



## POVERTY AND VULNERABILITY IN RURAL SOUTH-WEST NIGERIA

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### ABSTRACT

The near failure of various programmes and strategies by successive governments in Nigeria has been linked to the improper diagnosis of poverty as a static concept. There are growing concerns that poverty is not reducing due to the lack of understanding of its dynamic nature and vulnerability to poverty. This study investigates poverty and vulnerability to poverty in rural South-West Nigeria (SWN). Primary data were collected from 582 rural households in a two-wave panel survey (harvesting and lean periods) employing a multi-stage sampling technique. Data were analyzed using; Foster, Greer and Thorbecke (FGT) poverty measure; 3-Stage Feasible Generalized Least Squares (3FGLS); Tobit and Probit regression methods. Poverty lines of ₦3313.57 and ₦4093.21 were estimated for the two periods, respectively. Based on these, the incidence of poverty was 35.0% and 43.6% for the first and second periods. At the standard vulnerability threshold of 0.5, 55.7% of rural households in SWN were vulnerable to poverty. A unit increase in household size and dependency ratio aggravated vulnerability by 0.05 and 1.28, while attainment of secondary and tertiary education reduced vulnerability by 0.14 and 0.23, respectively ( $P < 0.01$ ). Vulnerability also translated into significantly ( $P < 0.01$ ) higher poverty by increasing the ex-post probability of becoming poor by 0.34. However, there were some factors related with vulnerability but not poverty and some related to poverty but not vulnerability. The study therefore suggests that poverty alleviation programs must focus not only on those factors which aggravate poverty but also vulnerability, in order to employ several specialized approaches to tackle these multifarious problems.

**Keywords:** poverty, vulnerability, rural, south-west Nigeria, logit model.

### INTRODUCTION

In Nigeria, poverty is mainly a rural phenomenon with agriculture accounting for the highest incidence over the years. The food consumed by the populace as well as raw materials for manufacturing activities are provided by the agricultural sector. The sector is also the major employer of labour especially in the rural areas. However, the neglect of the sector and the rural population has increased poverty in oil rich Nigeria. The poverty menace in the country has worsened since the late 1990s, such that every measure of poverty ranks Nigeria at the bottom list of nations. The Human Development Index (HDI) of 0.423 ranks the country 142 out of 169 countries in 2010. With estimated GNI per capita of \$2156, life expectancy at birth of 48.4 years, Multidimensional Poverty Index (MPI) of 0.368 (UNDP, 2010) and more than half (54.4%) of the population below poverty line in 2004 out of which 36.6% of the total population are living in extreme poverty (NBS, 2005). This poverty situation remains an overwhelming challenge as findings of a 2006 Core Welfare Indicator Questionnaire (CWIQ) survey conducted by the National Bureau of Statistics revealed that over 67 per cent or two-thirds of Nigeria's rural population was poor.

This situation is also a major threat to the nation's pursuit to be one of the 20 largest world economies by the year 2020 as the rural sector, from which about 70 percent of the populace derive their livelihoods, remains the country's treasure-house. The inability of previous programmes and strategies to put a commensurate dent on the incidence of poverty in Nigeria suggests that the major issue is not that households are poor but the probability that a household if currently poor, will remain in poverty

or if currently non-poor will fall below the poverty line (that is, household vulnerability to poverty). In other words, vulnerability to poverty is one of the factors that explain the ever-increasing level of poverty.

Thus, sustained economic growth and development in Nigeria cannot be achieved without the alleviation of poverty. To reduce poverty sustainably, however, reducing household vulnerability through increased ability of government to identify, assess and respond to potential crisis situations and improve households' ability to recover quickly when exposed to shocks are also necessary. This has become imperative as policy makers only weigh the current poverty status of a household, without taking into cognizance, the possibility that a household not poor now, might fall into poverty in the future. This *ex post* measure of development needs to be replaced by indicators that recognize that anti-poverty policies need to be forward-looking and incorporate the hazards affecting whether individuals or households are in poverty or are likely to fall into poverty, that is their vulnerability (UNU, 2008).

