Assessment of rural farm household poverty: Evidence from Potiskum Local Government Area of Yobe State, Nigeria

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The paper examined the poverty status of rural farm households in Yobe State, Nigeria using a descriptive statistics, Foster, Greer and Thorbecke poverty (FGT) indices and probit regression model. The data used were generated from a survey involving 100 rural farm household's which were selected using simple random sampling technique. The findings revealed that 70%, 80%, 90% and 88% of the respondents were male, married, with farm holding between 1 – 2 ha and no formal education respectively Results of analysis showed that only 10% of the farm households have access to potable water; while the common toilet facility was the bush. The study showed that the poverty incidence (P₀) was discovered to be 99%, the poverty depth/gap (P₁) was found to be 98.9% and the poverty severity (P₂) was 98.8%. The result of probit regression model indicated that gender, age, household size, farm size, education, membership of cooperatives and farm income are the major determinants of poverty among rural farm households. It is therefore recommended that government should create awareness to on birth control to reduce large family size, provide social infrastructure and make education accessible and affordable to rural farmers’ household. Rural farm households should endeavour to be more active in the value chain.

Key words: Rural farmers’ household, poverty status, probit regression model, poverty measure.

INTRODUCTION

Agriculture is regarded as the cornerstone of Nigeria’s economy and a major source of income to about 90% of the rural dwellers. With more than two-thirds of Nigeria’s population depending on agriculture for their livelihoods, agriculture is central to Nigeria’s economic development. Agriculture is critical to achieving global poverty reduction targets and it is still the single most important productive sector in most low income countries, often in terms of its share of Gross Domestic Product and almost always in terms of the number of people it employs (Oyakhilomen and Zibah, 2014). However, the agricultural sector has the highest poverty incidence and tackling poverty entails tackling agricultural underdevelopment. The huge size and potential of agriculture in most African economies suggests that strategies designed to promote the early stages of economic growth cannot ignore agriculture. Hence broad-based poverty reduction and food security policies in Africa must focus investment on smallholder rural farmers (Garvelink, Wedding and Hanson, 2012).

Poverty is a universal phenomenon that affects socioeconomic and political wellbeing of its victims whether in a developed or underdeveloped country, however, available statistics shows that poverty in poor country is absolute and more pronounced in the rural areas. Despite the myriads of existing literature on the relationship between agriculture and economic growth in Nigeria, there exists a relative dearth of empirical information on the relationship between agriculture and
rural farmers’ poverty in Yobe State of Nigeria. Therefore, this research was designed to fill the existing research gap by providing empirical information on agriculture and its implication for rural farmers’ poverty reduction. The specific objectives of the paper include to;

i.) Examine the socioeconomic characteristics of farm households that may affect their welfare level,

ii.) Assess the level and identify the determinants of poverty among farm households in the study area.

Conceptual framework

Poverty is real and it exists in all the economies of the world but at varying degrees. Poverty as a concept is earlier to describe than to define. Hence a universally acceptable definition of poverty has remained elusive. Rural poverty refers to a situation in which rural inhabitants, groups, communities and societies at a given point in time experience a level of income below that which is needed to provide a desirable minimum living standard (Nosiru and Rahji, 2010). Maghori (2008) observed that in the traditional setting, poverty was understood as material deprivations, as living with low income and low consumption which manifest by way of poor nutrition and poor living conditions. However, income poverty does not exist alone rather it is often times associated with so-called human poverty-low health and education levels. In this study, Poverty refers to a situation and process of serious deprivation or lack of resources and materials necessary for living within a minimum standard conducive to human dignity and well-being. Poverty connotes deprivation of the means of subsistence.

Theoretical framework

The theoretical framework guiding this study is Poverty as a cultural characteristics theory. It is a known fact that development plays a central role to poverty reduction in developing countries. Some authors feel that the national mindset itself plays a role in the ability for a country to develop and to thus reduce poverty. Grondona (2000), Harrison (2000) and Lindsay (2000) all feel that without development orientated values and mindsets, nations will find it difficult if not impossible to develop efficiently, and that some sort of cultural change will be needed in these nations in order to reduce poverty. Grondona, Harrison, and Lindsay all feel that at least some aspects of development-resistant cultures need to change in order to allow under-developed nations (and cultural minorities within developed nations) to develop effectively. According to their argument, poverty is fueled by cultural characteristics within under-developed nations, and in order for poverty to be brought under control, such nations must move down the development path.

