Developing Country Studies
ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
Vol.6, No.2, 2016

Analysis of Livelihood Strategy Determinates Among Different Wealth Categories of Rural Households: A Case from Amhara Region of Ethiopia

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Abstract
This study was conducted to determine factors affecting choices of household livelihood strategies among the different wealth categories. Multistage sampling which includes both purposive and random sampling was used to select 120 sample respondents. The Primary data were collected from randomly selected households based on probability proportional to size. Descriptive statistics, inferential statistics and an econometric model (Multinomial logistic regression) were used to analyze the data. The study identified that agriculture alone and agriculture plus migration livelihood strategies are the two most pertinent livelihood strategies in the study area. The multinomial logit model explores that out of the 15 explanatory variable: Agriculture alone livelihood strategy was determined by education level, credit access and receiving remittance, Agriculture plus nonfarm was affected by credit access, distance from market center and land holding and Agriculture plus off farm was influenced by sex of household head, credit access and remittance. The study suggested that Policy-makers need to work to promote livelihood diversification to minimize resource poor HH vulnerability.
Keywords: Livelihoods, wealth category, Livelihood strategies, Diversification, migration

Introduction

A livelihood strategy is the process of choosing activities and asset investment for maintaining and improving livelihoods (Ellis, 2000). Interventions designed to improve rural livelihoods must necessarily focus on the context in which households operate and create an environment that enable households to improve their condition. Agriculture employs nearly 80 percent of the labor force and providing livelihood for more than 90 percent of the population in Ethiopia (CSA 2015). Productivity level of the peasants remains near subsistence with fragmented and ever dwindling plots of land. Agricultural sector is not capable to support a rapidly increasing rural population at its prevailing state of technology, and labor productivity (Tesfaye, 2003 and Abu, 2013). There is need to exhaustively assess and systematize the utilization of non-farm and off farm sectors to absorb the growing population. Therefore, a thorough understanding of alternative livelihood strategies of rural households and communities is indispensable in any attempt to bring improvement (Tesfaye, 2003). All geographic locations do not have similar resource endowments, do not face similar level of constraints and do not necessarily employ similar strategies to solve their problem (Barret et al., 2001; Warren, 2002. Even within similar geographic locations, socio-economic factors pose a wide range of differentials among rural households which include demographic characteristics of households, well-being or economic and social status of households and the gender disparity perspective. The differences in endowments of resources in turn influence rural households' capability and their survival strategy. The reality this diversified rural livelihoods across a number of economic sectors should, therefore, impel the local government and development agencies to devise strategies that will have an effective impact upon the different livelihoods of the rural poor (Murray, 2001). This study in this regard, contributes to bridge these gaps by focused on assessing livelihood strategies choices persuaded by small holder farmers and its determinants at household level,

Objectives of the study

- To assess the livelihood strategies among different wealth categories of small holder farming households.
- To determine factor affecting the choice of household livelihood strategies.

Methodology

Location and Demographic features the Study Area

This study was conducted in Artuma Furssi district, in Oromia special zone, Amhara National Regional State Ethiopia. Artuma Furssi district is among the 7 districts in the special zone with total area coverage of 76,250 ha, which is equivalent to 762.5km^2. The capital town of Artuma Furssi, is Chefa Robit town, it located around 300 km north from the capital Addis Ababa. The District shares boundaries with Afar from East, Dawacheffa from north, Jille Timuga from South and North Shewa from West. Currently, it is sub-divided in to twenty-four Village Administrations and one urban town. Average altitude of the District ranges from 1200 to 2000 m.a.s.l.

The total population of the District is 120,491 of which 59,366 are females and the 61,125 are males. Out of total study area population 53% are productive manpower. The total household of the District is 37,848, of which 34189 (90.33%) are men and 3659 (9.67%) women headed households. The total rural population is 93,200 out of these 51% are males and 49% are female (District Agriculture office).

