DETERMINANTS OF PARTICIPATION OF RURAL FARM HOUSEHOLDS IN NON-FARM ACTIVITIES IN KWARA STATE, NIGERIA: A PARADIGM OF POVERTY ALLEVIATION

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Abstract
This paper attempt to examine the factors that determine non-farm occupations among rural farming households and to what extent has livelihood strategies improved the wellbeing of their households. Primary data were generated through random sampling of 200 respondents from four (4) Local Government Areas (LGAs) in Kwara State, Nigeria through field surveys. Descriptive statistics, double hurdle models and Foster-Greer-Thorbecke (FGT) index were employed in the analysis. The result confirmed the assertion that economic factors are often the most important determinants of searching for non-farm job. The proceeds from non-farm activities were used mainly either for consumption (34.5%) to minimize the income fluctuation or, to supplement the working capital (26.5%) for their primary occupation through purchase of farm inputs. The results also indicated that the factors that influence the rural farming household decision to participate in non-farm activities showed slight variation from those influencing level of decision (livelihood strategies) taken to engage in non-farm activities and where it does, not by the same magnitude and direction. For instance, distance travelled and adjusted household size was found to significantly influence the farmer's decision. In contrary, education, poverty status and per capita income did influence the level of participation significantly. Of the sampled 200 respondents, 49.5% live on less than US$1 a day which portends extreme poverty and about 87% on less than US $1.5 a day. Concerted effort by stakeholders must encourage continuous farming throughout the year through irrigation to avoid part-time farming which may become the dominant farm model.

Introduction
Nigeria is a relative large country which occupies about 923,768 square kilometres and agriculture is the main stay of its economy, providing the food need of the teaming population of about 163 million and employing close to 70% of the people who are mostly rural dwellers (Oladimeji *et al.*, 2013). According to Jama'are (2002), despite the discovery of oil in the early 1970's, the agricultural sector is still the most important sector of the national economy in terms of rural employment, provision of food and export earnings. It provides employment to about two-thirds of Nigeria's adult labor force (CBN, 2006). It still provides 88% of non-oil earning out of which crop production takes 51%

(Economic Associate, 2010). At the same time, the share of the agricultural sector in GDP has declined from 56% in 1960-1964 to about 35% from 2008 till date (NBS,2012; FAO, 2013). Ironically, the share of labour force in agricultural sector put at about 2/3 of active labour force has not widened significantly.

The performance of the Nigeria economy has improved in recent years. The gross domestic product (GDP) grew by about 7% in 2012 and 2013 respectively and is currently projected to grow at 6% or more in 2014 (NBS, 2013).Despite his large natural resource endowment, agricultural potential and human resources, the historical records of its economy show that development remain a critical challenges as reflected in its inadequate infrastructure, its low domestic investment rates, the slow pace of upgrading local technology and alleviating poverty, weaknesses in governance and insecurity. Even though agriculture is growing in terms of total value and jobs created, the rise in the contribution of services sector such as the telecommunications (8.5%) and wholesale and retail trade (23.7%) in 2013 has led to the reduction of agriculture contribution as a proportion of total GDP to about 35% (NBS, 2013). The implication of this is that Nigeria is moving towards a more service-oriented economy.

The services sector comprises domestic trade, tourism/hotel and restaurant, transportation, post and telecommunications, social services, utilities, finance and insurance and real estate. The service sector remains a major growth driver in the Nigerian economy, accounting for 65.89% and 54.89% of the total GDP growth in 2008 and 2009 respectively (NBS, 2010). The service sector has contributed about 53% to GDP in the first quarter in 2014 accounting for over half of GDP growth (NBS, 2014). As a result, per capita income of Nigeria has more than tripled over the period of year 2000, though to a medium base, it was still $2,069as of 2011compared to World per capita income of$10,082, which still made the country one of the poorest in the world (Oladimeji *et al*., 2014).

However, the rural farming households play a significance role in service sector mostly during the off-farm season to get work for sustaining their livelihood such as cushion food shortage experienced by the households or settle domestic obligation and buy back some inputs needed for farming operations. Hence, they go in search of all kind of non-farming jobs mostly casual labour in industries, craft, artisan work and, public and private institutions located near their villages. A handful of these households migrate temporarily to urban centres to search for jobs. They converge with urban job seekers and assemble at designated centres in major street corners of Ilorin and other cities in Nigeria in form of labour markets as also observed by Ali, (2014) in urban labourers found in Ethiopia. Such type of markets is common in developing nations where unemployed of different age groups, educated and illiterate assemble to get work for earning their livelihood.

