

**EFFECT OF NON-FARM INCOME DIVERSIFICATION
ON HOUSEHOLD POVERTY IN EGBEDORE LOCAL
GOVERNMENT AREA OF OSUN STATE**

Ogunniyi Laudia Titilola*

Adepoju Adenike Adebunola Olawuyi S.O*

Abstract

The study was carried out to examine the effect of non-farm income diversification on household poverty. Data used for this study was collected from a total of 143 households using a multistage random sampling technique. The main tools of analysis for this study include descriptive statistics, FGT model, Probit and Tobit regression and Gini-coefficients. The estimated poverty line in the study area is 4,655.17Naira and about 68% of the non participants in income diversification were categorized as core poor. FGT result reveals that poverty is more pervasive, severe and deeper among the non participant relative to their counterpart. About 20% of the participant claim to diversify in other to increase their household income. All the households derive income from farming activities which accounted for over 2/3 of the total household income. Income inequality is also more pronounced among households engaging in non-agricultural activities. The determinants of participation in non-farm activities are age, household size and education which were found to be statistically significant at 1% and 5 % level of significance. Also, these factors as well as farm size influence household income considering the the different sources of income available to households in the study area. The study recommends the need for encouraging households to participate in non-farm activities to reduce poverty thereby improving household living standard.

Keywords: income inequality, non-farm activities, diversification, poverty level

* Department of Agricultural Economics and Extension, Ladoké Akintola University of Technology Ogbomosho, Oyo State, Nigeria.

Introduction

Income diversification refers to the allocation of productive resources among different income generating activities. According to Barrett and Reardon (2003) a very few people collect all their incomes from only one source, hold all their wealth in the form of a single asset or use their resources in just one activity. Income diversification is often referred to as a risk management and coping strategy meant to cushion the effects of economic hardships. This cut across all workforces in the formal sector (public/private sectors), as well as, in the informal sector. For instance, studies by Castells and Portes (1989); Ijaiya and Chika (2004); Soares (2005); Ersado (2006); Minot *et al.*, (2006); Schtman *et al.*, (2006) discovered that in less developed countries, more than 60 percent workforce are engaged in multiple occupations all aimed at cushioning the effects of shocks (economic and agro-climatic), poverty reduction, reduction in income inequality, consumptions stability and overall improvement in the standard of living of the households.

Also, income diversification refers to an increase in the number of sources of income or the balance among the different sources of income. When linked to farm and non-farm activities in the rural area, income diversification is often used as a form of expansion in the earnings from crop or non-farm income. Non-farm income includes off-farm wages (labour), transfer and non-farm self employment. Thus, diversification into non-farm activities usually involves more diversity in income sources (Reardon, 1997; Barrett *et al.*, 2000; Deininger and Olintoro, 2001; Little, 2001; Minot *et al.*, 2006; Adugna, 2006)

Bryceson (2002) stated that the changing socio, economic, political, environmental and climatic atmosphere in Nigeria and other developing countries across the globe have continued to aggravate the living condition of most individuals especially those living in the rural areas. The accompanying increase in poverty levels has led residents of those economies to devise a number of strategies to cushion the negative effects of these changes. Diversification which was initially considered not the most desirable option in Nigeria has been analyzed as a rational response, by households to lack of opportunities for specialization. However, recent studies indicate that rather than promoting specialization within existing portfolios, upgrading them to augment income could be more realistic and relevant for poverty reduction (Ellis and Freeman, 2005)

Households motives for diversification, as well as the opportunities available to them, differ significantly across settings and income groups, suggesting an important distinction between

diversification undertaken for accumulation objectives driven mainly by “pull factors”, it can also be undertaken to manage risk, cope with shock or escape from agriculture in stagnations or in secular decline, hence driven by “push factor”. The terms of push and pull factor, are found in many households that researchers have examined patterns of households income diversification in their area.

Diversification driven by pull factors is usually associated with an upward spiral of income and assets for the households engaged in it while diversification by push factors seldom extracts a household from poverty but are merely a holding pattern or one of immoderation (Barrett, 1998). It thus becomes necessary for policymakers to understand the nature and patterns of household's income diversification, and distinguish the factors that drive households into non-farm activity.