While a number of studies have analyzed the status of poverty in Nigeria (FOS, 1999; Okojie *et al.*, 2000; Aigbokhan, 2000) very few have analyzed its dynamics (Alayande and Alayande, 2004; Oni and Yusuf, 2006; Oyekale and Oyekale, 2007). However, these studies apart from using cross sectional data which involves the exclusive reliance on the strong assumption of the ability of cross-sectional variability to capture temporal variability, did not investigate which factors were associated with vulnerability and how they compare with the static correlates of poverty. Investigating the factors associated with vulnerability to poverty has not



received much attention in the poverty literature in Nigeria, largely due to the lack of nationally representative panel data that track the poverty status of households over time. The attendant cost of collecting such data at the national level and the need to demonstrate the usefulness of panel data justifies the choice of South Western Nigeria. This study will therefore be an immeasurable contribution to the literature on household's vulnerability to poverty in Nigeria. This is essential not only for acquiring knowledge, but also for the design of suitable interventions for mitigating vulnerability which will in turn assist policymakers in devising better risk-management policies. From the above, a detailed understanding of the characteristics and limitations of the poor and vulnerable is fundamental to devising valuable strategies for poverty alleviation and for designing effective social protection programmes.

### REVIEW OF LITERATURE

Pritchett *et al.*, (2000) and Chaudhuri *et al.*, (2002) developed quantitative measures of vulnerability, as the *ex ante* risk of facing poverty in the future. They defined vulnerability as the probability that a household will find itself consumption-poor in the near future employing different types of data and empirical methodology. Pritchett *et al.*, (2000) estimated this vulnerability measure using panel data from two waves of the Indonesian survey of 1997 and 1998. They found out that half of their sample was vulnerable to poverty, although only 20 per cent of the population was defined as poor in the first year. Chaudhuri, *et al.* (2002) using cross-sectional data from the mini-SUSENAS in Indonesia in December 1988 and a three-stage feasible generalized least squares procedure to estimate the inter temporal variance of the log of consumption on household characteristics, found out that at the national level, while 23 per cent of the Indonesian population was poor, 45 per cent of the population was vulnerable to falling into poverty in the future. Their estimates also showed that the highly vulnerable were disproportionately rural and were most likely to live in remote areas. A related study by McCulloch and Calandrino (2002) applied the same technique to panel data from Sichuan, (the most populous province in China) between 1991 and 1995. They found that vulnerability was highest for those households in the lowest income and consumption quintile. Households in Sichuan were also found to be vulnerable to falling into poverty even when their average incomes/consumption was well above the poverty line.

Alayande and Alayande (2004) attempted a quantitative and qualitative assessment of vulnerability to poverty in Nigeria. In qualitative terms, they noted that weak governance structure in the form of absence of rule of law, lack of political effectiveness and efficiency and high level of insecurity were major sources of vulnerability to poverty in Nigeria and that the macroeconomic environment especially in terms of sluggish growth, low capacity utilization in the manufacturing sector and high rates of unemployment has

increased vulnerability to poverty in Nigeria. However, in quantitative terms, the study applied the Chaudhuri (2000) methodology to assess the level of vulnerability to poverty in Nigeria. The findings of the study showed that 87% of Nigerians were vulnerable to poverty and that 68.5% of the population was highly vulnerable, whereas only 31.5% of the population had low mean vulnerability. The study, while noting that building a strong and virile governance structure can help reduce vulnerability in Nigeria, also recommended a pro-poor growth macroeconomic policy environment that would allow the vulnerable and the poor to make use of their hidden assets.

