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EFFECT OF RISK ATTITUDE ON RURAL HOUSEHOLD POVERTY OF FOOD CROPS FARMERS IN SURULERE LOCAL GOVERNMENT AREA OF OGBOMOSO, OYO STATE, NIGERIA.

By

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ABSTRACT

Poverty is a global menace that threatens not only the standard of living of the food crops farmers, but all the people across various countries of the world. The aim of this study is to assess the effect of risk attitude on rural household poverty of food crops farmers in Surulere Local Government Area of Ogbomoso, Oyo State. Specifically the study examined the socio-economic characteristics of the respondents, investigates the poverty status of farmers in the study area, analyzed the risk attitude of the respondents and examined the relationship between the risk attitude of farmers and their poverty status. A total of 160 crop farmers were selected using multistage sampling procedure. The data for this study was collected with the aid of a structured questionnaire and interview schedule. The collected data were analyzed using descriptive statistics for the farmers' socio-economic characteristics and poverty categorization, Moscardi and de Janvry Safety First Model, and probit regression model were used to assess the risk attitude of the respondents and factors affecting their poverty level. Based on the safety first model individuals were categorized according to their risk attitude- risk lover, risk neutral, and risk averse. The result showed that 80% of farm households in the area were poor based on the 2/3 of mean per capital expenditure which was estimated to be N46, 720.63 and its two-third is N31, 147.09. The result indicated that all farmers in the study area are risk averse. Result of probit regression also showed that household size, labour and cost of variable inputs were significant determinants of poverty. The study recommends that Government should make provisions for productions input so as to reduce economic risk faced by farmers and also the farmers should employ more variable inputs in production other than labour inputs, to reduce their level of poverty.

Keywords: Risk, Rural Household, Poverty, Food Crops.

INTRODUCTION

Rural poverty is a dominant feature of life in all the regions of the world, affecting the lives of nearly one billion people (Ajijola*et al*, 2011). Poverty in Nigeria is said to be mainly a rural phenomenon with agriculture accounting for the highest incidence over the years. The rising profile of poverty in Nigeria is assuming a worrisome dimension every passing day. Abiola and Olaopa (2008) enunciated that the scourge of poverty in Nigeria is an incontrovertible fact, which results in hunger, ignorance, malnutrition, disease, unemployment, poor access to credit facilities, and low life expectancy as well as a general level of human hopelessness. According to Ojo (2008) Nigeria has at least half of its population living in abject poverty. It has also been revealed that the majority of the rural people are engaged in farming. Agriculture is considered the largest sector in Nigeria's economy. It employs 70 percent of the nation's labour force, contributes at least 40 percent of the gross domestic product and accounts for over three-quarters of the non-oil foreign exchange earnings (Ajekigbe, 2007). The bulk of agricultural production in Nigeria takes place in the rural areas and ironically, the level and incidence of poverty is very pronounced in these areas (NPC, 2004).

The Nigerian story presents a paradox. The country is rich, but the people are poor. As noted by Omotola (2008), Nigeria is richly endowed and the country's wealth potentials manifest in the forms of natural, geographical, and socioeconomic factors. With this condition, Nigeria should rank among the richest countries of the world that should have no business with extreme poverty. However, Okpe and Abu (2009) notably remarked that Nigeria has witnessed a monumental increase in the level of poverty. Furthermore, every measure of poverty ranks Nigeria at the bottom list of nations.

Risk is a social and cultural construction and its meaning may differ significantly among societies with different political and economic circumstances (Olarinde*et al*, 2010). Many people including small-scale farmers in developing countries face a wide range of risks that to a large extent been eliminated or reduced long ago in industrialized countries and thus have disappeared from the perception radar screen of its people. In agricultural production, where farmers' crop yields and income are dependent on various exogenous factors such as weather conditions and price fluctuations, risk is ubiquitous in farming decisions.

