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ESTIMATING THE IMPACT OF SUSTAINABLE LIVELIHOOD OPTIONS ON POVERTY TRANSITION AMONG RURAL HOUSEHOLDS IN NIGERIA

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Abstract

As concerns and investment to curb poverty continue to receive attention from different stakeholders, the survivability imperativeness through sustainable livelihood activities is vital to deterrent from poverty entry. Using a secondary data obtained from two waves of the National Household Survey (wave 2 and 3) data, the study estimate the impact of sustainable livelihood option son poverty transition among rural households in Nigeria. To achieve this, both descriptive statistics and multinomial endogenous treatment effect model were used to analyse the obtained dataset. The households were observed to obtain their livelihood from agricultural, agricultural wage employment, non-agricultural and non-agricultural wage employment. The result further showed that gender, household size, dependency ratio, membership of association, human development livelihood index, safety net, credit access, number of large ruminants, and policy-induced livelihood index significantly drive poverty transition in the study area. In conclusion, Nigeria is a federating unit consisting of 30 state with federal capital territory, despite the fact that most rural households in Nigeria rely heavily on agriculture as a means of livelihood, the study suggest that policies that will exit many rural household out of poverty should calcified through human development, resources peculiar to each federating unit and social inclusion.

Keywords: *Agriculture, Human, Livelihood, Policy, Sustainable*

Introduction

Poverty reduction is one of the most difficult challenge facing Nigeria and its people. The Sustainable Development Goals (SDG)of ending extreme poverty has been a major driver to combat poverty especially in sub Sahara Africa. The programme implementation in many countries necessitates promotion of sustainable livelihood activities of the targeted audience. Nigerian government has been up to the task in achieving this goal. But we need not to forget that underdeveloped institutions can be inundated by shocks and inability to provide adequate services and disaster response. People facing with the consequences of poverty are frequently consumed with how to respond to adversities or shocks.

This study was underpinned on Random Utility theory. In this theory households are thought to maximize utility by choosing another option or alternative from the existing and available options that profit from individual utility (Kennedy, 2003). The rule indicated fundamental utility function that encloses the trait of choice and individual characteristics that portrays an individual's utility valuation for each choice (Pryanishnikov and Zigova, 2003). The livelihood activities of many rural dwellers centred on agriculture and it has been the main source of their living. Agriculture is the pillar that most of the livelihood activities of rural area anchored on; people in this sector depend heavily on it, as it is the possible way out of food insecurity and poverty. Though, according to Fanifosi (2021), poverty reduction is not the only measure to advance the livelihood of the rural masses; but the need for a sustainable livelihood is paramount since it reveals the means to take critical attention to other issues like health, water facilities, assets, sanitations and housing which gives undaunted assuranceof improved life.

Literatures (Andersson, 2014; Ellis and Freeman 2005) have showed ample indication that some rural households are upheld through involvement in multi spatial livelihood activities. These households engage in both farm and non-farm income generating activities. The farm income provides capital for rural nonfarm employment; nonfarm income plays a key role in underpinning the probable of rural households as a trail out of poverty. Bak *et al.*, (2015) showed that there is a strong nexus between poverty and income,

although a number of literatures have prove that the use of income in measuring poverty does not reflect the true poverty, but this money metric poverty measurement approach is still relevant. Money metric approach of poverty measurement was used in this study. In measuring poverty, the United Nations Development Programme (UNDP) 2002 expresses the poor as people living on less than $1 per day. In spite of the disagreement revolving round its conceptualization, poverty has been shown to have strong unpleasant effect and impinge social exclusion, fear of neglect, suffering and deprivations on individual and communities (Backwith, 2015).

In light of this, empowering small-scale farmers, landless people and rural women is expected to create sustainable incomes for smallholder farmers through farming and other non-farm activities which could have multiple effects on poverty reduction and support rural development. Envisaging the imminent danger on the aspiration of 2014 Malabo Declaration (accelerated agricultural growth and transformation for shared prosperity and improved livelihood) and the SDGs, there is need to understanding poverty dynamics, and the combination of capabilities, adaptive responses, and transformative strategies.

Methodology

The study used the General Household Survey (GHS) data. The data gives an insight on the understanding of household welfare overtime. Two of the GHS-panel obtained from the National Bureau of Statistics (NBS) wave 2 & 3 was used. The dataset were collected from the period of 2012-2013 and 2015-2016.

