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Determinants of Transition in Economic Growth among Farming Households in Rural Nigeria

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ABSTRACT

This study analysed the determinants of transition in economic growth among rural households and matched it to the economic growth rate to categorise households into being in Inclusive Growth (IG) and Non-Inclusive Growth (NIG) groups in Nigeria. Secondary data from General Household Surveys for 2010, 2013 and 2016 were used. Data were analysed using descriptive statistics, Foster-Greer-Thorbecke (FGT), Probit model and Markov chain. The result shows that mean age of the rural households were 41.8, 43.7, and 46.9 years for 2010, 2013 and 2016 respectively. Majority (65.0%, 65.4% and 65.5%) were male while 64.3%, 63.1% and 63.4% were married in 2010, 2013 and 2016 respectively. Markov probability transition matrix revealed that rural households (29.9%) remained in NIG in both periods 2010–2013 and 2013–2016 while 70.1% of rural households contributed to the economic growth in 2013–2016. However, rural households (46.6%) that are inclusive in period 2010–2013 worsened in the period 2013–2016. In the long run, rural households (40.2%) were non-inclusive while 59.8% were inclusive. Probit results show that household size, education, access to energy, residency in zones (South East and South South) influenced rural households moving into NIG while age, access to health facilities, being married, access to credit, involvement in agriculture and residency in zones (North East and North Central) influenced rural households to be in IG. It was concluded that with equitable resources, rural households have the probability to be inclusive and contributed into economic growth in Nigeria.

INTRODUCTION

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. 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. 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 Adepoju and Adejare, 2013). It is impossible to overemphasize the importance of equitable access to services, creating employment and properties, as such access is critical in stimulating the economy to long-term development (Omonona, 2009). 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. Therefore, the group at the bottom end, that is, the poor will be able to meet their basic requirements. This will invariably reduce the incidence of poverty especially in the rural settings (Akinlade *et al.*, 2011). The concept of inclusiveness of growth can be used interchangeably with pro-poor growth which ensures equitable access by all strata of individual in the society (including the disadvantaged and marginalized) to opportunities created by growth (Ali and Son, 2007).

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 (OECD, 2014). 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.

Inclusive growth with high sustainability in the economy can only be accomplished when all the more vulnerable segments in the society including those that are dedicated to agriculture, both small and medium scale firm, are encouraged and equivalent with the other members of the society in order to have equitable growth which is fundamental for a sustained inclusive growth (Omotola and Okoruwa, 2016). Economies in Africa are growing rapidly and remarkably with an average of 5.6 percent in year 2012, while the growth in Gross Domestic Products (GDP) in Africa was 6.7 percent and the GDP growth in Nigeria was 4.21 percent. It (Nigeria GDP) increas es to 6.22 percent in 2014 and dropped drastically to 2.8 percent in 2015 (NBS, 2017). The non-inclusiveness of growth was influenced by living characteristics (such as availability of resources, accessibility to various resources and geographical location) and socio economic characteristics (for example, employment status, health facilities, household size, educational attainment, human capability and ownership of assets). Each of these parameters has a dimension that can be improved for better living conditions in order to benefit from growth.

The impressive growth in the economy has not been accompanied by increased employment generation. 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 (Aderounmu, 2018). 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. The growth achieved over the years has not translated into poverty reduction despite the fact that the Nigeria economy recorded significant growth. This is because rural households in Nigeria faced a high level of income inequality due to factors such as poor infrastructural facilities and poor access to incentives coupled with their poverty that make them particularly being marginalized (Adeleye *et al.,* 2020; Aderounmu *et al*, 2021). There is disparity between rural and urban households, (both rich and poor) when considering their socio economic characteristics and living characteristics (Amaechi, 2018). It is therefore pertinent to provide an insight into the extent to which the interventions of the implemented programmes have been achieved This study therefore, examined the long run or equilibrium transition probability between inclusive and non-inclusive growth condition among rural households in Nigeria and determine the factors influencing rural households' transitions between non-inclusive growth categories (Always non–inclusive, Exiting non-inclusive, Entering non–inclusive and Never non–inclusive) in Nigeria.

