Who Benefits from Public Spending in Different Education Levels across Geopolitical Zones/Regions in Nigeria?

[1]Uzochukwu Amakom (1)
[2]Ejike Udeogu (2)
Bernard Ugochukwu Nwosu (3)
Isife Theresa (4)
Vera Ogakwu (5)

Abstract
Intervention in the form of public spending in education can have multiplier effect if policy makers have access to information on who may likely benefit from an additional investment and how much more they will imaginably gain. In the absence of such vital information spending in education across all levels in Nigeria since her return to democracy have been moving in in undesirable direction looking at results and outcomes with noticeable disparities. Apart from location variations, there have been huge regional disparities. The study used the Harmonised Nigeria Living Standard Survey (HNLSS) applying marginal benefit incidence analysis developed as a political economy model in which different population groups such as poor and the non-poor have different political power and different costs and benefits from a given public spending. This method analysed likely benefits of additional spending across different governance levels of education in Nigeria by region (geopolitical zone) and by location (urban and rural). The study found that the marginal odds estimate for most of the regions in the south and by locations with little urban bias for primary and secondary education were pro-poor but pro-rich in the regions of the north. On the other hand, the tertiary level estimates of education were decidedly pro-rich at the margin in all regions and by location. The study recommended reforms in budgeting and legal frameworks to achieve targets by impact, need and achievement of equity.

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Corresponding Author: Bernard Ugochukwu Nwosu

[1] Authors (1), (3), (4) & (5) affiliations are: Institute for Development Studies, University of Nigeria, Enugu Campus
[2] Author (2) affiliation is: Department of Economics, Coventry Business School, United Kingdom.

BACKGROUND AND THE PROBLEM

From a purely historical perspective, education in Nigeria is experienced from two perspectives – Western Style education and Islamic Education. Prime importance has been ascribed to this important sector and owing to the level of importance attached to it; education was at a time mostly a government[3] run affair with very little private participation. This was even more so at the tertiary level where virtually all the Universities, Polytechnics, Colleges of Education and Technology were owned and run by the state. Private participation in education has generally been allowed at the primary and secondary school levels. In fact, at a time, the Federal Government owned all the Universities in the country. State governments got the nod to start their own Universities from about 1978. Private participation in education at the tertiary level in Nigeria only became a reality just in the 1990s.

Education is crucial to the development of every country because investment in the sector has been suggested as one way the poor can escape from poverty. This therefore implies that if the government has a target on inequality reduction, it can be achieved through well-targeted government spending and subsidies to the sector. The above reason has led to the recommendation by UNESCO to developing countries allocating about 26% of the total budget to the educational sector. Apart from other targeted poverty alleviation programs like food and housing subsidies, it is recognised that access to and provision of basic levels of education (primary and secondary) is central to increasing the welfare of the poor. In fact, basic education in most developing countries today is no longer a privilege but a right for every child. This is in line with the Universal Declaration of Human Rights (UDHR) adopted by the General Assembly of the United Nations in 1948 and the International Covenant on Economic, Social and Cultural Rights (ICESCR) adopted by the United Nations General Assembly 1966 which came into force in 1976. The declarations above accorded the status of a right to demand that education be made available and accessible to everyone based on equality and to call on member states to make it free and compulsory, at least at the elementary and fundamental states. Nigerian government responded to this call and have made basic education (the first nine years consisting of 6 years of primary and 3 years of junior secondary education) free through the creation of the Universal Basic Education (UBE) Fund.

Despite all the funding over the last two decades since the introduction of UBE by different tiers of government, Nigeria's indicators of education have not been what it is expected to be. A telling indicator is the fact that literacy rate of 15-24 years old for both sexes is still at 66% in 2021 as against the 100% target by 2015 with much regional (geopolitical zones) and location (rural and urban) diversity. Also, the net primary enrolment by location, region and gender as depicted in table 1 below is not encouraging.

Table 1: Percentage distribution of net primary school enrolment by gender and regions in Nigeria

	Male	Female	Total
National	57.6	56.4	57.0
URBAN	61.7	60.7	61.2
RURAL	53.5	52.1	52.8
North Central	63.0	61.6	62.3

[3] Government here refers to the three tiers (federal, state and local)

	Male	Female	Total
North-East	39.8	38.6	39.2
North-West	38.6	35.8	37.2
South-East	71.6	71.4	71.5
South-South	66.6	65.5	66.1
South-West	70.6	70.6	70.6

Source: Authors' computation from NBS 2022

At different locations, the percentage of persons who can read a simple letter in English language for those that are 15 years according to the NBS (2022)[4] stood at 67.8% for urban and 41.7% for the rural while at the regional indicators are 51.1%, 28.9%, 23.0%, 74.0%, 71.7% and 65.0% for the north-central, north-east, north-west, south-east, south-south and south-west geopolitical zones (region) respectively. Such regional and location variations have become a cause for concern and the need to find a way to ameliorate such situations in future public spending across different levels of education in Nigeria is imminent. This study, therefore, aimed at finding out the effect of extra public spending on education (i.e., measuring how household will benefit from extra government spending in this sector). In other words, the study is an evaluation of further public spending impact using the Marginal Benefit Incidence Analysis developed as a political economy model in which different population groups such as poor and the non-poor have different political power and different costs and benefits from a given public spending using the HNLSS[5]. The entire population was divided into five quintiles with quintile 1 representing the poorest and quintile 5 the richest to generate marginal odds estimates which shows if investment of extra one naira (₦1) in education in the region or location increases or decreases the public expenditure per capita going to that quintile. The quintile coefficient is pro when the value is greater than one (>1) and anti if otherwise.