Statement of Problem

It is clear from above that rural farming households also engage in wide range of income-generating activities for livelihood. Broadly, this can be categorized into "farm activities" and "non-farm activities" (Eboh, 2000). Non-farm income is increasingly important in the livelihood of Nigeria rural household. Evidence from literature revealed that there has been an increasing recognition recently that the rural economy is not confined to the agricultural sector, but embraces the broad spectrum of needs of all rural people including social service provision, economic activities,

infrastructure and natural resources (Csaki and Lerman, 2000; Davis and Bezemer, 2004; Idowu *et al.,* 2013). In addition, the economic diversity in the rural area has the potential to foster local economic growth and alleviate the rural-urban income gap and rural poverty (Davis and Bezemer, 2004).

Literature further revealed that involvement of rural farm households in non-farm activities exhibits higher potentials of reducing rural unemployment rate as well as increasing household income (Nicodemo, 2007; De Janvry *et al.,* 2005). Thus, many research work recommended that the non-farm employment should be developed more particularly among farm households in order to increase share in household income (Lanjouw and Murgai, 2009; Davis *et al.,* 2009, Idowu *et al.*, 2011).Consequently, the rural economy is not based only on Agriculture but rather on a diverse array of activities and enterprise (Reardon *et al.*, 2001). Considering the growing importance of the non-farm activities among the rural households in developing countries, the study therefore, intends to examine factors that determine non-farm occupations among rural farming households and to what extent has non-farm activities (livelihood strategies) improved the well-being of their households in Kwara State, Nigeria.

Hypothesis

(i) There is no significance difference between farm income with and without additional earning/secondary occupation.

(ii) Secondary occupations do not improved the economic well-being of the households in the study area

Methodology
Study Area

Kwara State is situated in North Central Nigeria with Ilorin as capital. It is located between latitude 7°45′ and 9°30′N and longitude 2°30′ E and 6°25′ E with a land mass covering about 32,500 sq.km and a total land size of 3,682,500 ha. With an estimated population of 2.4 million people (NPC, 2006), the State's population and farm families were projected in 2015 to be about 3.09 million and 305,990 respectively representing 3.2% annual growth rate and an average density of 95 persons per sq. km with majority living in rural areas.

The study was carried out in Kwara North and Asa LGAs, being predominantly farming area of Kwara State, Nigeria. The major markets, industries and tertiary institutions in the State are located in this area. Small and household level industries by formal and informal sectors such as Songhai farm, Quarry firms, Bacita and Lafiagi sugar companies, Jebba paper mill and Kam wire industry are situated in the study area. Others are Global soap and detergent, Unifoam, 7up Bottling Company, Tuyil pharmaceuticals, Nigeria Bottling Company, Kwara State Polytechnic and University as well as College of education (Technical) Lafiagi. Construction works both private and public and transactions of agricultural commodities through local markets, hoteliers and basic infrastructure works are also sources of non-farm employment and livelihood occupations among the inhabitations.
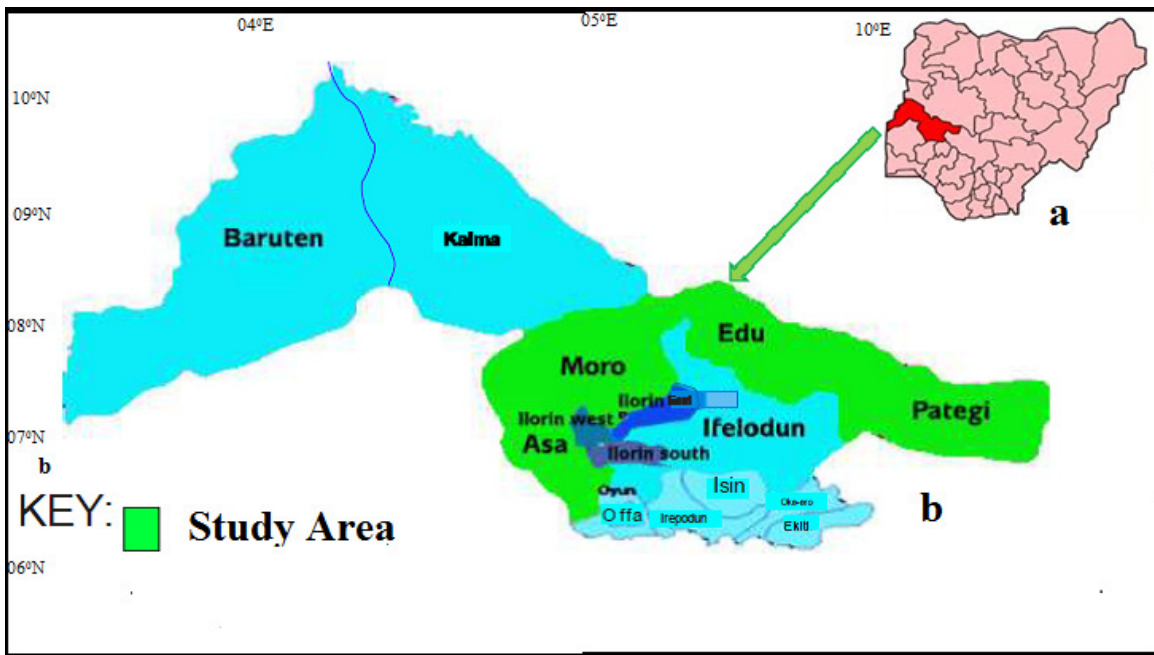
Figure 1: Map of Nigeria (a) and Location map of the Study Local Government Areas(b) {modified from NPC, (2006)}.