Similarly, Christiaensen and Subbarao (2004) using pseudo panel from rural Kenya conceived vulnerability as expected poverty and empirically assessed household vulnerability using pseudo panel data derived from repeated cross section augmented with historical information on shocks. They found out that in 1994, rural households in Kenya faced on average a 40 percent chance of becoming poor in the future. Households in arid areas that experienced large rainfall volatility appeared more vulnerable than those in non-arid areas, where malaria emerges as a key risk factor. Idiosyncratic shocks also caused non-negligible consumption volatility. Possession of cattle and sheep/goats appeared ineffective in protecting consumption against covariant shocks, though sheep/goat help reduce the effect of idiosyncratic shocks, especially in arid zones. Of the policy instruments simulated, interventions directed at reducing the incidence of malaria, promoting adult literacy, and improving market accessibility held most promise.

Gunther and Harttgen (2006) extended the proposed method by Chaudhuri (2000), by introducing multilevel analysis (Goldstein, 1999) which allows a differentiation between the unexplained variance of the household level (i.e., the impact of idiosyncratic shocks) and the unexplained variance at the community level (i.e., the impact of covariate shocks) and also corrects for inefficient estimators, which might occur whenever variables from various levels (e.g. from the household and community level) are introduced in the regressions. Their approach to data from Madagascar showed that whereas covariate shocks had a substantial impact on rural households' vulnerability, urban households' vulnerability was largely determined by idiosyncratic shocks.

Oni and Yusuf (2008) on the determinants of expected poverty in rural Nigeria also extended the vulnerability to expected poverty approach with the incorporation of covariate risks in the regression analysis allowing for inclusion of time varying covariates (such as regional specific variables) namely: rainfall, radiation, notable diseases, and price level and unemployment rates among others. They found that both idiosyncratic and covariate factors affect the expected log per-capita consumption of rural Nigerians, overall expected poverty for the country at 53.5% is 1.02 times the observed poverty in 1996 and that higher expected poverty is synonymous with north east, no formal education,



farming, older head of household, large household size and male headed household.

Kasirye (2007) employed panel data set of 1309 households in Uganda to measure vulnerability to poverty between 1992/93 and 1999/2000 and to estimate the impact of household characteristics on vulnerability. The likelihood of future poverty was estimated based on the expected mean and variance of household consumption. Education, spatial characteristics and access to community infrastructures were found to have important impact on vulnerability. Specifically, reduction in vulnerability to poverty was found to increase with higher education attainment of the household head. Also households resident in northern Uganda were about 60 percent more vulnerable compared to their counterparts in central Uganda. The study also found that causes of vulnerability in Uganda were similar to causes of poverty. Hence policies to raise the earning capacity of poor households would help both the vulnerable and the poor.

Gaiha *et al.* (2007) drawing upon the Vietnam Household Living Standards Survey (VHLSS) data that covered the whole of Vietnam in 2002 and 2004, construct *ex ante* measures of vulnerability. These they compared with static indicators of poverty (i.e., the headcount ratio in a particular year). Detailed analysis of the panel data showed that (i) in general, vulnerability in 2002 translates into poverty in 2004; (ii) vulnerability of the poor tends to perpetuate their poverty; and (iii) sections of the non-poor slip into poverty. They conclude that durable reduction in poverty is conditional on (i) identification of the vulnerable, (ii) their sources of vulnerability, and (iii) design of social safety nets that would enable the vulnerable to reduce risks and cope better with rapid integration of markets with the larger global economy.

Jamal (2009) assessed the extent of household vulnerability to poverty in Pakistan. The estimates showed that about 52 percent of the population was vulnerable to poverty during 2004-05. The rural headcount ratio in terms of household vulnerability was also relatively high as compared to the vulnerability incidence in urban areas.

The various literature highlighted above have shown that there currently exists a dearth of empirical evidence as regards vulnerability studies in the sub-Saharan African countries and most especially in Nigeria. This study will, therefore, fill the gap in knowledge and literature on vulnerability issues in Nigeria.