METHODOLOGY

The standard methodology for benefit incidence analysis involves application of subsidy rates on each public sector service (program) on average participation rates of households categorized in accordance with their levels of welfare. Examples of works done along these lines include that of Meerman (1979) for Malaysia; Hammer, et al (1995) also for Malaysia; and Van de Walle (1995) for Indonesia. Conventionally subsidy rates across spatial and income differences are assumed to remain constant. Due to the above reason, average odds of participation are derived by calculating the ratio of the participation of one income group, say a quintile, to the overall average.

Public sector expenditures are dynamic in their levels as well as compositions, both geographically and functionally. This is in response to policy reform and external shocks to government finance. For instance, there seem to be a better tax administration in the country due to the on-going tax reform which may likely increase resources at the disposal of government. Apart from this the rise in the price of oil in the international market has also boosted resources at the disposal of government. Mean benefit incidence analysis would help account for the distributional implication of such changes in government budget.

[4] NBS 2022.
[5] Harmonised Nigeria Living Standard Survey

Marginal Benefit Incidence, therefore, measures increment in access rates for a given public service of a certain income group when there is a change in aggregate participation or in spending. Such analysis normally requires panel data or repeated cross sections. But, in their pioneering works, Ajwad and Wodon (2002) and Lanjouw and Ravallion (1999) and Ogujiuba (2021) produced results that circumvented the problem. Approaches from both works are utilized in this study. It is true that Nigeria now has two waves of survey data thus – the National Living Standard Survey (NLSS) and the Harmonized National Living Standard Survey (HNLSS), there exist unique difference that may inhibit the merger into a panel data for the marginal incidence analysis hence the concentration on the latest HNLSS which is more complete than the former NLSS.

Method of computing benefit incidence of government spending on education is formally written as:

$$X_j \equiv \sum_{i=1}^{3} E_{ij} \frac{S_i}{E_i} \equiv \sum_{i=1}^{3} \frac{E_{ij}}{E_i} S_i \quad \text{.....(1)}$$

where X_j is the amount of the education subsidy that benefits group j, S and E refer to the government education subsidy and the number of public schools' enrolments and facilities usage respectively while *i* denotes the level of education (primary, secondary and tertiary).

The benefit incidence for total education inputted to group *j* is given by the number of primary enrollments from the group (*Eij*) multiply by the unit cost of a primary school added to the number of secondary enrollments multiply by the secondary unit cost of secondary education, plus the number of tertiary enrollments multiply by the unit cost of tertiary education. It is noteworthy that S_i/E_i is the mean (average) unit subsidy of an enrollment at education level *i.* The share of total education spending imputed to group (*Xj*) is then given by:

$$x_j \equiv \sum_{i=1}^{3} \frac{E_{ij}}{E_i} \left(\frac{S_i}{S} \right) \equiv \sum_{i=1}^{3} e_{ij} s_i \quad \text{.....(2)}$$

Equation (2) above depends on two major determinants: The $\boldsymbol{e}_{ij}$' defines the shares of the group in total service use (enrollments). These reflect *household behaviour or household decision.* The $\boldsymbol{s}_i$ is the shares of public spending across the different types of service, reflecting *government behaviour.* In some instances, regional and location variation are also considered calling for an additional subscript that will denote the region or location or any other group specified in the unit cost estimate. Therefore, the share of total education subsidy (S) that accrues to the region or location or any other group that could be deduced from equation (2) above.

It is equally noteworthy that this share can be determined by two factors thus: the share of each level of region or location or any other group enrollments at each level of education e_{ij} and the share of each level of education in total education spending s_i. In addition to these desegregations, one can also measure region or location or any other group disparity in education for both public and private facilities by providing for the gross enrollments rates given as:

$$r_{ij}^{l,m} = E_{ij}^{l,m} / E_j^{l,m} \quad \text{.....(3)}$$

where $E_{ij}^{l}(E_{ij}^{m})$ can be the number of one of the items in the region or location or any other group let's say number of girls (boys) in quintile j who are currently enrolled in level I, and $E_{j}^{l}(E_{j}^{m})$ is the number of girls (boys) of the corresponding school age in quintile j.

Given the poor quality of most public expenditure data; drawing on public spending at highly aggregate level; as well as theoretical and empirical reasons, the above method has always been doubted to yield correct information. Nonetheless, Ajwad and Wodon (2002) and Lanjouw and Ravallion (1999) methodologies[6] that use a single cross-section of data to identify the distribution of increases at the margin in access rates to public services or in outlays for social programmes across regions have been adopted by several studies.

This current study used the Lanjouw and Ravallion (1999) developed as a political economy model in which different population groups such as poor and the non-poor have different political power and different costs and benefits from a given public spending. The interplay between these factors determines the relationship between the size of the programme, or service, total spending on it, and each group's share of its benefits. "Early capture" by the poor occurs when they receive larger shares of a small programme but their share declines as the programme grows[7]. On the reflex is "late capture". Even with substantial restrictions, the theoretical model yields no general results on whether early capture or late capture will occur, so the question requires empirical analysis. Lanjouw and Ravallion (1999) provided the following econometric method thus:

$$\rho_{i,k,q} = \alpha_q + \beta_q \rho_k + \mu_{i,k,q} \quad \text{.....(4)}$$

where *i* indexes a small geographic unit (a region in Nigeria for instance), *k* indexes a larger one (ministry (sector) in Nigeria like education that cut across levels of governance), and *q* indexes the welfare quantile. The left-hand variable is the programme participation rate for a given region and quantile. The regressor is the programme participation rate for the education sector in which the region is located. β_q is the marginal effect of an increase in the programme participation rates for the sector on the participation rates of the people in each region and quintile[8]. The regressor is run separately for each quantile. In addition, because $\rho_{i,k,q}$ is included in ρ_k there is an upward bias in the estimation but Lanjouw and Ravallion (1999) resolved this by instrumenting ρ_k with the left-out mean[9], that is the participation for all sector *k* except those

[6] Full citations of the two studies are given in the Bibliography for further details on the methodology.

