

Full Length Research Paper

Analysis of Livelihood Diversification on the Poverty Status of Cassava Farmers in Ogun State, Nigeria.

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This study examined the analysis of livelihood diversification on the poverty status of cassava farmers in Ogun State, Nigeria. The data used in the study were collected from 180 households that were randomly selected from 3 Local Government Areas of the State. Descriptive statistics and Tobit regression model were used to analyze the data. Result from the socio-economic characteristics of the respondents shows that respondents were relatively old in age where about 45.1 percent of them were 50 years and above, and 92.5 percent of them were married. About 51.9 percent had between 5 and 7 persons as their household size while 61.7 percent of them indicated less than or equal to 2 hectares of land as their farm size. It was reported that 69.1 percent of the respondents had secondary education and above, indicating that the respondents were fairly educated while only 23.3 percent of them had more than 10 years of farming experience. Their major primary occupation was farming as 71.4 percent of them reported. The result further reveals that civil service, trading, artisanal jobs, commercial motor driving, labour wage, okada riding and rental service were the other livelihood activities available in the study area. The poverty line was taken as the 2/3 of the yearly per capita income and thus the number of households below the poverty line was 67, that is, 37.2 percent of the respondents while the non-poor was 113 or 62.8 percent of the respondents. The daily per capita income was ₦534.2 and the yearly per capita income was ₦194983.2 while the 2/3 yearly per capita income or poverty line was ₦129988.8. The determinants of livelihood activities adopted by the cassava farming households in the study area as shown by Tobit regression estimate revealed that age, household size, farm size and educational level were statistically significant, implying that they are important variables found to greatly influence the livelihood activities adoption by cassava producing farmers in Ogun State. It is therefore recommended that major attention should be given to education and birth control as poverty alleviation strategy in rural settings and access to higher returns non-farm jobs should be encouraged to boost their income.

Keywords: Livelihood diversification, Poverty status, Cassava farmers and Tobit regression analysis

INTRODUCTION

The changing socioeconomic, political, environmental and climatic atmosphere in Nigeria and other developing countries across the globe has continued to aggravate the living conditions of most households especially those living in the rural areas. The accompanying increase in poverty levels has led residents of these economies to devise a number of

strategies to cushion the negative effects of these changes. Meanwhile, there has been an increased recognition among researchers especially in the past one or two decades that Africans diversify their livelihood strategies, including on-farm (crop, livestock, fisheries) and off-farm activities or market and non-market activities, to mitigate risks inherent in

unpredictable agro climatic and politico economic circumstances (Ellis, 1998; 2000, Bryceson, 2002).

The academic trend has been followed by policy shifts in that poverty reduction and sustainable development must be formulated by well recognizing how and why African farmers pursue diversified livelihoods. Diversification has been analyzed as a rational response by households to lack of opportunities for specialization, and was initially considered not the most desirable option. However, recent studies indicate that rather than promoting specialization within existing portfolios, upgrading them to augmenting income could be more realistic and relevant for poverty reduction (Ellis and Freeman, 2005). Therefore, exploiting these off-farm opportunities could offer a pathway out of poverty for the rural poor (Barrett, et al. 2001). Since many rural households derive livelihoods from some forms of non-farm activity, increasing the profitability and range of such activities would improve their livelihoods security and living conditions (Mwabu and Thorbecke, 2001; Awoyemi, 2004). But expansion of these opportunities is related to the asset status and barriers to entry resulting from inadequate or differential access to markets (Ellis, 2000). The rural economy is not based solely on agriculture but rather on a diverse array of activities and enterprises. Much recent thinking on this subject is based on the concept of 'livelihood diversification as a survival strategy of rural households in developing countries' (Ellis, 1999). Farming remains important but rural people are looking for diverse opportunities to increase and stabilize their incomes. Individuals in developing countries often rely on various sources of monetary incomes.