## METHODOLOGY

The study was carried out in South-West of Nigeria which falls on latitude 6° to the North and latitude 4° to the south. It is marked by longitude 4° to the West and 6° to the East. It is bounded in the North by Kogi and Kwara states, in the East by Edo and Delta states, in the South by Atlantic Ocean and in the West by Republic of Benin. The zone comprises of six states namely Oyo, Osun, Ondo, Ogun, Ekiti and Lagos and is characterized by a typically equatorial climate with distinct dry and wet seasons. The mean annual rainfall is 1480mm with a mean monthly temperature range of 18° -24°C during the rainy

season and 30°-35°C during the dry season. The geographical location of South West Nigeria covers about 114, 271 kilometer square that is, approximately 12 percent of Nigeria's total land mass and the vegetation is typically rainforest. The total population is 27, 581, 992 and predominantly agrarian. Notable food crops cultivated include cassava, maize, yam, cowpea and cash crops such as cocoa, kolanut, coffee and oil palm (NPC, 2006).

Primary data used in this study were collected from a two-wave panel survey undertaken at 5-months interval to allow measurement of seasonal variation in behaviour and outcome and to balance both the cross-sectional and time series requirements of panel data. The two periods corresponds to the lean and harvesting seasons of 2009. The frame for the study was the demarcated Enumeration Area (EA) maps produced by National Population Commission for the 2006 Housing and Population Census. A multi-stage sampling technique was adopted for this study in selecting 600 representative households in the first period but only 582 households could be re-interviewed in the second round. Data from these 582 households' were used for analysis in this study. Further, all the sample data were weighted using the inverse of the overall selection probabilities which were called Design Weights (DW). The design weights were obtained for each of the sixty EAs canvassed for the study and applied accordingly to all the study units.

## Model specification

### Poverty measure

The poverty measure that was used in this analysis is the class of decomposable poverty measures by Foster, Greer and Thorbecke (FGT). They are widely used because they are consistent and additively decomposable (Foster *et al.*, 1984).

The FGT index is given by

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left( \frac{z - y_i}{z} \right)^{\alpha} \quad (1)$$

Where; Z is the poverty line defined as 2/3 of the Mean Per Capita Household Expenditure (MPCHHE),  $y_i$  is the value of poverty indicator/welfare index per capita in this case per capita expenditure in increasing order for all households; q is the number of poor people in the population of size n, and  $\alpha$  is the poverty aversion parameter that takes values of zero, one or two. By setting the value of  $\alpha$  to zero, one, two respectively, the FGT poverty measure formula delivers a set of poverty indices.

### Vulnerability as expected poverty

Taking into account the dynamic dimensions of poverty, the measure of 'Vulnerability as Expected Poverty' (VEP), an *ex ante* measure proposed by Chaudhuri *et al.* (2002) was adopted because of the advantage of the VEP approach especially in terms of its



ability to identify households exposed to risks but who are not poor. In this approach vulnerability is defined as the probability of being poor in the future and basically can take on two forms. It is either the ex ante risk that a household that is currently not poor will fall below the poverty line or the risk that a household that is currently poor will remain poor. This can be formally expressed as:

$$V_t = \text{Prob}(C_{(t+1)} < Z) \quad (2)$$

Where the vulnerability of a household during the current period  $V_t$  is dependent on the probability that future household consumption  $C_{(t+1)}$  will be less than poverty line ( $Z$ ). Empirically, building upon the works of Chaudhuri *et al.* (2002) and Gaiha *et al.* (2007), VEP was obtained by the following procedure: First, the FGT measure of headcount poverty (Foster, *et al.*, 1984) was estimated from household data. Second, household's expected consumption and its variance of the error term were estimated using the 3 stage Feasible Generalized Least Square (FGLS) estimation procedure. Household's vulnerability to poverty was then derived as the conditional probability of the household falling into poverty in the next period or the probability that a household's consumption will lie below the predetermined poverty line in the near future (please see details in Chaudhuri *et al.*, 2002).

