Food Poverty Dynamics and the Determinants across Households in Rural South South Nigeria

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Abstract
This article takes a dynamic approach to the study of poverty by investigating how households exist and stay in poverty over time in rural South South, Nigeria while focusing on the food dimension of poverty. South South region is at the center of multiple risk factors: natural, ecological, social and economic that result in highly volatile income and consumption pattern for households. Balancing potential welfare loss of rural households depends in part on the effectiveness of existing programmes. This article uses the panel data set for farm households collected by the National Bureau for Statistics between 2010 and 2012 to evaluate the effectiveness of these programmes. The article used the Multinomial Logit Model (MLM) to determine the conditional probability of poverty transition. The descriptive analysis and the econometric model both lead to results that illustrate the significance of food poverty determinants in a dynamic perspective.

Keywords: Vulnerability, food security, Social protection, rural households and poverty

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1.0   Introduction

For a long time, dynamic poverty analysis for Nigeria was limited by the paucity of panel data set until much recently. In 2010, the National Bureau of Statistics in collaboration with the World Bank advanced an innovative panel data collection on agricultural households to track Nigeria's developmental outcomes. Before now, except for a few studies, estimates of poverty - incidence, severity and depth-have been the usual empirical practice using the National Consumers' Surveys of 1980, 1985, 1992, and 1996(see Omonona, 2009) and the National Living Standard Survey of 2004 and 2010. While such estimates offered useful insight on poverty evaluation, there are suggestions that it was "problematic in rural population that depends on highly variable incomes from agricultural production in an informal economy. In such a setting it might be difficult to distinguish those households that are consistently poor or nonpoor from those that are transitionally in one status or the other due to passing conditions in the weather or markets"(Liverpool Tasie and Winter Nelson, 2011: Journal of Agricultural Economics, 42: 221-233).

The aim of this article is to examine whether very poor households, close to the subsistence minimum, voluntarily and substantially reduce their food consumption across time or increased their food consumption by moving out of poverty. The purpose is to enhance the efficiency in policy interventions by capturing in addition, the extent of poverty arising from yearly fluctuation in income and agricultural output. Rural South South region provides a useful landscape for the study of poverty dynamics because it is at the center of multiple risk factors: natural, ecological, social and economic that influences the income volatility of farmers. Each of the states in the zone, has specific poverty alleviation programmes that complement regional, National and international donor efforts.

The programmes include investment promotion in human capital and adoption of improved production technologies, promotion of entrepreneurship and agricultural productivity improvement. However the persistence of poverty in the zone raises further question on the nature of the agricultural policy incentive towards rural households? A dynamic study of poor households allows such evaluation. For example, does less emphasis on consumption smoothing, targeted income transfers and feeding of the poor create a more heterogeneous poverty population? For an all-inclusive evaluation of poverty reduction strategies in the zone, the following questions are pertinent: (1) what types of risks are rural households exposed to and the autonomous response strategies, (2) how many households escaped poverty over 2010 and 2012 farming seasons in South South Nigeria? (3) How many people remained in poverty and (4) are there new entrants into the life of poverty and (5) what is the impact of policy and individual characteristics on the probability of escaping or staying in poverty.

The remainder of this study is organised as follows. Section two provides materials and methods, paying attention on theoretical and methodological frameworks. Section three presents the results. Section four discusses the results and offers conclusion.

2.0   Materials and Methods
2.1   Theoretical and Methodological frameworks
Poverty dynamics analytical framework is underpinned by the household inter-temporal living standard model. The model posits that given a household i living for T periods, the living standard is the expected streams of consumption C over time T expressed as:

$$W = \frac{1}{T}\sum_{i=1}^{T} \beta^t u\left(\left[C_t^\alpha + (\rho C_{t-1})^\alpha + \cdots + \left(\rho^p C_{t-p}\right)^\alpha\right]^{1/\alpha}\right)$$

Where
c_t = consumption in period t
W = living standard
T = Number of time periods
P = Number of lags associated with the effects of past consumption
ρ=parameter describing the strength of the inertia link over one period
α =intertemporal substitution parameter for the living standard at each time period
β =subjective actualization parameter
u= utility function accounting for static household tastes

Several important issues arise in estimating the equation above. How to isolate consumption smoothing opportunities so that the mean of living standards over the time periods reflect both permanent and transitory income in the sense of consumer theory. Hence the study assumes rural communities characterized by borrowing constraints that limit perfect consumption smoothing. Constrained consumption might conflict with desired consumption given household taste and preference. There is also the challenge of how to identify axiomatically sound poverty measure that can aggregate individuals and periods for specific households. And how to specify unobserved household expectations which matters for the definition of the poverty measure. Hence measurement appears difficult for many of the variables.