Analytical Techniques

Poverty measurement

In estimating poverty, two waves of GHS were used with poverty line calculated as two-third mean per capita expenditure for both food and non-food items. This showed the dynamics of poverty, that is, the transition of individual in and out of poverty circle. The following categories were therefore established;

i. Poverty alleviation: Household poor in both waves (first and second) and new expenditure is more than the original.

ii. Poverty deepening: If household was poor in both waves (first and second) and the new expenditure is less than the original.

iii. Poverty exit: Household was poor in the first wave and is non-poor in the second wave.

iv. Poverty entry: Household was non-poor in the first wave and is poor in the second wave.

v. Non poor worse: household was non-poor in both waves (first and second) and the new expenditure is less than the original.

vi. Non poor better: Household was non-poor in both waves (first and second) and new expenditure is more than the original.

Multinomial Endogenous Treatment Effect(METE) Model

Multinomial treatment effect negative binomial regression model was used to analyze the impact of sustainable livelihood options on poverty transition. This is used when a latent factor structure is used to accommodate selection into treatment, and a simulated likelihood method is used for selection (Deb and Trivedi, 2006). The outcome variable is the poverty transition status and the multinomial treatment variable describe the dynamics of poverty and this takes four categories namely; those that are non-poor before and poor now (Poverty entry), those that are poor before and non-poor now (Poverty exit), those that are non-poor and better than before (non-poor better), those that are poor (Poverty deepening) – the control.

$$\Pr(Y_i = j) = \frac{e^{(Xij\lambda + rVEPijt - 1)}}{\sum_{k=1}^{3} e^{(Xij\lambda + rVEPijt - 1)}} \quad (12)$$

The outcome is a count variable J= 0,1,2,3,

The Multinomial Logistic model is explicitly expressed as:

$$Y_0 = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\beta_{13} X_{13} + \varepsilon_i \quad (13)$$

$$Y_1 = \alpha_1 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\beta_{13} X_{13} + \varepsilon_i \quad (14)$$

$$Y_2 = \alpha_2 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\beta_{13} X_{13} + \varepsilon_i \quad (15)$$

$$Y_3 = \alpha_2 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\beta_{13} X_{13} + \varepsilon_i \quad (16)$$

Where Y_i represents 4 unordered categories of poverty transition; Xs are sets of exogenous covariates with associated parameter βs.

Y_0 = households that are into poverty (Poor deepening)

Y_1 = households that non-poor(Poverty exit)

Y_2 = enter into poverty (Poverty entry)

Y_3 = households that are non-poor and better than before (non-poor better)

X_1= Age (years); X_2= Gender of household head; X_3= Household size, X_4= Social group membership, X_5= Education; X_6= Dependency ratio; X_7= Livestock; X_8= Access to safety net;X_9 = Access to credit;

X_{10}= Resource based livelihood index; X_{11}= Policy-induced livelihood index; X_{12}= Human Development livelihood index

Ɛ= error terms

Result and Discussion

The study presents the variables names, description and the summary statistics of some of the explanatory variables. From the result, we showed that the average age of the respondents stood at about 56 years; indicating that most of the sampled households' heads were in their productive age. The household size was about 8 persons on average and the result showed that most of these respondents had more than primary school education.

Table 1: Summary statistics, description and variable names

Variables	Description	Mean	Std. Dev
Age	Age of the respondents (years)	56.41	46.09
Household size	Respondents household size	9.32	7.77
Education	Years of education	8.36	6.11
Social capital factor	membership of any social group = 1, otherwise 0	0.46	0.38
Dependency ratio	total number of aged + children (0 – 17) years with the household size	0.59	0.33
Livestock	Tropical livestock unit (TLU)	7.38	5.66
Access to safety net	if receive safety net = 1, otherwise 0	0.66	0.51
Access to credit	if acquired = 1, otherwise 0	0.63	0.48
Resource based livelihood index	Resource based livelihood activities	0.34	0.25
Policy-induced livelihood index	Policy-induced livelihood activities	0.41	0.29
Human Dev. livelihood index	Human Development livelihood activities	0.38	0.26

Source: Authors' Computation, 2022

Livelihood Activities of the farming households

We classified the livelihood activities of the respondents based on the assumption that both men and women seek

to make choices and exercise agency in pursuit of their livelihood, but it is usually subjected to the limits imposed by the available resources, and prevailing policy. The study further observe the livelihood on the bases of if the household purely engage in agricultural activities, self-employment in agricultural activities, and wage employment in agricultural activities or non-agricultural activities (self-employment in non-agricultural activities, and wage employment in non-agricultural activities). Table 2, therefore showed the distribution of the respondents' livelihood activities based on the above.