Ellis (2002) stated that the rural economy is not solely based on agriculture but rather on a diverse array of activities and enterprises. Much recent thinking on this subject is based on the concept of livelihood diversification as a survival strategy of rural households in developing countries. Farming remains important but rural people are looking for diverse opportunities to increase and stabilize their income.

Individuals in developing countries often rely on various sources of monetary incomes. Evidence have shown that in many rural areas, agriculture alone cannot provide sufficient livelihood opportunities. Migration is not an option for everyone and where possible, policy-makers may in any case prefer to limit the worst excesses of urbanization with its associated social and environmental problems. Rural non-farm (RNF) employment can play a potentially significant role in reducing rural poverty. Numerous studies indicate the importance of non-farm enterprise to rural incomes. (8) examined household income diversification small enterprise in the study revealed that the typical rural household in Africa has more than one member employed in a non-farm enterprise. (17) reported that, the share of the non-farm sector in rural employments in developing countries vary from 20% to 50% while (8) finds RNF income shares in Africa ranging from 22% to 93%, and (18) point to a large body of recent research that indicates that the RNF sector is now thought to be more dynamic and important than previously believed.

Participation in the RNF sector allows poor people to smooth out or offset fluctuations in agricultural income that might occur on a seasonal basis or as a result of unexpected events. This is especially the case where savings, credit and insurance mechanisms are not available for this purpose, as is the case in many rural areas in Africa. Where the agricultural sector is dominant,

diversification into non-farm income opportunities are likely to echo trends and shocks in agriculture, but may nonetheless be somewhat more stable. It is widely agreed that capability to diversify is beneficial for households at or below the poverty line. Having alternatives for income generation can make the difference between minimally viable livelihoods and others. . The tendency for rural households to engage in multiple occupations is often remarked, but few attempts have been made to link this behavior in a systematical way to rural poverty policies. In the past it has often been assumed that farm output growth would create abundant non-farm income earning opportunities in the rural economy through linkage effects. However, this assumption is no longer tenable. For many poor families, farming on its own is unable to provide a sufficient means of survival.

In view of the above, this study examined the effect of non farm income diversification on household poverty in Egbedore Local Government area of Osun State, specifically, it examines the poverty status of the respondents, identify the reasons for participating in nonfarm activities, examine the effects of diversifying into nonfarm activities on income inequality and ascertain the determinants nonfarm activities among farm household

1. Materials and Methods

The study was conducted in Egbedore Local Government Area of Osun State, Nigeria. The Local Government Area is situated in the southern part of Osun State with its headquarter situated at Awo about 20 kilometers from the state capital. Because of its location and considerable social economic heterogeneity, it fits into the present study. Primary data were collected with the aid of well structured questionnaire and interview schedule.

Multi-stage random sampling procedure was used for the study by clustering the study area into ten (10) wards. The study area was divided along the current political wards to form cluster. Five clusters(wards) out of the ten clusters (wards) in the study area were randomly selected. From each stratum, two villages were randomly selected making a total of ten villages. Fifteen respondents were randomly selected from each village making a total of 150 respondents. A total of 143 copies of the questionnaire were found to be useful for this study.

Income source was disaggregated into different categories.

- i. Agricultural wage income
- ii. Non-agricultural wage income, (both formal and informal employment)

- iii. Self-employed income from own business.
- iv. Remittance income received from relatives and friends, not presently living with the household and
- v. Other income, mostly comprising capital earnings and pension

The data was analyzed using descriptive statistics, FGT poverty measures, regression analysis, Probit, Tobit regression and Gini coefficient.

FGT Poverty Measures

The Foster, Greer and Thorbecke (FGT) poverty measures are additive. This means that the poverty measures of the population as well as a whole is equal to the weighted sum of the poverty measures for the population subgroups, with the weights defined by the population shares of the subgroups.

