OFF-FARM LABOUR PARTICIPATION AND FARM HOUSEHOLD LIVELIHOOD STRATEGY IN YEWA DIVISION, OGUN STATE, NIGERIA

A. M. Shittu, O. F. Ashaolu and O. S. Odusanya

Paper prepared for presentation at the Farm Management Association of Nigria Conference, Asaba, Nigeria, October 18-20, 2005

OFF-FARM LABOUR PARTICIPATION AND FARM HOUSEHOLD LIVELIHOOD STRATEGY IN YEWA DIVISION, OGUN STATE, NIGERIA

Shittu[1], A. M., Ashaolu[2] O. F. and O. S. Odusanya[1]

[1] Department of Agricultural Economics, Olabisi Onabanjo University, Yewa Campus, Ayetoro
[2] Department of Agricultural Economics and Farm Management, University of Agriculture, Abeokuta

ABSTRACT

This study examines the pattern of farm and off-farm labour supply among members of farming households in Yewa Division of Ogun state, Nigeria. The study was based on primary data obtained in a cross-sectional survey of 80 randomly selected household drawn by a three-stage sampling technique from 10 randomly selected farming communities in the study area. The data was obtained by personally administered questionnaires, and was focused on the socio-economic characteristics of the farming households, its labour allocation among various economic activities, agricultural production and income from all sources. The study data was analysed by descriptive and regression (Tobit and logit) techniques. The study found that income from non-farm sources accounts for as much as about half the farm households' income. Only very few individuals and households depended solely on only one source of income (farm or non-farm); but, married women, and individuals that had their professional training in non-farm activities tend to supply more labour off-farm than an average household member in the sample. Furthermore, the study suggests that a major cause of poverty among rural farm households has been a result of their inadequate access to livestock production capital and skills, and small landholdings in crop production. This is because those households that were able to combine livestock production with arable crops farming were richer, on the average, than an average farming household that divested its labour into non-farm activities.

INTRODUCTION

Against the background of a rising incidence of poverty in Nigeria, which evidence from World Bank (1995 and 1996), FOS (1996 and 1999) and Ajakaiye and Adeyeye (2001) among others suggest is most prominent among the rural households most especially those that rely mainly on farm income, it is imperative to carefully analyse the returns to the various farm and off-farm employment opportunities open to the rural folks in Nigeria as to be able to arrive at appropriate policy options for meaningful poverty alleviation. Beside this, a growing body of literature suggests that off-farm labour supply, which contributes a substantial proportion of farming household income in the developed countries (about 90% in the US – Mishra et al, 2002; Kimhi and Rapaport, 2004), is growing in importance in most developing countries. In rural Peru for example, almost 35% of household labour is allocated to and 51% of income comes from economic activities outside of own-farming (Escobal, 2001). Similar evidence from other parts of the world suggests non-farm activities accounts for 25% of employment and as much as 40% of income in rural Latin America; 32% of rural households' income in Asia as well as 42% of rural household income in Africa (Reardon et al. 1998).

The growing body of literature on the non-farm sectors contributions suggests that policy makers are showing increasing interests in rural non-farm activities as a means of creating favourable conditions to reduce poverty in the rural areas (FAO, 1998; Matshe and Young, 2004). Growth in the rural non-farm activities may also be used to stem the rapid rural-urban migration and the attendant urban poverty in most developing (Goldsmith, Gunjal and Ndarishikanye, 2004). Besides the opportunity for income diversification and reduction of income variability / risks that off-farm labour supply offers (Schultz, 1990; Ellis, 2000; Abdulahi and CroleRees, 2001) the predominantly peasant farmers in Africa, off-farm labour supply is also important means of raising financial capital among farming families (Olfert, 1993). It also represents an alternative form of employment and source of income, most especially to the rural landless.

While very limited information is available on the contributions of non-farm sector to household income in rural Nigeria, evidence concerning the rapid rate of movement of labour away from farm to the non-farm sector in Nigeria and the current pace of rural – urban migration among the youths suggest that meaningful development planning would not be possible without a clearer understanding of the roles of the non-farm sector in Nigeria, most especially in the rural areas. It is against this background that this study is undertaken to throw light on the pattern of farm and non-farm labour allocation decision among members of farming household the rural southwest Nigeria, using the Yewa division of Ogun state as an example.

OBJECTIVES OF THE STUDY

The broad objective of the study is to analyse the pattern of farm and off-farm labour supply among members of farming households in Yewa Division of Ogun State, Nigeria.