Gender on the other hand, is an integral and inseparable part of rural livelihoods. Men and women have different assets, access to resources, and opportunities. Women rarely own land, may have lower education due to discriminatory access as children, and their access to productive resources as well as decision-making tend to occur through the mediation of men. Women typically confront a narrower range of labour markets than men, and lower wage rates. In general, therefore, diversification is more of an option for rural men than for women. In this sense, diversification can improve household livelihood security while at the same time trapping women in customary roles (Ellis, 1999).

RESEARCH METHODOLOGY

The Study Area: This research work was carried out in Ogun State, Nigeria. Ogun State is one of the six states constituting the South-Western region of Nigeria. It is bounded in the west by Oyo State and on the south by Lagos State and the Atlantic Ocean. The

State is divided into four division, these are the Egba, Remo, Ijebu and Yewa. It has 20 Local Government Areas It has a land area of 16,762 km² (NBS) with an estimated population of about 3,728,098 (NPC, 2006).

Methods of Data Collection: Primary data were used in this study. Personally administered questionnaire was used to collect data on socio-economic characteristics, livelihood activities, as well as determinants of livelihood activities adopted by the cassava farmers.

Sampling Procedure and Size: A multistage random sampling technique was used in this study. The first stage was the purposive selection of six Local Government Areas based on geo-political zone of the state. These include: Ijebu-North and Ikenne LGAs (Ijebu-East), Odeda and Obafemi Owode LGAs (Egba Central) and Yewa North and Ado-Odoota LGAs (Yewa West). The second stage was the use of random sampling techniques to select two villages/towns from each LGA and finally, fifteen respondents were selected from each village. The total sample size was 180 respondents.

Methods of Data Analysis: A combination of analytical tools were employed in this study. These included; descriptive statistics (e.g. means, frequencies, percentages), that was used to examine the socio-economic characteristics of the respondents. Also, Tobit Regression Analysis was carried out to determine livelihood activities adopted by the cassava farming households.

Model specification

Tobit Regression: This is an extension of Probit model, and it was originally developed by James Tobin (Tobin 1958). Tobit models are explicitly developed for censored dependent variables that comprise a substantial amount of zero values (Godoy et al. 1997, Dolisca et al. 2007). The error term is assumed to follow a truncated normal distribution.

We apply a model of the type Tobit 1 for dependent variables censored at zero

$$y_i = x_i \beta + \epsilon_i \quad \text{with } \epsilon_i \sim N(0, \sigma^2) \quad i = 1, 2, \dots, n$$

y_i = latent variable which linearly depends on X_i . The error term ϵ_i is normally distributed with mean at zero and variance, σ^2 (Wooldridge, 2003).

The observed value y_i is censored at zero:

$$Y_i = \begin{cases} y_i, & \text{if } y_i > 0 \\ 0 & \text{if } y_i \leq 0 \end{cases}$$

Where,

Y_i = the observed dependent variable

Y_i^* = the latent variable which is not observable.

X_i = vector of independent variables

β = vector of unknown parameters

Table 1: Socio-economic Characteristics of Respondents

| Variables | Frequency | Percentage |
|---------------------------|-----------|------------|
| Age (Years) | | |
| ≤ 30 | 7 | 3.8 |
| 30-39 | 27 | 15.0 |
| 40-49 | 65 | 36.1 |
| 50 years and above | 81 | 45.1 |
| Total | 180 | 100 |
| Marital status | | |
| Single | 5 | 3.0 |
| Married | 167 | 92.5 |
| Widow/Divorced | 8 | 4.5 |
| Total | 180 | 100 |
| Household size | | |
| 1 | 5 | 3.0 |
| 2-4 | 26 | 14.3 |
| 5-7 | 94 | 51.9 |
| 8 members and above | 55 | 30.8 |
| Total | 180 | 100 |
| Farm size | | |
| 0.01-2.00 | 93 | 61.7 |
| 2.01-4.00 | 64 | 35.5 |
| 4.01 and above | 23 | 12.8 |
| Total | 160 | 100 |
| Educational status | | |
| No formal schooling | 12 | 6.8 |
| Primary education | 44 | 24.1 |
| Secondary education | 66 | 36.8 |
| Tertiary education | 58 | 32.3 |
| Total | 180 | 100 |
| Farming experience | | |
| 1-5 | 62 | 34.6 |
| 6-10 | 76 | 42.1 |
| 11 years and above | 42 | 23.3 |
| Total | 180 | 100 |
| Primary Occupation | | |
| Farming | 129 | 71.4 |
| Civil Service | 31 | 17.3 |
| Artisan | 11 | 6.0 |
| Trading | 9 | 5.3 |
| Total | 180 | 100 |