The relationship between agriculture and poverty reduction

It has been observed that extreme poverty continues to be a rural phenomenon despite increasing all over the world. According to Anriquez and Stamoulis (2007) the world’s 1.2 billion the world’s extremely poor people, 75% live in rural areas and depend mostly on agricultural related activities. World agricultural productivity, particularly in poor countries, is key to global food security and the fight against hunger and poverty. It can therefore play an important role in economic development and poverty reduction.

Theoretical postulations and country experiences in developing regions underscore the crucial role of agricultural growth for poverty reduction (Eboh et al., 2012). Strong agricultural growth, particularly increased productivity, has been a feature of countries that have successfully reduced poverty. Agriculture contributes to poverty reduction because it provides employment to the poor, who have also generally low skills and education. Growth in agriculture also contributes to greater supply of food-stuffs and lower food prices, and benefits both rural and urban poor. In most poor countries, especially in sub-Saharan Africa, large majorities of the population live in rural areas and earn their livelihoods primarily from agriculture.

METHODOLOGY

Study area

The empirical setting for the study is Yobe State, Nigeria, with a special focus on rural farm households in Potiskum Local Government Area in Yobe State. It was purposively selected because of its proximity to the researchers and safety from the security challenge in the State. Potiskum is a Local Government Area in Yobe State, Nigeria, located between Latitude 11.70 degrees north and Longitude 11.07 degrees east. It has an area of 559 square kilometers (216 sq. miles) and a population of 205,876 at the 2006 census. Majority of the people are farmers producing Maize, Sorghum, Cowpea, Beniseed etc. Potiskum is strategically located as a centre of commerce, learning, spiritual and cultural revival with the biggest cattle market in sub-Saharan Africa.

The study utilizes primary data generated among 100 rural farm households drawn from ten rural farming communities in the ten wards of Potiskum Local Government Area of Yobe State. 10 farm households were selected from each ward using simple random sampling techniques using a complete list of farm
households provided by Zonal headquarters (Zone B) of Yobe State Agricultural Project, Potiskum.

**Analytical procedure**

The analytical techniques used in this study were, descriptive statistics such as frequencies, percentages to examine the socio-economic characteristics of farm households, Foster Greer and Thorbeck (FGT) 1984 and Probit regression model. Following Foster et al (1984), poverty line was computed as the 2/3rd of the mean per capital annual expenditure of all members of the sampled households. The FGT index allows for the quantitative measurement of poverty status among subgroups of a population (i.e., incorporating any degree of concern about poverty) and has been widely used (Kakwani, 1990). The headcount ratio measures the ratio of the number of poor individuals or simply measures the poverty incidence (i.e., the percent of the poor in the total sample). The analysis of poverty incidence using FGT measure usually starts with ranking of expenditures in ascending order Yi ≤ Y, ≤ ... ≤; Yn:

\[
P_\alpha = \frac{1}{N} \sum_{i=1}^{q} \left( \frac{Z - Y_i}{Z} \right)^\alpha
\]

Where: 
- n = total number of households in population 
- q = the number of poor households 
- Z = the poverty line for the household 
- yi = household income 
- α = Non-negative poverty aversion parameter, which can be 0 for poverty incidence, one for poverty gap or two for poverty severity. α = non-negative poverty aversion parameter (0, 1 or 2). The analysis of the poverty status of the households were decomposed into the three indicators i.e. prevalence of poverty \(P_0\), poverty depth \(P_1\) and severity of poverty \(P_2\).

If α = 0, the index become \(P_0 = q/n\). This gives the head count ratio or the incidence of poverty which is the percentage of respondents in poverty i.e whose per capita expenditure is below the poverty line.

If α = 1, it reflect both incidence and depth of poverty or the proportion of the poverty line that the average poor will require to attain to the poverty line.

If α = 2, the index measure the severity of poverty which is the mean of square proportion of the poverty gap. When multiplied by 100, it gives the percentage by which a poor household’s per capita expenditure should increase to push them out of poverty.

Probit regression model was used to investigate the determinants of poverty status among farming households in the study area. The Probit model to be estimated is given as:

\[
Pi = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8
\]

\(Pi\) = Poverty status dummy (poor = 1, 0 otherwise).
X1 = Gender (male = 1, 0 otherwise).
X2 = Age of respondent
X3 = Marital status dummy (married = 1, 0 otherwise).
X4 = Size of the household.
X5 = Farm size (ha)
X6 = Education dummy (formal education = 1, 0 otherwise).
X7 = Membership of Cooperative societies.
X8 = Household income (₦)