MATERIALS AND METHODS

Data Requirement and Sources

The data used for this study were sourced from General Household Survey (GHS) carried out periodically throughout the country in periods 2010, 2013 and 2016. 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 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.

Analytical Techniques

The analytical techniques used include descriptive statistics, Foster-Greer-Thorbecke and Markov chain. The descriptive statistics involves the use of percentages, tables, figures, frequency distribution and standard deviation. The socio-economic characteristics of the rural households between

periods 2010 and 2013; 2013 and 2016 and; 2010 and 2016 was examined with the use of descriptive statistics such as frequency distribution, percentages, ratios, mean and standard deviation.

Poverty Gap Index

The use of the consumer price indexes for capturing the poverty lines was necessary in order to remove the influence of poverty and for the comparison of individual households for two periods (Omonona and Agoi, 2007). The poverty gap index was created using the quantitative poverty measure developed by Foster, Greer and Thorbecke (1984). This measure of poverty gaps was captured with the use of the Consumer Price Indexes (CPI) and the poverty line of year 2009 (Table 1).

Markov Chain Processes

Markov chain is a stochastic interaction that fulfills the Markov property, which implies that when the present is realized the past and future are free. That is, there is no extra data of its past states that may be needed to make the most ideal expectations of its future (Jerumeh and Omonona, 2018). Markov chains are mainly used to estimate the probabilities of occasions happening by review them as states changing into similar states as in the past or progress into another state.

The consumer price index (CPI) / Raising Factor

The consumer price index (CPI) of 95.78 in 2009 and the poverty line ₦54,401.16 in 2009 (NBS, 2010) were used in order to scale up the poverty lines produced by CBN (2010) 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. 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 as shown in Table 1. 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 indicating that households in the growth process is poor and 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.

Table 1. CPI and Estimated Poverty Lines for years 2010, 2013 and 2016

Year	CPI	Poverty line	Raising factor	Estimated Poverty line (₦)
2009	95.78	₦54,401.16	1.0000	54,401.16
2010	108.92	-	1.1372	61,864.42
2013	135.48	-	1.4145	76,949.98
2016	173.13	-	1.8076	98,334.44

Source: NBS, 2017

Markov Chain Probability Transition Matrix

The Markov chain probability transition matrix was used to determine the rural households' non inclusive transition into non – inclusive, remain non-inclusive, exiting non – inclusive and never non-inclusive; and determine the long run or equilibrium probability transition of rural households between periods (2010 – 2013 and 2013 – 2016). The probability transition of the rural households was a 2 x 2 matrix (periods 2010 – 2013 and 2013 – 2016).

The 2 x 2 matrix (periods 2010 – 2013 and 2013 – 2016) in Table 2 shows the transition into four categories. That is, transitioning from;

e_1 in period 2010 – 2013 to e_1 in period 2013 – 2016 (always non–inclusive, p11),
e_1 in period 2010 – 2013 to e_2 in period 2013 – 2016 (exiting non–inclusive, p12),
e_2 in period 2010 – 2013 to e_1 in period 2013 – 2016 (entering non–inclusive, p21)
e_2 in period 2010 – 2013 to e_2 in period 2013 – 2016 (never non–inclusive, p22).

Table 2. First-Order Markov Model of Growth Probability Transitions of Rural Households

Period		Period 2013 - 2016		
		Non-Inclusive (e_1)	Inclusive (e_2)	Total
Period 2010 – 2013	Non–Inclusive (e_1)	p11	p12	r^1
	Inclusive (e_2)	p21	p22	r^2
	Total	p1	p2	

The Table 2 was obtained by using;

$$(r_1, r_2) \begin{pmatrix} P_{11} & P_{12} \\ P_{21} & P_{22} \end{pmatrix} = (r_1, r2) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

The above matrix produced r_1 and r_2, which were the proportions of households that would be non-inclusive and inclusive at equilibrium in the long run respectively. The long run equilibrium is attained when the total numbers of rural households entering a given category equals the numbers of rural households exiting the category.