Data Collection

The study is based on primary sources of the data gathered by field surveys in 2013/2014 off-farming season through questionnaire and interview. Specifically, it focused on socio-economic characteristics and data on secondary occupations.

Sampling Procedure and Sampling Technique

The analysis in this paper was based on a multi stage random household survey conducted in four (4) LGAs viz. Asa, Edu, Moro and Patigi in 2013/2014 off-farming season. The LGAs were purposively selected being an area with farming households that have myriads opportunity to other ancillary jobs in their surroundings. Two villages each were randomly selected from each of the 4 LGAs. Then, 25 farming households were randomly selected from each of the village to make a total of 200 respondents. The selected villages were Ogbondoroko, Laduba (Asa);Onipako, Beriberi (Moro);Songahi, Bacita (Edu) and Ellah, Sunkuso (Patigi).

Analytical Techniques

The determinant of non-farm resource allocation to various categories of non-farm activities by the individual farm household is a two-stage decision process: viz. decision to participate, and level of participation. There are two main reasons for separating these decisions. First, due to social-demographic or psychological drives, some farming households may not participate in any non-farm activity as a result of the prevailing relative wage rates, distance to urban centres, pressure from farm work, local-level involvement in social and religious organizations and many other possible factors. Secondly, a household head may see the needs to get extra income (livelihood strategies) to upset food and other basic needs for the households but for certain levels of relevant variables, decide not to respond. The former represents abstention, the latter a corner solution. Damisa *et al*. (2011)

observed that the application of either multiple regression or one step tobit regression analysis for a cross sectional data of this nature can be misleading, for most of cross-sectional income/consumption data, zero income/consumption is one problem for any modelling effort to address.

In addition, two disadvantages of using one step tobit model are that all zero observations on level of decision to participate in non-farm activities (livelihood strategies) undertaken to get extra earning to cater for household basic needs such as combating the food shortage in the household are interpreted as corner solutions, that is, the household is assumed to perceive the problem of need for extra earning (participation) but chooses not to respond at the current level of exogenous variables. A further restriction of the Tobit is that both decision to participate and level of participation undertaken to cater for the household basic need are determined by the same variables, that is, a variable that influences the decision to participate also influences the level of participation or extra earning (livelihood strategies) undertaken.

Several studies have used binary choice models in determining perception and the response decisions where the perception and the response resulting from the perception were viewed as a single step process. However, the study employed double-hurdle model in determining decision to participate and livelihood strategies where the decision and the level of participation resulting from the decision were viewed as a two-step processes. In other words, decisions to participate and its level are viewed as separate hurdle that needed to be crossed.

The double-hurdle model was originally proposed by Cragg (1971) adopted in agricultural technology adoption studies by (Damisa *et al*., 2007; Shiferaw *et al*.,

2008); consumer demand and market participation studies by (Weersink, 1992; Matshe and Young, 2004; Serra *et al*., 2005; Damisa and Hassan, 2009; Idowu *et al*., 2013).It assumes that two separate hurdles must be crossed before a positive level of consumption/income can be observed. In the context of the household decision and level of response analysis, the first hurdle involves the decision of whether or not the household see the needs to get extra earning (income) to upset food and other basic needs for the household (participation decision). It is reasonable to assume that the choice to perceive needs in household by the household head is not only an economic decision, but also influenced by social and demographic factors. The second hurdle concerns the type /number of livelihood strategies to choose (response decision). A different latent variable was used to model each decision process (Damisa *et al*., 2011).