It is written as:

$$P_n = \frac{1}{N} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^\alpha$$

Where z = poverty line

q = number of households below the line

N = total sample

y_i = income of the i th person

α = FGT Parameter which takes the value of 0, 1, and 2

where 0 = headcount ratio/ pervasive

1 = poverty gap/depth

2 = poverty severity

3. Results and Discussion

3.1. Respondents Poverty Status

The total monthly expenditure for the entire (143) respondents was NGN51,218.78(USD336.97). The respective mean per adult equivalent household expenditure (MPAEHE) per month was NGN66,982.75(USD45.94). To get a moderate poverty line, we employed 2/3 of MPAEHE obtained. Therefore the poverty line was NGN4,655.17(USD30.63) for the respondents. Any adult spending less than NGN4,655.17 per month on consumption is describe as being poor

relative to others spending exactly the stipulated amount or higher on it on consumption per month connotes that the respondent is non poor. The core poverty line was NGN2,327.58(USD15.31) per month for the respondents (1/3 of MPAEHE obtained). Table 2 shows that majority of the non participants were core poor (68.1%) while majority (69.8%) of the participants were non poor. This study shows that non participants are poorer than participants.

3.2. Respondents Poverty Profile

In Table 3, household headed by non participants in nonfarm income diversification have higher level of poverty profile with poverty incidence, gap and severity of 91.5%, 66.2% and 47.8% respectively. This implies that non participants are poorer than their counterparts. The prevalence of poverty (P_o) was 30.2% for participants and 91.5% for non participants. This indicate that 30.2% of the participants and 91.5% of the non participants are living below the poverty line and therefore relatively consumption poor. The result shows that poverty is more pervasive among the non participants compare with participants by about 91.5% - 30.2%. The poverty gap or depth (P_1) was 9.9% and 66.2% for participants and non participants respectively therefore poverty is not only more pervasive among non participants, it is also deeper.

The poverty severity index was 3.3% for participants and 47.8% for non participants. This low value indicates that poverty is not too severe among the participants. For instance, while the poverty severity index of 3.3% means that about three (3) persons out of ninety six (96) participants are extremely poor and that of 47.8% for non participants connote that about twenty-two (22) non participants out of forty seven (47) are in severe or extremely chronic poverty compare with others. Poverty severity is higher among non participants than participants.

3.3. Reasons for Participating in Non-farm Activities

Table 4 shows that majority of the respondents (19.8%) diversifying into non-farm activity in order to increase household income level. On the other hand, only a few of the respondents (2.1%) diversify into non –farm activity to engaged surplus labour in rural area, provide another source of income during agricultural off-season and also, to overcome credit constraint.

3.4. Contribution of Income Source to Overall Household Income

Table 5 reveals how different income sources contribute to the overall household income in the study area. All households derive income from farming which, however only accounts for more than two third of total income on average (80.9%), while only 19.1% are derived from different non-farm sources. This finding is in consonance with the available literature from other countries e.g. Reardon *et al.*, (1998a and 1998b). Seven-eight percent (78%) of the sample households in the study area participate in non-farm employment activities. Among these, non agricultural wage employments and self – employment are the most important ones. About 38.5% also participate in agricultural wage employment but this source only contributes 2.9% to total income.

3.5. Contribution to Non-Farm Income by Household Members

Table 6 presents the household members contribution to non-farm income. While the other household members' contribution to household income account for the largest share (60.5%). Also, the result reveals that household heads contributes next to other members of the household relative to their spouses' contribution except in other sources of income (35%) which are not amongst the categories used by this study. e.g. fringe benefits. However, the spouses' total contribution accounted for 19.8% this is slightly higher than household heads (19.7%). This finding contradicts the findings of earlier study by Babaluade and Qaim (undated).

3.6. Gini Decomposition of Inequality by Income Source

Table 7 shows the present details of the Gini decomposition for the households sampled. Overall income inequality of 0.27 is lower than the Gini coefficient for total Nigeria of 0.51 reported by FAO (2006), of 0.48 reported by NBS (2006) or 0.58 reported by Oyekale *et al.*, (2006). The result seem to suggest that income inequality is lower in rural than urban area of Nigeria, contrary to what was reported by other studies such as Oyekale *et al.*, (2006). Among the disaggregated income sources, crop income is the most correlated with total household income with a correlation coefficient of 0.76. This is followed by livestock income (0.68) and self employed income (0.13). The most unequally distributed income sources are non agricultural, other income, remittance and agricultural wage income with Gini coefficient of 0.77, 0.76, 0.74 and 0.66 respectively.