The proportion of households that would be in each category in the periods is given as;

$$P(r_1, r_2) = P(o)\, P_{ij}k \quad \text{---------- (2)}$$

Where;

k is the time periods (2010 – 2013 and 2013 – 2016),
P(o) = the vector of initial probability,
P_{ij} = the probability transition matrix, the probability of households transitioning from i to j (from one category of growth to the other),
i = ith household,
j = jth period ,
r_1 = the probability of rural households that would be in non-inclusive growth category at equilibrium in the long run, and
r_2 = the probability of rural households that would be in inclusive growth category at equilibrium in the long run.

RESULTS AND DISCUSSION

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 presented in Table 3. The mean value of 41.8 ± 9.4, 43.7 ± 9.46, and 46 .93 ± 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. The mean household sizes were 8 ± 2.03, 7.3 ± 3.12 and 7.6 ± 1.6 in years 2010, 2013 and 2016 respectively. Most (64.3%) were married while majority of the rural households (65.0%) were male 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.

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. The results revealed that educational status in 2013 worsened as higher proportions of rural households were recorded with no education. 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. Majority of the rural households were self-employed. The higher proportions that were recorded in 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 their major occupation. This corroborates Adeoti (2014) that a large proportion of the rural sector is primarily an agrarian society and larger number of people living in the rural areas were mostly farming households.

Table 3. 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	
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						
Single	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

Transitions of Rural Households from period 1 (2010 – 2013) to Period 2 (2013 – 2016)

The results of the transition of the rural households were shown in Table 4. The results of the transition probability matrix was estimated by converting the probability transition matrix into probability values by dividing each item of the corresponding rows by the corresponding total.

Table 4. Transition Matrix of Rural Households between Period 2010 / 2013 and Period 2013 / 2016

	Status	2013/2016		
		Non-Inclusive growth (NIG)	Inclusive growth (IG)	Total
2010/2013	Non-Inclusive growth (NIG)	162	380	542
	Inclusive growth (IG)	1,308	`1,497	2,805
	Total	**1,470**	**1,877**	**3,347**

Table 5 revealed that 29.9% of the rural household that were in non–inclusive group in periods 2010 – 2013 were also in non–inclusive group in period 2013 – 2016 which of the rural household who were in the non–inclusive group in period 2010-2013 transited to inclusive group, that is, exiting non–inclusive growth group in period 2013 – 2016. The result revealed that larger proportion of the rural household exited non–inclusive growth group and transited into inclusive growth group. Similarly, 46.6% of the rural households who were in the inclusive growth group in the period 2010 –2013 transited to non–inclusive group in the period 2013 – 2016, while 53.4% of the household who were in inclusive group in the period 2010 – 2013 remained in the inclusive group (never non-inclusive) in the period 2013 – 2016. This indicates that the transition probability of rural households moving from one period to another that would never be in the non-inclusive group was 53.4%. This showed that the proportion of rural households that would always remain in inclusive growth group was higher than those that would remain in non-inclusive growth group. The results indicate that there was an improvement in the non–inclusiveness of growth from periods 2010 – 2013 to periods 2013 – 2016 because higher percentage of rural households that were worse-off in 2010 – 2013 transited into inclusive growth group in periods 2013 – 2016.

