

# Non-inclusive Growth Among Rural Households in Nigeria: A Micro Level Analysis of Income Growth and Equitable Distribution of Resources

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**Abstract:** This study assessed Non-Inclusive Growth among rural households in Nigeria. Secondary data from General Household Survey (GHS) of 2010/2011, 2012/2013 and 2015/2016 were used. The GHS is a panel data consisting of 5,000 Households) of which 3,347 rural households were used. Data were obtained on socio-economic characteristics, living condition characteristics and geopolitical zones. Poverty gaps were estimated and matched to the economic growth rate to categorise households into non-inclusive growth. Data were analysed using descriptive statistics, Foster-Greer-Thorbecke (FGT) and Probit model. The mean age of the rural households were  $41.8 \pm 9.4$ ,  $43.7 \pm 9.4$ , and  $46.9 \pm 9.4$  years, while the mean household sizes were  $8.0 \pm 2.0$ ,  $7.3 \pm 3.1$  and  $7.5 \pm 1.8$  for 2010/2011, 2012/2013 and 2015/2016 respectively. Majority were male, 65.0%, 65.4% and 65.5%, while 64.3%, 63.1% and 63.4% were married in 2010/2011, 2012/2013 and 2015/2016, respectively. households with no formal education (45.3%) was higher in 2012/2013 than in 2010/2011 (43.3%) and 2015/2016 (40.2%). The non-inclusive growth was higher without access to health facilities, access to energy, access to potable water and employment in periods 2010–2013, 2013–2016 and 2010–2016. The Probit results show that age of rural households, household size, education, access to health facilities, access to energy, access to potable water, access to credit, North East zone, North West zone, South South zone and South West zone influenced non-inclusive growth among rural households. Therefore, access to facilities and equitable share of resources should be paramount in the rural areas in order to reduce the poverty status of the people vis a vis reduced non-inclusiveness of growth.

**Keywords:** Non-inclusive Growth, Rural Households, Economic Growth, Poverty, Nigeria

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## 1. Introduction

Reduction in poverty is about improving the living standards of human beings, especially the poor. In the past two decades, Africa is one of the developing worlds that have recorded an increasing number of people that are poor and living with a lower earning than the global poverty line of \$1.25 per day [6, 3]. Alleviation of poverty is at the focal point of the strategy conversation in each public organization, global association and non-governmental organization [10]. Kakwani and Pernia (2000) stated that the living standard of the rural people could be increased through reduction in poverty and this would invariably improve human livelihood

and well-being [11]. The importance of poverty is reflected in the fact that it is the first sustainable development goal (SDG) that seeks to end poverty in all forms and the goals has been to set the rural poor as the focal point of development in order to improve their living standards [5]. Omobowale (2014) described poverty as a state where the people are deprived of good things of life and the ability to achieve the desired state of wellbeing and socially acceptable standard of living [18]. Incidentally, the poverty prevalence is generally intense in rural areas, close to 80% or huge proportion of the population lives below the poverty line, with constricted social and infrastructural amenities [16].

Nigeria is a country with an abundance vast pool of human

resources, Demographically, Nigeria is the most populous country in Africa, the seventh world-wide with an estimated population of over 200 million in 2020 and 8<sup>th</sup> as the largest exporter of crude oil in the world with many other resources [21]. Despite the Nigeria enormous resources among the Sub Saharan African countries, a large proportion of her population still living below income poverty line of US\$1.90 per day [3].

The growth in and equitable distribution of income are prerequisites for reducing poverty. Amoo (2018) stressed that the actual income of the poor can be enhanced by improving the quantity and quality of produce through establishment of poverty reduction strategies and implementation of the strategies which would be targeted at factor and commodity markets [5]. However, for poverty reduction strategies and initiatives to be successful, favourable inclusive proposals for inclusive growth in terms of adequate infrastructure and improvement in essential amenities, such as access to energy, provision of basic education for the rural poor, availability of health facilities and adequate provision of financial assistant for the rural people should be encouraged [9, 4]. Inclusive growth centres consideration around the degree to which the marginalized, the youth, poor men and women are engaged in and add value to economic growth; as assessed through improvements in household living standards and the available resources they require in enhancing higher incomes in the future [14]. Mendoza and Mahurkar (2012) also opined that non-inclusive growth is a growth process which advances non-equitable resources for economic agent such as the marginalized, poor women, youth and unemployed [13].

The significance of equal opportunities for individual lies in its inherent worth which depends on the fundamental right of every individual that equal opportunity should be circulated to all [2]. It is impossible to overemphasize the importance of equitable access to services, creating employment and properties as such access is critical in simulating the economy to long-term development [19]. The promotion of inclusive growth needs a policy that is intentionally developed to help the poor thereby allowing the engagement and contribution of members to have equal advantage proportionally to the growth. However, Mendoza and Mahurkar (2012) also explained inclusive growth as growth that is comprehensive in achieving sustainable growth that will produce an expanded economic opportunities in order to have involvement of members of the society to contribute and benefit from the economic growth [13]. Rauniyar and Kanbur, (2010) opined that the definition of inclusive or non-inclusive growth varies depending on the environment and datasets [23]. The definition of inclusive growth still coupled with equitable distribution of opportunities and which consist of economic, societal and institutional dimensions in achieving the growth process. Inclusive growth is an economic growth that results in a broader access to sustainable economic and social opportunities for a number of people or regions as a way of protecting the marginalized in the society if the targeted audiences are given the opportunity of equal justice and

without being sentimental in distribution of goods [7, 22].

Growth is non-inclusive when individual members of a society are not contributing and participating in the growth process in an equitable basis irrespective of their individual conditions [20]. Growth inclusiveness therefore laid emphasis on making opportunities and focusing on how the opportunities would be available to all and also ensuring equitable access to them. Equity in terms of having access to opportunities will centre on bigger savings in expanding human capabilities (including the poor rural households) and have opportunity for beneficial utilization of resources.