However for model tractability, the Permanent Income Framework (PIF) by Jalan and Ravallion [1998]; Rodgers and Rodgers (1993) Foster 2009 and Duclos, Araar, and Giles [2010] have been commonly applied. PIF is used to identify chronically poor and by extension transient poor. There are different versions of PIF depending on the underlying assumptions. There is the assumption of perfect substitutability of resources across periods (Jalan and Ravalion, 1978). Foster (2009) proposes a parameter that accommodates perfect and imperfect substitutability of resources. He relaxed unobserved past and future consumption and focused on observed consumption periods. In this article, perfect substitutability of resources assumption is applied and observed consumption periods of 2010 and 2012 of households considered.

Given that the consumption streams of household i, over T time-periods is denoted as; P $(y_{i1}, y_{i2} \ldots \ldots y_{iT})$, the permanent income standard $\hat{\bar{y}}_i$ is defined as the mean consumption over the years (2010 and 2012) measured as

$$\hat{\bar{y}}_i = t^{-1}\sum_{j=1}^{t} y_{iT}$$

In an intertemporal framework, any axiomatically valid social evaluation function satisfying the

Pareto principle and the independence from unconcerned individuals must be an additive function of the lifetime utilities of individuals (Blackorby, Bossert and Donaldson, 1995). Hence the article specifies the model using well behaved poverty measures that are both intertemporally and interpersonnally additive. The FGT (Foster, Greer and Thorbecke, 1984) family measures corresponding to $\alpha > 1$ and also known as "Squared Poverty Gap has been found to satisfy both properties of additivity and convexity. The convexity property makes it highly sensitive to poverty arising from income variability. Given a poverty line denoted as z and normalize consumption of household i , denoted as $1 - y_i$, the squared poverty Gap (P_2) across all individuals n is measured as

$$P_2 = n^{-1} \sum_{i=1}^{n} (1 - y_i)^2$$

Total poverty is the mean yearly poverty measures using the above equation. Replacing consumption y_i by the permanent income standard, $\hat{\bar{y}}_i$ for all periods T, Chronic poverty across all individuals is measured as

$$C_i = n^{-1} \sum_{i=1}^{n} (1 - \hat{\bar{y}}_i)^2$$

Chronic poverty is the proportion of individuals with permanent income below the poverty line. Transient poverty is the residual of total poverty (P_2) once the chronic poverty has been accounted for. The use of consumption rather than in income values in this study, is justified as an indicator of long-term living standard, and believed to be easier to collect in developing countries relative to an income measure. To control for differences in household composition, consumption values were adjusted with household size resulting in per capita consumption. The consumption values were also deflated to control for yearly differences in prices. The short length of time observation relaxes the discount factors between the years. The article uses the 2/3 mean per capita food consumption expenditure as the poverty line. By implication, the poverty line for 2010 is ₦34,020.90 per person per year while it is ₦30,621.93 per person per year in 2012. All households living in households in which the per capita food consumption expenditure is below the poverty line in 2010 are classified as poor in 2010 while all other individuals are classified as non-poor, and likewise for 2012.

Determinants of food poverty dynamics
To model the determinants of food poverty dynamics over 2010 and 2012, poverty is decomposed into four states: (i) being poor in both years (P–P), (ii) escaping poverty (P–NP), (iii) falling into poverty (NP–P) and (iv) being non-poor in both years (NP– NP). The multinomial logit model is used to specify the four poverty states defined as 'P-P', 'P-NP', 'NP-P', and 'NPNP'. The model posits that the probability of any of these states is a linear function of the size of the household, assets, dependency ratio, gender and location and age. Given households i, with a set of characteristics x_i (given as a 1 x K vector) and the poverty outcome y (taking on one of the four alternative states), that is $y_i = j/x_i$ if the outcome is the jth alternative conditional on a set of characteristics x_i .