The agricultural sector is exposed to a variety of risks which occur with high frequency. These include climate and weather risks, natural catastrophes, pest and diseases, which cause highly variable production outcomes. Production risks are exacerbated by price risks, credit risks, technological risks and institutional risks. An improved understanding of risk attitude can help in analyzing investment or business alternative as well as making day-to-day decisions. Risk attitude can be divided into three types; risk averse, risk preferring and risk neutral (Ajijola *et al*, 2011). Risk averters or avoiders are characterized with preferences for less risky resources of income or investment, while risk preferring individuals are characterized with preference of

more risky business ventures and the risk neutral person is the limiting case between risk averters and risk preferring types.

Risk and uncertainly impact households' production and consumption decisions. Production decisions are generally made under the environment of risk and uncertainties, yields, product prices, input prices and quantities are usually not known with certainly when investment decisions are being made. The way of managing risks and the extent to which different types of risks are managed depend on such factors as farmers degree of risk aversion, cost involved, relative size of a risk, correlation of risk with other forms of risk, other sources of indemnity, farmer's perception of the nature of risk and farmer's income and wealth (Ajijola,*et al*, 2011).

Yield variability has an effect on the goal of meeting rising aggregate demand and on price and market stability (Aneke, 2007). It leads to unstable farmer income, unstable household food production, variable supplies and prices to consumers. According to Bauer and Bushe, (2003) and Aneke, (2007) all these risks collectively affect the farmers' technical and profit efficiency.

Moreover, knowledge of how subsistence farm households make economic decisions under risk is important in determining strategies and formulating policies for agricultural development. Some studies have focused on production decisions and choice of technology (Feinerman and Finkelshtian (1996). Other studies have analyzed risk coping and risk management strategies or use of assets or savings to cope with risk (Udry, 1995). However, to add to the current literature, more need to be done considering the fact that economics of risk in farming businesses which affect the level of resources in the rural household at some places has not been researched and documented. There is paucity of information on this aspect of the research in Nigeria, particularly in the study area. Poverty and risk have been identified as key factors that can scuttle any desired outcome. Thus, the need for this study to empirically ascertain the effect of risk attitude on rural household poverty level. There was therefore the curiosity to examine the following specific objectives: describe the socio economic characteristics of the respondents in the study area; determine the poverty situation among farmers; analyze the risk attitude of farmers; and examine the relationship between the risk attitude of farmers and the incidence of poverty. Also, null hypothesis: that there is no significant relationship between the risk attitude and poverty situation of the respondents was tested

Research Methodology

This study was conducted in Surulere Local Government Area of Oyo State, Nigeria. Its headquarters is in the town of Iresa-Adu. It has an area of 23km^2 and a population of 142,070 at the 2006 census (Federal Republic of Nigeria, Official Gazette, 2009). The Local Government

Area is located in the Ogbomoso Agricultural zone of Oyo State. It lies on latitude 8^0 08′ and longitude 4^0 15′.

The study area has a typical derived savannah type of vegetation, which usually witness annual bush burning at the peak of the dry season around the month of December through February. The area is characterized by a fairly high temperature (as high as 28.70) while the mean annual rainfall is about 1200mm. It begins from March to November with June to October as the "wettest" months. January to March is the "hottest" period. The rainfall is not all that enough to support the cultivation of tree crops like cocoa, rubber, oil palm etc. therefore, the area is good or well suited for food crop production. Hence; arable crops like beans, cassava, maize, yam, guinea corn etc. are widely grown.

Fig 1: Map of Oyo State Showing Local Government Areas

Source

Nigerian Muse, 2010

Primary data used for this study were collected through the use personal interview to achieve the study objectives. The information that was elicited from the farmers includes; information on their socio-economic characteristics (e.g. sex, age etc.), primary occupation, variable inputs and output prices, household expenditure (food and non-food expenditure) among others. Food crop farmers constitute the sampling frame for the study, while random sampling technique was employed in selecting 40 farmers each from 4 villages to make a total of 160 farmers for the study. The data collected were analyzed using descriptive statistics (employed the frequency distribution, table, percentage and mean) for Socio-Economic characteristics and Poverty categorization for farming households. Also, Moscardi and de Janvry Safety First Model (1997) and Tobit Regression Model as inferential statistics.