The agricultural-based livelihood activities classification in this study was established on the pillar of whether the activities were agricultural or non-agricultural. The table showed that more than 21% of the household engaged in both agricultural and non-agricultural self-employment. Slightly above 21% of the respondents' livelihood strategies were pinned on both agricultural and non-agricultural self and wage employment. About 20% were engaged with both agricultural and non-agricultural wage employment. Also, the result showed that 2.75% of the households participate in non-agricultural self-employment and 1.51% engages solely on non-agricultural wage employment. From the result, there is an indication that agriculture and its related businesses form major part of the household livelihood strategies and fewer depend solely on non-agricultural livelihood activities. This implied that most of the households were into agriculture and that many have diversified into other source of livelihood away from agriculture to enhance the household welfare. The report of AGI (2014) indicated that more than three-quarters of households in the rural sector source their livelihood from agriculture, fisheries and livestock.

The policy induced livelihood activities in this study were obtained by observing households who acquire any form of livelihood activities under the auspices of government or non-governmental organisation (NGO) i.e. households who at any time benefitted from government or NGOs empowerment programme. The result shown on Table 2 revealed that 33.94 % of the households engage in non-agricultural self-employment businesses, 12.9% were into agriculture and have self-employment agricultural businesses, 11.83% of the households engage in non-agricultural wage employment activities and 9.94% of the households were into agricultural and also

engage in non-agricultural wage employment activities. The result further showed 9.32% of the households who are into agricultural business and also engage in non-agricultural self-employment activities and 8.59% of them were into agricultural business and equally engage in both non-agricultural self and wage employment activities.

Table 2: Livelihood Strategies of Farming households

Livelihood Strategies	Resources based		Policy-induced	
	Frequency	Percentage	Frequency	Percentage
Agricultural practices only	113	2.93	93	2.97
Agric. & Agric. self-employ	227	5.90	406	12.96
Agric. & Agric. wage employ	328	8.52	72	2.29
Agric. & Agric. self + wage employ	527	13.68	137	4.37
Agric. & Non-agric. self-employ	833	21.64	292	9.32
Agric. & Non-agric. wage employ	771	20.03	311	9.94
Agric. & Non-agric. self + wage employ	815	21.17	269	8.59
Non-agric. self-employ	106	2.75	1063	33.94
Non-agric. wage employ	58	1.51	371	11.85
Non-agric. self + wage employ	72	1.87	118	3.77
Total	3850	100.0	3132	100.00

Source: Authors' Computation, 2022; **Multiple responses**

Poverty Dynamics

We present the distribution of the respondents' poverty status on Table 3. Poverty entry accounted for about 45% of the respondents, 31.52% were classified into poverty deepening, 21.88% were categorised into the non-poor better and only 1.81% exit poverty. Poverty change was estimated by deducting the percentage of the respondents that exit poverty from those that enter poverty i.e. poverty exist - poverty entry. The poverty change here was 6.89. From the table the poverty rate was estimated to be 55.63; it was estimated from summation of the percentages of poverty deepening, poverty alleviation and poverty exit. The result indicated that the poverty rate in the rural sector was higher and need the attention of policy makers. The estimated fraction of worse off is 0.7. The result indicated that poverty is higher in the rural sector.

Table 3: Poverty Status of the rural households (Dynamics)

Poverty Status	Frequency	Percentage
Poverty deepening	1285	38.68
Poverty entry	589	17.73
Non-poor better	158	4.76
Non-poor worse	727	21.88
Poverty exit	360	10.84
Poverty alleviation	203	6.11
Total	3322	100.00
Poverty change = 6.89		
Poverty rate = 55.63		
Fraction of worse off = 0.70		