The model is specified as:

$$P_{ij} = Pr(y_i = j|x_i) = \frac{exp(x_i\beta_j)}{\sum_{i=1}^{4} exp(x_i\beta_j)}, j = 1,2,3,4$$

The model ensures that $0 < P_{ij} < 1_i$ and$\sum_{i=1}^{4-1} P_{ij} = 1$. In order to identify the model, one of the dynamic poverty states is taken as the baseline case by setting its coefficients β_j as zero. Interpretation is then done in respect to the base category. The model is estimated using pseudo-likelihood procedure used to generate the response probabilities for household i. The marginal effect (ME) of the explanatory variables on the probability of any one of the poverty states is computed because of the parameters of multinomial models are not directly interpreted(Cameron and Trivedi, 2010). For household i, the ME of a change in the kth explanatory variable on the probability that alternative j is the outcome is:

$$ME_{ijk} = \frac{\partial Pr(y_i = j)}{\partial x_{ik}} = \frac{\partial F_j(x_i, \theta)}{\partial x_{ik}}$$
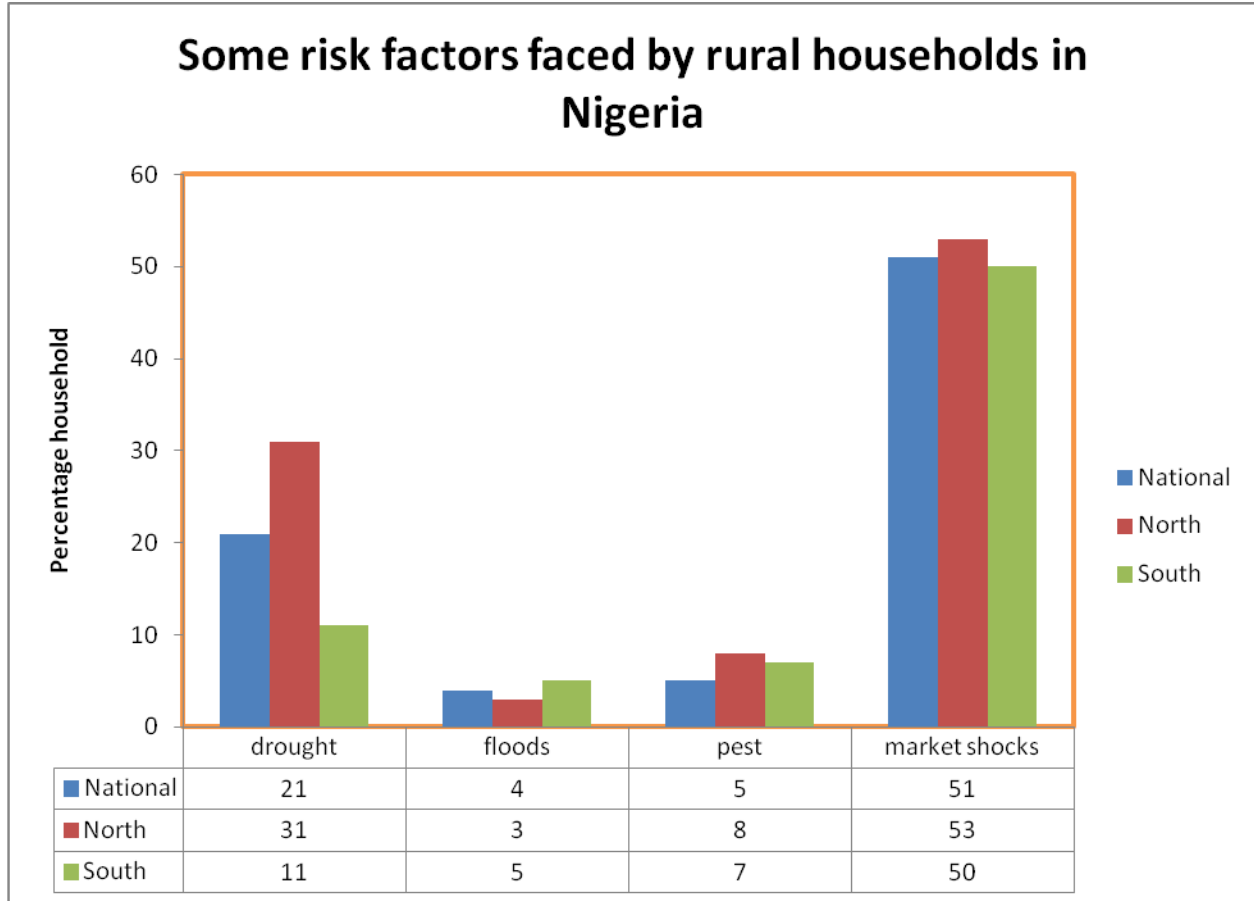
Data set for empirical application was sourced from the National Bureau of Statistics of the federal government of Nigeria. This source data is justified on the grounds that the agency has been collecting detailed micro data since 1981, using various modules of the National Integrated survey of households (NISH) programme. The NISH programme is a probability population sample by design and involves scientific selection of respondents at national and sub-national levels. Relevant to this study is the module: General Household Survey with panel component (GHS-Panel) with 5,000 households covering multiple agricultural activities. To generate farm households I used questions in the cover file that asked whether a household is a farm household or not. To generate rural households I used the sector variable to disaggregate the data into rural data set. Also to generate South South data set, I used the regional variable "zone" for disaggregation. After data cleaning and removal of outliers a total of 508 rural farm household observations were used. Analysis was done at the farm household levels meaning that plot level information and individual level information or crop level information were converted to farm household level information. Variable selected for analysis were informed by previous studies. Some of the variables are measured at the individual and household level while others at the community level. There are also quantitative and qualitative variables.