$$\widehat{VEP}_i \equiv \hat{v}_i = \hat{\Pr}(\ln c_i < \ln z | X_i) = \Phi\left(\frac{\ln z - X_i \hat{\beta}}{\sqrt{X_i \hat{\theta}}}\right) \quad (3)$$

Adopting the standard vulnerability threshold of 0.5 following (Gahia *et al.*, 2007; Imai *et al.*, 2009; Oni and Yusuf, 2006) households were classified into their vulnerability status. Hence, those with a 50 per cent or more chance of falling into poverty in the future were identified as vulnerable.

#### Determinants of poverty

A probit model was employed to estimate whether a household's per capita consumption was below the poverty line in the two periods, conditioned on a vector of determinants of per capita consumption,  $X_i$  (Gahia *et al.*, 2007 and Imai *et al.*, 2009).

$$\Pr(Y_i = 1) = \Phi(X_i \gamma) \quad (4)$$

Where  $Y_i = 1$  if  $\ln c_{i+1} < \ln z$  and  $Y_i = 0$  otherwise.

The association between vulnerability in the first survey period and the probability of being poor in the second period was then analyzed by including VEPi in the first period as one of the explanatory variables in the second period. The independent variables which are the socio-economic variables and demographic variables that

influence poverty were included in the model following Omonona (2001), Imai *et al.* (2009) and Gaiha *et al.* (2007).

#### Determinants of vulnerability as expected poverty (VEP)

A Tobit model was used to examine the determinants of vulnerability to poverty in rural South West Nigeria using the value of VEP estimated for each household (equation 3) as the dependent variable. The dependent variable has zero values for households below the vulnerability threshold which is indicative of censoring of an underlying variable and therefore requires Tobit estimators (Blundell and Mhegur, 2002; Wen *et al.*, 2001). The Tobit Model developed by Tobin (1958) and as adopted by Haddad and Ahmed (2003) and Omonona (2001) is expressed as:

$$Y_{ij} = \beta X_i + e_i \quad (5)$$

$$Y_{ij} = \widehat{V}h_t = \hat{F}_r(\ln c_{i+1} < \ln z | X_i) = \frac{\phi\left[\frac{z - X_i \hat{\beta}}{\sqrt{X_i \hat{\theta}}}\right]}{\sqrt{X_i \hat{\theta}}} = \text{VEP}$$

Where  $Y_{ij} = 0$  for  $\widehat{V}h_t < v$ .

$Y_{ij} > 0$  for  $\widehat{V}h_t \geq v$ .

Where:

$X_i$  = Vector of explanatory variables

$B$  = Vector of respective parameters

$e_i$  = Independently distributed error term

$Y_{ij}$  = Estimated vulnerability as expected poverty indices

$v$  = Vulnerability threshold

$Z$  = Poverty line

$X_i \hat{\beta}$  = Expected log of consumption

$X_i \hat{\theta}$  = Expected variance of log consumption

## RESULTS AND DISCUSSIONS

#### Construction of poverty line

The poverty lines constructed for the harvesting and lean seasons stood at ₦3313.57 and ₦4093.21, respectively as shown in Table-1. Hence households were classified as being moderately poor if their mean per capita expenditure was below ₦3313.57 or ₦4093.21 for the first and second survey rounds, respectively. The head count poverty indices of the respondents in the 2 periods showed that respondents were poorer off-season as the incidence of poverty was 35% in the first round indicating that 204 households were below the poverty threshold and 44% in the on-season indicating that 254 were moderately poor.