[1] Corresponding Author: amshittu@yahoo.com; 080-53422123

The specific objectives are to:

1. Describe the socio-economic characteristics of the faming households in the study area.
2. Determine the relative contribution of various farm and non-farm labour activities as well as other non-labour sources to household income.
3. Compare the socio-economic characteristics of household members involved in farm & non-farm activities;
4. Determine the influence of the individual member's socio-economic characteristics on his/her patterns of farm and off-farm labour allocation decisions – viz. whether or not to work off-farm and for how many workdays per month.

METHODOLOGY

The empirical setting for this study is the Yewa Division of Ogun State, Nigeria. The study area accounts for five of the 20 Local Government Area (LGA) in the State and about 31.4 percent of the population which was about 2.3 million in 1991 and is currently estimated at about 3 million people given the estimated population growth rate of 2.88 percent per annum (FOS, 1999). The five Local Government Areas in the division are: Yewa North, Yewa South, Ipokia, Imeko-Afon and Ado-Odo. Farming is the most common occupation in the villages and the people living in towns are engaged in various occupations apart from farming. Most of the farmers in the study area are engaged in arable crop production such as cassava, melon, maize, cocoyam, and others while some others have livestock farms.

This study utilised primary data obtained in a cross-section survey of 80 randomly selected households in the study area. The survey was conducted during the third quarter of the year 2004. The respondent farming households were drawn in a three-stage random sampling process. In the first stage, two farming communities (villages) were purposefully picked from the list of villages in each LGA. Ten residential houses were randomly selected from each of the ten villages drawn in the first stage; and no more than one farming households (where available) was included in the sample from each house in the final stages. A total of 86 farming were draw in this process, but information from six were discarded for being incomplete/unreliable.

Personally administered structured/interview schedule were used to elicit information from each household on its members socio-economic characteristics, participation of each members in farm (crop and livestock) and various non-farm activities, average number of workdays devoted to the various activities with the last three months, associated costs and income, farm production data in the 2003/2004 farming season, and many others.

The study data was analysed by both descriptive and quantitative (logistic and Tobit regression) methods. Simple descriptive techniques involving frequency distributions, means and standard errors, etc. were used to analyse and compare the socio-economic data. For the purpose of determining the influence of socio-economic factor on decisions whether or not to work off-farm, the logit model (equation 1), which is one of the classes of binary choice models, was specified and estimated using the SHAZAM Econometric software.

The general formula for the logistic regression is as follow;

$$y=b_o+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+\ldots..+b_{10}X_{10}+U\ldots\ldots \quad (1)$$

Where;

y_i = binary variable that takes on value of 1 if the referenced person participated in off-farm activities and 0 if otherwise

X_1 = age of working member (years)

X_2 = Level of education (years of formal schooling)

X_3 = Farming experience (years)

X_3 = Sex Dummy (Female = 1, Male =0)

X4= Marital Status Dummy (Single = 0, Married = 1)

X_6 - X_{10} = Occupational Dummy variables that takes on values of 1, in turn for traders, artisans, civil servants, private sector employees, others labour income sources, and 0 if otherwise

U = stochastic residual term, which is assumed to follow the logistic distribution.

For the purpose of determining the influence of socio-economic factors on determining the number of working days to be supplied to the non-farm sector, a Tobit model (equation 2), which is a censored regression model, which disallows prediction of negative days of work with the estimated model. This was also specified with the explanatory variables in the above equation as the regressors; but the dependent variables y is the average number of workdays equivalent devoted by each working member to off-farm activities. The equation was also estimated using the SHAZAM Econometric software.

$$y=b_o+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+\ldots..+b_{10}X_{10}+U\ldots\ldots \quad (2)$$

RESULTS AND DISCUSSION

Households' socio-economic characteristics

Considering the importance of households' and the individual members characteristics on its decision making process, Table 1 summarises the distribution of the sampled households by location, nativity, size, types of farming enterprises undertaken, farm size, etc. Results on Table 1 reveals that while the largest majority of the households (91.2%) originated from within Ogun state, about half (51.2%) of the sampled households and by extension farming households in the study area were actually migrants in their current place of residence. The main import of this is that a sizeable proportion of these households might not have direct access to farmland. This probably explained the fact that about 31% of the sample did not cultivate any crop during the 2003/2004 farming season. The table also shows that the largest proportion (55%) of the households that cultivated some crops during the 2003/2004 farming season cultivated no more than one hectare of land.