3.0 Results

Figure 1 below shows various shocks during 2010 planting seasons. Observed shocks included rainfall changes as well as changes in food prices and supply chain infrastructure aggregated as market shock. While market shock is most dominant, flood and drought are pronounced in the south and north respectively. Although the relationship between these vulnerability conditions and poverty is complex falling below a given poverty line in a particular season depends on the magnitude of exposure and the coping ability of the rural household or community (Ellis, 2003; cited from Scott, 2006) as well as governmental responses. Table 1 shows the various strategies used by households against shocks namely, asset disposal, labour supply, and savings, less

consumption, remittances, borrowing and technology.

As observed a large percentage of households used all strategies for markets shocks but across shock type and zones there is evidence of variation in the relative importance of strategies. Cooperative savings and remittances are visible in the north and south respectively while technology is used against drought and pests. Households without access to loans relative to asset disposal increased the use of remittances as strategy against market shocks and pests by 30%. Meaning that effective extension services and credit availability will allow farmers to adapt to climate risks.

Some risk factors faced by rural households in Nigeria

	drought	floods	pest	market shocks
National	21	4	5	51
North	31	3	8	53
South	11	5	7	50

Some risk factors faced by rural households in Nigeria
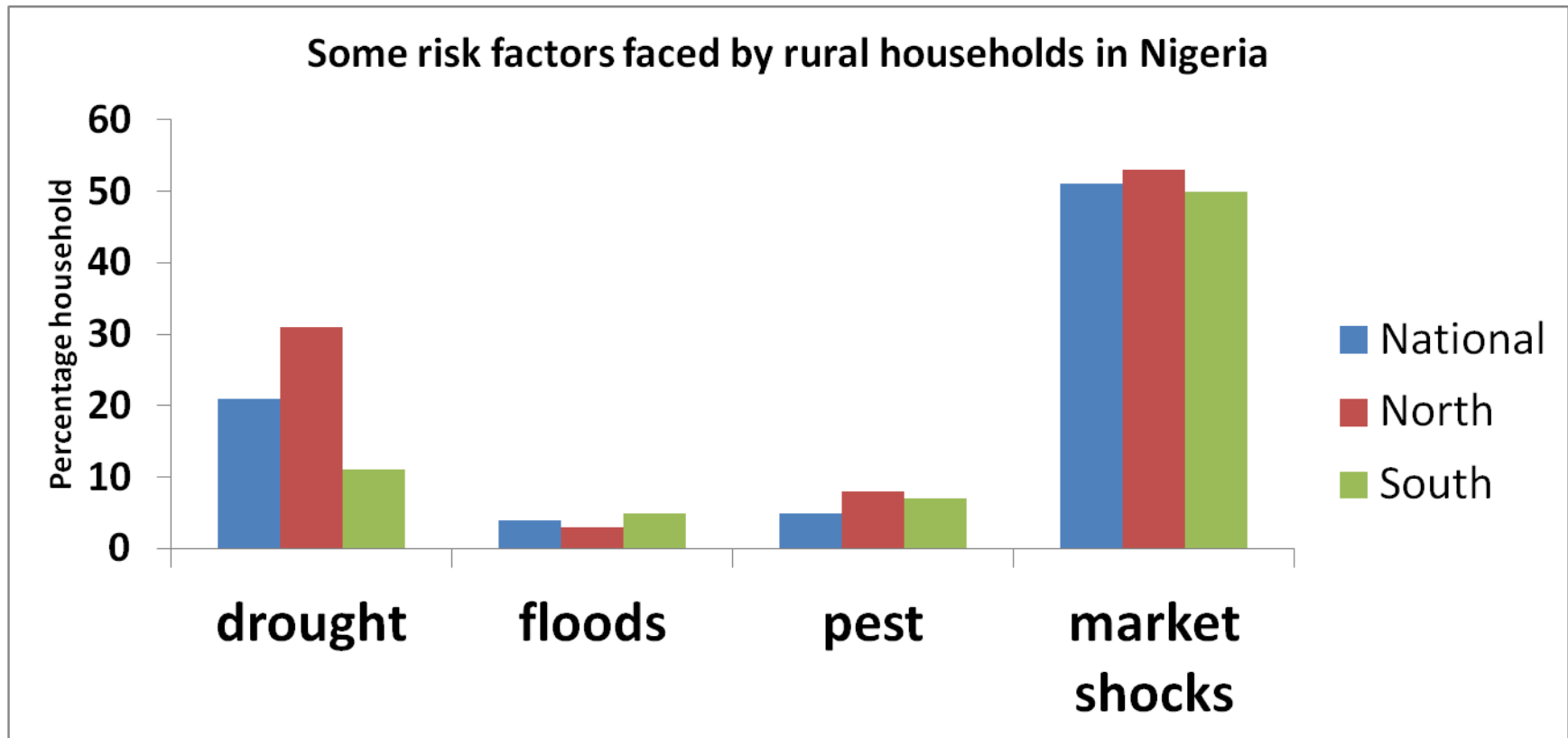
Shocks/Zones \\ Strategies	DROUGHT			FLOODS			MARKET SHOCKS			PESTS		
	North	South	National	North	South	National	North	South	National	North	South	National
Less food	27.3	10.9	17.8	4.3	4.6	4.5	55.0	50	52.1	7.7	2.5	4.7
Technology	31.6	10.6	20.3	2.2	5.3	3.8	51.7	47.9	50	8.3	2.3	5.1
Esusu(informal savings	27.4	11.8	18.6	2.9	4.4	3.8	59.8	41.5	49.3	4.9	3	3.8
Cooperative savings	11.8	5.9	8.8	0.0	0.0	0.0	76.5	29.4	52.9	0.0	0.0	0.0
Remittances	29.1	10.6	15.6	4.2	6.8	6.11	45.8	52.3	50.6	14.6	3	6.11
Labour supply	26.3	12.5	19.7	5.3	5.7	5.5	57.9	43.2	50.8	6.8	2.3	4.6
Borrowing	23.2	8.5	17.7	5.6	4.3	4.8	60.6	50	56.6	7.1	1.2	4.8
Asset disposal	26.9	0.0	12.7	0.0	6.9	3.6	46.2	27.6	36.4	11.5	6.9	9.1