[7] In Lanjouw and Ravallion (1999) specification, the non-poor bear all the programme costs and hold the political power int eh sense that the poor cannot impose on them a programme that lowers their welfare. In such cases, the convexity of the programme cost function is sufficient to guarantee early capture" by the poor.

[8] Following Lanjouw and Ravallion (1999), the average participation rate is defined as the proportion of the population of a particular quintile that participates in a government sponsored programme. Thus the average enrollment rate can be defined as the proportion of school-age population enrolled in a publicly funded school, or simply the proportion of the total population currently so enrolled in the case of education

[9] Using ordinary least squares to regress incidence in each income interval on regional means equally returns biased estimates due to endogeneity problem. This is because in deriving regional (geo-political zones) mean values we have already included information from the specific quintile in the left hand side of the equation. To control for this problem, Ajwad and Wodon (2002) use the 'leave-out' mean as their right hand side variable while Lanjouw and Ravallion (1999) instrument the actual mean by the leave-out mean. The leave-out mean is the average for a zone's (region) access rate excluding the specific sub-region and quintile in question.

individuals in region i and quintile q under the intuition that observing sector participation variations across the country will make it possible to understand how increased coverage affects the participation of different population groups. If β_q is greater than one, it indicates that a general expansion in coverage is correlated with a disproportionately large increase in participation for that region and quintile. Again, we estimate this as one regression with group-specific fixed and interaction effects and constrain the marginal effects to account for the total change thus:

$$\rho_{i,k,q} = \alpha + \beta\rho_k + \sum_{k=2}^{q}(\alpha_q Q_q + \beta_q \rho_k Q_q) + \mu_{i,k,q} \quad \text{.....(5)}$$

$$\alpha + \frac{N_q}{N}\sum_{2}^{q}\alpha_q = 0..and \quad \text{.....(6)}$$

$$\beta + \frac{N_q}{N}\sum_{2}^{q}\rho = 1 \quad \text{.....(7)}$$

In all models, two restrictions have been imposed on the coefficients: that the $\alpha_q s$ sum to zero and the $\beta_q s$ sum to the number of quintiles which in this case is five (5). Although Lanjouw and Ravallion (1999) do not impose such restrictions, they are required if the estimated shares of marginal benefits are to sum to one. One advantage of this method is that it requires only a cross-section of data, just like the standard method and in the current study the Harmonized Nigerian Living Standard Survey (HNLSS).

An important assumption here is that across regions, the same political process determines the correlation between programme size or coverage or incidence. Our preference in the study was to define all participation behaviour in per capita terms – normalising school enrollments on the total (rather than school-age). The analysis of marginal benefit incidence here is restricted to public facilities – that's schools facilities financed by government.

The margin that this model estimates according to Younger (2003) is the incidence of an increase in programme participation. It should be noted that this model does not address the policies that might bring about the programme expansion, nor does it consider in this case the demand for education. Rather, it makes a more general appeal to the political economy behind the policies to argue that whatever policies are used, the outcome must respect the political constraints implied by each group's[10] costs, benefits and political power. One statistical problem of the Lanjouw and Ravallion approach is that they used average data for regions and quintiles which reduced the efficiency of the estimates and yielded larger estimated standard errors. To overcome this, individual level data was used.

DATA AND SOURCES

Nigeria has had two waves of survey data, the National Living Standard Survey (NLSS) and Harmonized National Living Standard Survey (HNLSS). Both data sets are welfare monitoring surveys collected by the National Bureau of Statistics (NBS) in collaboration with the European Union and the World Bank. The former has 19,158 households with complete information out of the 22,000 households in the sample while the latter is an enlarged scope of previous National

[10] Group here refer to the poor, non-poor, the rich as expressed in quintiles 1-5 with 1 the poorest and 5 the richest group.

Consumer Surveys and a follow-up to the Nigeria Living Standard Survey (NLSS). The scope of the HNLSS was enlarged to include Demography; Health and Fertility behaviour; Education and Skills/Training; Employment and Time-use; Housing and Housing Condition; Social Capital; Agriculture; Household Income & consumption, and Expenditure. This study utilised the HNLSS because of its completeness.

Information from the HNLSS survey was collected on an individual basis and households for education and further disaggregated by location, region, and state. Here access to education were chosen for analysis considering their close correlation with welfare status of households. The data contained information on households' total expenditure and households' expenditure on education. Brief descriptive statistics of the household respondents is presented in table 2a below.

Table 2a: Household Descriptive Statistics

Variable	**Number of Observation**	**Mean(N)**	**Std. Dev.**
Household size	73,329	6.02	1.061198
Per capita expenditure	73,329	53,533.12	22460.69
Urban	20,035		
Rural	53,294		

Source: Author's

Table 2b below shows the distribution of individual respondents across regions and socio-economic status (quintiles) and the percentage share. Details suggest that the north-west region has the highest percentage share in terms of individual respondents' distribution followed by North-Central and north-east before the southern regions.

