,196.6	15,432,678	3,725,490	862,023.0	33.25
1998	487,113.4	12,793.00	2.63	126,649.5	16,436,742	3,811,234	941,329.0	33.77
1999	947,690.3	8516.600	0.90	246,399.5	17,907,008	3,844,585	983,689.0	34.30
2000	701,050.9	23,342.60	3.33	182,273.2	19,151,442	4,104,345	1,032,873.0	34.84
2001	1,017,997.0	19,860.00	1.95	264,679.1	19,041,224	4,601,105	113,6160.0	35.66
2002	1,018,178.0	9215.000	0.91	264,726.3	19,806,082	5,124,270	124,776.0	36.50
2003	1,225,988.0	14,680.20	1.20	318,757.0	19,865,437	5,321,464	1,272,772.0	37.36
2004	1,384,000.0	2550.000	0.18	359,840.0	21,395,510	6,279,562	417,281.0	38.20
2005	1,743,200.0	27,440.80	1.57	453,232.0	2,2115,432	6,397,581	1,540,021.0	39.10
2006	1,842,588.0	35,791.80	1.94	479,072.8	22,861,884	6,436,449	156,2010.0	39.90
2007	2,348,593.0	48,293.51	2.06	610,634.2	21,513,996	6,068,160	156,7550.0	40.80
2008	3,078,262.0	48,500.70	1.58	800,348.1	20,008,142	6,888,700	160,2441.0	41.70
2009	3,280,768.0	40,388.90	1.23	852,999.7	20,957,642	7,827,318	168,0112.0	42.60
2010	3,993,249.0	170,770.0	4.28	1,038,245.0	21,558,460	9,056,768	170,1123.0	43.50
2011	4,233,013.0	335,837.0	7.93	1,100,583.0	28,593,762	9,215,563	1,785,436.0	44.40
2012	4,199,978.0	348,400.0	8.30	1,091,994.0	30,598,343	9,265,478	216,7454.0	45.20
2013	4,323,000.0	342,118.0	7.91	1,123,980.0	31,518,341	9,316,748	3,289,765.0	46.10
2014	4,210,000.0	356,200.0	8.46	1,094,600.0	32,879,649	9,253,246	493,1268.0	46.90
2015	4,650,000.0	424,234.0	9.12	1,209,000.0	34,276,549	9,538,765	589,6453.0	47.80

Sources: 1. Central Bank of Nigeria (CBN) Statistical Bulletin various issues, 2. World Bank, 3. Author's computation (EEDUEXP$_{26}$)