Many developing countries have failed in reducing poverty despite achieving rapid economic growth [18]. Rising income and income inequalities had been experienced in Nigeria for the past two decades. These led to the concerns that the country's economic growth was not pro-poor and inclusive in terms of access to resources and facilities [15]. More so, high level of inequality resulting from unequal access to income opportunities, education, health facilities and basic infrastructure has led to high poverty rates in Nigeria which implies that the rates of poverty is beyond low incomes, savings and growth [19]. The growth achieved over the years has not translated into poverty reduction despite the fact that the Nigeria economy recorded significant growth [8]. There is apprehension on the fact that the advantage of growth has not really gotten to the rural households especially those in Nigeria [16]. However, this benefit is essential for expanding the economic opportunities of the poor people. Many developing countries like Nigeria still lack the ability to utilize the resources and capacity to accommodate the growing awareness of inclusive growth strategy on the development agenda [6].

Unemployment rate has assumed an upward trend, rising from an average of 9.2% between 1991 and 2000 to 23.1% over the period of 2011-2014. The unemployment rate increased from 14.2% in 2016 to 18.8% in the third quarter of 2017 [3]. Similarly, people's welfare had worsened over time in spite of the persistent economic growth in term of access to employment, social amenities and the basic necessity of life [15]. Nigeria's poverty rate (69%) has not declined significantly and remains high between 2014 – 2016. There is still significant disparity between rural and urban households, (both rich and poor) when considering households' access to employment, social amenities and basic necessities of life. This is because economic growth has not been equitably shared among the groups in the society [1]. Therefore, a lot of developmental strategies, social policies and social protection programmes have been implemented in Nigeria. Example of these projects are Community Based Poverty Reduction Programme (CPRP), National Poverty Eradication Programme (NAPEP), Local Empowerment and Environmental Management Programme (LEEMP), National Economic Empowerment Development Strategy (NEEDS), Structural Adjustment Programme (SAP), Community Development Project (CDP); Agricultural and Rural Development Project (ARDP), National Fadama Development Project (NFDP II and III) and

Agricultural Transformation Agenda (ATA) [5, 1]. However, the valuable results of the benefits of growth in Nigeria were yet to reach the vast majority of the rural households despite huge government spending on various programmes [5].

The concept and empirical studies of non-inclusive growth is scanty and a lot of studies have not been conducted by (research) scientists in Nigeria. This work will be one of the contributions to knowledge in this area as it attempts to examine the determinants of non-inclusiveness of growth at the household level in rural Nigeria.

## 2. Materials and Methods

### 2.1. Area of the Study and Source of Data

This research was conducted in Nigeria. Nigeria is a West African nation with a population of approximately 200 million people and a 3.8 percent average growth rate [21]. The data used for this study were sourced from the National Bureau of Statistics (NBS). The secondary data from NBS is a panel survey that is, General Household Survey (GHS) carried out periodically throughout the country in periods 2010/2011, 2012/2013 and 2015/2016. The first GHS survey conducted in 2010 is referred to as wave 1 while the second survey in 2013 and third survey in 2016 are referred to as wave 2 and wave 3 respectively. The GHS-Panel is a modern and important method for researching in income-generating behaviors and socio-economic outcomes in Nigeria because of its ability to track the same households over time.

### 2.2. Sampling Procedure

The General Household Survey (GHS) survey is a panel survey of 5,000 households carried out periodically throughout the country by National Bureau of statistics (NBS). The first GHS survey was carried out in 2010 referred to as wave 1. While the second survey in 2013 and third survey in 2016 were referred to as wave 2 and wave 3 respectively. The ability to follow the same households over time makes the GHS-Panel a new and powerful tool for studying and understanding trends in income generating activities and socio-economic outcomes in Nigeria. The GHS Panel is the first panel survey to be carried out by NBS. Nigeria is one of the eight countries being supported by the World Bank to strengthen the production of household-level data. The sample design was a 2-stage stratified sampling. The first stage involves the random selection of 120 housing units called enumeration areas (EAs) from each state and the Federal Capital Territory. At the second stage, a total selection of five (5) housing units from each of the selected enumeration areas was chosen.

### 2.3. Method of Data Analysis

The socio-economic characteristics of the rural households showing the proportions of households that experienced non-inclusive growth between periods 2010 and 2013; 2013 and 2016 and; 2010 and 2016 were examined with the use of descriptive statistics such as frequency distribution,

percentages, ratios, mean and standard deviation.

### 2.4. Consumer Price Index-Based Poverty Index

$$P_i = \frac{P\alpha}{C_i} \quad (1)$$

Where;

$P_i$  = poverty line in  $i$ th year,

$P\alpha$  = 2009 CBN (2010) estimated poverty line,

$C_i$  = Consumer Price Index.

$$C_i = \frac{C_x}{C_y} \quad (2)$$

Where:

$C_i$  = Consumer Price index,

$C_x$  = Mean CPI In reference year,

$C_y$  = Mean 2009 CPI,

$i$  = 2009, 2010, 2013 and 2016.

$$P_j = \frac{E_j - P_i}{P_i} \quad (3)$$

Where:

$P_j$  = Poverty gap,

$E_j$  = Household *per capita* expenditure,

$P_i$  = Poverty line in  $i$ th year,

$J$  =  $j$ th household,

$$S_j = P_{x_t} - P_{x_{t-1}} \quad (4)$$

Where:

$S_j$  = Inclusiveness measure,

$P_{x_t}$  = Poverty gap in current year,

$P_{x_{t-1}}$  = Poverty gap in the previous year,

$J$  =  $j$ th household,

$S_j > 0$  = Non-inclusive growth,

$S_j < 0$  = Inclusive growth.