Source: Field Survey, 2016

ε_i = residuals that are independently and normally distributed with mean zero and a common variance. The coefficients are calculated by maximum likelihood estimators (MLE). This is estimated by maximizing the Tobit likelihood function of the following form (Maddala, 1997; Amemiya, 1985).

Where

Y = Index of Adoption (Number of livelihood activities adopted divided by number of probable livelihood activities),

X_1 = Gender (Male = 1, Female = 0)

X_2 = Education (years)

X_3 = Primary Occupation (farming =1, non-farming = 0)

X_4 = Occupation of Spouse (ranking)

X_5 = Age (years)

X_6 = Household Size (number)

X_7 = Children in School (number)

X_8 = Farming Experience (years)

X_9 = Farm Size (hectares)

X_{10} = Poverty Status (poor = 0, non-poor = 1)

μ_i = Error term

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

Table 1 reveals the socio – economic characteristics of the respondents. From the Table, the age distribution of the respondents showed that

the respondents were relatively old in age where about 45.1 percent of them were 50 years and above, and 92.5 percent of them were married. About 51.9 percent had between 5 and 7 persons as their household size while 61.7 percent of them indicated less than or equal to 2 hectares of land as their farm size. It was reported that 69.1 percent of the respondents had secondary education and above, indicating that the respondents were fairly educated while only 23.3 percent of them had more than 10 years of farming experience. Their major primary occupation was farming as 71.4 percent of them reported.

Other livelihood activities available to the cassava farming households

The distribution of other livelihood activities available to the cassava farmers is presented in Table 2.

Table 2: Distribution of respondents by the available livelihood activities

| Livelihood Activities | Frequency | Percentage |
|-----------------------|-----------|------------|
| Trading | 70 | 38.9 |
| Civil service | 56 | 31.1 |
| Artisanal jobs | 48 | 26.7 |
| Okada driving | 37 | 20.6 |
| Taxi driving | 33 | 18.3 |
| Paid labour jobs | 22 | 12.2 |
| Property rentage | 19 | 10.6 |
| Property sales | 17 | 9.4 |

Multiple Responses

Source: Field Survey, 2016

The result revealed that trading (38.9 percent), civil service jobs (31.1 percent) and artisanal jobs (26.7 percent) constituted the major livelihood activities the cassava farming households engaged with.

Household Income Analysis

The household income analysis of the cassava farming households is presented in Table 3.

Table 3: Household Income Analysis

| Income Sources | Mean (₦) | Std Deviation (₦) | Percentage |
|--------------------------------|----------|-------------------|------------|
| Civil service | 316740 | 155806 | 25.0 |
| Trading | 180500 | 86179.92 | 14.3 |
| Artisanal jobs | 150750 | 55732.34 | 11.9 |
| Paid labour | 47300 | 23640.41 | 3.7 |
| Taxi driving | 95455 | 63528.17 | 7.5 |
| Okada driving | 72510 | 49498.11 | 5.7 |
| Rentage | 14866 | 67111.40 | 1.2 |
| Property sales | 33700 | 34276.20 | 2.7 |
| Total Diversified Income | 911821 | 511871 | 72.1 |
| Agricultural activities | | | |
| Cassava output | 353620 | 318470 | 27.9 |
| Total household income | 1265441 | 571975 | |

Source: Field Survey, 2016

The results revealed that income from diversified livelihood activities contributed about 72.1 percent to total cassava farming households' income while cassava production contributed about 27.9 percent to the household income. The analysis of the income from the diversified activities revealed that income from civil service jobs, trading and artisanal jobs accounted for about 71.1 percent of the income from the diversified activities.