Table 1 Distribution of households by socio-economic characteristics, N= 80

Characteristics	Frequency	Percent
Local Govt. Area		
▪ Yewa North	20	25.0
▪ Yewa South	16	20.0
▪ Ipokia	16	20.0
▪ Imeko Afon	15	18.0
▪ Ado Odo	13	16.25
Home town of household head		
▪ Current location	39	48.8
▪ Within Yewa land	17	21.3
▪ Within Ogun State	17	21.3
▪ Within South West	7	8.8
Farm land		
▪ None	25	31.3
▪ Below 1 hectare	30	37.5
▪ Between 1 and 2 ha	17	21.3
▪ Over 2 ha	8	10.0
Household size		
▪ 1 – 3	5	6.25
▪ 4 – 6	51	63.75
▪ 7 or more	24	30
No. of working members		
▪ Only one	3	3.8
▪ Two	58	72.5
▪ Three	11	13.8
▪ Four or five	8	10.0
Sources of household income		
▪ Crop & Livestock production	2	2.50
▪ Crop & non-farm labour	18	22.50
▪ Livestock & non-farm labour	11	13.75
▪ Crop, Livestock & Non-farm labour	26	32.50
▪ Crop, non-farm labour & assets	13	16.25
▪ Livestock, non-farm labour	4	5.00
▪ Crop, livestock, non-farm labour & Assets	6	7.50

Source: Field Survey, 2004

An average farming household in the sample was indicated as having had between four and six members, most of whom had two (72.5%) or three (13.8%) working members, and almost all (97.5%) of the households had income that was derived from non-farm source(s). Further evidence on the role of the various farm and non-farm activities on the farming households' income and likely poverty profile (per capita income) are presented on table 4.2. The result suggests that non-farm sources, contributes about half of the rural farming households' income in the study area. The largest share was found to come from non-farm labour (48.24%) while income yielding assets like building, shareholding, land and equipment leasing, etc. also contributes about 5.94% of an average household's income in the sample.

Results on Table 2 also show clearly that none of the farming households depended solely on any one source of income. Rather some degree of income diversification was evident. In general, those households that were involved in livestock production activities had higher income (as well as per capita income) that those than those combined crop production with other sources. The richest set of households were those few that focused solely on farming (that is, crop and livestock production only), while those that combined crop production with non-farm labour supply only had the lowest income level. The main import of these findings is that while non-farm employment is quite important and contributes a sizeable proportion of the farming household income, those households that may be able to raise enough financial capital as to include livestock production in their enterprise may in fact be able to fair better, income-wise, than where they resort to seeking off-farm employment as an alternative.

Table 2 Farming households' income by the mix of farm and non-farm activities

Sources of household income	Statistics	
Income by specific source	***Mean / yr***	***% of total***
▪ Crop production	71,925.25 (10,660)	7.51
▪ Livestock production	367,099.3 (63,597.47)	38.31
▪ Off-farm labour supply	462,293.10 (26,636)	48.24
▪ Income yielding assets	56,956.25 (25,728)	5.94
Total	***941,179.30 (72,970.09)***	***100***
Income by the mix of economic activities	***Mean household income / month***	***Mean per capita household income / mth***
▪ Crop & Livestock production	168,491.67 (15,094.74)	28, 081.94 (2,814.12)
▪ Crop & non-farm labour	41,088.70 (5,329.32)	8,113.85 (1,196.59)
▪ Livestock & non-farm labour	105,982.58 (23,528.73)	17,687.48 (3357.60)
▪ Crop, Livestock & Non-farm labour	77,757.78 (9040.74)	12,741.92 (12,08.70)
▪ Crop, non-farm labour & assets	74,330.00 (15,702.82)	16,012.67 (2,981.55)
▪ Livestock, non-farm labour	124,425.42 (17,093.74)	19,375.07 (2,984.62)
▪ Crop, livestock, non-farm labour & Assets	108,990.03 (20,691.89)	16,552.66 (2,881.73)
Sample average household	***78,431.61 (6,080.84)***	***13,752.25 (940.25)***

Note: Figures in parenthesis are standard error of estimates
Source: Computed from survey data.

Characteristics of farm and off-farm labour participants

For policy purposes, a clear understanding of those variables that influence off-farm labour participation among members of farming households is quite important. Thus, this section presents results of comparative analysis of the socio-economic characteristics of household members that participates in one way or another in farm and non-farm activities. The results are summarised on Table 3.

Results on Table 3 reveals that the largest majority (about 76%) of the working farming households' members participates in both farm (crop and / or livestock production) and non-farm activities. Only a few had their income generating activities focused solely on either farm (about 9%) or non-farm (about 15%) activities. Chi-square tests also reveal significant variation in distribution of household members of the different age, gender and marital status across occupational groups. A larger proportion of those that worked solely off-farm are married women

aged between 18 and 50 years; while the male-folks dominated of different age group and marital status dominated those that worked solely on the farm.