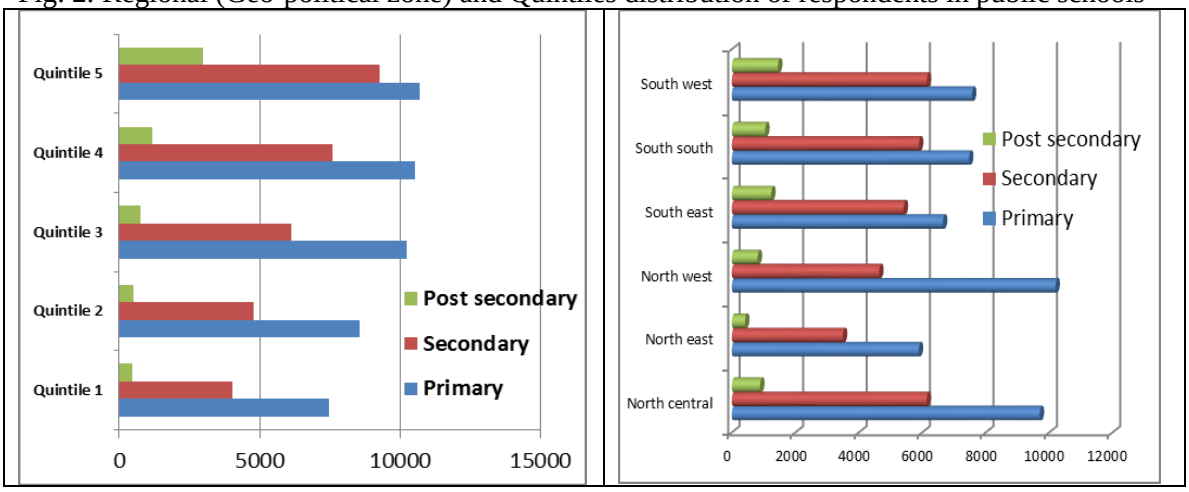
Table 2b: Regional (Geo-political zone) composition of individual respondents by Quintiles

	North-Central	North-East	North-West	South-East	South-South	South-West	Total
Quintile 1	7,645	17,964	22,815	4,310	5,884	6,753	65,371
Quintile 2	11,048	11,167	21,758	6,318	6,648	8,632	65,571
Quintile 3	12,147	9,930	18,931	7,073	8,260	9,430	65,771
Quintile 4	11,011	8,624	15,728	9,332	10,339	10,337	65,371
Quintile 5	11,719	6,162	12,740	10,226	13,637	11,287	65,771
Total	**53,570**	**53,847**	**91,972**	**37,259**	**44,768**	**46,439**	**327,855**
% share	**16.34**	**16.42**	**28.05**	**11.36**	**13.65**	**14.16**	**100.00**

Source: Authors' computation

The above table shows that there were over 300,000 individual respondents across the six regions of the country interviewed and out this number about 85,000 respondents were in one level of the public schools during the period of the interview. Distribution of these 85,000 respondents across the level of education reveals that about 55% were in public primary schools, 37% in public secondary schools and about 6% in public post-secondary (tertiary) schools. See figure 2 below for the detailed regional and quintiles distribution of individual respondents.

Fig. 2: Regional (Geo-political zone) and Quintiles distribution of respondents in public schools



Source: Author's

Apart from the survey data, the following data from secondary sources such as the total actual revenue and spending on education across local government, states and the federal levels sourced from the Federal Ministry of Finance, the Central Bank of Nigeria (CBN) and the National Bureau of Statistics were helpful.

RESULTS AND FINDINGS

There is unanimity that fiscal system has become one of the key instruments available for every government to combat poverty and income or wealth or regional or location inequality. One of the major components of fiscal policy is investment in the social issues especially education, healthcare, water supply and basic sanitation. Let's recall the main objectives of this study which has to do with analysing the distribution of increase in public spending at the margin in education in Nigeria. In other words, the study is to determine the marginal benefit incidence of Nigeria's education sectors assessing how pro-poor, regional (geo-political zones) as well as location (rural and urban) equalising are the expansion of access to public education. The dependent variable applied by this study is a simple 0/1 indicator of service use by identifying within a lot, those who attended any level of public schools (primary, secondary and tertiary). The study avoided the valuation of benefits in monetary terms because several studies have already embarked on such studies. This current study analysed the distribution of beneficiaries across the per capita expenditure distribution by region (geopolitical zone) as well as location, i.e. calculating the marginal odds of accessibility of public education institutions and not implicit or explicit monetary benefits.

In interpreting the marginal odds results we must recall that if β_q (the quintile coefficient) is greater than one, it indicates that a general expansion in coverage is correlated with a disproportionately large increase in participation for that region, location and quantile and vice versa. In terms of Nigeria, it implies that a further investment of extra one naira (₦1) in education in the region or location increases or decreases the public expenditure per capita going to that quintile by the quintile coefficient's (β_q) equivalent.

Primary Education

Primary education in Nigeria comprises of 6 years of basic education. This study analyzed this because the first nine years of schooling is free across the country irrespective of region or location. The study avoided early child development (nursery education) because of insufficient data for analyses. The results of the marginal benefit incidence analysis (the marginal odds of accessibility) to basic education are presented in table 3 in the annex.

The regional and location disaggregated marginal benefit incidence analysis findings as presented suggest slight differences in marginal odds across location and region but generally looks pro-poor though not at a very high rate across the entire regions except for rural north-east and north-west. Most of the marginal odds' coefficients are greater than 1. Findings also show that the marginal odds of quintile 4 in the rural north-central and urban north-east region were almost the same with that of quintiles 1 and 2 in the same regions. The marginal odds for the other poorest quintiles (quintiles 1 & 2) were all statistically significant looking at the t-values. This implies that for example a further ₦1 investment in primary education in north-central region will increase the public expenditure per capita going to the poorest quintiles (quintiles 1 and 2) by ₦1.20 and ₦1.10 respectively and to the richest quintiles (quintiles 4 and 5) by only ₦1.05 and 48k respectively all other things remaining constant.

Findings on primary education corroborates with findings of Demery and Gaddis (2009) for Kenya which found that poorer groups have secured a larger share of the primary budget by raising their primary school enrolments. It also disagrees with the findings of Johannes and Noula (2011) which marginal odds of participation estimates suggest that an expansion of primary schooling would be decidedly pro-rich at the margin in Cameroon. In that study, the marginal odds estimates suggested that an extra 100 Francs per capita spent on primary schools will increase the public expenditure per capita going to the poorest quintile by only 81 Francs.