Measurement of Poverty

Poverty was measured from the two-third (2/3) of mean per capital expenditure (MPCE). A frequency distribution and percentage was used to categorize the respondents into poor and non-poor.

Estimation of Risk Attitude Coefficient Using the Safety-First Model

The risk attitude coefficient was calculated using safety-first model derived as follows: The double log form of Cobb-Douglas function was used in the estimation based on evidenced from literature (Moscardi and de janvery, 1997).

$$K(s)=\frac{1}{\theta}\left(1-\frac{P_i X_i}{Pf_i \mu y}\right) \quad \text{.....1}$$

Where:

K(s) = risk parameter

θ = coefficient of variation of yield

Pi = factor price (fertilizer price/kg)

Xi = Input level (fertilizer kg/ha)

μy = mean yield

fi = elasticity of fertilizer input

P = price of output /kg

The coefficient of variation of yield, θ was calculated from summary statistics of yield from the study area.

$$\theta=\frac{\sigma/y}{\mu/y} \quad \text{.....2}$$

Where; σy = standard deviation and

μy = mean yield

The input and product prices that were used are the prevailing market price during the time of the survey. The farmers were classified into four (4) groups on the basis of the risk parameter "k" following the work of (Moscardi and de Janvry, 1997). A farmer is risk preferring if k<0, low risk averse if 0<k<0.4, intermediate risk averse if $0.4 \leq k \leq 1.2$ and high risk averse if 1.2 <k <2.0

Determination of the Effect of Risk Attitude on Household Poverty Using Tobit Regression Model

The censored Tobit regression model was used to determine effect of risk attitudes on poverty of farmers in the study area. Discrete and continuous variables were combined. The Tobit regression model is as specified below according to Salimonu and Falusi (2009).

$$Y^*_i = \beta X_i + \varepsilon_i \quad \text{.....3}$$

$$Y^*_i = 0, if\ Y_i < 0 \quad \text{.....4}$$

$$Y^*_i = 0, if\ 0 \leq Y_i \geq 0 \quad \text{.....5}$$

Where;

Y^*_i = the limited dependent variable, which represents the index of farmers poverty.

X_i = vector of independent variable.

β = vector of unknown parameters.

ε_i = is a disturbance term.

i = 1, 2 ... n (n is the number of possible observations).

The explanatory variables that were used to categorize farmers are defined thus; SEX = Gender of farmer (D=1 if male, otherwise D=0); FMLSZ = Household size; AGE = Age of farmer in years; EXPRNC = Farming experience in years; ASSOC = Member of Association (D=1 if yes, otherwise D=0); FMSZ = Farm size in hectares; MS = Marital status; EDUC = Level of education; MOCCUP = Major occupation; LAD = Labour; VC = Variable cost; FC = Fixed cost and RISKPARA = Risk parameter

Results and Discussion

Socio-economic Characteristics of the Respondents

There is a pertinent need for the examination of socio-economic characteristics of food crop farmers in the study area. This is because it is believed to affect their poverty level. The major characteristics discussed include Sex, Age, Marital status, Level of Education, Family size, Years of Farming Experience and Membership of Farming Association.

The respondents for this study were from both gender and the categorization is shown in Table 1. Majority of the respondents (95.2%) were male and this is due to the fact that food crop farming requires some level of diligence and expertise that is mostly found in male gender and this is in compliance with the findings of Rahman and Umar (2009) where over 90% of the respondents were Male. Ahandful of the respondents (61.6%) fall between the ages of 45 – 65years. The age distribution of respondents has an implication on the productivity as these people belong to the active labour group in the study area. The mean age of 54 years implies that most of the respondents are in their active age. This corroborated with the work of Nwachuckwu (2011).

Also, the table shows that a very high percentage of the farmers (83.2%) were married and this had a positive impact on the security of their farms since most farmers had their family members to look after the farms in their absence. This is not in line with the finding of Oladejo and Adetunji (2012) where over 90 percent of the respondents were married. Family size of respondents varies directly with the labour offered. Family size has consequent effect on standard of living. The table shows that majority of the respondents have the household size ranges between 1-6 and 7 – 12 with 40.8% and 50.4% respectively. This substantiates the work of Oladejo and Adetunji(2012).