Consumer Price Index (CPI) – Based Poverty Profile for Rural Nigeria for periods 2010/2011, 2012/2013 and 2015/2016 were estimated to determine the proportions of rural households that are non-inclusive and estimate factors that are responsible for non-inclusive growth in rural Nigeria. Consumer Price Indexes (CPI) and the poverty line of year 2009 was used to upscale the poverty lines of years 2010, 2012 and 2015. The poverty line was scaled up by dividing the consumer price indexes in years 2010, 2012 and 2015 by the estimated consumer price index of 2009. The results were used to multiply the poverty line of 2009 to estimate the poverty lines for the 3 periods 2010 2011, 2012/2013, and 2015/2016. Poverty lines were estimated for the three periods following the poverty lines produced in 2009 while poverty gaps between the periods were also estimated in order to know the differences in the poverty gaps and how far away the households to the poverty line in each period [6]. Therefore, households that were below the poverty line between the periods were categorized as being non-inclusive growth (the dependent variable) which takes a

value of 1 while households that are above the poverty line were inclusive and takes the value of 0.

The consumer price index (CPI) of 95.78 in 2009 [6] and the poverty line ₦54,401.16 in 2009 were used in order to scale up the poverty lines in 2009 to 2010, 2013 and 2016 values. The consumer price index for years 2010, 2013 and 2016 were 108.92, 135.48 and 173.13 respectively. This was achieved by generating the poverty lines for the three periods and derived as follows: First, the CPI for each year (2010, 2013, and 2016) was divided by the CPI of 2009.

That is,

CPI in 2010 divided by CPI in 2009 to have a raising factor of 1.1372 for 2010;

CPI in 2013 divided by CPI in 2009 to have raising factor of 1.4145 for 2013; and CPI in 2016 divided by CPI in 2009 to have a raising factor of 1.8076 for 2016.

The raising factor was used to multiply the poverty line ₦54,401.16 of 2009 to upscale the poverty lines to ₦61,864.42 in 2010; ₦76,949.98 in 2013 and ₦98,334.44 in 2016. Secondly, poverty gap was estimated for each period; that is, poverty line minus the households' *per capita* expenditure divided by the poverty line. Thirdly, the differences in the poverty gaps between periods 2010/2011 and 2012/2013; and the difference between periods 2012/2013 and 2015/2016 were calculated to compare the same households between periods. Therefore, to know that growth between two periods was non-inclusive, if the difference in poverty gap between the two periods is positive, this shows that, as expenditure increases, poverty level is also increasing relative to the growth rate in GDP in Nigeria indicating that households in the growth process is non-inclusive; and if the difference in poverty gap is negative, it shows that there is reduction in poverty and therefore there is growth inclusiveness.

The Probit regression model was used to estimate the factors that are responsible for non-inclusive growth in rural Nigeria. The dependent variable was growth inclusiveness, which has a value of 1 for non-inclusive growth and 0 for inclusive growth. The model is written as follows:

$$Y_{ij} = \beta_0 + \beta_1 X_i + \beta_2 X_2 + \varepsilon_i \quad (5)$$

Where;

i = ith household,

j = jth period,

Y = growth inclusiveness (Y = 1 for non-inclusive growth, 0 otherwise),

$\beta_i$  = coefficients estimate,

$\beta_0$  = constant,

$X_i$  = vector of explanatory variables,

$\varepsilon_i$  = Random error,

The explanatory variables are;

$X_1$  = sex of household head (1 if male, 0 if female),

$X_2$  = age of household head (years),

$X_3$  = marital status of household (1 if married, 0 otherwise),

$X_4$  = household size (number of persons),

$X_5$  = education of household (years),

$X_6$  = occupational status of the household (1 if farming, 0 otherwise),

$X_7$  = access to credit by household (1 if yes, 0 otherwise),

$X_8$  = access to health facilities by household (1 if yes, 0 otherwise),

$X_9$  = land ownership by household for farming (1 if yes, 0 otherwise),

$X_{10}$  = access to potable water (1 if yes, 0 otherwise),

$X_{11}$  = access to energy (1 if yes, 0 otherwise),

$X_{12}$  = North east regional dummy (1 if yes, 0 otherwise),

$X_{13}$  = Northwest regional dummy (1 if yes, 0 otherwise),

$X_{14}$  = North Central regional dummy (1 if yes, 0 otherwise),

$X_{15}$  = South east regional dummy (1 if yes, 0 otherwise),

$X_{16}$  = South south regional dummy (1 if yes, 0 otherwise),

$X_{17}$  = South west regional dummy (1 if yes, 0 otherwise), and

$\varepsilon_i$  = random error.

### 3. Results and Discussion

#### 3.1. Socio-Economic Characteristics of Households in Rural Nigeria

The distribution of socio-economic characteristics of rural households in Nigeria in year 2010, 2013 and 2016 is shown Table 1 and Figure 1. The results show that (17.7%), (44.0%) and 37.8% among the household were below 40 years in age while (77%), (49.6%) and (53.8%) of the household were between the ages of 41 – 60 years in 2010, 2013 and 2016 respectively, with a mean value of  $41.8 \pm 9.4$ ,  $43.7 \pm 9.46$ , and  $46.93 \pm 9.39$  years in years 2010, 2013 and 2016 respectively, which implies that a significant proportion of the respondents were middle-aged and may be physically capable, indicating that they should be healthy and agile to engage in economic activities. Also, few household 5.1%, 6.3% and 8.3% were above the age of 60 years in 2010, 2013 and 2016 respectively.