Agro- ecology, Land use and farming system

The study district is characterized by subsistence mixed farming system. The great majority of the populations get their livelihoods by cultivating a variety of crops and rearing livestock simultaneously. The mean annual temperature of the district ranges from12- 38^0c, and receives an average annual rainfall ranging from 650-900mm. The farming system in the District can be broadly grouped in to cropping patterns and livestock ownerships. *Sorghum, Maize* and *Teff* are important elements of the overall farming system, supplemented by livestock herding with strong interaction between the two. Most crops are grown with rain fed farming system. The primary purposes of herding livestock include security against emergencies, production of dung to use for fuel and production of compost, and provision of dairy and meat products, which have a role in the household income. According to the data from District Animal Production Department (2013) there are about 45189 TLU[1], 3,365.2 TLU, 6720TLU, 1633 TLU and 447.67 TLU of cattle, small ruminant, equines, camel and poultry, respectively; and 2052, traditional, 285 modern and 5 transitional beehives. Camel, Goats, Donkeys, and Poultry are the dominant livestock types reared in the district. The District was planned for 2004/05 to produce 256,266qn, but achieve only132, 445 (51%). Based on District crop production department information the reason for these low achievements were erratic and unpunctuality of rainfall.

Land use refers to the economic activity for which the land is used. Land use pattern is among the factors that play key role in aggravating or minimizing the problem of land degradation and enhance or hinder livelihood outcome. The land use pattern is within individual holding and used for different purposes. The information gathered from the district shows that the average land holding is 0.5 ha. The table below summarizes the District land use pattern.

Table 1: Land Use Pattern of Artuma Furssi district

Land Use Type	Area (hectares)	Percentage (%)
Arable land	11,923	11%
Grazing land	19,909	18.4%
Forestland and bushes	68,068	62.8%
Land under different constructions and Others	8495	7.8%
Total	**108,395**	**100%**

3.2. Sampling Techniques and Sampling Procedures

Sampling is one of the methods, which allows the researchers to study relatively small number of units representing the whole populations. There are several approaches to determine the sample size. These include using a census for small populations, imitating a sample size of similar studies using published tables, and applying formulas to calculate a sample size. A simplified formula used by Yamane 1967 was applied to calculate sample size for this study. The formula is as below.

$n= N/1+N (0.09)^2$ ---------- (1)

Where, n=Sample size, N= Total population size (total household size), and e= Level of precision. The above formula required a minimum of 116 households but to make use of the opportunity of larger sample size this study used 120 sample households.

The study employed multistage sampling. At first stage Artuma Fursi District was purposively selected because it is a district where food insecurity is prevalent according to government. Secondly, by the help of district agricultural office three sample villages namely, Fursi muri, Cheffa dire and Jarra were selected randomly, it assumed for this specific research that all rural villages are similar characteristics by being food insecure and sampling frame was obtained from village agricultural office and extension offices. To determine each sample village shares in total sample household probability proportional to size (PPS) method was used to capture representative samples size. Finally, 120 sample households were selected using simple random sampling techniques particularly systematic sampling method. Then get relatively homogeneous wealth groups of household wealth ranking were conducted by focused group discussion. Focus group was composed of men, women, youth representatives, community leaders and elders. The group participants defined and outlined wealth ranking criteria's according to their localities; consequently based on the wealth ranking criteria's three wealth groups identified; namely better off, medium and poor. And finally, by using the criteria's the participant listed the name of each household head into respective wealth group. However, the distribution of wealth within sample populations is often uneven. There are usually more households at the poorer category than at the better off end.

Table 2: Sample household by sex, wealth category and villages

Sample village s	HH size	Sample size in wealth distribution								
		Total sample HH by sex			Poor		Medium		Better off	
		F	M	T	F	M	F	M	F	M
Furssi Murii	759	13	35	48	10	9	3	23	0	3
Cheffa dire	433	4	23	27	3	8	1	10	0	5
Jarra	710	7	38	45	5	23	2	11	0	4
Total	**1902**	**24**	**96**	**120**	**18**	**40**	**6**	**44**	**0**	**12**

Data Sources and Method of Data Collection

The sources of primary data were sample households, key informants (KIs), and focus group discussants (FGDs). Data from sample household was collected through structural interview schedule. It focused on demographic, socioeconomic, institutional, physical and finical factors and related with household livelihood strategies. Six enumerators who had the capacity, knowledge, familiarity with the culture and language of the study area were recruited trained, and conducted pretest before the actual data collection. After the pretest finding the interview schedule was upgraded. Secondary data were gathered from numerous sources like research journals and articles, internet sources and reports. Qualitative data were collected through focus groups discussions and key informant interviews. A checklist was used to manage the FGDs and KIs. The discussions were focused on wealth rankings, major livelihood strategies, and the dominant livelihoods strategies and its outcomes, the trend and current situation of migration and its consequence.