In addition, 28% of the farmers have primary education, 25.6% have adult literacy education, while 20% have secondary and no formal education. This may not be unconnected with poverty, as their academic attachment may not necessarily mean that they have adequate knowledge of risk management. It is therefore possible that a particular farmer who has little educational level but is adequately trained in food crop farming are risk preference compared to another farmer with tertiary education, but have little knowledge of food crop farming.78.4% of the farmers were in one or other farming association which helps them to minimize different kinds of risks such as social, market, institutional, financial, production risk among others. Majority (56.8%) of the farmers have between 21 – 36 years of farming experience. Experience is a key factor to improve the level of production. Regardless of the level of education a well experienced farmer will possessed the most preferred attitude toward risk, which in turn increases their level of production compared to another farmer with less farming experience.

Table 1: Distribution of Respondents by Socio-economic Characteristics

Socio-economic Characteristics	Frequency	Percentage
Sex		
Male	119	95.2
Female	6	4.8
Age		
<15	1	0.8
15 – 25	0	0
25 – 35	5	4
35 – 45	21	16.8
45 – 55	37	29.6
55 – 65	40	32
>65	21	16.8
Marital Status		
Single	4	3.2
Married	104	83.2
Widowed	7	5.6
Divorced	10	8.0
Family Size		
1 – 6	51	40.8
7 – 12	63	50.4
13 – 18	9	7.2
>18	2	1.6
Level of Education		
No formal education	25	20.0
Adult literacy education	32	25.6
Primary education	35	28.0
Secondary Education	25	20.0
Tertiary Education	8	6.4
Farming Association		
No	27	21.6
Yes	98	78.4

Farming Experience (Years)		
5 – 20	23	18.4
21 – 36	71	56.8
37 – 52	28	22.4
>52	3	2.4

Source: Computation from survey data, 2015.

Poverty

Poverty is a concept of individual welfare having different arguments over its measurement. Either using consumption or income as an indicator of welfare has been widely discussed in the literature. But most of the consensus on poverty such as the report of Ravallion (1992) titled, Poverty Comparisons: A Guide to Concepts and Methods or that of World Bank (2005) titled; Introduction to Poverty Analysis shows that the use of consumption expenditure can have the power of reflecting the welfare of individuals rather than income. This study, therefore, prefers consumption to income in determining household poverty status.

Poverty is measured from the 2/3 of mean per capita expenditure (MPC). The MPC of farmers in the study area is ₦46, 720.63 and its two-third is ₦31, 147.09. The international poverty line of US$1 per day per person is adopted for this study. As indicated above, translate to ₦31, 147.09 per annum at the exchange rate of ₦300 per dollar (this was the prevailing rate during the period of the survey). Thus, any farm household whose mean per capita expenditure per annum falls below ₦31, 147.09 is considered poor. The table shows that 20 percent of the respondents were non-poor, while 80 percent of them were poor. This supports the report of CBN(2011) and Ogujiuba, (2014) that over 70% of Nigerians live below the international income poverty line of US$1 dollar per day.

Risk Attitude of Farmers in the Study Area

Farmers‟ risk was calculated from the estimated production function using marginal product together with the coefficient of variation and prices of both input and output. The risk parameter was used to classify farmers following the categorization of risk level by Moscardi and de Janvry (1977). Risk parameter (K) was estimated using coefficient of variation of yield (θ), factor price (fertilizer price/kg) (Pi), Input level (fertilizer kg/ha) (Xi), mean yield (μy), elasticity of fertilizer input (fi), and price of output /kg (P).

The coefficient of variation of yield, θ was calculated from summary statistics of yield from the study area using both standard deviation (σy) and mean yield (μy). Farmers are said to be low risk if $0<K<0.4$, risk neutral if $0.4\leq K\leq 1.2$ and high risk or risk averse if $1.2<K<2$. The results show that all farmers in the study area are risk averse with the value of risk parameter, K,

greater than 1.2, but less than 2 for all the respondents in the study area. This seems to be in support with previous findings in the literature which reported that most farmers are risk averse (Moscardi and de Janvry, 1997; Aye and Oji, 2005. Farmers are risk averters towards the adoption of agricultural technology. While their attitude towards adoption of new technology is ambiguous.