Not less than 1.3% of household had household size of less than 5 members in years 2010 and 2013 while there was no household with less than 5 persons as members in year 2016. Majority (90.42%, 84.9% and 81.5%) in years 2010, 2013 and 2016 respectively, had household size of 6 to 10 members while 8.3%, 13.7% and 18.6% had household size being more than 10 members. The mean household size were  $8 \pm 2.03$ ,  $7.3 \pm 3.12$  and  $7.6 \pm 1.6$  in years 2010, 2013 and 2016 respectively. The sex of the rural households show that 65.0% and 35.0% were male and female household heads respectively across the years. This indicates that more males were involved in various activities than the females especially farming in rural Nigeria while the females might be involved in small farming and engaged more in processing of agricultural produce. Most (64.3%) were married in 2010 while about 63.1% were married in 2013 and 63.4% were married in 2016. However, 30.1%, 31.3% and 21.3% of the household

were never married in 2010, 2013 and 2016 respectively. The results show that, rural individuals that are still single reside in the rural areas. This could be attributed to the fact that more youths were involved in agricultural activities in the rural areas. Also, 3.21%, 4.15% and 9.92% of the household heads were divorced while 2.4%, 1.2% and 5.3% were widowed in 2010, 2013 and 2016 respectively.

For human capital assets, the result shows that 43.4%, 45.3% and 40.2% of rural households had no formal education in years 2010, 2013 and 2016 respectively. Not less than 15.2% of the rural households had primary education in 2010 while 18.9% and 20.1% had primary education in 2013 and 2016 respectively. Also, 22.7% had secondary education in 2010, 17.8% had secondary education in 2013 while 19.2% had secondary education in 2016. In terms of attainment of post-secondary education, 18.7%, 18.1% and 20.6% had post-secondary education in year 2010, 2013 and 2016 respectively. The results revealed that educational status in 2013 worsened as higher proportions of rural households were recorded with no education. However, the primary educational attainment improves in the year 2013 (18.9%) and year 2016 (20.1%) than year 2010 (15.2%). Also, there was an improvement in the educational attainment in 2016. The number of rural households that had no education was reduced in 2016 and there was appreciable proportion (20.6%) of rural households in the year 2016 that attained post-secondary education. Considering the importance of education as human capital asset, inadequate access is a disincentive to abilities of population to explore growth opportunities especially in rural communities.

Result also shows that in terms of the employment status of the household, 81.5% in (2010), 82% in (2013) and 79.2% in 2016 were self-employed. Also, 15.7%, 15.3% and 17.7% were in paid employment in 2010, 2013 and 2016 respectively. The higher proportions that were the self-employed among the rural households might not be unconnected to the fact that majority (96.4%, 94.1% and 88.9% in 2010, 2013 and 2016 respectively) in the rural areas were involved in agricultural activities as major occupation. Also, the few rural members that were in paid employment were the civil servants that were engaged either in government establishments, corporate or non-governmental

organizations and they were also involved in farming activities. However, it could be noted that there is no white collar job in the rural areas which makes employment or creation of job difficult except they are fully engaged in agriculture. This is in line with [1] who portrayed that a large proportion of the rural sector is primarily an agrarian society. This implies that, larger number of people living in the rural areas were mostly farming households that engaged in various agricultural activities.

A small proportion of the population (2.04%, 1.85% and 2.10%) were unemployed in the years 2010, 2013 and 2016 respectively. Also, 0.73%, 0.51% and 1.05% were retired in year 2010, 2013 and 2016 respectively. The results revealed that more rural households were unemployed and retired in 2016 which might be due to increasing in ages which corroborates the findings of [8] who opined that increasing ages or aged individual in the society depend on another as their capacities to work effectively deteriorate.

The results in Figure 1 also revealed that, 52.24% of the population 60.96% and 54.34% had no access to credit in years 2010, 2013 and 2016 respectively, while 47.73%, 39.01% and 45.65% had access to credit. However, the situation in accessing credit facilities worsened in year 2013 which might be due to government policies in lending and inability to provide credit institutions in the rural areas. Access to health facilities was worse off across the years as few percentage were revealed in the rural areas. A greater proportion (99.19%, 93.36% and 99.19%) of the rural households had no access to health facilities in years 2010, 2013 and 2016 respectively. The proportion of rural households without access to energy was higher (58.11%) in 2010, (61.79%) in 2013 and (54.97%) in 2016 than those that had access to energy. This result corroborate with the findings of [18]. A substantial proportion (57.6%, 67.79% and 66.24%) of the population in the rural areas also had no access to potable water in years 2010, 2013 and 2016 respectively while 42.40%, 32.21% and 33.76% had access to potable water. This might not be unconnected to the effect of rural developmental programme implemented by the government by providing good drinking water in the rural areas. The results across the three periods indicate that access to infrastructural facilities in the rural areas worsened more in period 2012/2013.

*Table 1. Socio-economic Characteristics of Rural Households in Nigeria.*

Variable	2010/2011		2012/2013		2015/2016	
	Frequency	%	Frequency	%	Frequency	%
Age (yr.)						
<40	592	17.7	1475	44.06	1267	37.84
41 – 60	2,582	77.15	1660	49.60	1801	53.82
>60	173	5.15	212	6.34	279	8.34
Mean	41.77		43.69		46.93	
SD	9.38		9.46		9.39	
Household size						
<5	43	1.28	43	1.30	0	0.00
6 – 10	3,026	90.42	2844	84.97	2726	81.45
>10	278	8.3	460	13.73	621	18.55
Mean	7.95		7.3		7.56	
SD	2.03		3.12		1.76	

Variable	2010/2011		2012/2013		2015/2016	
	Frequency	%	Frequency	%	Frequency	%
Sex						
Male	2176	65.01	2189	65.40	2192	65.49
Female	1171	34.99	1158	34.60	1155	34.51
Occupation						
Agric.	3226	96.38	3148	94.05	2978	88.96
Non-Agric.	121	3.62	199	5.95	369	11.02
Marital status						
Never married	1009	30.13	1046	31.25	714	21.34
Married	2151	64.25	2111	63.08	2123	63.42
Divorced	107	3.21	139	4.15	332	9.92
Widowed	80	2.4	41	1.23	178	5.32
Education						
No education	1,451	43.35	1515	45.26	1344	40.15
Primary	509	15.21	632	18.88	673	20.12
Secondary	760	22.71	595	17.77	642	19.17
Post-secondary	627	18.72	606	18.09	688	20.56
Employment						
Self employed	2,728	81.51	2756	82.36	2650	79.18
Paid employment	526	15.72	512	15.28	591	17.67
Unemployed	68	2.04	62	1.85	70	2.10
Retired	24	0.73	17	0.51	35	1.05