Table 3: Distribution of working household members by nature of their work and personal socio-economic characteristics

	Category of working members			Total
	Work solely On-farm	Work solely Off-farm	Work both On & off farm	
Age of workers (yrs)				
▪ Below 18	5	-	2	7
▪ 18-30	9	7	32	48
▪ 31-40	4	9	53	66
▪ 41-50	4	2	48	54
▪ 51-60	6	-	10	16
▪ Above 60	1	-	1	2
Total	***29***	***18***	***146***	***193***
$\chi^2_{Cal} = 39.328^*$ df = 10				
Gender of workers				
▪ Male	25	1	74	100
▪ Female	4	17	72	93
Total	***29***	***18***	***146***	***193***
$\chi^2_{Cal} = 29.24^*$ df = 2				
Marital status				
▪ Single	14	-	13	27
▪ Married	15	18	133	166
Total	***29***	***18***	***146***	***193***
$\chi^2_{Cal} = 34.15^*$ df = 2				
Education level				
▪ None formally	-	-	5	5
▪ Primary	8	9	48	65
▪ Secondary	13	2	33	48
▪ Tertiary	8	7	60	75
Total	***29***	***18***	***146***	***193***
$\chi^2_{Cal} = 10.83$ df = 6				

* indicates that Chi-square test reveals significant association ($p<0.05$)
Source: Field survey, 2004.

Determinants of off-farm labour participation choices

The final phase of this study involves a quantitative assessment of the contributions of various socio-demographic factors to the decisions on whether or not work off-farm, and the average number of workdays per month devoted to non-farm activities by each household members. Table 4 summarises the results of logistic and Tobit regressions estimated to capture these two sets of influences respectively. Results on Table 4 suggests that the main socio-economic factors influencing the individual household members decisions to participate in off-farm labour supply are the gender, marital status and the main occupation of each member, which most often reflect the area of professional training of most household members. Women and the married household members were revealed as having a greater likelihood to work off-farm than the men and the single household members. The fact that the single household members are most likely to work on-farm is most likely a consequence of being predominantly dependants, and thus had to provide for household farm work.

Individuals that were trained for non-farm activities – i.e. traders, civil servants / private sector employees and artisans (tailors, hairdressers, etc) were revealed to be more likely to work off-farm, and tend to supply more workdays of off-farm activities than an average individual that have taken to farming as their main occupation. One major result that goes against a-priori expectation is the influence of education which most previous studies suggest should positively and significantly influence off-farm labour allocation decisions. It should however be noted that one major role of educational qualification is its being a pre-requisite for appointment and placement of individuals on salary scales in paid employment in the governments or private sectors. However only very limited government and private sector employments opportunities existed in the study. And the fact that the main occupation was also included as an explanatory variable might have influenced this outcome.

Table 4: Results of logistic and Tobit regression model of off-farm labour decisions

Explanatory variables	Parameter estimates	
	Logit model of off-farm labour participation decision	Tobit model of average number of off-farm workdays / month
Age	-0.0619 (-1.481)	-0.19772 (-1.90)
Education	0.0401 (0.513)	-0.74777 (-0.38)
Farm Experience	-0.0375 (-0.959)	-0.10520 (-0.11)
Marital Status	2.9021*** (2.867)	0.60352 (3.87)
Sex	2.4772 *** (3.025)	1.4375*** (4.81)
Main occupation		
▪ Trading	3.0939*** (3.386)	1.4354*** (5.36)
▪ Artisan	2.7423 *** (2.876)	1.2252*** (4.03)
▪ Public / civil service	11.3028 (0.348)	1.6715*** (5.98)
▪ Private sector employment	2.4969* (1.939)	1.6080*** (4.03)
▪ Schooling	0.8362 (0.778)	0.22660 (0.63)
▪ Others	2.2534 (1.779)	0.25245 (0.54)
Constant	-0.8141 (-0.6566)	-0.11761 (-0.29)
- 2 Log Likelihood	- 73.75	
Log Likelihood		- 641.59
Percent overall correct prediction	89.39%	
Predicted probability of Y > limit		0.963

***, ** and * imply significant at 1%, 5% and 10% respectively

SUMMARY AND CONCLUSION

The central focus of this study has been to analyse the pattern and determinants of off-farm labour supply among members of farming households in Yewa Division of Ogun State, Nigeria and the effect on their productivity and income of off-farm labour supply. The study was based on primary data obtained in a cross section survey of 80 randomly selected household drawn by a three-stage sampling process from 10 randomly selected farming communities (villages), two each from the five local government areas in the Yewa division of the state. Data obtained included the socio-economic characteristics of the farming households and the members, number of workdays devoted by each working members to various farm and non-farm activities, income obtained from both labour and non-labour sources as well as the households production, cost and returns from farming (crop and livestock) activities in the 2003/2004 farming season.