Following the standard practice in related studies (Matshe and Young, 2004; Serra *et al*., 2005; Idowu *et al*., 2013), the decision to participate in non-farm activities was addressed by fitting a logit model while its level (livelihood strategy)was addressed by fitting Tobit regression model for only those households that claimed to participate in non-farm activities. Therefore, the underlying response variable y* in the case of binary choice was econometrically specified by the multivariate logit regression relation in equation 1

$$y* = \beta_0 + \beta_1 X_1 + \cdots \cdots \cdots + \beta_k X_k + u_i \qquad (1)$$

Where: $y*$ = the probability that a household will participates in non-farm work and ranges from 0 to 1; X_i = the ith explanatory variables which are parameters to be estimated (Oladimeji*et al*., 2015).

Following Goodwin and Mishra (2004); El Osta *et al*. (2004); Damisa *et al*. (2011) and

Idowu *et al*. (2013), the Tobit model was used, thus:

$$Y_i^* = \sum X_i \beta + \mu_i \ldots\ldots\ldots\ldots (2)$$

$$Y_i = P_i = (X_i \beta, \mu_i), \text{if } P_i > P_i^* \qquad (3)$$

$$0 = (X_i \beta, \mu_i), \text{if } P_i \leq P_i^* \qquad (4)$$

i= 1, 2..., n

Where: Y_i = the dependent variable. Y_i^* is the vector of variables indicating the extent of livelihood strategies of household or otherwise in non-farm activities. β is a vector of unknown co-efficient and μi is an independently distributed error term. Xi is a vector of explanatory variables (Oladimeji, 2015).The model was estimated using maximum likelihood estimation procedures. Table 1 shows the description

and measurement of variables employed in the double-hurdle model estimation.

A Foster-Greer-Thorbecke (FGT) index was used to determine the influence of income with or without subsidiary earning on welfare of rural farmers given as:

$$p_{ai} = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z - y_i}{z} \right)^{\alpha} \qquad (5)$$

Where: P_{ai} is the poverty index for the ith sub-groups, n is the total number of households, Y_i is the per adult equivalent income/consumption expenditure of i-th households, z is the poverty line, q is the number of the sampled household population below the poverty line and α is the aversion to poverty it ranges from 0 to 2 (Foster *et al*., 1984).

Table 1: Measurement of variables and *a priori* expectations

Variables	Description and *a priori* expectations
Decision	1 = If a household participate in any of the non-farm activities during the season and 0, otherwise
Level of participation	It is the rank level of participation (livelihood strategies) by the household head or any household member in improving the economic well-being of the households above the poverty line. The value =1 if any member of the household or household head were employed in non-farm skilled labour; =2, if employed in non-farm unskilled labour; =3, if employed in paid social or community service; =4, if received remittance from other households; =5, if the rank take on the value of 1 and any of 2-4; =6, if the rank take on the value of any or all combinations of 1-4.
Age	Age of the household head in years; *positive*
Education	Years spent in a formal education by the household head; *negative*
Adjusted household size	Number of dependents per household head; *positive*
Distance	Distance to the nearest city (Km); *positive*
Credit accessed	Amount of credit accessed during the production season (₦); *negative*
Poverty status	Poverty status of household (poor=1, 0 otherwise); *negative*
Per capital income	Adjusted income in the non-farm relative to agriculture (₦); *negative*
Social organisation	Years of membership of farming cooperative society; *negative*

Note: ₦ denote Nigeria currency (Naira); 1US $= Average ₦164.5 during the field survey

Results and Discussion

Socio-economic Characteristics

Summary statistics of the data reported in Table 2 revealed that rural household heads that engaged in non-farm occupations in the study area are males dominated (95%); average age of 48 years

and married (71%) with mean household size of 8and adjusted size of 7.Therefore, it could be concluded that the preponderance of active and virile heads of households in the study area has a multiplier effects on increased availability of able bodied labour

for both primary production (farming) and secondary occupation.