Mean Per Capita Food Expenditure
Table 2 shows the percentage mean food and non-food shares of agricultural households in South South Nigeria. From the table, there is evidence of more spending on food compared to non-food both across gender and location. This reflects the social strata of the respondents who are likely to spend more on food because of their low income earnings compared to non-food items. Across gender, female headed households spend more on food compared to male headed households. This suggests that female headed households are more of net buyers of food compared to male headed households. For example, in 2010, the food expenditure share of female headed households was 60%, about 7% higher than the percentage share of male headed households. It should however be noted that inflation prospects across years was not taken into account being one of the limitation of this analysis.

Table 2. Percentage Mean Food and Nonfood shares, Rural South South, 2010 to 2012

Welfare Indicators	Female Headed Households		Male Headed Households	
	2010	**2012**	**2010**	**2012**
Food expenditure share (%)	60%	57%	53%	48%
Non-food expenditure share (%)	40%	42%	47%	52%
	Rural Households		**Urban Households**	
Food expenditure share (%)	54%	50%	50%	48%
Non-food expenditure share (%)	45%	50%	49%	52%

Source: Author's estimation from LSMS

Table 3. Mean Food, Nonfood and Total Expenditure, Rural South South, 2010 to 2012

Welfare indicators	Female Headed Households		Male Headed Households	
	2010	**2012**	**2010**	**2012**
Food expenditure /capita/annum	₦54,187.02	₦51,141.23	₦47,313.14	₦40,272.18
Non-food expenditure/capita/annum	₦42,305.23	₦38,787.59	₦48,607.66	₦50,112.26
Total expenditure /per capita/annum	₦96,541.43	₦89,603.7	₦95,113.05	₦89,890.99
	Rural Households		**Urban Households**	
Food expenditure/capita/annum	₦48,889.23	₦42,721.83	₦59,326.52	₦57,657.51
Non-food expenditure/capita/annum	₦47,156.04	₦47,566.91	₦70,250.18	₦72,831.39
Total expenditure per capita/annum	₦95,443.11	₦89,826.05	₦12,8778.8	₦13,0001.5