By decomposing the overall Gini coefficient, farm income as a whole accounts for 97.5% while non – farm income accounts for 9%. This is in line with Adams (1999) and Van den Berg and Kumbi (2006), who reported that farm income contributes more than non- farm income to inequality in rural Egypt and Ethiopia. The relative concentration coefficients, confirms that farm incomes is inequality-increasing whereas non – farm income is inequality-decreasing in the context of rural Nigeria. This is driven by livestock income as crop income decreases inequality. The source elasticity suggests that a 10% increase in farm income would increase the overall Gini coefficient by 1.7% while a 10% increase in non – farm income would reduce the overall Gini coefficient by 1%.

3.7. Determinants of Participation in Different Non-farm Activity

Table 8 presents the determinants of participation in different non-farm employment. Probit model are used to explain whether or not farm households are engaged in different non- farm activities. Participation in non- agricultural wage and self employment is statistically significant and negatively related to age. This means that older people are less likely to participate in non-agricultural wage and self employment.

On the other hand, participation in non agricultural wage employment is statistically significant and positively related to household size. This implies that household with more members are more likely to participate in non agricultural wage employment. This is because larger households can maintain their farm and household activities, while still sending one or more members to work for additional income.

Education has differential impacts, while schooling does not seem to be important for self employment; it significantly increases the probability of finding work in non agricultural sectors (Zhu and Luo, 2006) and significantly reduce the probability of finding work in agricultural wage labour. Farm size does not show a significant effect in any of the models, which confirms that participation in non-farm employment, is not primarily a response to household land constraints.

3.8. Determinants of Household Income

Table 9 presents the result of the determinants of total household income and of income by source. Same household characteristics was as used earlier, as it is likely that factors influencing

the probability to participate in certain activities would also determine the magnitude of incomes from those activities. For total household income and income from crop production, ordinary least squares (OLS) techniques was employed, since all households report non-zero income values for these two categories. For the other categories, Tobit model was used because the dependent variable is censored at zero. This is similar to the approach used by De Janvry and Sadoulet (2001) in their analysis of the role of off-farm activities in rural Mexico.

Age is statistically significant and has a positive effect on crop income, agricultural wage income and remittance income while it has a negative effect on non-agricultural wage income and self-employed income. This indicates that household with older heads benefit more from crop, agricultural wage and remittance income but less from non-agricultural employment and self-employment. Household size is statistically significant with a positive effect on total income and crop income and a negative effect on remittance income. This is not surprising, as household incomes are not expressed in per capita terms. Every additional adult equivalent living in the household increases total household income by approximately 90 naira on average.

Education is statistically important for only income from non-agricultural employment. Education has a positive effect on non-agricultural employment. Each additional year of schooling increases non-agricultural income by almost 4,000 Naira. Also, farm size contributes positively to total income, crop income and self employed income. Every additional hectare of land cultivated leads to a rise in total income, crop income and self-employed income by approximately 3,000, 2000 and 1500 naira respectively.

2. Conclusion

The findings of the study have revealed that non farm income diversification has effect on the poverty level of household in the study area. It also revealed that non participants in other income generating activities are worse hit by poverty scourge than their counterpart as they are more poverty perverse and severed. They also recorded the highest frequency among the core poor. Based on the findings, the study recommended that household should be encouraged to participate in other income generating activities to increase their earnings and consequently reduce incidence of poverty, and hence improve living condition. There is also the need to foster campaign on enlightening the masses on the importance of education and birth control to reduce poverty.

References:

Adam, R.H. and He, J.J. (1995), "Sources of Income Inequality and Poverty in Rural Pakistan", International Food Policy Research Institute, Research Report 102.

Adams, R. (1999), "Non Farm Income, Inequality and Land in Rural Egypt", Mimeo, PRMPO/MNSEED. The World Bank, Washington, DC.