Table 5. Probability Transition Matrix of Rural households

	Status	2013/2016	
		Non-Inclusive growth (NIG)	Inclusive growth (IG)
2010/2013	Non-Inclusive growth (NIG)	0.299	0.701
	Inclusive growth (IG)	0.466	0.534
	P(o) Vector of Initial Probability	0.4392	0.5608

Rural Households Equilibrium (Long Run Probabilities Transition) between Periods 2010 - 2013 and 2013 - 2016

The analyses of the Markov chain probability transition matrix of rural households were estimated with a 2 x 2 matrix to generate how the observed population in a given period is distributed in different times. Following Ayantoye *et al.* (2011), the Markov chain processes for long run probability of the 2 x 2 matrix was calculated as;

$$r_1, r2 \begin{pmatrix} 0.299 & 0.701 \\ 0.466 & 0.534 \end{pmatrix} = (r_1, r2)$$

Solving the above matrix, the vector of probabilities as the long run is obtained as;

$(r_1, r_2) = (0.402, 0.598)$

At equilibrium, that is, in the long run, the probability of the rural household that would be in the non–inclusive group (r_1) is 40.2% while the probability that the rural household would transit to inclusive growth group (r_2) is 59.8%. The result indicates that higher proportion of the rural households (59.8%) would be in inclusive growth group in the future. It also shows that the long term projection of rural households that would be moving out from non–inclusive growth group, that is, that would be inclusive in long run is higher than the rural households that would be transitioning into non–inclusive growth.

Similarly, in short run, the results in Table 5 were converted into probability values by dividing the probability matrix values under each item in the

different categories (always non inclusive, exiting non–inclusive, entering non inclusive and never non–inclusive) by the corresponding row total. The results also revealed the vector of initial probability that, in short run, the probability of the rural households in Nigeria that would be transited into non–inclusive growth group is 43.9% while the probability that the rural households would transit into inclusive growth group in short run is 56.1%. The results revealed that the probability that the rural households would transit into inclusive growth group in long run is higher than the probability of transition in short run. Therefore, there would be a reduction in the proportion of rural households that would be in non–inclusive growth in long run.

Factors Influencing Rural Households' Transition In and Out of Non-Inclusive Growth between periods

The Probit regression model was used to determine factors influencing rural households' transition in and out of growth categories in Nigeria. The model was adopted for its suitability in capturing non–inclusive growth transition of rural households into four categories namely always non–inclusive growth, exiting non-inclusive growth, entering non–inclusive growth and never non–inclusive growth.

$$Y_{ij} = ß_0 + ß_1X_i + E_i \quad (3)$$

Where:

Y_{ij} = the dependent variable for the different categories of non – inclusive transition
i = ith household (1…..... 3,347)
j = jth categories of non-inclusive transition (1……4)

The four categories of non – inclusive growth transition are as stated below;

Y_{11} = 1 if always non–inclusive, 0 if otherwise,
Y_{12} = 1 if exiting non–inclusive, 0 if otherwise,
Y_{13} = 1 if entering non–inclusive, 0 if otherwise,
Y_{14} = 1 if never non–inclusive, 0 if otherwise,
$ß_0$ = constant term,
ßs = coefficients estimated,
Xs = Vector of explanatory variables, and
E_i = Random error

The independent variables, which are the socio–economic and demographic variables, are captured as:

X_1 = sex of household (1 if male, 0 if female),
X_2 = age of household (years),
X_3 = household size (number of persons),
X_4 = access to health facilities by household (1 if yes, 0 otherwise),
X_5 = educational attainment of household (years),
X_6 = marital status of household (1 if married, 0 otherwise)
X_7 = access to credit by household (1 if yes, 0 otherwise),
X_8 = access to electricity by household (1 if yes, 0 otherwise),
X_9 = occupational status (agriculture) of household (1 if yes, 0 otherwise),
X_{10} = North east regional (1 if yes, 0 otherwise),
X_{11} = North Central regional (1 if yes, 0 otherwise),
X_{12} = North West regional (1 if yes, 0 otherwise),
X_{13} = South East regional (1 if yes, 0 otherwise),
X_{14} = South South regional (1 if yes, 0 otherwise),
X_{15} = South West region (1 if yes, 0 otherwise), and
E_i = Random error.