Methods of Data Analysis

Descriptive and inferential statistics

Depending on the objectives of a given study and nature of data available, analysis to be made requires different approaches. In this study there is one objective that requires descriptive analysis and others require econometric model. Descriptive statistics includes: mean, percentages and standard deviations were used to describe various aspects of sample respondents. Inferential statistics includes: one way ANOVA (F-test), chi-square for only two categorical variables and chi-square for categorical variables that contain more than two categories were used to see if there are significant mean and proportion differences between categories in terms of different explanatory variables. Qualitative data obtained from FGD, key informant and observation was analyzed through narration and interpretation qualitatively.

Econometric model

When there are more than two alternatives among which the decision maker has to choose (i.e. unordered qualitative or polytomous variables), the appropriate econometric model would be either multinomial logit or multinomial probit regression models. Nevertheless, multinomial probit regression is not often used in empirical studies owing to estimation difficulties imposed by the need to solve multiple integrations related to multivariate normal distributions (Greene, 2003; Chilot and Hassan, 2008). The dependent variable in this study is choice of livelihood strategy is a polytomous variable. Consequently, a multinomial logit model is applied since the categorical dependent outcome has more than two levels (Alwang *et al*., 2005; Brown *et al*, 2006; Jansen *et al*., 2004). Multinomial logit model was selected not only because of it is computational ease but also it exhibits a greater ability to envisage livelihood diversification and picking up the differences among the livelihoods strategies of rural households (Chan, 2005; Jansen *et al*., 2004). Berhanu (2007), Adugna (2008), Tatek (2012) are some scholars those used Multinomial logit (MNL) model to analyze the determinants of household livelihood strategy choices. Standing from all the above truths multinomial logit model was used in this study to identify factors affecting choice of rural household livelihood strategies. The data was analyzed using STATA version11 statistical software.

Specification of Multinomial logit model

Rural households make a number of decisions in their daily activities. When there are alternatives to choose from; economic theory tells that agents choose what maximizes their expected utility given the existing situation (Moti and Gardebroek, 2008). To identify the factors that affect rural household decision to engage in various livelihood strategies the mentioned econometric model was used. The assumption is that in a given period at the disposal of its asset endowment, a rational household head choose among the four mutually exclusive livelihood strategy alternatives that offers the maximum utility. Following Greene (2003), suppose for the i^{th} respondent faced with j choices, we specify the utility choice j as:

$$U_{ij} = Z_{ij}\beta_{+}\varepsilon_{ij} \quad \text{(2)}$$

If the respondent makes choice j in particular, then we assume that U_{ij} is the maximum among the j utilities. So

the statistical model is derived by the probability that choice j is made, which is:

Prob ($U_{ij} > U_{ik}$) for all other K $\neq$j …… (3)

Where;

U_{ij} is the utility to the i[th] respondent from livelihood strategy j

U_{ik} the utility to the i[th] respondent from livelihood strategy k

If the household maximizes its utility defined over income realizations, then the household's choice is simply an optimal allocation of its asset endowment to choose livelihood that maximizes its utility (Brown et al., 2006). Thus, the i[th] household's decision can, therefore, be modeled as maximizing the expected utility by choosing the j[th] livelihood strategy among J discrete livelihood strategies, i.e.