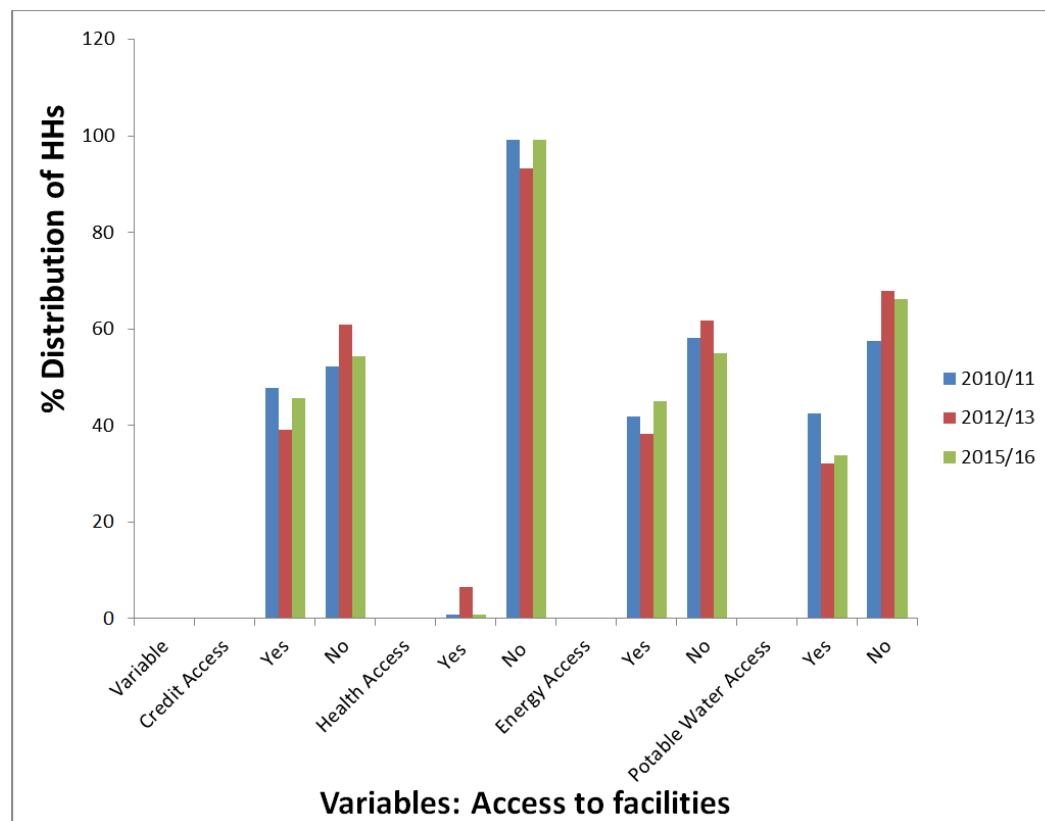


Figure 1. Distribution of Rural Households by Access to Facilities in Periods 2010/2011, 2012/2013 and 2015/2016.

### 3.2. Rural Households' Experience of Non-inclusive Growth in Between 2010 and 2013; 2013 and 2016; and 2010 – 2016

The proportion of the rural households. That had non-inclusive growth is shown in Table 2.

The results show that the mean of the household across the six geo political zones that had non-inclusive growth

between 2010 - 2013 was 51.2% while 49% and 47% have non-inclusive growth between periods 2013 – 2016 and 2010 – 2016 respectively. This indicates that poverty worsened between period 2010 and 2013 among the household in rural Nigeria than period 2013 and 2016 which might be due to inequitable access to opportunities. This agreed with the study of Omotola and Okoruwa (2016) that poverty in rural areas had become a persistent issue. But there were little improvement in terms of having equitable share to

opportunities between periods 2013 and 2016 [20]. Among the male households, an average of 51.0% was non-inclusive while 52.0% was non-inclusive among the female household between 2010 and 2013. While, in 2013 – 2016, the proportion of rural household that have non inclusive growth reduced to 46% male and 49% female. The proportion of non-inclusive growth (51.4%) of rural households that were in category of age above 60 years was higher in 2010 – 2013 while 44.2% had non inclusive growth in 2013 – 2016 which indicates an improvement in terms of access to opportunities. Household size shows that household size less than (<3) had high percentage (41.1%) in 2010 – 2013 and (56.4%) in 2013 – 2016 among the rural households that experienced non-inclusive growth in the rural areas. The results indicate that as the household increases the proportion of the non-inclusiveness of growth increases. The result is in tandem with the findings of [1]. The results also show that the proportion (48.5%) of rural households that had no formal educational attainments were non-inclusive in periods 2010 – 2013 while it worsened more in periods 2013 – 2016 as 56.2% were non-inclusive. In terms of households that attended primary level, 51.8% and 46.55 were non-inclusive in periods 2010 – 2013 and 2013 – 2016 respectively. Also, 52.5%, 48.7% and 49.0% were non-inclusive in 2010 – 2013 and 2013 – 2016 respectively in terms of rural households that attained secondary education. The same trend was recorded in terms of attaining tertiary education. It could be observed that there was appreciable decrease in non-inclusiveness of growth as the rural households had education especially in periods 2013 – 2016.