Factors Influencing Rural Households Transition In and Out of Non–Inclusive Growth Group in Nigeria

Table 6 presents factors influencing rural households transition in and out of the non–inclusive growth category in Nigeria between periods 2010 – 2013 and 2013 - 2016. The transition of the households in and out of non–inclusive growth categories were made up of 4 categories; namely, always non–inclusive growth category, exiting non-inclusive growth category, entering non–inclusive growth category and never non–inclusive growth category.
The results show that rural households have the probability to be in always non–inclusive growth category with increase in household age and size. This supported the findings of Adeoti (2014), that a rise in household size was correlated with a higher likelihood of being non-inclusive, which is linked to poverty due to increase in dependency ratio. The probability of always non–inclusive would also be reduced by -0.0178 with increased in access to health facilities. The result revealed that healthy farmers would be able to work and utilize available resources effectively thereby increasing in productivity. The probability transition of the households to always remain in non–inclusive growth decreases with marital status (14.4%). The result indicates that being married will invariably decrease the probability of households that would always remain non-inclusive. Also being engaged in agricultural activities, the probability of households to remain non–inclusive would be decreased by -0.0385. The regional dummies shows that increased in the residency of households in Northeastern region will reduce the non–inclusiveness of growth by 25.1%, while increasing in the residency in the North Central would reduce the probability of non–inclusive by 36.6%. However, the North central region had the highest tendency of probability of reducing the number of rural population that would remain in non-inclusive growth.

The probability of rural households exiting non–inclusive growth group increase by 0.0804, 0.0216, 0.1953, 0.0621 and 0.1673 with access to health facilities, educational attainment, marital status, access to credit and engagement in agricultural activities respectively while it reduces by 0.0025 with age. The results indicate that having access to health facilities and educational attainment in the rural areas would increase the probability of rural households

exiting non-inclusive growth by 8.04% and 2.16% respectively, while marital status had the probability of increasing members that exiting non-inclusive growth by 0.1953. Similarly, the results show that gaining access to credit and being engaged in agricultural activities have the probability of increasing the number of rural households exiting non–inclusive growth category by 6.2% and 16.7% respectively. Also, the probability of rural household exiting non-inclusive would increase by 0.1168 and 0.2227 with increase in the number of residencies in the North East and North Central regions respectively.

The probability of rural household entering into non–inclusive growth category increase by 0.0223 ($p<0.05$) with household size while the probability of rural households moving into non–inclusive growth category decrease by -0.0132 ($p<0.05$) and -0.2164 ($p<0.05$) with educational attainment and access to electricity respectively. This result indicates that the probability of entering into non-inclusive growth category is associated with large household size.

Access to electricity had a significant influence on rural households and it is negatively related to the rural households entering into non–inclusive growth category. Being educated would decrease the projection of households into non-inclusive growth category by -0.0132 at 5% level of significant. The results also show the significant influence of residency in the geopolitical zones on rural household head *per capita* expenditure. It indicates that, residing in the SE and SS have the probabilities of increasing the households entering non–inclusive growth category by 0.3541 ($p<0.05$) and 0.3459 ($p<0.05$) respectively. These also show that being resident in these areas hardly added value to the welfare of the people in terms of increasing their income but increasing the *per capita* expenditure of the rural households which is also associated with poverty.

The probability of rural households to be never non–inclusive decreased by -0.0358 ($p<0.05$) and -0.2170 ($p<0.1$) with household size and marital status respectively while it increases by 0.0638 ($p<0.01$), 0.0625 ($p<0.05$) and 0.1802 ($p<0.05$) due to access to health facilities, access to credit and being engaged in agriculture, respectively. Also being engaged in agriculture (0.1802) would increase the probability of rural households to remain non-inclusive. Rural household that never non-inclusive also increased by 0.3336 ($p<0.1$) and 0.3287 ($p<0.1$) with a regional increase in the number residencies among households in North Central and South East respectively.