Source: Author's estimation from LSMS

Inter-temporal changes in poverty
Table 4 shows the panel based poverty estimates between two agricultural years of 2010 and 2012. From the table, rural food poverty rates were 79.13 percent and 80.31 percent in 2010 and 2012 respectively. The 2010 poverty rate can be split into the fraction that remained poor in 2012 (71.06 percent) and the fraction that escaped poverty (8.09 percent). With 8.09 percent of the rural population escaping poverty from 2010 to 2012 it is clear that South

South Region made some efforts in terms of moving people out of poverty but really not substantial. On the contrary, 9 percent of the rural population fell into poverty by being non-poor in 2010 but poor in 2012. This reflects the possibility of the non-poor becoming poor over time. Although this is a fairly small fraction it underlines that poverty reduction strategies of the region must now include the vulnerable households with per capita consumption expenditures just above the poverty line in order to keep the pace in poverty reduction effort.

Table 4. Panel based Poverty Estimates

Poverty rates	2010	2012
POOR	406(79.13%)	408(80.31%)
NONPOOR	106(20.87%)	100(19.69%)

Source: Author's estimation from LSMS

Table 5. Poverty states

Poverty states	Frequencies	Percentage
POOR TO POOR	351	71.06
POOR TO NONPOOR	41	8.09
NONPOOR TO POOR	47	9.25
NONPOOR TO NONPOOR	59	11.61
Total	508	100

Source: Author's estimation from LSMS

Poverty movement by Location and gender
Tables 3 and 4 presents the movement in and out of poverty across states in the region and gender. In Akwa Ibom state for example, the poverty rate estimate for the state is 86.45 percent in 2010 and 92.71percent in 2012. The 2010 poverty rate can be split into the fraction that remained poor in 2012 (84.38 percent) and the fraction that escaped poverty (2.08 percent). On the contrary, 8 percent of Akwa Ibom rural population fell into poverty by being non-poor in 2010 but poor in 2012.

Table 6. Poverty states by location

Location	Poor-Poor	Poor-NonPoor	NonPoor-Poor	NonPoor to Nonpoor	Poverty rates
AKWA IBOM	81(84.38%)	2(2.08%)	8(8.33%)	5(5.21%)	86.46%
BAYELSA	42(77.78%)	3(5.56%)	8(14.81%)	1(1.85%)	83.33%
CROSS RIVERS	82(87.23%)	4(4.26%)	6(6.38%)	2(2.13%)	91.49%
DELTA	40(44.94%)	19(21.35%)	7(7.87%)	23(25.84%)	66.29%
EDO	37(77.08%)	5(10.42%)	3(6.25%)	3(6.25%)	87.50%
RIVERS	79(62.20%)	8(6.30%)	15(11.81%)	25(19.69%)	68.50

Source: Author's estimation from LSMS

The largest movement out of poverty is seen in Delta State where 21% of agricultural households escaped food poverty, while only 8 percent fell into poverty 2012. Table 7 shows

the poverty transitions and poverty rates across gender in South South geopolitical zone. Individuals in female headed agricultural households have lower poverty rates compared to individuals in male headed households. In terms of movement in and out of poverty, more individuals in female headed households moved into poverty compared to male headed households. For example, 14 percent of individuals in female headed household moved into poverty compared to only 8 percent in male headed households. However, many female headed households may be vulnerable in the sense that the per capita consumption expenditure is just above the poverty line.

Table 7. Poverty states by gender

Gender	Poor-Poor	Poor-NonPoor	NonPoor-Poor	NonPoor to Nonpoor	Poverty rates
FEMALE	73(65.18%)	7(6.25%)	16(14.29%)	16(14.29%)	71.43
MALE	288(72.73%)	34(8.59%)	31(7.83%)	43(10.86%)	81.31

Source: Author's estimation from LSMS

Regression analysis
The summary statistics of the variables used in the regression analysis is presented in Table 8. Table 9 presents the coefficients obtained using the method of maximum likelihood. The coefficients for variables included that were significant statistically (P<0.05) are asterisked. The model has good predictive power as it explained 36% of the changes in the dependent variable. The coefficients are presented across the four poverty states: being poor in both years (P–P), (ii) escaping poverty (P–NP), (iii) falling into poverty (NP–P) and (iv) being non-poor in both years (NP– NP). The multinomial regression analysis showed some interesting results. Increasing Food prices by ₦1 brought about 13% increase in the probability of households remaining poor over the two years considered and also raising food prices reduces the probability of households moving from nonpoor states to poor states by 19%. Being a rural farmer in Akwa Ibom, Bayelsa, Cross Rivers and Edo States increased the probability of remaining poor by 20%, 53%, 23% and 18% respectively but reduces the probability of transient poverty by 14%, 19%, 14% , 8% and 7% for farmers in Akwa Ibom, Bayelsa, Cross Rivers , Delta and Edo States respectively. Among the other determinants, education reduced the probability of being poor. This supports the continued effort for increasing the share of people who are more educated.