**RESULTS AND DISCUSSION OF FINDINGS**

**Socio-economic characteristics of farm households**

Table 1 summarizes the selected socio-economic characteristics derived from the sampled households. The findings revealed that about 70% of the respondents were male-head household which implies that male household dominated the farming occupation in the study area and this has been in line with many studies carried out in Yobe State. The result showed that 60% of the farming household fall within 20-40 years age bracket. This indicate that majority of the respondents are young and energetic for the tedious farm work. It was also shown that over 80% of the sampled respondents are married which implies that most of the respondents were mature and responsible to cater for their households as well as have clear knowledge of their wellbeing. The majority of the respondents (45%) fall between 11 and 20 persons per house. This agrees with prevalent religious study in the study area which permits polygamy. Household size has been seen as one of the major determinants of poverty that is positive to being poor in this part of the world. The study also reveals that that the farm size of 90% of the respondents is between 1 – 2 ha. This farm size confirms the peasant nature of the production in the study. About 88% of the respondents had no formal education. This agrees with the findings that Yobe state is an educational disadvantaged state. A good number of farming household (78%) are members of cooperatives to finance their farm and cater for their basic needs. Income has been a vital tool in accessing human wellbeing. About 61% of the sampled households earn less than ₦150,000 which means that looking at the responsibilities of these people couple with their household size, there is need to improve on household income in order to alleviate poverty in the study area. The distribution of farm households by ownership of residential building as shown in Table 1 reveals that 79% of the farm households owned the residence. However, 52% of the farm households in Yobe State use Lantern as their major source of power supply. The common source of water is the borehole which constitutes 74% of access available to the rural households in Yobe State.
Table 1. Distribution of farming household according to Socio-economic characteristic.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>B: Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-40</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>40-60</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>&gt;60</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>C: Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>D: Family Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-10</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>11-20</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>21-30</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>&gt;30</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>E: Farm size (ha)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>180</td>
<td>90</td>
</tr>
<tr>
<td>&gt;2</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>F: Educational Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal education</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Informal education</td>
<td>88</td>
<td>88</td>
</tr>
<tr>
<td>G: Membership of cooperative societies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>H: Income level (₦)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50,000-100,000</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>100,000-150,000</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>&gt;150,000</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>I: Ownership of house</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>Inherited</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>J: Sources of power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public power supply</td>
<td>66</td>
<td>33</td>
</tr>
<tr>
<td>Generator</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>Lantern</td>
<td>104</td>
<td>52</td>
</tr>
<tr>
<td>K: Water source</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Tap</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Borehole/deep well</td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td>Stream</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>M: Toilet facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water closet</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Pit</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Bush</td>
<td>65</td>
<td>365</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2017

followed by bore hole/deep well. The common toilet facility available in the study area is the bush which constitutes 65% of the responses from the farm households.

**Analysis of farm household poverty status**

The farm households poverty status in the state were analyzed using the three indicators- prevalence of poverty (Po), poverty depth (P1) and severity of poverty (P2). Prevalence of poverty indicate the percentage of the households falling below the poverty line; poverty depth shows the amount by which the poor fall short of the poverty line and severity of poverty is the sum of the square of poverty depth divided by the number of poor households in the sample. As shown in Table 2, the prevalence of poverty among the farm households in Yobe State was (0.99) representing 99 percent of the farm households were actually poor based on the poverty line with consumption expenditure level below the poverty line. The poverty depth ($P_1$) was 0.989 for the respondents in the study area; this indicated that poverty is not only persuasive but also deeper. However, most of those who were poor were very deficient on spending i.e. greatly below the poverty line and require much
Table 2. Summary of poverty indices among farming households in the study area.

<table>
<thead>
<tr>
<th>Poverty Level</th>
<th>Poverty Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0</td>
<td>0.990</td>
</tr>
<tr>
<td>P1</td>
<td>0.989</td>
</tr>
<tr>
<td>P2</td>
<td>0.988</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2016

Table 3. Determinants of poverty status among farm households in Yobe State.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.6426</td>
<td>0.4754</td>
<td>1.983</td>
</tr>
<tr>
<td>Gender</td>
<td>1.240</td>
<td>0.332</td>
<td>3.731**</td>
</tr>
<tr>
<td>Age</td>
<td>0.035</td>
<td>0.011</td>
<td>0.775</td>
</tr>
<tr>
<td>Household size</td>
<td>1.151</td>
<td>0.141</td>
<td>2.268**</td>
</tr>
<tr>
<td>Farm size</td>
<td>-0.154</td>
<td>0.021</td>
<td>-2.725**</td>
</tr>
<tr>
<td>Education Level</td>
<td>-0.085</td>
<td>0.103</td>
<td>-2.412**</td>
</tr>
<tr>
<td>Membership of Cooperative</td>
<td>-0.516</td>
<td>0.216</td>
<td>-0.726</td>
</tr>
<tr>
<td>Income</td>
<td>-0.223</td>
<td>0.307</td>
<td></td>
</tr>
</tbody>
</table>