Education is considered a key to expand the horizons of the minds and to develop thinking to live good social and economic life (UN, 2005;UNICEF, 2010). But, the estimated mean years of schooling of sampled household heads are 1.09 years, a reflection of deprived training conditions, skewed towards the informal education and below UNDP, (2011) mean education index

of 5 years for Nigeria. The study also revealed that 75% of the household heads had no access to credit facilities from either formal or informal sources. It suffices to note that the bulk of proceeds from both secondary and off farm income (61%) are designated for consumption and purchase of inputs in preparation for farming production. The findings on socio-economic data is comparable with Idowu *et al*. (2013); Oladimeji *et al*. (2015).

Table 2: Definition and dominance indicators of the socio-economic variables

Variables description	Dominance indicators	Mean	Min	Max
Gender	95% were male	--	--	--
Age (years)	58% below 50 years	48	23	68
Level of education (years)	53% had no primary education	1.09	0	12
Adjusted household size	74% had adjusted size of 7-9	8	3	14
Distance travelled (km)	65% travelled at least 15km	18.9	5	43
Credit accessed (₦)	75% had no credit access	22760	0	98000
Per capita income (₦)	52% earned <₦70,000/annum	65700	42500	98750
Social organisation (yrs)	65% were passive member	24	6	38
Poverty line (income)	58% were below 2/3 per AE			
Consumption & inputs	61% used the proceeds from non-farm activities for both items			

Results in Figure 2 revealed that family members of the sampled rural households were mainly engaged as domestic servants (27%), trading (24.3%), artisan labourers (21.3%), catering/restaurant workers (13.3%), commercial motor cycle and bus conductors (10%) and others (4%) which include selling farm products, hunting, weaving (cloth and basket) and woodcarving. The implication of these findings were also similar to what Oladimeji, (1999); Olaoye *et al*. (2012) pointed out that the rural farming households have diversified farming oriented economy and has developed capacity to cope with increasing vulnerability associated with fishing or farming, such as diversification and migration. Diversification as a strategy involves the attempt by individuals and households to find new ways to raise

income and reduce risk. Ellis, (1998) and Nasai (2008) stated that it is evident that rural households in Nigeria engaged in multiple activities such as trading (marketing or adding value to commodities), small scale business enterprises (carpentry, radio and bicycle repairs), processing of agricultural goods, arts and crafts (weaving, mats and basket making) in order to supplement earnings from agriculture.

Meanwhile, result in Table 3 shows the plan usage of income earned from ancillary and non-farm activities. It was found that majority of the rural households who seek for secondary and non-farm employment in the rural areas or migrate temporarily to urban centres either in the formal or informal sector used the proceeds for either consumption (34.5%) to minimize the income fluctuation during off-farm season

and or drought or, to supplement the working capital (26.5%) for their primary occupation through purchase of farm inputs. Other reasons mentioned were to foster education of their wards and family health care (8.5%) and repairs and construction of residential building (8%) which shows that rural households are aware of value of education and health care

and, decent and comfortable abode which are grossly lacking in the study area. This confirmed the studies by Damisa *et al.* (2011) and Ali, (2013; 2014) as well as assertion by Akangbe *et al.* (2006) that economic factors are often the most important determinants of searching for off-farm job.
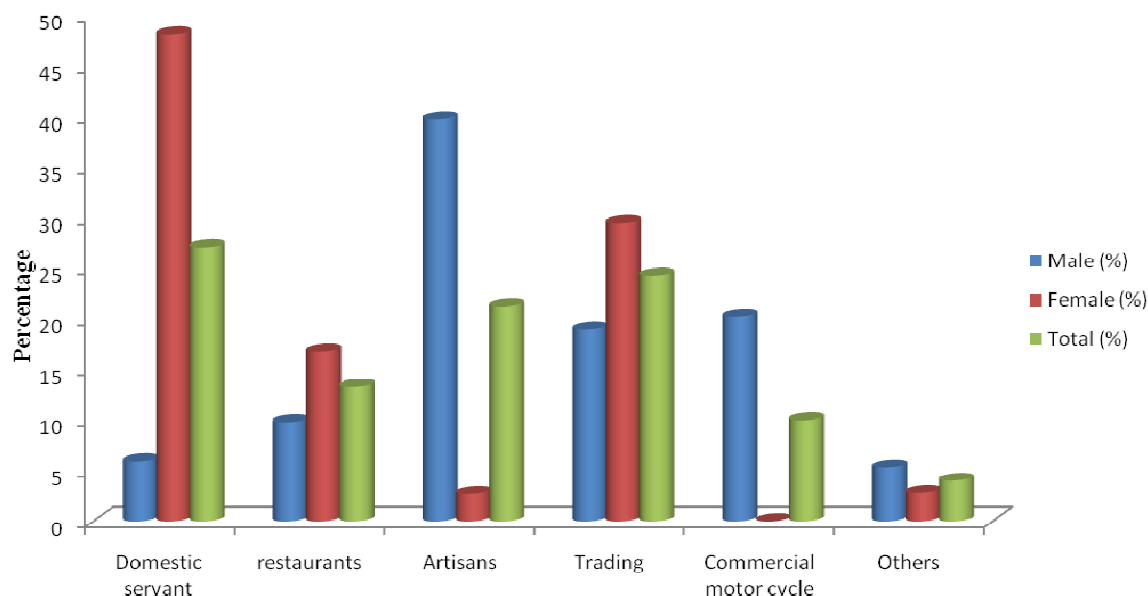
Figure 2: Secondary Occupation of Household Members