Table 8. Summary statistics of variables used

Variable	Mean Std. Dev.	Min	Max
Age in years (508)	51 (15)	21	108
Household size(508)	5 (3)	1	16
Asset Value in ₦ (508)	132,860.9 (460,207.4)	100	7572851
Land size in hectares (314)	0.83 (3.8)	0	57.26796
Dependency ratio(488)	0.9 (0.89)	0	8
Price Index(508)	1.2 (0.27)	.0533333	2.717027
Esusu savings(508)	1.6 (0.48)	1	2
Micro Finance Access(508)	1.92 (0.27)	1	2
Education level in years(498)	13.5 (8.26)	0	42
Christian headed (507)	9% (25%)	0	1
Married(508)	70% (45%)	0	1
Widowed(508)	18% (38%)	0	1
Female gender(508)	22% (41%)	0	1
Akwa Ibom(508)	19% (39%)	0	1
Bayelsa(508)	11% (31%)	0	1
Cross Rivers(508)	18% (39%)	0	1
Delta(508)	17% (38%)	0	1
Edo(508)	9% (3%)	0	1
Rivers(508)	25% (43%)	0	1

Table 9. Multinomial logistic regression

	P-P	P-N	N-P	N-N
	Marginal estimates			
	.0017	-.0002	-.0013	-.0002
Age in years	(1.39)	(-0.18)	(-1.37)	(-0.33)
Household size	.0550	-.0123	-.0135	-.0293
	(5.11)*	(-1.39)	(-1.38)	(-3.65)*
Asset Value in ₦	-1.21e-07	4.12e-08	3.50e-08	4.48e-08
	(3.80)*	(1.43)	(1.15)	(2.45)*
Land size in hectares	.0013	-.0007	-.0015	.0009
	(0.48)	(-0.28)	(-0.89)	(0.99)
Dependency ratio	.0334	-.0056	-.0173	-.0105
	(1.15)	(-0.32)	(-0.81)	(-0.45)
Price Index	.1312	.0470	-.1952	.0169
	(1.53)*	(0.65)	(-2.47)*	(0.50)
Esusu savings	-.0194	-.0026	.0118	.0102
	(-0.52)	(-0.09)	(0.50)	(0.42)
Micro Finance Access	.0612	.0748	-.0321	-.1038
	(1.12)	(1.95)*	(-0.71)	(-3.09)*
Education level in years	.0040	-.0016	-.0007	-.0017
	(1.46)*	(-0.72)	(-0.32)	(-1.11)
Christian headed	-.0506	.0034	.0162	.0308
	(-0.83)	(0.08)	(0.32)	(0.86)
Married	.1045	-.0490	-.0604	.0049
	(1.58)*	(-0.76)	(-1.73)*	(0.17)
Widowed	.1121	-.0224	-.0589	-.0307
	(1.34)*	(-0.32)	(-1.15)	(-0.91)
Female gender	.0659	-.0744	-.0115	.0199
	(0.90)	(-1.32)	(-0.25)	(0.66)
Akwa Ibom	.2040	-.0375	-.1429	-.0236
	(3.24)*	(-0.63)	(-2.66)*	(0.37)
Bayelsa	.5339	-.1910	-.2255	-.1173
	(7.05)*	(-3.15)*	(-3.50)*	(-3.16)*
Cross Rivers	.2337	-.0155	-.1378	-.0805
	(4.37)*	(-0.31)	(-3.35)*	(-2.44)*
Delta	.0145	.1105	-.0823	-.0427
	(0.22)	(2.16)*	(-1.82)*	(-1.55)*
Edo	.1762	.0592	-.0786	-.1568
	(2.69)*	(1.12)	(-2.25)*	(-3.08)*
Rivers	0	0	0 (omitted)	0

Source: Author's estimation from LSMS
- Values in brackets( ) are the T-values and tell us whether a variable is significant at 95%

Table 10. Multinomial logistic regression (Only significant variables)