Adugna L. (2006), "The Dynamics of Income Diversification in Ethiopia", www.idas.repec.org/mab/wpapers/3.html . Last Accessed June 13, 2009.

Babatunde, R.O, and Qaim, M. (Undated), "The role of off-farm income diversification in rural Nigeria: Driving forces and household access".

Barrett, C.B. (1998), "Immiserized Growth in Liberalized Agriculture", *World Development* 26(5),743–53.

Barrett, C.B., Bezuneh, M., Clay, D.C. & Reardon, T.(2000), "Heterogenous Constraints, Incentives and Income Diversification Strategies in Rural Africa", Accessed from: www.ies.wisc.edu/Itc/live/basg100008a Last Accessed: June 13,2009

Barrett, C.B. & Reardon, T (2003), "Asset, activity and Income Diversification among African Agriculturists: Some Practical Issues", Working Paper 2000-19, Department of Applied Economics and Management, Cornell University.

Bryceson, D.F, (2002), "The Scramble in Africa: Reorienting Rural Livelihoods". *World Development* 30(5), 725 – 739.

Castells, M. & Portes, A. (1989), "World Underneath: The Origins, Dynamics and Effects of the Informal Economy", In Portes, A., Castells, M., Benton, L.A., (Eds.), *The Informal Economy: Studies in Advanced and Less Developing Countries*, Baltimore John Hopkins University Press.

Deininger, K. & Olinthro, P. (2001), "Rural Non-Farm Employment and Income Diversification in Colombia", *World Development* 29(2), 455 – 465.

De Janury, A. & Sadoulet, E. (2001), "Income Strategies among rural households in Mexico. The Role of Non-farm Activities", *World Development* 29(3), 467-480.

Ellis, F. (2002), "Rural livelihoods and Diversity in Development Countries", Oxford University Press, Oxford.

Ellis, F. & Freeman, H.A. (Eds.) (2005), "Rural Livelihoods and Poverty Reduction Policies", London and New York: Routledge.

Ersado, L. (2006), "Income Diversification in Zimbabwe: Welfare Implications from Urban and Rural Areas", World Bank Policy Research Working Paper No.3964.

FAO (2006), Food and Agricultural Organization of the United Nations, Millennium Development Goals Report, 2006. United Nations, New York.

Ijaiya, G.T & Chika, A. (2004), "The informal sector and Formal Sector Inter-Linkages and the incidence of poverty in Nigeria: A case study of Ilorin Metropolis", *Africa Development* XXIX (3), 84-102.

Islam, N. (1997): The non-farm sector and rural development. Food, Agriculture and Environment Discussion Paper, No. 22. Washington DC: International Food Policy Research Institute.

Little, P.D. (2001), "Income Diversification Among East African Pastoralists", Global Livestock Collaborative Research Support Programme, Research Brief., 01- 08.

Minot, N., Epprecht, M., Anh T.T.T. and Trung, L.Q. (2006, "Income Diversification and Poverty in the Northern Uplands of Vietnam", International Policy Research Institute. Research Report No. 145.

Newman, C. & Canagarajah, S. (1999), ‘Non-Farm Employment, Poverty and Gender Linkages: Evidence from Ghana and Uganda’, Working draft paper. Washington DC, World Bank.

NBS (2006), Socio-economic survey on Nigeria, National Bureau of Statistics, Abuja.

Oyekale, A.S., Adeoti, A.I. & Oyekale, T.O. (2006), ‘Measurement and Sources of Income Inequality among Rural and Urban Households in Nigeria’, PMMA Working Paper 2006-20, Poverty and Economic Policy Research Network (www.pep-net.org).

Reardon, T. (1997), ‘Using Evidence on Household Income Diversification to Inform Study of the Rural Non-Farm labour Market in Africa’, *World Development* 25(5),735-48.

Reardon, T., Stamoulis, A., Balisacan, M.E., Berdegue, J. & Banks, B. (1998a), ‘The State of Food and Agriculture, Part III. Rural Non-Farm Income in Developing Countries’, Rome: Food and Agriculture Organization of the United Nations.