The study data was analysed by both descriptive and regression (logit and Tobit) methods. The main findings of the study may be summarised as follows:

- While the largest majority of the households (91.2%) originated from within Ogun state, about half (51.2%) of the sampled households and by extension farming households in the study area were actually migrants in their current place of residence.
- About 31% of the sample did not cultivate any crop during the 2003/2004 farming season, while the largest proportion (55%) of the households that cultivated some crops during the 2003/2004 farming season cultivated no more than one hectare of land.
- An average farming household in the sample was indicated as having had between four and six members, most of whom had two (72.5%) or three (13.8%) working members, and almost all (97.5%) of the households had income that was derived from non-farm source(s).
- Further evidence on the role of the various farm and non-farm activities on the farming households income suggests that non-farm sources contributes about half of the rural farming households' income in the study area. The largest share was found to come from non-farm labour (48.24%) while income yielding assets like building, shareholding, land and equipment leasing, etc. also contributes about 5.94% of an average households income in the sample.
- None of the farming households depended solely on any one source of income. Rather some degree of income diversification was evident.
- In general, those households that were involved in livestock production activities had higher income (as well as per capita income) that those than those combined crop production with other sources. The richest set of households were those few that focused solely on farming (that is, crop and livestock production only), while those that combined crop production with non-farm labour supply only had the lowest income level.

- Chi-square tests reveal that significant variation exists in the distribution of household members of the different age, gender and marital status across occupational groups. A larger proportion of those that worked solely off-farm are married women aged between 18 and 50 years; while the male-folks of different age group and marital status dominated those that worked solely on the farm.
- The main socio-economic factors influencing the individual household members decisions to participate in off-farm labour supply are the gender, marital status and the main occupation of each member, which most often reflect the area of professional training of most household members.
- Women and the married household members have greater likelihood to work off-farm than the men and the single household members, while individuals that were trained for non-farm activities – i.e. traders, civil servants / private sector employees and artisans (tailors, hairdressers, etc) were revealed to be more likely to work off-farm, and tends to supply more workdays of off-farm activities than an average individual that have taken to farming as their main occupation.

REFERENCES

Abdulahi, A., CroleRees, A., (2001). Determinants of income diversification amongst rural households in Southern Mali *Food Policy* 26 (2001) 437-452.

Ajakaiye, D. O. and V. A. Adeyeye, "The nature of poverty in Nigeria," *Nigerian Institute of Social and Economic Research (NISER) Monograph Series* No. 13, (Nigeria: NISER, 2001).

Escobal, J., (2001). The determinants of non-farm income diversification in rural Peru *World Development* Vol. 29, No 3, Pp 497-508, 2001.

FAO, 1998. *The state of food and agriculture*. Food and Agriculture Organization Agriculture Series No 31.

Federal Office of Statistics (FOS), Poverty in Nigeria, (Nigeria: FOS, 1996).

Federal Office of Statistics (FOS), Poverty and Welfare in Nigeria, (Nigeria: FOS, 1999).

Goldsmith, P.D., Gunjal, K., Ndarishikanye, B., 2004. Rural-urban migration and agricultural productivity; the case of Senegal. *Agricultural Economics* 31 (2004)

Israeli farm households. American Journal of Agricultural Economics. 86 (3) (August 2004): 716 – 721

Kimhi, A., and E. Rapaport. Time allocation between farm and off farm activities in Matshe, I., Trevour Young. Off farm labour allocation decisions in small-scale rural households in Zimbabwe. Agricultural economics 30 (2004) 175 – 186.

Mishra, A.s H.El-osta, M. Morehart, J. Johnson and J. Hopkins. Income, wealth and the economic well-being of farm households. Department of agriculture ERS Agricultural Economics Report 812, 2002.

Olfert, M. 1993. Off-farm labour supply with productivity increases, peak period production and farm structure impacts. Canadian Journal of Agricultural Economics, 41: 491-501

Reardon, T., Cruz, M.E., and Berdeguie, J. (1998). Rural non-farm income in developing countries: food and agriculture organization (1998)

Schultz, T.W. (1990). Restoring Economic Equilibrium. Cambridge M.A: Basil Black Well

World Bank, 1995. *African Development Indicators*. Washington DC

World Bank, 1996. *Ecuador Poverty Report*. World Bank Country Study, The World Bank, Washington, DC.