**Table-1.** Average monthly expenditure of respondents on food and some basic needs.

Item	Average monthly expenditure ₦ (1 <sup>st</sup> round)	Share in total expenditure	Average monthly expenditure ₦ (2 <sup>nd</sup> round)	Share in total expenditure
Total (Non-food)	6928.42	37.02	7987.87	36.78
Total expenditure (food + non-food)	18, 716.50	100	21, 717.98	100
Mean per capita household expenditure (MPCHHE)	4970.36		6140.43	
2/3 MPCHHE (Poverty line)	3313.25		4093.21	
Poverty incidence	35 percent		43.6 percent	

Source: Field survey, 2009

### Vulnerability estimates

The estimates from the FGLS regression (reported in Table-2) were used to generate an index of household vulnerability as specified in equation (3). Adopting the standard vulnerability threshold of 0.5, the summary statistics for the vulnerability distribution of households is shown in Table-3. A total of 324 (55.7%) households were vulnerable using the relative poverty line of ₦3313.57 estimated for the study. This result indicates that vulnerable households were higher than the proportion actually poor in South Western Nigeria. This finding is in line with findings from other studies (Chaudhuri *et al.*, 2002; Kasirye, 2007) in which the proportion of vulnerable is greater than the proportion of households actually poor.

**Table-2.** Generalized least squares regression results (stage 3).

Variable	Coefficient	Z
Sex	0.604	11.69***
Age	0.011	2.71***
Age squared	-0.00008	-1.97**
Household size	0.058	10.58***
Dependency burden	1.283	20.64***
Household type	-0.052	-1.61
Primary education	0.017	0.59
Secondary education	-0.142	-3.72***
Tertiary education	-0.231	-4.01***
Primary occupation	0.098	2.44**
Years of experience	-0.001	-0.86
Land size	-0.052	-5.84***
Membership of local group	-0.718	-2.55**
Access to credit	-0.087	-3.06***
Access to remittances	-0.511	-13.73***
Malaria	0.014	1.92*
Distance to public health	0.009	1.91*

Mud	0.08	2.68***
Room ratio	-0.273	-5.86***
Access to sanitary	-0.068	-1.96**
Access to potable water	-0.107	-2.19
Access to electricity	-0.113	-3.55***

\*\*\* Significant at 1%, \*\* Significant at 5%, \* Significant at 10%

Observations -582 R. Squared- 0.8598 Adj R. Squared- 0.8542

**Table-3.** Vulnerability estimates.

Vulnerability status of the household	Frequency	Percent
Not vulnerable	258	44.3
Vulnerable	324	55.7
Total	582	100.0

Source: Field survey, 2009

### Determinants of vulnerability to poverty

The results of the Tobit model (Table-4) show that being a male headed household and a year increase in the age of the household head increased vulnerability to poverty by 0.60 and 0.011, respectively. The increase in vulnerability with age could be attributed to the fact that as household heads get older, they become economically inactive which in turn affects their productivity, income and subsequently increase their vulnerability. Consistent with lifecycle effects, the coefficient of age squared had a negative effect on vulnerability implying that the positive association of age with vulnerability will weaken over time. Also, a unit increase in household size, an additional non-working member to the household and an increase in the incidence of malaria in the household increased vulnerability by .059 and 1.28 and 0.014, respectively. The impact of large family size is such that it reduces the per capita expenditure of the family. Increased household size is also synonymous with more dependants who do not contribute to household income, thereby aggravating vulnerability to poverty in the household. Increased malaria incidence could result into productivity losses,



directly through reduced work time because of illness or indirectly through time spent caring for the sick.