More than half 53.6% of the rural households had non inclusive growth in terms of engaging in agriculture as their major occupation in period 2010 and 2013 while 47.8% had non-inclusive growth in between periods 2013 and 2016. The proportion of the rural households that were not engaging in farming activities (non-agricultural activities) showed that 64.7% were in the category of non-inclusive growth in period 2010 and 2013 while 51.8% and had non-inclusive growth in periods 2013 to 2016. The results

indicate that more than average of rural households that were engaged in agricultural and non-agricultural activities were not equitable with respect to economic resources which is associated with non-inclusiveness of growth. This study also agreed with Oluseye and Gabriel (2017) who posited that poor educational attainment and inadequate agricultural financing were prerequisite for non-inclusive growth in the rural areas [17].

The results for access to opportunities in Table 2 also revealed that 50% of the rural household had non inclusive growth to access to health facilities in 2010 - 2013 while it worsened more in 2013 – 2016 where about 58% of the rural households that had access to health facilities were non-inclusive. A larger proportion (63.2% and 72.9%) among the rural household heads without access to credit had non inclusive growth in periods 2010 – 2013 and 2013 – 2016 respectively. The result also indicates that inequitable access to credit worsened more in 2013 – 2016 than period 2010 - 2013. More than a quarter (32.9%) of the rural households that have access to credit were non-inclusive between 2010 and 2013 while 50.1% had non inclusive growth in 2013 and 2016.

Also 87.3% in 2010 - 2013 and 70.4% in period 2013 – 2016 among the rural household with no access to energy such as electricity had non - inclusive growth while about 35.9% and 41.6% with access to energy had non-inclusive growth. Furthermore, 74% of the rural households in Nigeria was non inclusive in the periods 2010 – 2013 in access to potable water while 71% were non inclusive in the period 2013 – 2016. This might be due to the fact that rural developmental project or programme purposely implemented for the rural areas did not really have positive effect in their welfare and its benefits were not equitably shared. This corroborates the findings of Oluseye and Gabriel (2017) who found that rural households were not equitably distributed in the use of energy such as electricity and are also lacking easy access to a good water source that is suitable for drinking (potable water), especially through improved source like pipe borne water and bore holes [17].

**Table 2.** Characteristics of the rural sectors showing the Percentage of Non - inclusive growth: 2010 - 2013; 2013 - 2016; and 2010 – 2016.

Variables	HHs	2010 – 2013		2013 – 2016		2010 – 2016	
Geo - Zones	Total HH	Freq	% of NIG	Freq	% of NIG	Freq	% of NIG
NC	577	302	52.34	328	56.85	308	53.38
NE	659	316	47.95	339	51.44	319	48.41
NW	728	357	49.04	286	39.29	306	42.03
SE	590	302	51.19	253	42.88	253	42.88
SS	540	290	53.70	264	48.89	269	49.81
SW	253	134	52.96	139	54.94	114	45.06
Sex							
male	2616	1321	50.50	1207	46.14	1237	47.29
female	731	380	51.98	362	49.52	332	45.42
Age							
< 40	1206	604	50.08	526	43.62	566	46.93
41 - 60	1439	736	51.15	729	50.66	689	47.88
> 61	702	361	51.42	310	44.16	314	44.73
Marital status							
married	2578	1302	50.50	1357	52.64	1221	47.36
never married	627	321	51.20	315	50.24	282	44.98
widowed	117	66	56.41	65	55.56	54	46.15

Variables	HHs	2010 – 2013		2013 – 2016		2010 – 2016	
Geo - Zones	Total HH	Freq	% of NIG	Freq	% of NIG	Freq	% of NIG
Educ. level							
No Education	1267	614	48.46	712	56.20	611	48.22
Pry education	1295	671	51.81	602	46.49	581	44.86
Sec. education	281	301	52.53	279	48.69	281	49.04
Tert. education	212	115	54.25	92	43.40	96	45.28
Access to Health facilities							
no	3321	1688	50.83	1458	43.90	1558	46.91
yes	26	13	50.00	15	57.69	11	42.31
Access to Credit							
no	1749	875	50.03	915	52.32	835	47.74
yes	1598	826	51.69	801	50.13	734	45.93
Access to Energy							
no	1785	1560	87.39	1256	70.36	1509	84.54
yes	1562	560	35.85	650	41.61	458	29.32

HHs = Households, NIG = Non-inclusive growth.

*Table 3. Determinants of Households being in Non-inclusive Growth Group in (2010 – 2013 and 2013 – 2016).*

Variable	Periods 2010 – 2013			Periods 2013 – 2016		
	Coefficient	Standard error	Marginal effect	Coefficient	Standard error	Marginal effect
Sex	-.01020***	.00185	-.00983	.012513	.01502	.00068
Age	.02009	.00404	.00072	.01859***	.00367	.00059
Marital Status	.00442	.01991	.00763	.02251	.01656	.01329
HHsize	.08954***	.48296	.03355	.91135***	.00427	.06468
Education	-.09745***	.00363	.02019	-.11102***	.00291	-.13044
Employment status	-.62313***	.02748	-.13044	-.58930	.02461	-.11961
Access to credit	-.11658***	.02563	-.00841	.33104***	.01897	-.10971
Access to health facilities	-.05684**	.02262	-.01618	-.20558***	.01632	-.08174
Land ownership	-.03882	.02434	-.00223	-.16052	.01572	-.07158
Access to potable water	.11019	.03364	.02499	-.32022***	.05102	-.01519
Access to energy	-.67402***	.25171	-.01840	-.25687***	.02108	-.03988
North east	-1.13498***	.04286	-.05516	-.28003	.02798	-.03644
North west	-.16810***	.05265	-.02162	-.16248***	.03165	-.04089
South east	-.15860***	.04562	-.03591	-.05873	.03303	-.00064
South south	-.13741	.08463	-.02109	-.65820***	.03040	-.02555
South west	-.41296**	.03809	-.00101	-.88848***	.05991	-.00443
constant	12.0910***	.66027		-4.5609***	.64691	
No of observation = 3,347				No of observation = 3,347		
Log – likelihood = -2308.67				Log – likelihood = -2296.65		
Pseudo R <sup>2</sup> = 0.5625				Pseudo R <sup>2</sup> = 0.6732		
Prob > Chi <sup>2</sup> = 0.0006				Prob > Chi <sup>2</sup> = 0.0062		

\*, \*\*, \*\*\* denote statistical significant 10%, 5% and 1% respectively.