The findings for primary education marginal odds across locations and for more than half of the regions in Nigeria may not be far from a reflection of the impact of Universal Basic Education (UBE) programme which has been in place since the return to democracy and the different states government interventions. It is true that the marginal odds also favour the richest quintile in two regions and not as high as expected but generally the marginal odds were greater than one (1) for the poorest quintiles which is quite encouraging. The implication is that public spending in primary education has been to an extent *pro-poor* across regions of the country (except for rural north-east and north-west) and further increase in spending at this level of education is expected to improve access for more children from poorest households' cateris paribus.

Secondary Education

Secondary schools in Nigeria comprises of junior and senior secondary schools[11]. While the junior level is both pre-vocational and academic, the senior level embraces academic, technical, commercial and other vocational courses to make her graduates employable after the Senior Secondary Certificate Examination (SSCE). The results of the marginal benefit incidence analysis (the marginal odds of accessibility) to secondary education are presented in table 3 in the annex.

[11] Note that this study could not look at each level separately because of the unavailability of disaggregated survey data for junior and senior secondary schools.

Unlike the primary education, the regional and location disaggregated marginal benefit incidence analysis findings for secondary education as presented suggest significant differences in marginal odds across regions and locations. There was a clear divide between the regions in the north and their counterparts in the south in the marginal odds of the poorest quintile except for north-central region. While the marginal odds estimate of the poorest quintile across location were greater than 1 (>1) in the south apart from quintile 1 rural south-south, only the marginal odds of north-central (both rural and urban) were greater than 1 (>1) in the three regions of the northern Nigeria though next to the poorest quintile (quintile 2) corroborates with that of southern regions. This implies that further increase in public spending for secondary education across the southern regions are more likely to improve access for more children from poorest households' than their northern counterparts cateris paribus.

It is equally noteworthy that within the southern regions and locations; there were slight differences in the marginal odds estimates. This is visible from the fact that the south-west region marginal odds showed a consistent progression from the poorest quintile to the richest quintile unlike the south-east with a kink in quintile 4 for rural and south-south with bias against rural quintile 1. With this finding, the south-west (both rural and urban) marginal odds show the best statistically significant pro-poor further public spending for secondary education with an implication that an extra ₦1 will increase the public expenditure per capita going to the poorest quintiles (quintiles 1 and 2) by more than ₦1 irrespective of location (rural and urban) all other things remaining constant.

The findings from secondary education marginal odds across location and region is like an assessment of different states intervention in secondary education and is encouraging to the states in the southern region as well as other states within other regions. Previous benefit incidence analysis studies that used the NLSS dataset have suggested that secondary education may not have been pro-poor[12]. The disaggregation into regions has shed more light into the findings hence giving hope and encouragement to policy makers from some of the regions.

Estimates of marginal odds of enrolment for primary and secondary schooling confirm that marginal benefits from education spending are subject to large variations across quintiles which have been the case for several studies including Demery and Gaddis (2009) for Kenya as well as Johannes and Noula (2011) for Cameroon.

The results from primary and secondary generally confirm Younger's (2003) point that the use of individual observations in analyzing marginal benefits from surveys of this kind is to be preferred, with greater precision in the estimated coefficients. Using individual observations, the poor quintiles benefit more at the margin from primary school spending, and less at the margin from secondary school spending.

Tertiary Education

The tertiary level of education in Nigeria includes the Colleges of Education, Monotechnics, Polytechnics, Colleges of Technology and the Universities. The study could not do separate analysis for each due to the absence of disaggregated data that aligns with each clarification. Estimates of marginal odds across locations and regions at the tertiary level of education looked bizarre when compared with primary and secondary levels. The marginal odds across location and regions were all less than 1 (<1) for the poorest quintiles (quintiles 1 & 2) apart from south-

[12] See Alabi *et al* (2011); Amakom & Ogujiuba (2010); Amakom (2012), (2013a), (2013b);

east rural which wasn't statistically significant. See table 3 in the annex for the tertiary level detailed marginal odds estimates.

Table 3 in the annex presents the marginal odds estimates for tertiary education in Nigeria by regions and locations which suggests a pro-rich at the margin. This is because all the marginal odds estimate for the poorest quintiles (quintile 1 & 2) were less than 1 (<1) while the marginal odds for richer quintiles (quintiles 4 & 5) were greater than 1 (>1). The middle quintile (quintile 3) was the only quintile closer to the poor that has marginal odds estimates greater than 1 (>1) for the north-central, south-east and south-west regions for urban residents. The other three regions (north-east, north-west, and south-south) have only the two richest quintiles dominated in terms of marginal odds estimates. The finding which is skewed to rich quintiles suggests that for instance in the urban of south-south region, a further ₦1 public spending will increase the public expenditure per capita going to the richest quintiles (quintiles 4 and 5) by ₦1.26 and ₦1.35 respectively and to the poorest quintiles (quintiles 1 and 2) by 69k and 89k respectively all other things remaining constant. The implication of this finding is that extra funding to this level without deliberate police reform will yield little or no progressive outcomes.

The above finding of decidedly pro-rich at the margin was also found by Demery and Gaddis (2009) for Kenya which found that the poor people get little from tertiary spending. The study tried to generalize that for Africa by stating "As is typical in Africa, the poorest groups do not benefit from spending on tertiary education, with no change over time (at about 2 percent of the tertiary budget)". The finding in Nigeria was further in support of the previous findings by Castro-Leal (1999) for seven Sub-Saharan African countries; Ajay, Singh and Afridi (2000) for India and its principal states; Sahn & Younger (2000) for eight Sub-Saharan African countries; Rannan-Eliya et al (2001) for Bangladesh; Foster, Adrian, Naschold & Conway (2002) for Ghana, Malawi, Mozambique, Tanzania and Uganda; etc.