Table 2: Poverty Situation

Poverty	Frequency	Percentage
Non-Poor	25	20.0
Poor	100	80.0
Total	**125**	**100**

Source: Computation from survey data, 2015.

Result of the Regression Analysis

The regression result for poverty status of the respondents gave the probability of the respondents' against some exogenous variable namely poverty status of the respondents using the gender, age, marital status, family size, level of education, major occupation, years of farming experience, labour data, farm size, farming association, cost of variable inputs, cost of fixed inputs and risk parameter. The table revealed that only three out of the thirteen included variables were significant at varying level. Family size has a negative sign and was significant at 1% level and this indicated an inverse relationship, that is, a unit increase in household size of the respondent increase the likelihood of the farmer being poor and this follows a-priori expectation. This is because the family with lager number will have more mouths to feed and thereby increases their level of poverty. The larger the household size, the greater will be the total consumption needs of the farm family and thus, the less willingness to take risk. However, larger household size can augments the total labour supply of the farm thereby enhancing its income generating potentials and thus reducing farmers' risk aversion. This was the opinion of Aye and Oji (2005).

The coefficient of labour was significant at 5% level and has a negative relationship with the dependent variable, poverty. This implies that the higher the number of labour employed to work during production season, the higher the chance of the farmer being poor. This is an indication that the food production process might be in the third stage of production with respect to labour and thus resulting in the low productivity and increasing level of poverty. The regression result shows that the cost of variable inputs has a positive relationship with the poverty level of farmers in the study area and it is significant at 5% level. This implies that the higher the cost of other variable inputs incurred during the course of production, the higher the likelihood of the farmers in the study area not to be poor. This means production with other

varying input increases at an indication rate i.e. an indication ofstages 1- 2 of the production process. Other factors such age, sex, marital status, educational level farming experience are determinants of poverty level but are not significant at any level.

Table 3: Probit Regression Analysis

Variable	Coefficient	Standard Error	t-ratio
Constant	-2.452	20.196	-0.121
SEX	0.239	0.138	0.173
AGE	0.322	0.380	0.848
MS	0.111	0.528	0.210
FMLSZ	-0.884	0.113	-7.798*
EDUC	0.212	0.351	0.605
MOCCUP	-0.125	0.177	-0.708
EXPRNC	0.753	0.167	0.449
LAD	-0.146	0.608	-2.401**
FMSZ	0.243	0.191	1.268
ASSOC	0.569	0.828	0.687
VC	0.537	0.239	2.246**
FC	0.245	0.255	0.962
RISKPARA	1.831	10.135	0.181

Source: Calculations from field survey Data, 2015.
Note: * Significant at 1%, ** Significant at 5%, *** Significant at 10%

Conclusion

Finding revealed that only three of the independent variables family size, labour and variable cost significantly determine the poverty status of respondents in the study area were significant at varying level. Though poverty is high, the result shows that there is no evidence that farmers‟ attitude towards risk significantly affects poverty i.e. there was no significant relationship between the risk attitude and the poverty status of the respondents. Hence, the null hypothesis is accepted that there is no significant relationship between the risk attitude and poverty situation of the respondents.

Policy Recommendations

Based on the findings of this study, the following recommendations are here by suggested;

- Government should make provisions for productions input so as to reduce economic risk faced by farmers.
- Farmers should employ more variable inputs in production other than labour inputs.
- Farmers should adopt the use of improve technology in their production.
- Government should orientate farmers on birth control or family planning to help them have the appropriate household size without any threat or risk of been poor.
- Government and relevant agencies should ensure adequate monitoring, control and use of fertilizer so as to eliminate the risk associated to soil infertility.
- There should be intensified awareness programmes on the nutritional importance of food crops consumption so as to create demand for crop output.
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