$\max_{j=} E(U_{ij} = f_j(x_i) + \varepsilon_{ij}; j = 0....J$ …… (4)

In general, for an outcome variable with J categories, let the j[th] livelihood strategy that the i[th] household chooses to maximize its utility could take the value 1 if the i[th] household choose j[th] livelihood strategy and 0 otherwise. The probability that a household with characteristics x chooses livelihood strategy j, P_{ij} is modeled as:

$$p_{ij} = \frac{\exp(X_i\beta_j)}{\sum_{j=0}^{J}\exp(X_i\beta_j)},\ J = 0 \quad \ldots\ldots(5)$$

With the requirement that $\sum_{j=0}^{J} p_{ij}$ =for any i

Where;

Pij = probability representing the i[th] respondent's chance of falling into category j

X = Predictors of response probabilities

β_j= Covariate effects specific to jth response category with the first category as the reference.

Appropriate normalization that removes indeterminacy in the model is to assume that β_1= 0 (this arise because probabilities sum to 1, so only J parameter vectors are needed to determine the J + 1 probability), (Galab, et al., 2002) so that, $\exp(X_i\beta_j) = 1$ implying that the generalized equation (4) above is equivalent to:

$$P_r(y_i = j/x_i) = P_{ij} = \frac{\exp(X_i\beta_j)}{1+\sum_{j-1}^{J}\exp(X_i\beta_j)} \quad \text{for } j = 0, 2\ldots J$$

and

$$P_r(y_i = j/x_i) = P_{i1} = \frac{1}{1+\sum_{j-1}^{J}\exp(X_i\beta_j)} \quad \ldots\ldots(6)$$

Where;

y = A polytomous outcome variable with categories coded from 0…J Note: The probability of P_{i1} is derived from the constraint that the J probabilities sum to 1. That is, $P_{i1} = 1 - \sum P_{ij}$. Similar to binary logit model it implies that we can compute J log-odds ratios which are specified as:

$$\text{In}\left[\frac{p_{ij}}{piJ}\right] = x'(\beta_j - \beta_J) = x'\beta_j, \text{if}, J = 0 \quad \ldots\ldots (7)$$

Coefficient interpretation

The predicted probabilities are better interpreted using the marginal effects of the multinomial model (Greene, 2003 cited in Adunga, 2008). Therefore, every sub vector of β enters every marginal effect both through probabilities and through weighted averages that appears in δij. By differentiating equation (7) above with respect to the covariates it can be found the marginal effect of the individual characteristics on the probabilities (Greene, 2003). The marginal effects (βj) of the characteristics on the probabilities are specified as;

$$\delta ij = \frac{Pij}{x1} = Pij\ \partial\ [\beta - \Sigma^{1}_{j=0} Pij\ \beta\ j] = Pij\ [\beta - \beta^{-}] \quad \ldots\ldots(8)$$

Where, δj denotes the marginal effect (the coefficient), of the explanatory variable on the probability that alternative j is chosen.

Result and discussion

Livelihood strategies and wealth category

Households in the study area are found to pursue different livelihood strategies, in their day-to-day struggle, to earn their living and fulfill their aspirations for improved and better livelihood. As mentioned before there are four different types of livelihood strategies are pursuing by sample households. The following section briefly

discusses the existing livelihood strategies of sample households their wealth status to build a better picture regarding livelihood strategies and wealth category. As mentioned in methodology part of this study the wealth groups were categorized based on FGD discussant criteria. According to the result 58.3%, 4.2%, 32.5% and 5% of the respondents pursue agriculture alone, agriculture plus non-farm, agriculture plus migration, agriculture plus off farm livelihood strategies. The subsequent table clearly indicated that, the poor wealth group in the study area participates, indiscriminately, in all kinds of livelihood strategies to earn their living. The overwhelming and probable reason for the poor people to participate in all kinds of livelihood strategies could be due to their interest to win their bread from all kind of activities. However, the better-off wealth categories rely more on farm activities than other livelihood strategies may be due to low remuneration under from their livelihood strategies and possession of large amount of crop land size. Likewise their livestock possession (especially ox) is higher than their counterpart categories.