SUMMARY OF FINDINGS, DISCUSSION AND POLICY IMPLICATIONS

Major finding seems to suggest that the primary and secondary level of education which are largely funded by the lower tiers of government (state and local) will likely improve access to the poorest households with extra funding across regions and locations. The consequences and summary of the above results and findings can be summarized thus:

- There exits location, regional and other inequalities in who will likely benefit from further education funding;
- Further increase in public spending for primary education across the southern regions is more likely to improve access for more people from poorest households' groups and individuals irrespective of location (rural and urban) than secondary education cateris paribus.
- Primary and secondary education which is largely funded by the lower tiers of government (state and local) will likely improve access to the poorest households with extra funding across regions and locations.
- Education financing currently is inadequate;
- Resource constraints may be deeper than just financing;
- Tertiary education attracts much larger public per capita spending than primary and secondary, yet it is decidedly pro rich at the margin;
- Poor people lay claim to a growing share of primary spending;

- The poor have also seen their share of the per capita public secondary spending increase when compared to previous studies that used 2004 survey data set; and
- Poor people get little from tertiary spending.

The above findings have some implication on education financing in Nigeria. Let's recall that education financing has been embedded in the virtually endemic problems of fiscal federalism – in particular, the so called vertical and horizontal fiscal imbalances. Observation has shown that since independence, the search for appropriate instruments and formulas for minimizing each set of imbalances has been predominantly challenging. This is clear from the fact that between 1960 and 1991, sixteen changes were made to the constitution in attempts to resolve these issues (Hinchliffe, 2002)[13]. Education figures centrally in these debates for several reasons. First, primary school enrolments are part of the allocation formula for distributing centrally collected revenue across states. Second, the education sector typically consumes a significant share of state and local government resources. And third, the financial responsibility for primary education across levels of government has never been fully reserved.

While much attention in the past fifty years in Nigeria has been given to the issues of horizontal imbalances (particularly between states), less has focused on whether the revenue allocation arrangements are sufficient to minimize vertical imbalances and to allow each level of government to perform the responsibilities allocated to it. In the education sector where, in spite of some overlaps, the major financial responsibility for each separate level lies with a different tier of government, it is relevant to ask whether the vertical allocation criteria allow for the provision of 'appropriate' funding for the education system as a whole and for each individual level of the system.

A further analysis of spending composition across tiers of government is needed to understand if the country has been on incremental budgeting ideology. In public sector budgeting and spending in Nigeria (both the federal and state), there are two contending issues. First is the issue of zero budgeting, and secondly, the issue of incremental budget. The former is a budgeting process based on the evaluation of the sectors and their expenditure need. Such budgeting process assumes that the sectors under consideration require a new budget outlay annually, according to the development target in that sector. The later that Nigeria has adopted allocates budgets to sectors as a function of the previous budgetary allocation hence an increment based on the last budget estimate of the sectors. Incremental budget, therefore, is the marginal increase of the last budget plus the last budget. This process has been criticized for a number of reasons and takes no account of who is in need (targeting by need) and how every additional resource spent can yield a corresponding improvement in human development (targeting by impact).

Most member countries of the United Nations have basic education as a right of every child through the signing of the Child Right Acts (CRA). Nigerian currently has a Child Right Act (CRA) which is in the concurrent list thereby requiring domestication by the second tier of government (state) for smooth implementation measures that will cover legal, administrative and budgetary allocations that can help boost education and the safety of the average Nigerian child. The situation today is such that most of the Nigerian states especially states in the north-east and north-west where findings were not encouraging except for Jigawa are yet to domesticate the

[13] Hinchliffe, K. 2002. "Public Expenditure on education in Nigeria: Issues, Estimates and some Implications" *African Region Human Development Report working Paper Series*, The World Bank

Child Right Law (CRL). Oladiji (2013)[14] opined that Nigerian states where the CRL has been domesticated have improved in their budgeting for education and other children's rights under the law that covers every aspect of the lives of children and adolescents, broken down into the following four categories viz: survival, development, participation, and protection rights.

POLICY RECOMMENDATIONS AND CONCLUSIONS

Scaling up funding in education should not follow the usual incremental budgeting ideology but rather public spending must be targeted by *impact* and *need* for it to be meaningful and create equity. In the presence of higher regional inequality in education, region specific education policy target may be helpful just as the domestication of other enabling laws such as the Child Rights Law across all states. Child right Laws allow for further legal, administrative and budgetary allocations to issues relating to children and adolescents' education which are necessary ingredients towards equity in public spending across locations and regions.

A reallocation of spending towards primary and secondary schooling would lead to an improvement in the share of the total budget going to females and males alike as well as to poorer groups in the society. However, such decisions should not rest on the marginal benefit incidence estimates alone but be based on different states and regions sound understanding of how household behavior would be affected by such expenditure reallocations and other socio-economic factors that act as obstacles to school enrolment. This reallocation is necessary because the secondary level of education has technical, commercial and other vocational courses to make senior secondary school leavers employable and can move them up in the development ladder. A well-defined and functional primary and secondary education that empowers and provides jobs for people limits the number of people seeking to attain tertiary education.