Table 3: Planned usage of income earned from ancillary and non-farm activities

Planned usage	Total	Main occupation of households		
		Arable cropping	Fishing	Agricultural labour
Purchase of farming inputs	53(26.5)	14	39	0
Purchase of livestock	20(10.0)	11	7	2
Consumption	69(34.5)	20	37	12
Savings	15(7.5)	3	5	7
Repair & construction of house	16(8.0)	6	4	6
Education & health	17(8.5)	5	3	9
Others	10(5.0)	2	5	3
Total	200(100)	61(30.5)	100(50.0)	39(19.5)
Mean	28.57	8.71	14.29	5.57
Standard deviation	22.82	6.58	16.26	4.20

Note: figure in parenthesis are %

Table 4 depicts per capita household's income per annum without supplement or secondary occupation while Table 5 present per capita household's income per annum

with supplement earning either in form of secondary occupation or non-farm earning and regular remittance from friends and relatives. Of the sampled 200 respondents,

almost half (49.5%) live on less than US$1 a day which portend extreme poverty (UNDP, 2005) and about 87% on less than US $1.5 a day. However, with access to secondary occupation, a handful of rural household heads (6.8%) achieved a threshold of US $2 a day and according to UNDP, (2005), almost half of the world population, live on less than US $2 a day. The result also revealed that with opportunity to supplement their income with both secondary or non-farm earning and remittance from family and friends, only 32%live on less than US$1 a day and about 62.7% on less than US $1.5 a day.

Further, the study shows that secondary occupation could have increase the income of rural households more considerably but most rural household heads and their household members did not have access to continuous work for all days of the off-farm season couple with unbar-gain and poor wages. The result was consistency with findings of Ali, (2014) who observed that majority (about 73%) of daily labourers in Ethiopia together with family members survive on less than US $2 per day.

TABLE 4:Distribution of /capita household head's income/annum without ancillary earning

Household Income (₦)	Household Income (USD:$)	Total Sample	% Contribution
20 000--40 000	121.58--243.16	32	16.0
40 001--60 000	243.17 -- 365.00	67	33.5
60 001--80 000	365.01-- 486.32	59	29.5
80 001--100 000	486.33 -- 607.90	23	11.5
>100 000	>607.90	19	9.5
Total --	--	200	100
Mean 46 752.50	2/3 = 31 168.3 (poverty line)	--	--

Note: the income was adjusted to per adult equivalent; USD = $

Table 5: Distribution of / capita household head's income/annum with ancillary earning

Household Income (₦)	Household Income ($)	Total Sample	% Contribution
20 000--40 000	121.58--243.16	23	11.5
40 001--60 000	243.17 -- 365.00	41	20.5
60 001--80 000	365.01-- 486.32	59	29.5
80 001--100 000	486.33 -- 607.90	49	24.5
>100 000	>607.90	28	14.0
Total --	--	200	100
Mean 67 500.90	2/3 = 45 000.6	--	--

Factors Influencing Farming Household Decision and Level of Participation

Table 6 shows the estimates of the double hurdle regression model. The results indicated that the factors that influence the rural farming household decision to participate in non-farm activities showed slight variation from those influencing level of decision (livelihood strategies) taken to engage in non-farm activities and where it

does, not by the same magnitude and direction. For instance, distance travelled and adjusted household size were found to significantly influence the farmer's decision. In contrary, education, poverty status and per capita income did influence the level of participation significantly.

Adjusted household size and per capital income were the most important variables that significantly influenced the first and

second hurdles (P < 0.05). This was consistency with *a priori* expectations. For example, per capital income is an important factor in determining the poverty status of a household and an increase in extra income will decrease the propensity of a farmer falling below the poverty line. Households with sufficient farm income and negative poverty status may have negative likelihood effect on engagement in self-employment, that is, being less poor significantly increased the probability of participating in non-farm self-employment (Idowu *et al*., 2013).