*t value significant at 1% level, **t value significant at 5% level.

improvement in spending to reach the poverty line. The poverty severity index (P2) was 0.988 for the farming households; this high value indicated that poverty is severe in the study area. The poverty severity index is 99% means that 99 households out of 100 respondents in the study area were extremely poor compared with the other household. The severity of poverty index was 0.99 which represents the poorest among the poor farm households who require the attention of policy maker in the distribution of the standard of living indicators, such as health care services, clean water and income generating activities.

Table 3 showed the result of the determinants of poverty among farming households in the study area. Probit regression model was used to determine the poverty status among the rural farming households in Yobe State, Nigeria. The results of the analysis as shown in Table 3 revealed that gender, age, household size, farm size, education, membership of cooperatives and farm income are the major determinants of poverty in the study area. The coefficients of gender, age and household size were positive with the regressand (i.e. the poor household is 1 and 0 otherwise) which implies that increase in the value of any of these variables may likely increase the probability of being poor. For instance, as the respondent is getting older, the likelihood of being poor is increasing. This is can be justified base on the fact that elderly person decline in strength and productivity as he gets older as well as involves in health problems. The result indicates that income is positively related to gender of the household’s head, indicating that, female-headed households are poorer than their male headed counterparts. Household size also increases the likelihood of being poor and this could be because of increase in household size directly or indirectly reduces income per-head (per-capita income) as well as impair standard of living of the households. On the other hand, farm sizes, education, membership of cooperatives and farm income have negative coefficients and significantly affect the level of poverty in the study area. An increase in the value of any of these variables increases the likelihood of not being poor in the study area.

Discussion

The study investigated the determinants of poverty among rural farming households in Yobe state. The study revealed that most of the head of the farm households are male, between the ages of 20 - 40 with large household. This finding is consistent with the findings of Adekoya (2014). The study also found out that most of the farm households have low level of education with small farm size. This finding also agrees with Faustinus (2011). The result indicates that income is positively related to gender of the household’s head, indicating that, female-headed households are poorer than their male-headed counterparts. This agrees with the findings of Babatunde, Olorunsanya and Adejola (2008). The age of the household heads sampled was also found to be positively correlated to the poverty status indicating that as the household heads get older, the likelihood of being poor also increases. This position is consistent with those of Amao Ayantoye and Fadahunsi (2013) that poverty increases with old age as the productivity of the individual decreases. Large family size was found to be positively
related to poverty status. The results obtained from the
State further revealed that the likelihood event of being
poor were more with large households. Evidence from
the study by Masood and Nasir Iqbal (2010) point to the
same direction between poverty and household size. The
lack of social organization by the respondents also agrees
with the assertion by Anyanwu (2010) and Oladejo
(2011).

It was found that education of household head is
positively related to household income, implying that
households with less-educated head are poorer than
those with more educated head when other things are
constant. This result makes sense, because more
education tends to open more opportunities for income
generation through non-farm jobs. Belonging to farmers’
cooperative group has a positive impact on household
welfare. Farmers who belong to cooperative group are
better-off than their colleagues who are not member. This
is in support of the submission of Babatunde,
Olorunyanya and Adejola (2008) that the prevalence of
poverty is higher among households which do not belong
to any farmers’ cooperative group. The finding of a
positive correlation between farm size and income also
agrees with the findings of Igbalajobi et al. (2013).

Conclusion

In this paper, we have analyzed the determinants of
poverty among farm households in Yobe state of North
eastern Nigeria, using survey data collected in 2016. The
study showed that there is low level of literacy among
rural farm households’ members and the incidence of
poverty is very high among them. The major
determinants of poverty in the study area are gender,
age, household size, farm size, education, membership
of cooperatives and farm income.

Recommendation

Based on the findings of this study, the following
suggestions are put forward to alleviate the poverty of the
farm households in the study area;

i.) Government should make effort to provide social
amenities to be available to the rural farm households
ii.) Government should gear effort towards making
education accessible and affordable to rural farm
households
iii.) Rural Farm households can increase income by
getting involved in the value chain
iv.) Cooperative Institutions should be should be
strengthened and membership made compulsory for
every rural farm household
v.) Intense awareness on birth control to reduce large
family size
vi.) Creation of market institutions to buy large quantities
from rural farm households

vii.) Awareness needs to be created on the importance of
rural farm households in non-farm activities.

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