### 3.3. Factors Influencing Households Belonging to Non-inclusive Growth Group in Periods 2010 – 2013 and 2013 - 2016

The result of Probit Regression Model on factors influencing non-inclusive growth in rural Nigeria is shown in Table 3. The result shows that in period 2010 – 2013, R<sup>2</sup> is 0.5625 and significant at 1% while in period 2013 – 2016, R<sup>2</sup> is 0.6732 and also significant at 1%. Out of the 16 explanatory variables in the model, 11 were found to have a substantial impact on the likelihood of a rural household experiencing non-inclusive growth between periods 2010 and 2013. These are sex, household size, education, employment status, access to credit, access to health facilities and access to energy. Also, four geographical zones (North East (NE), North West (NW), South East (SE) and South West (SW)) while 10 explanatory variables significantly influenced the probability of rural household experiencing

non-inclusive growth between periods 2013 and 2016. These include age of household heads, household size, education, access to credit, access to health facilities, access to potable water, access to energy and three geographical zones (North West, South South and South West).

The results show that being a member of a male household tended to reduce the probability of experiencing non-inclusive growth by 0.98% in 2010 – 2013 period. This suggests that having increase in population of male-headed household promotes attainment of inclusive growth in the rural sector of the economy. This is traceable to the greater access of male to productive resources, especially land. But between period 2013 and 2016, the coefficient of the male headed household was not significant. This might be attributed to the fact that female households were also contributing to the growth in the rural sector. The result of the marital status shows that being married had no significant influence in both periods 2010 – 2013 and 2013 – 2016.

The results of rural households in terms of age shows that age had no significant influence in periods 2010 – 2013, while the results of the marginal effect in periods 2013 – 2016 shows that an increase in age would lead to increase in non-inclusive growth. This implies that as rural households are getting older, the capability to work might be reducing and the sets of rural households would increase the level of dependents on other households.

The result of the household size revealed that, the higher the number of people among rural households, the higher the probability of being non-inclusive. The results of the marginal effect of household size shows that as household size grows, the probability of being non-inclusive increases by 3.4% in periods 2010 – 2013 while in period 2013 – 2016, the probability of increasing in non-inclusiveness of growth worsened by 6.5%. This result agreed with the work of Omonona (2009) and Adeoti (2014) who posited that increase in household size is associated with poverty which indicates that household size has positive correlation with probabilities of being non-inclusive with increasing in sizes [19, 1] An increase in the year of education of the rural household decreased non-inclusiveness of growth by 2% in 2010 – 2013 periods while there was increase in the probability of reducing non – inclusiveness of growth by 13% in 2013 – 2016 periods. This shows that there was appreciable development in the level of educational status among the rural people in periods 2010 – 2013 to periods 2013 – 2016. This implies that education enhances the capabilities of households to accessing incentives that stimulates involvement of households in the growth process.

The results of the employment status of the rural households showed that being employed among the rural household reduced non-inclusiveness of growth by 13.0% in period 2010 - 2013. But in period 2013 – 2016, the coefficient is negatively correlated but not significant. The implication is that, individual being employed would have opportunity for increasing *per capita* expenditure and have the probability of being growth inclusive. Also most of the household were self-employed and might engaged more in agricultural activities due to government intervention in implementing rural developmental programmes between periods 2013 and 2016.

The results revealed that access to credit will reduce individual probabilities of being non inclusive by 0.84% in period 2010 – 2013 while in period 2013 -2016, it reduces the household probability of being non-inclusive by 10.97% which indicates that there was an improvement in terms of access to credit by rural households in this period. Since access to credit is negatively related indicating that it would enhance production incentives for improvement in agricultural productivity vis a vis increase in income of the rural households. The result of the marginal effect of access to health facilities by the rural household heads had the probability of reducing the non-inclusiveness of growth by 1.6% in period 2010 – 2013, while in period 2013 – 2016, there was appreciable improvement in access to health facilities which had the probability of reducing the non-

inclusiveness of growth by 8.2% this might be due to the government intervention in terms of improving rural health facilities. This agreed with the findings of Verdier-Chouchane and Karagueuzian (2016) in their study on concept and measure of inclusive health across countries found that Nigeria among other ten (10) countries had negative residuals to health facilities especially in the rural areas. The result also indicates that healthy farmers would work effectively and increase their productivity [24].

In periods 2010 – 2013, there was worsened situation in terms of access to good drinking water (potable water) as the coefficient was not significant but in period 2013 – 2016, access to potable water had tended to improve the growth inclusiveness of growth by 1.5% which implies that potable water results to good health which invariably reduced the non-inclusive growth among the rural households. Access to land ownership in the rural areas have the probability of reducing the non - inclusiveness of growth but had no significant influence to rural households that experienced non-inclusive growth in both periods 2010 – 2013 and 2013 - 2016. Also, an increase in the supply of energy such as electricity and access to gas in the rural areas results to a reduction in the non - inclusiveness of growth by 1.8% in period 2010 – 2013, while increasing in the supply of energy in the rural areas results to a reduction in the non - inclusiveness of growth in period 2013 – 2016 by 3.99%. This agreed with Oluseye and Gabriel (2017) in their findings that improvement in energy supply in the rural area will improve the welfare of the people and provision of energy is very crucial in the rural areas such as electricity and the use of gas [17]. This is an indication that energy supply in terms of electricity and access to kerosene or gas would improve the standard of living of the rural households.