Reardon, T., Cruz, M.E. & Berdegue, J. (1998b), ‘Los Pobres and Desarrollo Del Empleo Rural No Agricola en America latina: Paradojas desafios’, Invited plenary paper at the Tecer sistemas Agropecuarios, Lima, 19 – 21 August.

Schgtman, A., Berdegue, J. and Modrego, F. (2006), ‘Income Diversification Through Agricultural Developmen’t, www.rimisp.org/getdoc.php.

Soares, F.V. (2005), ‘The Impact of Trade Liberalization on the Informal Sector in Brazil’, UNDP International Poverty Centre Working Paper No. 7.

Van Den Berg, M, Kumbi, G.E, (2006), ‘Poverty and the rural non-farm economy in Oromia, Ethiopia’, *Agriultural. Economics* 35 (Suppl), 469 – 475.

Zhu, N. & Luo, X. (2006), ‘ Non Farm Activities and Rural Income Inequality: A case study of two provinces in China’, World Bank Policy Research Working Paper 3811, The World Bank, Washington, DC.

Table 1: Summary of some Poverty Indices

Group	Relative Poverty line	Core Poor	Mean per Capita Household Expenditure
Entire respondents	4655.17	2327.58	6982.75

Source: Field Survey, 2010.

Table 2: Distribution of the Respondents by Poverty Status

Status	Participants		Non participants	
	Frequency	Percentage	Frequency	Percentage
Core Poor	6	6.3	34	68.1
Moderately Poor	23	24.0	3	6.4
Non Poor	67	69.8	12	25.5
Total	96	100	47	100

Source: Field Survey, 2010.

Table 3: Distribution of the Respondents by their Poverty Profile

Poverty Indices (%)	Participants	Non Participants
P0 (Poverty incidence)	30.2	91.5
P1 (Poverty depth / gap)	9.9	66.2
P2 (Poverty severity)	3.3	47.2

Source: Field Survey, 2010.

Table 4: Distribution by Reason for Diversifying in Non-farm Activity

Respondent Motive	Frequency	Percentage
To increase household income level	19	19.8
To reduce the household poverty level	14	14.6
To engage surplus labor in rural area	3	2.1
To help farm base household	6	4.2
To offer more remunerative activity	7	4.9
Provide other source of income during agricultural off season	3	2.1
To cope when farming fail	15	10.5
To create competitive atmosphere	5	3.5

To overcome credit constraint	3	2.1
Others	21	14.7
Total	96	100.0

Source: Field Survey, 2010.

Table 5: Distribution of the Respondents based on Income from Non-farm Activity

Income Source	Participation Rate %	Mean annual Income (Naira)	Standard Deviation	Share of Income	Total
Total farm income	100	248454.55	173966.26	80.9	
Crop income	100	229342.66	160584.24	74.6	
Livestock income	46.4	19111.89	13382.02	6.22	
Total Non-farm income	94.4	58809.09	32055.36	19.1	
Non-farm employment	78.3	49828.67	31598.48	16.2	
Agric wage	38.5	8982.52	15091.09	2.9	
Non agric wage	18.2	16406.29	24872.06	5.3	
Self employed	72.0	24439.86	26015.25	8.0	
Remittance Income	15.4	3787.41	9177.43	1.2	
Other Income	18.9	5139.01	13096.35	1.7	
Total household Income		307263.64	178968.20	100	

Source: Field Survey, 2010.

Table 6: Distribution of Household members' contribution to annual non-farm income (N=143).

	Total non-farm income	Agric wage income	Non-agric wage income	Self employed income	Remittance income	Other income
	In Naira					
Household Total	58809.09	8982.53	16406.29	24439.6	3787.42	5193.01
Head	11609.79	1853.15	2765.73	5929.37	752.45	309.09
Spouse	11639.16	1034.97	5097.90	3461.54	202.80	1841.96
Other members	35560.15	6094.41	8542.66	15048.95	2832.17	3041.96
	In percentage					
Head	19.7	20.6	16.9	24.3	19.9	5.9
Spouse	19.8	11.5	31.1	14.2	5.4	35.5
Other members	60.5	67.9	52.0	61.6	74.8	58.6

Source: Field Survey, 2010.