**Table-4.** Determinants of vulnerability to poverty.

Variable	Coefficient	Z
Sex	0.604	11.69***
Age	0.011	2.71***
Age squared	-0.00008	-1.97**
Household size	0.058	10.58***
Dependency burden	1.283	20.64***
Household type	-0.052	-1.61
Primary education	0.017	0.59
Secondary education	-0.142	-3.72***
Tertiary education	-0.231	-4.01***
Primary occupation	0.098	2.44**
Years of experience	-0.001	-0.86
Land size	-0.052	-5.84***
Member. Assoc	-0.718	-2.55**
Access to credit	-0.087	-3.06***
Access to remittances	-0.511	-13.73***
Malaria	0.014	1.92*
Distance to public health	0.009	1.91*
Mud	0.08	2.68***
Room ratio	-0.273	-5.86***
Access to sanitary	-0.068	-1.96**
Access to potable water	-0.107	-2.19
Access to electricity	-0.113	-3.55***

Observations 582 \*\*\* Significant at 1%, \*\* at 5%, \* at 10%

Pseudo R. Squared 0.9177 LR  $\chi^2(22) = 861.79$  Prob  $> \chi^2 = 0.000$

On the other hand, vulnerability decreased with increase in educational attainment although the coefficient of primary education was not significant and was positively correlated with vulnerability. Specifically, secondary and tertiary education reduced vulnerability by 0.142 and 0.231. This is an indication that increased educational attainment of the household head strongly affects vulnerability by assisting household heads in getting good jobs and taking opportunities which otherwise would not have been possible. The overall effect of this is increased income which translates to increased per capita expenditure and consequently improved welfare and standard of living of household members. The negative coefficient of membership of association, access to credit and access to remittances indicates that being a member of a local group or association, having access to

credit and remittances reduced vulnerability by 0.718, 0.087 and 0.511, respectively. Further, a hectare increase in land size decreased vulnerability by 0.0527 that is; households with smaller land sizes or the landless are more vulnerable to poverty than households with larger sized land. The other characteristics that reduced vulnerability in the study area (room ratio, access to sanitary means of excreta disposal and access to potable water) give a strong indication that sanitary living conditions and access to infrastructure are good indicators of welfare measurement.

#### Determinants of poverty

Table-5 shows the factors associated with a household's poverty status in the two periods. The statistically significant value of chi-square of 313.82 and 317.87 for the first and second periods respectively is an indication that the data set fits the model in the two periods. In the first period, sex of household head, household size, years of experience in primary occupation, malaria incidence, distance to public health facility, membership of association of the household head, dependency burden, primary occupation of household head, number of rooms per person (room ratio), access to potable water, secondary education household head, tertiary education of household head and access to credit of the household head were the major determinants of poverty. In the second period, the estimated VEP indices was included as part of the explanatory variables in the probit model to test whether vulnerability in the first period influence poverty status in the second period. The coefficient of vulnerability (VEP) was 0.342 and significant thus implying that vulnerability results considerably into higher poverty. That is, a unit increase of the *ex-ante* probability of becoming poor will increase the *ex-post* probability of becoming poor by 0.342. This finding corroborates the findings of Gaiha *et al.*, 2007. The signs of the coefficients of the determinants of poverty and their significance are alike in both periods.

In contrasting the determinants of poverty and vulnerability in the study, while household size, dependency burden, primary occupation of household head, malaria incidence, and distance to health facility aggravated both vulnerability and poverty, factors such as gender of household head, age and construction material of outside wall also had significant positive effects on vulnerability but not poverty. On the other hand, factors that mitigated both vulnerability and poverty were secondary and tertiary education, membership of association, room ratio, access to potable water and access to credit. However, there were a few factors such as; land size, age of household head, access to remittances, access to sanitary means of excreta disposal and access to electricity that reduced vulnerability but not poverty in the study area. The results obtained above confirm findings from earlier studies (Gahia *et al.*, 2007; Imai *et al.*, 2009) that while poverty is closely linked with vulnerability, they are to some extent distinct as there were some factors associated with vulnerability only and not with poverty



and there were also factors related to poverty only and not vulnerability. This is an indication that examining poverty as a static situation could lead to ineffective policy prescriptions whereas examining the dynamics (vulnerability) might lead to potent policy prescriptions. Based on the following premise, poverty reduction policies should not only take into account those currently poor but should also give concern to those at risk of future

poverty because if the characteristics of the currently poor differ from those at risk of becoming poor, targeting anti-poverty interventions towards the former will miss a significant proportion of those whose welfare decline sharply in the event of a shock. Hence, in the long run, poverty alleviation may only be possible by reducing the probability of being poor.