The following education policy messages emerge from this analysis:

- *Continued efforts are needed to raise enrolments among the poorest:* With the evidence that further public spending in primary and secondary education will likely increase access among the poorest in most regions of the south and some at the north, there is the need for every possible effort that will help boost net primary and secondary enrolment rate to be put in place including legal, administrative and budgetary efforts.
- *Ensure that the gains in primary and secondary school enrolments are not lost:* Poor people have responded to the free basic education policy (UBE). The challenge now is to ensure the gains made are not lost. Poor quality of education and the failure to improve education attainment might eventually discourage attendance at school among poorer groups. Schooling standards at the primary level should be enhanced. A study by Demery and Gaddis (2009) has shown that any weakening in the primary education policy effort would impact most on the poorest especially poor girls. As a corollary, any further advances would benefit them the most.
- *Raise tertiary enrolments among the poor:* The very poorest groups in Nigeria (the bottom 20 percent) will likely gain very little from further tertiary

[14] Oladiji, O. 2013. Paper presented at the Women Empowerment and Reproductive Health Centre (WERHC) Policy Dialogue on Child right programming in Nigeria held on August 19th, 2013

education spending according to the marginal odds estimates. Our analysis suggests that even increased spending on tertiary schooling is unlikely to benefit even the bottom 40 per cent greatly—the greater share of spending will likely still be captured by the better-off. To frame appropriate interventions, research is needed on the main constraints faced by poor people in enrolling children in tertiary school—candidate factors are poor educational attainment at secondary level, costs of schooling, access to tertiary school facilities, and perceptions of the benefits of tertiary schooling in a farming context. One policy that may be considered is the introduction of tertiary school indirect bursaries[15] by different states that will focus on poor households. Such must be devoid of factors such as non-transparent, inconsistent in providing support to poorer households, and generally inefficient in its implementation procedure which has marred several good programmes initiated in Nigeria. Clearly the implementation of a tertiary school indirect bursary scheme needs to be made more transparent and actions taken to ensure that poorer households get to benefit.

This study has to shed light on whether expansion in public spending on education would be pro poor across regions and locations in Nigeria and as such findings will help in the design of future public spending across the levels of education in such a manner that allows it to create other incomes directly, some of which is expected to benefit poor households and these incomes in turn creates other incomes through the income-expenditure multiplier process.

The above recommendations are necessary ingredients that will boost the results of further financing in the education sector towards achieving not just literacy but the goals of equity and efficiency. Redefining and sharpening the role of different Nigerian governments in the sector is paramount.

REFERENCES

Ajay, M., Singh, J. and Afridi, F. 2000. "Who Benefits from Public Health Spending in India? Results of a Benefit-Incidence Analysis for India" Washington, DC: World Bank.

Ajwad, M. I. and Q. Wodon 2001. Marginal benefit incidence analysis using a single cross-section of data. www.wbln0018.worldbank.org /LAC/LACinfoclient

Ajwad, M. I. and Q. Wodon 2002. Marginal benefit incidence analysis using a single cross-section of data.www.wbln0018.worldbank.org /LAC /LACinfoclient

Alabi, R. A., Adams, O.O., Chime, C.C., Aiguomudu, E.E. and Abu, S.O. 2011.Marginal Benefit Incidence Analysis of Public Spending in Nigeria, Poverty and Economic Policy (PEP) Research Network PMMA Working Paper 2011-003

[15] By indirect, the entire cash will not be given to students but paid for their tertiary education needs such as tuition fees, accommodation, while different required books are provided to them. The cash aspect to be handed to the students will be for basic upkeep only.

Amakom, U., & K. Ogujiuba, 2010. "Distributional Impact of Public Expenditure on Education and Healthcare in Nigeria: A Gender Based Welfare Dominance Analysis" *International Journal of Business and Management,* Vol. 5, No 12 (2010), pp. 116-127

Amakom, U. 2012. "Public Expenditure on Education and Healthcare in Nigeria: Who Benefits and Why?" International Journal of Business and Management, Vol. 7, No 12, pp 48-59.

Amakom, U. 2013a. "Public Spending and Poverty Reduction in Nigeria: A Benefit Incidence Analysis in Education and Health", AERC Research Paper 254, Nairobi-KENYA, African Economic Research Consortium

Amakom, U. 2013b. "Public Spending Effectiveness and Distribution of Education and Healthcare Benefits in Nigeria" AfriHeritage Research Paper 9, Enugu-Nigeria, African Heritage Institution. http://www.afriheritage.org/publications/Paper%209.pdf

Castro-Leal, F., Dayton, J., Demery, L. and Kalpana M. 1999. "Public Social Spending in Africa: Do the Poor Benefit?" Washington, DC: World Bank.

Central Bank of Nigeria 2014. Statistical Bulletin, Abuja, Central Bank of Nigeria (CBN)

Demery, L. 2000. "Benefit Incidence: A Practitioners Guide, Poverty Development Group Africa Region, The World Bank

Demery, L. and Gaddis, I. 2009. Social Spending, Poverty and Gender Equality in Kenya: A Benefit Incidence Analysis (Revised Edition), Published by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH Support to Public Finance Management Reforms in Kenya

Foster, M., Adrian, F.,Naschold, F. and Conway, T 2002. "How, When and Why does Poverty get Budget Priority: Poverty Reduction Strategy and Public Expenditure in Five African Countries" Overseas Development Institute, Working Paper 168.

Hammer, J.S., I. Nabi, and J.A. Cercone. 1995. "Distributional Effects of Social Sector Expenditures in Malaysia, 1974-89," In D. Van de Walle and K. Nead, eds., Public Spending and the Poor: Theory and Evidence. John Hopkins University Press.