The results also show the significant influence of residency in the geopolitical zones on household *per capita* expenditure. In 2010 – 2013, the coefficients were negatively correlated with the household *per capita* expenditure and significant at 1 percent except the SW geopolitical zones that was significant at 5 percent. The results indicate that, residing in NE and NW would reduce non-inclusive growth by 5.5% and 2.2% respectively. However, in the SE and SW, increase in *per capita* expenditure would reduce non-inclusiveness of growth by 3.6% and 0.1% respectively. The results indicate that there is tendency of improving the welfare or the living standard of living of the rural with the improvement in rural *per capita* expenditure at the regional levels. However, in period 2013 - 2016, the results of geopolitical zones show that NW, SS and SW have negative relationship and significantly influenced the rural *per capita* expenditure of the rural household heads. However, Northeast had negative relationship but not significant in period 2013 – 2016. This might not be unconnected to the insurgency by terrorists in that area which destroyed a lot of material, animal and human lives during the period. The situations however improved in North West region, South South and South West regions in terms of residency in periods 2013 – 2016 except North East and South East regions.

The estimated marginal effect revealed that residency in the geopolitical zones had significant influence in reducing the probability of being non-inclusive in the rural areas. The marginal effect of geopolitical zones in periods 2010-2013 were Northeast (-0.0552), Northwest (-0.0216), Southeast (-0.0359) and Southwest (-0.0010) indicating that Northeast had the highest probability of reducing non inclusive growth while the estimates of the geopolitical zones marginal effects in periods 2013 - 2016 were -0.0409, -0.0256 and -0.0044 for Northwest, Southsouth, and Southwest respectively which shows that rural households in the NW have the highest probability of reducing the non-inclusiveness of growth in rural Nigeria. The results revealed that in the Northeast region, increasing rural *per capita* expenditure had the probability of reducing the level of being non inclusive by 4.2% which indicates an improvement in the standard of leaving of the rural people in the region. Similarly, residing and increasing in *per capita* expenditure in the rural area of Northwest, Southeast and Southwest have the probability of reducing the non-inclusiveness of growth by 2.2%, 3.6% and 0.1% respectively.

The results show that residing and increasing the *per capita* expenditure of the rural households in Northwest have the probability of reducing the non-inclusiveness of growth by 4.1%. Also, increase in rural *per capita* expenditure in the Southsouth and Southwest have the tendency of reducing the non-inclusiveness of growth among the rural households by 2.5% and 0.4% respectively. However, Southeast significantly influenced the probability of being non-inclusive in period 2010 – 2013 but the situation however worsened in period 2013 – 2016 as the result shows negative relationship but not significant for residing in the region as well increasing the rural *per capita* expenditure.

## 4. Summary, Conclusion and Recommendation

### 4.1. Summary

The socio economic characteristics of the rural households in Nigeria show that, the average age of the rural households across the three waves was 42 which imply that the rural households were still agile and can be very active in terms of agricultural production. The percentage of male to female in the rural areas shows that more male headed households were involved in agriculture and other non-farm activities than female headed households. Majority (64%) of the rural households were married while households that were never married recorded below average. Also, high percentages were recorded across the years for households that have no formal education and the rural households were self-employed which might not be unconnected to the fact that rural households are more engaged in agriculture as their major occupation.

The mean proportion of rural households that experienced non inclusive growth in Nigeria across the geopolitical zones was 48%. Average rural households in terms of sex, age and

marital status were non inclusive across the periods. The same trend was also recorded in the educational attainment for non-inclusiveness of growth while majority of rural households that engaged in non-farm activities were non-inclusive. On the access to infrastructural facilities, it was found that a larger percentage 50.8% of the rural households that had no access to health facilities in periods 2010 – 2013 were more than the rural households that had no access to health facilities and were non-inclusive in periods 2013 - 2016. Higher percentage of the proportion of households that were non inclusive were found from the households that have no access to credit while the same trend occurred in the access to energy and access to good drinking water across the periods.

The results of the Probit model show the factors influencing the rural households that experienced non inclusive growth. The results in period 2010 – 2013 revealed that sex, educational attainment, employment, access to credit, access to health facilities and access to energy significantly influenced the probabilities of non-inclusiveness of growth among the rural household heads. The results of geopolitical zones were significantly and negatively related to non-inclusive growth except the South South zones that was negatively correlated but not significant which shows that there is tendency of reducing non-inclusiveness of growth with the improvement of rural *per capita* expenditure of the rural household heads. The results in period 2013 – 2016 show that age, household size educational attainment, access to credit, access to health facilities, water and energy were significantly influenced the non-inclusiveness of growth among the rural households. Also, North West, South South and South West were significantly correlated.

### 4.2. Conclusion

The study concluded that there is still significant disparity in terms of access to facilities, social amenities and the basic necessity of life. In Nigeria's rural households, there is a lack of inclusion; unemployment and poverty remain high, and the vast majority of the population is denied access to health care, electricity, credit, and educational opportunities. In order for development to be equitable, concerted efforts should be made to develop rural areas not only in terms of economic opportunities, but also in terms of fair access to those opportunities. Rural households in Nigeria have shown non-inclusiveness, poor job creation and poverty remain high and most of the people were excluded from infrastructural facilities such as health services, energy, credit and educational attainment.

### 4.3. Recommendation

The study found out that rural household heads were non-inclusive despite the growth in economy. Therefore, there should be policies on economic growth and distributional strategies that can bring about poverty reduction among the rural households such as improvement in the local infrastructure. Educational attainment was found to significantly influence non-inclusive growth and being

engaged in agricultural activities as their primary occupation would therefore call for improvement in educational sector through provision of schools, increase public spending on social services and enhance access to basic education and primary health care in the rural sector in order to improve their living standards.. Access to credit and provision of health facilities in the rural areas was found to significantly influence non – inclusive growth. The poor rural households should be provided with financial assistance or means of having access to credit facilities and health facilities in the rural areas to improve the rural people welfare.

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