Table 7: Gini Decomposition of income Inequality by Income Source

Source	Income Share (S _i)	Gini coefficient (G _i)	Correlation with total income distribution (R _i)	Pseudo gini coefficient (G _i R _i)	Percentage contribution to total income inequality (S G R/G*)	Relative concentration of income source (GR/G*)	Source elasticity of total inequality (SG R/G)
Total farm income	0.809	0.331	0.984	0.326	97.542	1.206	0.167
Crop income	0.746	0.341	0.756	0.258	71.267	0.955	-0.034
Livestock income	0.062	0.521	0.684	0.356	8.210	1.310	0.010
Total Non-farm income	0.191	0.522	0.243	0.127	8.992	0.470	-0.101
Non-farm employment income	0.162	0.545	0.189	0.103	6.187	0.382	-0.100
Agric wage income	0.029	0.656	0.003	0.002	0.021	0.007	-0.029
Non agric	0.053	0.77	0.103	0.079	1.568	0.294	-0.038
Self employed	0.071	0.621	0.133	0.083	2.433	0.306	-0.055
Remittance	0.012	0.742	0.033	0.024	0.112	0.091	-0.011
Others	0.017	0.755	0.163	0.123	0.770	0.456	-0.009
Total	1	0.27	1	0.27			

Source: Field Survey, 2010.

Table 8: Determination of Participation in Different Non- Farm Activities (Probit Estimates)

	Agricultural wage employment		Non agricultural Wage Employment		Self Employment	
	Coefficient	z-values	Coefficient	z-values	Coefficient	z-values
Constant	-1.05	-2.53	-9.25	-3.68	1.51	3.96
Age	0.55	0.47	-0.12***	-2.76	-0.02**	-2.09
Gender	0.2	0.58	0.34	0.57	0.18	0.5
Household size	0.24	0.31	0.63***	3.14	0.63	0.99
Education	-1.24***	-2.73	0.07***	3.93	-0.06	-0.14
Farm size	0.05	0.78	0.01	0.1	-0.32	-0.51
Log livelihood	-77.25		-26.77		-78.29	
Chi – squared	36.05***		82.07***		12.92**	
%correct prediction	76.2		83.2		87.4	

Note: ** and *** coefficients are significant at the 5% and 1% level respectively

Source: Field survey, 2010.

Table 22: Determinant of household income by type of income (N =143)

	Total Household Income		Crop Income		Livestock Income		Agricultural Wage Income		Non Agricultural Wage Income		Self Employed Income		Remittance Income	
	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Constant	295167.47	5.76	212809.97	4.63	16411.75	3.11	-1207.61	-0.13	-22190.37	-1.19	36083.36	3.46	-16908.25	-1.40
Age	51.535	0.34	692.71*	1.92	56.90	0.80	307.84**	2.38	-610.08**	-2.30	-505.16***	-3.44	405.85***	2.83
Gender	-13198.83	-0.29	-17935.85	-0.44	-2795.38	-0.82	-3184.94	-0.65	-9825.91	-0.88	704.35	0.10	-5152.82	-0.771
Household Size	88.95***	2.94	87.87***	2.04	-305.04	-0.70	-899.54	-1.14	1192.42	0.75	648.14	0.74	-1750.44 *	-1.82
Education	31.04	0.53	1685	0.32	235.42	0.76	-444.27	-0.78	3578.00***	3.40	-13.10	-0.02	-412.34	-0.60
Farm Size	3415.85***	2.42	2258.81***	3.31	210.27	0.35	758.44	0.711	835.66	0.42	1544.34**	2.29	968.28	0.78
R ² Log Likelihood	0.411		0.243		-1555.87		-979.02		-896.37		-1561.00		-500.31	
Left Censored Observation					83		61		72		9		103	

Source: Field Survey 2010.

Note: *, ** and *** coefficients are significant at 10%, 5% and 1% level respectively. The dependent variable is the annual household income from the particular source expressed in Naira.