Hinchliffe K. 1989. Federation and Education Finance: Primary Education in Nigeria. *International Journal of Educational Development, 9(3)*

Hinchliffe, K. 2002. "Public Expenditure on education in Nigeria: Issues, Estimates and some Implications" *African Region Human Development Report working Paper Series*, The World Bank

Johannes, Tabi Atemnkeng and Noula, Armand Gilbert (2011). Gender and Increased Access to Schooling in Cameroon: A Marginal Benefit Incidence Analysis. Journal of International Women's Studies, 12(1), 94-106. Available at: http://vc.bridgew.edu/jiws/vol12/iss1/8

Lanjouw, P. and Ravallion, M. 1999. "Does Program Participation Reveal Benefit Incidence? Evidence for Rural India, 1993-94." World Bank, Washington, DC

Meerman, J. 1979. Public Expenditure in Malaysia: Who Benefits and Why. Oxford University Press.

NBS 2014. "The Nigeria Poverty Profile 2010 Report" Press Briefing by the Statistician-General of The Federation/Chief Executive Officer, National Bureau of Statistics, Dr. Yemi Kale Held At The Conference Room, 5th Floor, NBS Headquarters, Central Business District, Abuja On Monday, 13th February, 2014.

NBS 2022. "The Nigeria Multidimensional Poverty Index 2022. Available @ https://www.nigerianstat.gov.ng/pdfuploads/NIGERIA%20MULTIDIMENSIONAL%20POVERTY%20INDEX%20SURVEY%20RESULTS%202022.pdf

Oladiji, O. 2013. Paper presented at the Women Empowerment and Reproductive Health Centre (WERHC) Policy Dialogue on Child right programming in Nigeria held on August 19th, 2013

Rannan-Eliya, R., Badri, P., Killingworth, J. and Somanathan, A. 2001. "Equity in Financing and Delivery of Health Services in Bangladesh, Nepal and Sri Lanka" Washington, DC: World Bank

Ravallion, M. 2002. "An Automatic Safety Net?" Finance and Development. Vol.39, No.2, pp.21-23, IMF

Reinikka, R. 2002), "Public Expenditure Tracking and Service Delivery Surveys: A review of design and implementation issues" PEAM Course, May 23, DECRG, The World Bank

Sahn, D., & S. Younger. 2000. "Expenditure Incidence in Africa: Microeconomic Evidence." *Fiscal Studies* 21(3):329-48.

Sen, A. 1976. "Real National Income," Review of Economics Studies. Vol, 43, No.1,pp.19-39

World Bank. 2021. Available online: https://microdata.worldbank.org/index.php/catalog/3827 (accessed on September 22nd, 2023).

Van de Walle, D. and Kimberly N. 1995. "Public Spending and the Poor: Theory and Evidence". Baltimore and London: The Johns Hopkins University Press for the World Bank, 1995), pp. 226-58.

Yitzhaki, S. 1982. "Relative Deprivation and Economic Welfare." European Economic Review. Vol. 17, No.1,pp.99-113

Younger, S. 2003. Benefits on the Margin: Observations on Marginal Benefit Incidence. *The World Bank Economic Review*, Vol. 17, No. 1 89–106

Table 3: Estimates of marginal odds for levels of education (primary, secondary, and tertiary) in Nigeria by region and location

Primary Education	**North-Central**		**North-East**		**North-West**		**South-East**		**South-South**		**South-West**	
Quintiles	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
1	1.21*	1.189**	1.027	1.198*	1.109	1.079*	1.516***	1.41***	1.242*	1.226*	1.563**	1.546**
2	1.109*	1.117**	1.126***	1.011*	1.063**	1.4***	1.121*	1.21	1.102**	1.099***	1.22*	1.169*
3	1.188*	1.199*	1.12**	1.188***	1.154***	1.077*	1.062*	0.897**	1.085*	1.079***	1.006	0.748
4	1.015*	0.967*	1.024***	1.075*	0.931***	0.814*	0.769**	0.867	0.831*	0.843***	0.613***	0.809***
5	0.481*	0.534	0.703*	0.544*	0.747***	0.636	0.541**	0.62	0.744**	0.757***	0.602*	0.734*
Secondary Education	**North-Central**		**North-East**		**North-West**		**South-East**		**South-South**		**South-West**	
Quintiles	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
1	1.019*	1.013**	0.985***	0.971	0.978***	0.953*	1.02***	1.124*	0.973*	1.017***	1.103**	1.026**
2	1.022	1.032*	0.97*	1.025***	1.031***	0.911*	1.026*	1.133**	1.002*	1.102*	1.03*	1.024**
3	1.055*	1.011**	1.011***	1.057*	1.143**	1.047***	1.016*	1.14*	1.012**	1.042***	1.013*	1.032*
4	1.092*	1.112**	1.021**	1.025*	1.026*	1.081*	0.936**	1.17***	1.014	1.029	1.046*	1.014*
5	0.814***	0.835	1.013**	0.441*	0.828**	1.016	1.011*	0.441	1.01***	0.813***	0.815*	0.913*
Tertiary Education	**North-Central**		**North-East**		**North-West**		**South-East**		**South-South**		**South-West**	
Quintiles	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
1	0.581	0.774*	0.75**	0.801	0.75*	0.801**	0.656**	0.689	0.846*	0.605**	0.849*	0.805*
2	0.939*	0.813*	0.937***	0.915	0.884***	0.814*	1.03	0.921*	0.97**	0.887***	0.959**	0.902***
3	0.979**	1.053*	0.938**	0.828**	0.959***	0.86	0.902*	1.021**	0.879***	0.895***	0.893	1.012
4	1.136*	1.046**	1.152**	1.174*	1.121*	1.213**	1.102&&	1.049***	1.104	1.261*	1.141*	1.113*
5	1.364*	1.314**	1.224**	1.283***	1.286***	1.312**	1.311**	1.321***	1.201**	1.353**	1.162**	1.171**

*Source: Author's estimates based on expenditure data and HNLSS 2009/2010; Note: Coefficients are statistically significant at * (90%); ** (95%); *** (99%); and not statistically significant when there is no star*