Sample household were asked to identify their challenge regarding practicing their livelihood strategies. Accordingly 40.8%, 20%, 20%, 9.2%, 7.5% and 2.5% respondents reported limitation of technical support, shortage of input, lack of capital, natural disaster, shortage of cultivated land and lack of ox respectively. Likewise, the data gathered from key informant revealed that mostly landless and poor households are engaged more in non agricultural activities.

Table 3: Livelihood strategies of sample households by wealth category

Livelihood strategies	Total sample		Poor		Medium		Better off	
	n	%	n	%	N	%	n	%
Ag	70	58.3	34	48.6	26	37.14	10	14.28
Ag + NF	5	4.2	1	20	4	80	0	0
Ag + Mg	39	32.5	19	48.7	18	41.15	2	5.13
Ag+ OFF	6	5	4	66.7	2	33.3	0	0
Total	120	100	58	48.3	50	46.7	12	10

Source: own survey, 2014

Based on the information gathered from FGD session conducted in all sample village s indicated that the dominant livelihood strategies are agriculture and AG + migration livelihood strategies. However, agriculture alone livelihood strategies are not contributing significantly to household asset creation and asset protection. They all agree with how nonfarm activities could be significant livelihood returns but they thought as it needs high capital and also less institutional supports that facilitate to alternative livelihoods.

Migration strategy

Migration to Arab countries is a practice known long ago in the study area. The survey result indicates that about in 32.5% of the sample households at least one family member has migrated somewhere to Arab countries especially to Saudi Arabia. The discussion with key informants revealed that migration takes place throughout the year to improve the household income and to cover important household expenses from remittance. As the survey result indicates 111 HH (92.5%) of migrants reached to their destination illegally but only nine household (7.5%) migrants followed legal procedures. Based on the group discussion session, most migrants belongs to age ranging 18 - 40 years old but sometimes under age/ teenagers migrated through illegal brokers convinces. The information from FGD session and KI interview revealed that illegal migration to abroad is an activity widely practiced by sample households across all wealth categories as an option that could easily applied. Many youths in the study area migrated by quieting their education and some also migrate by leaving their marriages through divorce or by negotiation with their partner.

Table 4 indicated that 32.5% of HH have at least one family member were living in outside of the country. Of which 48.71, 46.15 and 5.12 were found to be poor, medium and better off respectively. The study ensured that even though the strategy practiced with different ranges, migration is one of the strategy that practicing by all wealth categories. The possible reason for all categories practicing migration as strategy may be the perception of parents of better opportunity in abroad. The chi-square result also showed that the mean difference among wealth categories at less than 5% probability level. The study also revealed that out of the total household practicing migration strategy, 3.5% of families lost their family members because of migration (illegal migration). This figure showed that the risk involved in choosing migration particularly abroad.

Table 4: Practice of migration strategy in SHHs with wealth distribution

Variables	Migration strategy in wealth category							
	Total		Poor		Medium		Better off	
Migration strategy	N	%	n	%	N	%	n	%
Yes	39	32.5	19	48.71	18	46.15	2	5.12
No	81	67.5	39	48.15	32	39.51	10	12.34
Total	120	100	58	48.3	50	46.7	12	10
χ^2	11.61							
P value	0.003**							

** Significance at less than 5% probability level

Source: own finding 2015

Peoples have different reason for migration. Based on the information gathered from the migrant's parent, the majority of respondent (75.8%) mentioned that low income was the migrant preliminary reason for their family member migration followed by drought or crop failure (10.8%) and seeking of better life (13.3%).

Main income source and Income portfolio analysis

This section deals the livelihood activities income proportions obtained by sample households. Accordingly, the average estimated total annual income of households in the study area is found to be 4111.24 birr (Table 5). The average annual income across wealth category was found to be Birr, 1672.175, 3297.025, and7215.625 for the better off, medium and poor of the poor wealth categories respectively. The result also indicates that all wealth groups obtained relatively better income from agriculture (crop and livestock production) and migration. In other word, they were diversified their livelihood strategies and expanding the range of income, however, they were collected less remuneration. The probable reason for the poor to obtain small amount of income from agriculture was because of lack of resource especially arable land and livestock. However, for better off households agriculture alone and migration are their main income sources. When it judged based on the quantity of contribution to the total income, migration strategy is the first most imperative income source of sample households followed by on farm activity (Table 5).