**Table-5.** Regression results of the determinants of poverty.

Variable	Poverty (1 <sup>st</sup> period)			Poverty (2 <sup>nd</sup> period)		
	df/dx	Std. Err.	z-value	df/dx	Std. Err.	z-value
VEP	-		-	0.342	0.121	2.85***
Sex	-0.188	0.081	-2.45**	-0.377	0.062	-4.34***
Age	0.001	0.009	0.19	-0.005	0.009	-0.61
Age squared	0.00001	0.00008	0.17	0.00003	8.81E-05	0.34
Household size	0.116	0.016	7.89***	0.085	0.02	3.99***
Dep.burd.	0.163	0.091	1.75*	0.724	0.213	3.43***
Household type	-0.051	0.058	-0.85	-0.038	0.842	-0.49
Primary Educ.	-0.08	0.056	-1.38	-0.073	0.071	-1.03
Sec. Educ.	-0.158	0.06	-2.29**	-0.153	0.087	-1.71*
Tertiary Educ.	-0.283	0.032	-3.88***	-0.402	0.11	-3.19***
POccup.	0.164	0.082	1.92*	0.209	0.096	2.13***
YexpOccup.	-0.012	0.004	-2.90***	-0.007	0.004	-1.72*
Land size	0.013	0.019	0.69	0.028	0.022	1.24
Member. Assoc.	-0.113	0.058	-1.99**	-0.071	0.058	-1.19
Access to credit	-0.135	0.047	-2.63***	-0.196	0.061	-3.08***
Access remitt.	-0.029	0.062	-0.48	-0.244	0.097	-2.52**
Malaria	0.047	0.015	3.05***	0.053	0.02	2.69***
Dist.pub.Health	0.026	0.01	2.65***	0.039	0.011	3.32***
Mud	-0.52	0.058	-0.9	0.194	0.063	2.98***
Room ratio	-0.231	0.094	-2.35**	-0.098	0.072	-1.36
Sanexcre	-0.042	0.059	-0.7	-0.128	0.069	-1.86*
Pwater.	-0.098	0.048	-1.98**	-0.011	0.054	-0.2
Electricity	0.07	0.06	1.19	-0.078	0.044	-1.71*

Observations 582      \*\*\* Significant at 1%, \*\* at 5%, \* at 10%  
Pseudo R. Squared      0.4193      0.4050  
LR Chi<sup>2</sup> (22) =      313.82      LR Chi<sup>2</sup> (23)      317.87  
Prob > Chi<sup>2</sup> =      0.0000      0.0000

## CONCLUSIONS

Successive governments in Nigeria have implemented poverty alleviation programmes and strategies without commensurate dent on poverty. The near failure of these programmes and strategies has been linked to the improper diagnosis of poverty as a static concept. There are growing concerns that poverty is not reducing due to the lack of understanding of its dynamic nature and vulnerability to poverty. This study estimated vulnerability to poverty of households and found out that

on the average there is a 0.56 probability of entering poverty a period ahead. The fact that the number of vulnerable households exceed the number of households currently poor, calls for policy interventions that reduce variance in consumption. This could be achieved through reducing exposure of the households to various types of risks that lead to a reduction in their welfare or through improving their ability to cope with these risks when they occur. There is a relation between the factors influencing poverty and vulnerability however, there are a few factors



associated with vulnerability only but not poverty and vice versa suggesting that such factors are crucial to reducing vulnerability and poverty in the study area. Therefore, all efforts at reducing poverty should take into account those factors which exacerbate the vulnerability of the poor. The close association between poverty and vulnerability also suggests that the various programmes and strategies targeted at alleviating poverty must be multifaceted in nature.

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