The Poverty Status of Cassava Farming Household

The poverty status analysis of the cassava

farming households is presented in Table 4. The poverty line was taken as the 2/3 of the yearly per capita income and thus the number of households below the poverty line was 67, that is, 37.2 percent of the respondents while the non-poor was 113 or 62.8 percent of the respondents. The daily per capita income was ₦534.2 and the yearly per capita income was ₦194983.2 while the 2/3 yearly per capita income or poverty line was ₦129988.8. The study observed that the cassava farming households were 62.8 percent non-poor due to the contribution of income from diversified activities to the households' income.

Table 4: Poverty Status Analysis of Cassava Farming Households

| Income | Mean | Std Deviation |
|--------------------------|----------|---------------|
| Household size | 6.49 | 2.61 |
| Total Household Income | 1265441 | 571975 |
| Yearly Per Capita Income | 194983.2 | 82143 |
| Daily Per Capita Income | 534.2 | 352.99 |
| 2/3MPCI | 129988.8 | |
| Non Poor | 62.8% | |
| Poor | 37.2% | |

Source: Field Survey, 2016

Table 5: Maximum Likelihood Estimates of Tobit Model

| Variables | Coefficient | Std. Error | P-value |
|-----------------------|-------------|------------|---------|
| Gender | -0.013 | 0.041 | 0.754 |
| Educational Level | 0.451*** | 0.132 | 0.001 |
| Primary Occupation | 0.001 | 0.015 | 0.950 |
| Occupation of Spouse | 0.022 | 0.015 | 0.155 |
| Age | 0.004** | 0.002 | 0.027 |
| Household Size | 0.038*** | 0.009 | 0.000 |
| Children Schooling | -0.009 | 0.012 | 0.460 |
| Farming Experience | 0.001 | 0.003 | 0.904 |
| Farm Size | -0.034** | 0.015 | 0.029 |
| Poverty | 0.216*** | 0.034 | 0.000 |
| Constant | -0.353*** | 0.097 | 0.000 |
| Sigma | 0.128 | 0.009 | |
| LR Chi- square | 60.39 | | |
| Pseudo R ² | 0.71 | | |
| Log likelihood | 41.323 | | |

*** represents 1% significance level

** represents 5% significance level

Source: Field Survey, 2016

Determinants of livelihood activities adopted by the cassava farming households

The likelihood estimates of the Tobit model indicated that chi-square (χ^2) statistic of 60.39 was highly significant ($P < 0.0001$) suggesting that the model has a strong explanatory power. The pseudo coefficient of multiple determination (R^2) shows that 71 percent variation in the dependent variable was explained by the included independent variables. This implies that the model showed a good fit to the data. The determinants of livelihood activities adopted by the cassava farming households in the study area as shown by Table 5 revealed that age, household size, farm size and educational level were statistically significant, implying that they are important variables found to greatly influence the livelihood activities adoption by cassava producing farmers in Ogun State. The variables that were negatively signed implied that negative relationship existed between

them and adoption of livelihood activities in the study area and vice-versa.

CONCLUSION AND RECOMMENDATIONS

The respondents in the study area were fairly educated which helped them to know the benefits inherent in having multiple sources of income as a strategy to reduce poverty. It is concluded that majority (62.8 percent) of the respondents were non-poor due to the contribution of income from their diversified activities. Age, farm size and educational level greatly determined the adoption of livelihood activities by the cassava farming households in the study area. It is therefore recommended that land redistribution policy that will increase the farm size of farmers in order to boost cassava production should be encouraged. Also, at the policy level, major attention should be given to education and birth

control as poverty alleviation strategy in rural settings, and access to higher returns non-farm jobs should be encouraged to boost their income.

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