Determinants of Rural Households Transitioning In and Out of Non–Inclusive Growth Group

Variable	Household Always NI	Household Exiting NI	Household Entering NI	Household Never NI
Constant	0.2544*** (0.0681)	-0.3063* (0.1693)	-1.2666*** (0.2226)	-1.9440*** (0.2982)
Sex	0.0913 (0.0789)	-0.1082 (0.0801)	-0.0779 (0.1013)	0.1968 (0.1382)
Age	0.0036* (0.0014)	-0.0025** (0.0015)	-0.00067 (0.0019)	-0.0033 (0 .0026)
Household size	0.0219** (0.0093)	0.0105 (0.0089)	0.0223*** (0.0038)	-0.0358** (0 .0135)
Access to health facilities	-0.0178** 0.0083	0.0804** (0.0524)	-0.2393 (0.3632)	0.0638*** (0.0258)
Educational attainment	-0.0013 (0.0044)	0.0216** (0 .0075)	-0.0132** (0.0057)	-0.0049 (0.0044)
Marital status	-0.1438* (0.0789)	0.1953* (0.0806)	0.0403 (0.1025)	-0.2170* (0.1332)
Access to credit	0.0168 (0.0442)	0.0621*** (0.0145)	0.0517 (0 .0580)	0.0625 ** (0.0253)
Access to electricity	0.0509 (0.1090)	0.0559 (0.1093)	-0.2164** (0.1348)	0.0104 (0.1857)
Occupational status (agric)	-0.0385** (0.0193)	0.1673*** (0.0345)	-0.0165 (0.1552)	0.1802** (0.0541)
Non-agric	-0.0399 (0.0701)	-0.0381 (0.071)	0.1218 (0.0881)	0.0424 (0.1169)
North East	-0.2509** (0.0938)	0.1168** (0.0952)	0.2031 (0.1356)	0.2692 (0 .1831)
North Central	-0.3661*** (0.0966)	0.2227* (0.0976)	0.1823 (0.1392)	0.3336* (0.1865)
North West	-0.0856 (0.0929)	-0.0061 (0.0947)	0.1321 (0.1359)	0.2043 (0.1832)
South East	-0 .2284* (0.0952)	-0.0039 (0.0969)	0.3541** (0 .1350)	0.3287* (0.1838)
South South	-0.1519 (0.0966)	-0.0738 (0.0987)	0.3459** (0.1364)	0.3090 (0.1868)
Pro > chi2	0.0003	0.0007	0.0069	0.0000
Log-likelihood	2280.78	2221.88	1171.13	639.514
LR ch2	37.86	33.23	25.87	15.35
Pseudo R2	0.6205	0.5803	0.4814	0.5224

The coefficients ***, ** and * denote significance at 1%, 5% and 10% respectively

SUMMARY AND CONCLUSION

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. Majority (64%) of the rural households were married while households that were never married recorded below average. The transition probability matrix results show the projection of rural households in and out of non–inclusive growth category over time. The result showed that larger number (70%) of the rural households would move out of non-inclusive growth category (exiting non inclusive growth) from year 2010 to year 2016. The transition matrix also revealed that 53% of the rural households had the probability of being inclusive (never non–inclusive) while the 30% and 47% of the rural households had the probability of remaining in non-inclusive growth (always non–inclusive) and transiting into non–inclusive growth category (entering non–inclusive growth) respectively.

However, the long run probability of the households show that larger percentage (59.8%) would be moving into inclusive growth category while 40.2% would be non–inclusive which indicates that the long term projection of rural households that would be moving out from poverty, that is, that would be inclusive at long run was higher than the rural households that would be transiting into non–inclusive growth. The probability of the rural households that would move into non-inclusive growth category in short run was 43.9%, while the probability of the rural households moving out of non-inclusive growth category, that is, inclusive was 56.1%. Therefore, the vector at short run shows that there was also a reduction in the proportion of households that were non– inclusive at short run to a long term projection.

The study shows 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. The probability of the rural households that would be inclusive in long run is higher than the rural households that would not be participating in economic growth. Therefore, Nigeria should incorporate distributive features and pursue growth that is inclusive as this would support positive multiplier effects.

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