The adjusted household size variable was significantly positively related with the household's decision to participate (p<0.05); however, the variable had a significant negative relationship (p<0.01) with the extent of participation (livelihood strategy) in the household. The implication of the inverse relationship with level of participation was that the less the household size, the rapid they were able to make decision to participate less in non-farm activities. Both credit accessed and cooperative membership were insignificant in the 2 hurdles. Cooperatives were supposed to train and render other forms of welfare assistance to their members

(Damisa *et al*., 2011) while credit is one of the policy instruments which could promote farm technology transfer and increase farm income. The insignificance of these variables could mean that the cooperatives were inactive while lack of credit or its inadequacy was most likely to affect farming operations negatively.

Measuring Poverty Incidences with and without non-farm income

The study used and consider the relative poverty measurement among others for a number of reasons. The advantage of this method over the dollar per day lies not only in its simplicity but in the fact that the poverty line is determined in relation to the general living standard of the whole target population and the ability to assess changes in the living standard of the people over time (Oladimeji *et al*., 2014). Also in relation to other members of a community there would always be relative poverty. Overall, about 42% of sampled household heads fell below poverty line of ₦31 168.3 per capita per year without extra earning from secondary occupation while only 25% could not meet a threshold of ₦45 000.6 when the income from secondary occupations were included.

Table 6: Estimates of decision and extent of participation (Double Hurdle Model)

Variable	First Hurdle equation (Decision)	Second hurdle equation (Extent)
Age	0.021(1.08)	0.152(0.69)
Level of education	0.362(0.98)	−0.097**(1.99)
Adjusted household size	0.621**(2.29)	−0.430***(3.70)
Distance travelled	0.009***(4.01)	0.062(1.14)
Credit accessed	−0.727(0.08)	0.176(1.50)
Poverty status	0.053(1.52)	−0.092**(2.07)
Per capital income	0.681**(2.30)	0.521**(2.35)
Cooperative membership	−0.510(1.06)	0.275(1.24
Constant	−0.032(1.78*)	0.022(3.42***)
No of observation	200	200
Log likelihood function	−31.04	−29.5
LR Chi^2	47.3	29.7
Pseudo R^2	0.417	0.390

***; **; *significance at 1%, 5% and 10% respectively; t-ratio in parenthesis

Figure 3 presents the Cumulative Distribution Function (CDF) for households with and without access to non-farm income at different levels. The CDF of households without access to non-farm income stochastically dominated the CDF of households with access to additional income. This shows that households with no access to non-farm income would have more poverty incidence, depth and severity than households with access to additional income over the range of the poverty line. The second order stochastic dominance also holds true.
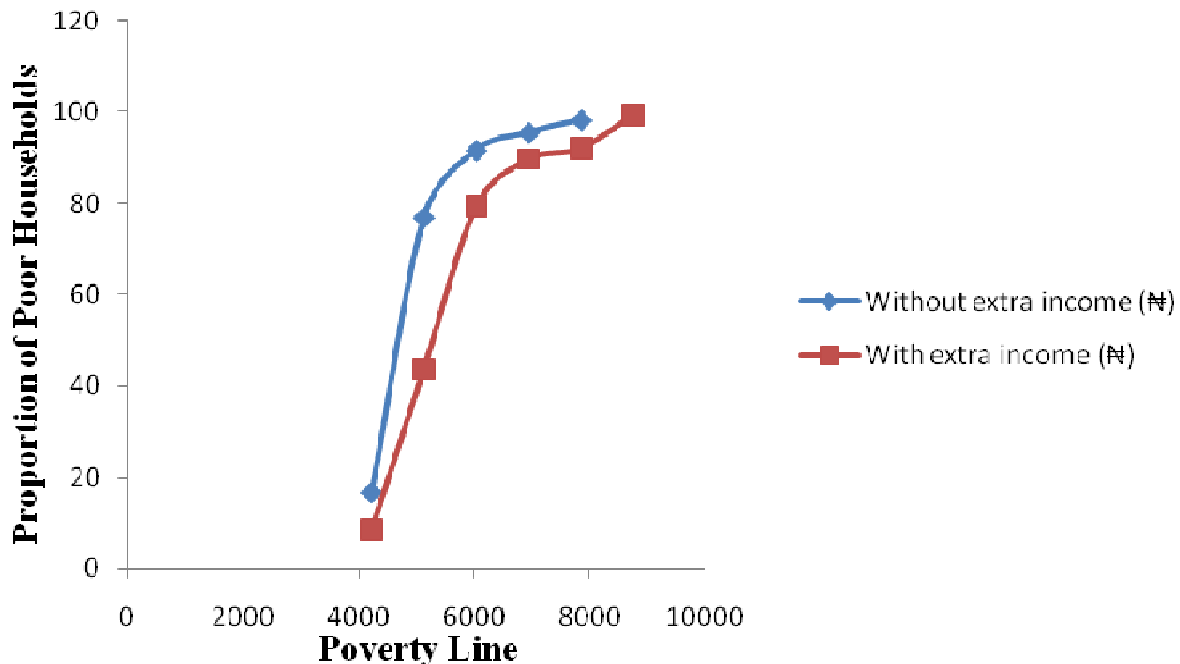