Source: Authors' Computation, 2022

Note: Poverty Change = Poverty entry – Poverty exist

Poverty rate = Poverty deepening + Poverty alleviation + Poverty exist

Fraction of worse off = Poverty deepening / Poverty rate

Table 4 presents the parameter estimate of the impact of livelihood options on poverty transition in the study area. The result from the multinomial endogenous treatment effect model revealed three different poverty transition models separately. Poverty deepening was chosen as the base outcome, while we have poverty entry, poverty exit and non-poor better models. For the non-poor better model, the coefficient of both household size and dependency ratio was negative and statistically significant at 1% and 10% level of confidence respectively. The two variables showed the expected signs and the result implied that increase in the household size will likely reduce the non-poor better with respect to poverty deepening assuming other variables are held constant. The study of Oyekale (2012) and Fanifosi and Amao (2016) support this finding, showing that households' size is critical to the poverty status of rural populace. Likewise, the case of dependency ratio had the same

implication. That is, taken other variables constant, increase in dependency ratio will reduce the likelihood of the respondents to be non-poor better. In furtherance, social group, social safety net, credit access and human development livelihood index had positive relationship with non-poor better. The implication of this was that increase in these variables will increase the chance of the respondents to be non-poor better, taken other variable constant.

Similarly, the table revealed coefficient of gender, social group membership, dependency ratio, social safety net, policy induced livelihood index and human development livelihood index influence the probability of the respondents to exit poverty with respect to poverty deepening, holding other variables constant. The variables showed positive sign as expected and were significant at 10%, 1%, 1%, 5%, 1% and 1% level of confidence. Policy plays vital role in poverty reduction; the implication of this result was that both policy induced livelihood index and human development livelihood index could increase the chance of respondents in exiting poverty.

The coefficient of age, household size, livestock credit access, resource based livelihood index and policy induced livelihood index showed negative sign and statistically influence poverty entry. The implication of this was that increase in each of the variable reduces the likelihood of poverty entry, holding all other variables constant. In this study, we have both resource based and policy induced livelihood index variable to show significant impact in poverty reduction. Knowingly, these variables formed the bases of most rural populace livelihood and means of survival Fanifosi (2021). Also, with all other variable held constant, gender, social group membership, and dependency ratio were found to be positively related with poverty entry. Increased dependant will likely increase poverty entry, though the sign of the coefficient of social group membership and gender might not be as expected since male are the favoured with productive assets such as land. Also, social group membership could not automatically result to poverty alleviation stand if the motive of its establishment is not related to that. People join social group for different understanding and pursuit; this could be as a result of religion cause, cultural or ethno-cultural reasons.

Table 4: Estimate of impact of sustainable Livelihood option on poverty transition

Variables	Non-poor better		Non-poor (Poverty Exit)		Poor (Poverty Entry)	
	CoefficientP>/z/		CoefficientP>/z/		CoefficientP>/z/	
Age	-0.0124203	0.211	-0.0014299	0.656	-0.0200656	0.076*
Gender	0.3782872	0.281	0.0763151	0.076*	1.250619	0.040**
Household size	-0.0557852	0.321***	-0.0081082	0.200	-0.1084672	0.097*
Social group membership	2.802245	0.000***	2.053927	0.000***	5.860857	0.000***
Education	0.3977709	0.218	-0.0024577	0.980	0.4611997	0.511
Dependency Ratio	-0.0615956	0.090*	0.0858387	0.000***	0.2442103	0.000***
Livestock	0.068202	0.539	-0.0164412	0.537	-0.0502326	0.101*
Social safety_net	0.4470253	0.073*	0.0354959	0.018**	-0.3032564	0.651
Credit access	0.0051772	0.049**	0.1005151	0.001***	0.2137026	0.002***
Resource based livelihood index	0.0113669	0.873	0.0112563	0.629	-0.0081253	0.097*
Policy-induced livelihood index	0.0139026	0.549	0.0297932	0.001***	-0.0087006	0.010***
Human Dev-based livelihd-index	0.2331749	0.037**	0.1501807	0.039**	-0.0961647	0.344
Constant	2.740699	0.001***	0.733969	0.011***	-5.563649	0.000***

Source: Authors' Computation, 2022

Conclusion and policy implication

Livelihood activities were strongly connected with poverty. And on this we critically examine the impact of sustainable livelihood options on poverty transition among rural households in Nigeria. The households were observed to obtain their livelihood from agricultural, agricultural wage employment, non-agricultural and non-agricultural wage employment. From the estimate of both poverty rate and fraction of the worse off, we concluded that poverty rate in the study area was high and need the attention of policy makers. Also, the categories of livelihood options of the rural households significantly influence poverty transition. With the known that poverty is higher in rural sector in Nigeria, we suggest quick response to mitigate the impact of poverty through improved and sustainable livelihood option peculiar to different zone or federating unit in Nigeria.

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