	P-P	P-N	N-P	N-N
	Marginal estimates			
Household size	.0550			-.0293
	(5.11)*			(-3.65)*
Asset Value in ₦	-1.21e-07			4.48e-08
	(3.80)*			(2.45)*
Food Price Index	.1312		-.1952	
	(1.53)*		(-2.47)*	
Micro Finance Access		.0748		-.1038
		(1.95)*		(-3.09)*
Education level in years	.0040			
	(1.46)*			
Married	.1045		-.0604	
	(1.58)*		(-1.73)*	
Widowed	.1121			
	(1.34)*			
Akwa Ibom	.2040		-.1429	
	(3.24)*		(-2.66)*	
Bayelsa	.5339	-.1910	-.2255	-.1173
	(7.05)*	(-3.15)*	(-3.50)*	(-3.16)*
Cross Rivers	.2337		-.1378	-.0805
	(4.37)*		(-3.35)*	(-2.44)*
Delta		.1105	-.0823	-.0427
		(2.16)*	(-1.82)*	(-1.55)*
Edo	.1762	.	-.0786	-.1568
	(2.69)*		(-2.25)*	(-3.08)*
Number of observations	303			
Wald chi2(54)	= 283.31			
Prob > chi2	= 0.0000			
Pseudo R2	= 0.3628			
Log pseudolikelihood	= -124.16971			

Source: Author's estimation from LSMS

- Values in brackets( ) are the T-values and tell us whether a variable is significant at 95%

4.0 Discussion and Conclusions

"The emergence of panel data has opened up areas of micro level study of well-being dynamics that were infeasible a generation ago" (Barrett, Garg, & McBride, 2016). Panel data set evidences the theoretical knowledge that poverty is not necessarily a stagnant state for an individual or a group of individuals. Poverty dynamics have been studied extensively since the time of Jalan and Ravallion, (1998) but not so much has been done for Nigeria. The article attempted to establish a dynamic poverty profile for South South geopolitical zone that not only characterizes the poor and non-poor at a given point in time but, instead, describes poverty states over a short period of time and the mechanism. The panel data component of the rural parts of the nationally representative household surveys LSMS 2010 and 2012 was disaggregated for South South region. The data set consisting of 504 rural households,

provided the basis for the analysis. The panel data shows outflow from poverty from 2010 to 2012 and a comparably inflow to poverty. The 2010 poverty rate can be split into the fraction that remained poor in 2012 (71.06 percent) and the fraction that escaped poverty (8.09 percent). With 8.09 percent of the rural population escaping poverty from 2010 to 2012 it is clear that South South Region made some efforts in terms of moving people out of poverty. On the contrary, 9 percent of the rural population fell into poverty by being non-poor in 2010 but poor in 2012.

In our analysis of the gross flows in and out of poverty from 2010 to 2012, I describe the variations in the flows across states and gender. I also used an econometric model that analyzes the role of some selected factors in determining the process of moving in and out of poverty in the region. While there were challenges in precisely describing the group of people who escape poverty and, in particular, those who fall into poverty in the period, the model has good predictive power as it explained 36% of the changes in the dependent variable. In some sense I showed it may be more meaningful to describe four poverty states over the period: being poor in both years (P–P), (ii) escaping poverty (P–NP), (iii) falling into poverty (NP–P) and (iv) being non-poor in both years (NP– NP). The descriptive analysis and the econometric model both led to results that, although they are not surprising, illustrate the significance of poverty determinants in a dynamic perspective.

Most importantly, as the rural poverty rate has increased over time it has become increasingly clear that South South region is facing serious problems with respect to poverty reduction programmes and therefore a need to review and redesign existing poverty reduction programees. The multinomial regression analysis showed some interesting results and while the results do not provide direct guidance in terms of policies for reducing food poverty across the states in the region, a couple of findings are worth noting. Increasing Food prices by ₦1 brought about 13% increase in the probability of households remaining poor over the two years considered and also raising food prices reduces the probability of households moving from nonpoor states to poor states by 19%. What this means is that while high prices are good incentive for increased food production by farming households, high prices can also drive transition because some farmers are net food buyers. Hence the challenge for policy programming is to strike a balance.

Secondly farmer's asset reduced the probability of staying in poverty and increases the probability of remaining non poor. In other words increasing the asset base of farmers would help to reduce movement into poverty and make farmers richer. Thirdly being a rural farmer in Akwa Ibom, Bayelsa, Cross Rivers and Edo States increased the probability of remaining poor by 20%, 53%, 23% and 18% respectively but reduces the probability of transient poverty by 14%, 19%, 14% , 8% and 7% for farmers in Akwa Ibom, Bayelsa, Cross Rivers , Delta and Edo States respectively. Locational variables are able to capture differential levels of infrastructural development and spatial interventions. This indicates that local infrastructure investments may be important for the vulnerable households just above the poverty line. Among the other determinants, education reduced the probability of being poor. This supports the continued effort for increasing the share of people who are more educated.

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