Figure 3: Dominance analysis by level of Income Earned by Household Heads

Thus, in Table 7, a rural household that earned at most ₦60, 000 without including non-farm income had poverty incidence of about 68% but the poverty incidence was reduced to 50% among the same group when extra earnings from non-agricultural activities were included.

Table 7: Identified poverty sub-groups based on incomewith and without extra earning

Variables	P_0	P_1	P_2	n	Share of poverty	
					q	%
Without extra earning (₦)						
20 000 – 60 000	0.677	0.030	0.006	99	67	63.2
60 001 – 100 000	0.415	0.031	0.001	82	34	32.1
>100 000	0.263	0.003	0.000	19	5	4.7
With extra earning(₦)						
20 000 – 60 000	0.500	0.018	0.001	64	32	41.6
60 001 – 100 000	0.380	0.030	0.001	108	41	53.2
>100 000	0.143	0.001	0.000	28	4	5.2

P_o is the headcount index, P_1 is the poverty gap index, P_2 is the squared poverty gap index

According to Eboh, (2000), it is widely agreed that a capacity to diversify is beneficial for households at or below the poverty line. In addition to providing a strategic employment option outside Agriculture, the non-farm sector stimulates inter-sectoral linkages; reduce rural-urban migration, promote equitable distribution of income; broadens economic participation and enables the poor to smoothen inter-year and inter-season fluctuation of Agricultural labour demand and income.

Hypothesis testing for income with or without ancillary occupation

Table 8 shows the result of the hypothesis test comparing the mean of farmers with and without additional earning. The result proved a significant difference between farmers' income with and without additional earning of rural farming households. Since the average farm income with extra earning was greater than income from farming only, with a significant t- value at 1%, the null hypothesis which states that there is no significant difference between farm income with and without additional earning is therefore rejected.

Table 8: Test of hypothesis on difference between farmers' income with and without additional earning

Variables	Mean	N	SD	SE	t-value	t-critical
With	67 500.90	200	14152.9	5432.1	25.80	2.01
Without	46 752.50	200	9765.3	3890.6		

***P<0.01, SD=Standard Deviation, SE= Standard Error

Conclusions and Policy implications

The study revealed that rural farming households were exposed to myriads of secondary occupations and extra earning from service or non-agricultural sector in rural areas and mostly urban centres. However, there is low probability that the urban economy will take care of rural household heads and their family members during off-farm season and/or provide enough employment for the growing rural labour force to allow a large proportion to move to the urban economy. The rural labour force must therefore have to find a way to improve their incomes in rural areas particularly during the dry season such as through continuous farming by irrigation activities, aquaculture, keeping livestock such as poultry and ruminant. However, in interim, it is recommended that the non-farm employment should be developed among farm households to cater for rural households that are left fallowed during off-farm season.

It is suffice to note that incomes from both farming and the non-farming sectors will improve the standard of living through increase income. This could sharply enhance reduction in absolute poverty or apparently poverty alleviation in rural areas. Food insecurity may, however, continue to persist, except government encourages dry season farming through provision of infrastructures and irrigation facilities. Therefore, concerted effort by all stakeholders must encourage continuous farming throughout the year to avoid part-time farming which may become the dominant farm model, and could become a significant retardation of agricultural growth based on migration to industrial and service sectors. Finally, in view of the fact that farmers engages in secondary occupations partly due to volatile nature of agricultural production system, suggests also that any policy aimed at improving the livelihood strategies and standard of living of the rural farming households in the study

area should at least for now target both primary and secondary occupations.

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