Table5: Mean annual income by broader livelihood strategies

Major income sources	Mean income from major income sources in wealth category					
	Total mean	Poor	Medium	Better off	χ^2	P- value
On-farm/ Agriculture	6322.5	512.4	531.6	10612.5	10.32	0.001***
Off farm	516.7	550	450	0.0	-	0.436
Non farm	850.7	500	512.5	0.0	-	0.003**
Migration	8830	5126.3	11694	18250	20.14	0.000***
Total annual mean	4111.24	1672.175	3297.025	7215.625	14.9	0.025**
SD	6434.6	4522.9	5598.09	1389.05		

***, ** Significant at less than 1% and 5%

When the annual income of households is distribute by specific income source from highest to lowest share, Remittance from migration (30%), Crop sale alone (28.3%), both crop and livestock sale (21.7%), livestock sale (10.8%) laboring on other farm/ wage laborer (5%) and retailing non agricultural (4.2%) .

Table 6: Multinomial logit regression of AG alone livelihood strategy choice

Variables	Coef.	Std. Error	Z	P>| Z |	Marginal effect
Constant	2.78	4.40	0.63	0.52	
AGEOHHH	-0.016	0.05	-0.031	0.75	-0.0019
SEXOHHH	2.09	1.48	1.35	0.17	0.3490
EDULOHHH	-1.29	0.73	-1.76	0.07*	0.1579
FAMSOHH	-0.22	0.33	-0.69	0.49	-0.0278
DEPRATIO	-0.23	1.36	-0.17	0.86	-0.0284
EXTAGCO	-1.02	1.63	-0.63	0.43	-0.0917
INPUTUSE	2.23	1.67	1.34	0.18	0.2035
MEMTOCOOP	-1.25	1.31	-0.95	0.34	-0.0178
DISTFNMAR	0.02	0.17	0.14	0.88	-0.0299
CREDACC	3.38	2.45	1.38	0.022**	0.2257
RECREMT	1.02	1.89	-3.70	0.000***	0.2972
LANDSIZE	0.55	1.43	0.39	0.69	0.0674
LIVESHOL	0.407	0.28	1.56	0.11	0.0497
INCDIME	-0.0001	0.001	-1.41	0.15	-0.0002

*, **, *** Significant at less than 1%, 5% and 10% probability level respectively
Source : multinomial logit regression result

Table 7: Multinomial logit regression of AG +NON FARM livelihood strategy choice

Variables	Coef.	Std. Error	Z	P>| Z |	Marginal effect
Constant	2.782	1.021	0.490	0.726	
AGEOHHH	0.550	2.164	0.320	0.299	0.0309
SEXOHHH	-1.150	0.693	-1.036	0.394	-0.0104
EDULOHHH	0.664	1.939	2.870	0.922	0.0058
FAMSOHH	1.929	0.798	1.005	0.946	0.0075
DEPRATIO	-0.303	0.481	-0.005	0.492	0.0012
EXTAGCO	3.592	1.604	0.432	0.986	-0.0094
INPUTUSE	1.330	1.560	2.108	0.983	0.0137
MEMTOCOOP	-2.109	0.261	-0.913	0.932	-0.0531
DISTFNMAR	-0.1095	0.510	3.001	0.082*	0.1374
CREDACC	0.528	0.449	1.236	0.051**	0.0370
RECREMT	-0.318	0.666	0.560	0.913	-0.0547
LANDSIZE	-0.890	1.121	-0.714	0.082*	-0.0239
LIVESHOL	-1.089	0.183	1.004	0.745	0.0231
INCDIME	-0.002	2.586	0.002	0.362	0 .000

*, **, Significance at 1% and 5% probablity level respectively

Table 8: Multinomial logit regression of AG +OFF livelihood strategy choice

Variables	Coef.	Std. Error	Z	P>| Z |	Marginal effect
Constant	4.663	3.211	0.35	0.726	
AGEOHHH	13.9	2.34	-2.92	0.92	0.0432
SEXOHHH	-4.4	2.37	- 1.72	0.06*	- 0.381
EDULOHHH	-1.32	0.96	-2.16	0.16	0.0074
FAMSOHH	0.087	1.37	1.69	0.49	0.0658
DEPRATIO	-0.18	1.37	1.37	0.89	0.0327
EXTAGCO	11.5	1929	0.51	0.95	-0.0099
INPUTUSE	1.17	1.78	0.46	0.53	-0.0451
MEMTOCOOP	-4.05	2.24	-0.92	0.37	0.4513
DISTFNMAR	0.75	1.50	1.73	0.62	0.000
CREDACC	4.46	2.23	1.18	0.046**	0.0211
RECREMT	9.34	0.64	-0.24	0.000***	0.6105
LANDSIZE	-2.35	1.98	1.62	0.23	0.0021
LIVESHOL	1.79	0.963	1.66	0.98	0.000
INCDIME	0.000	0.034	-1.99	0.16	0.0338

Dependent variable	Livelihood strategy
Number of observation	120
Log likelihood	62.87
Chi-square(45)	167.98
Significance level	0.000
Pseudo R^2	71.49

*, **, *** Significant at less than 1%, 5% and 10% probability level respectively
Source: multinomial logit regression result

Discussion

Sex of household head (SEXOHHH): Men and women have different social roles in the community. Gender affects diversification options, including the choice of income-generating activities (both farm and non-farm) due to culturally defined roles, social mobility limitations and differential ownership of/access to assets (Galab *et al*, 2002). In this specific study, as expected being female household head was found to negatively and significantly influence the choices of agricultural plus off farm livelihood strategy. Keeping the influence of other factors constant; the likelihood of female headed households' to choose agriculture plus off farm livelihood strategy is decreases by 38.1% at less than 10 percent probability level. This means female-headed households tend to engage less in agriculture plus off farm activities. The probable reasons were that female households have less chance to participate in off-farm activities since they invest much time in domestic roles such as childcare, gathering fire wood, fetching water, cooking, with high participation in low return and time consuming agricultural activities. This result is similar with previous studies conducted by Berhanu (2007), Adugna (2005) and Tatek (2012)

Education of the household (EDULOHHH): Education increases farmers' ability to get involved in high reward livelihood activities. Educational attainment proves one of the most important determinants of nonfarm earnings, especially in more remunerative salaried and skilled employment in rural Africa (Barrett *et al.*, 2001). Households with the average high level of education leads relatively better life by diversifying their income enhancing livelihood activities such as working on off-farm and non-farm (often in better remunerated occupations) than the other (Fekadu and Gebrehiwot,2012). This variable was found with negative correlation with the decision of the household to participate in agriculture alone livelihood strategies and significant at less than of 10 percent probability levels. In other words, the higher level of education of the household the lesser would be the participation on agricultural alone. Accordingly, a one year (unit) increase of household head educational level, the household decreases the involvement in agriculture alone livelihood strategy by 15% keeping other factors constant. The contrary is true for AG+ nonfarm and AG+ off farm livelihood strategy. The possible reason for this is educated people mostly have better exposure to create social network with the society and it helps to have better chance to engage in different livelihood strategies. The result is congruent with Tatek (2012).

Distance from nearest market (DISTFNMAR): Distance from market center usually affects the livelihood strategies employed by rural households. Households near to market centers tend to have easier market access to

dispose their production. The distance to market places increases the agriculture group disincentives to go out of their area for selling of their agricultural produce Berhanu (2007). In this study it was found that the variable has positive rewards for household's livelihood strategy diversification. Table 25 indicated that keeping that the influence of other factors constant, the choice decision to participate in agriculture plus non-farm activities increases by about 13.74 percent at less than10 percent probability level, as distance to market place decreases by one km. This implies nearness to market center motivate rural households to engage in agriculture plus nonfarm. This result is in line with the findings of Berhanu (2007) and Tatek (2012).

Credit access (CREACCE): The formal and informal credit facilities that avail for rural farmers are a very important asset in rural livelihoods not only to finance agricultural inputs activities, but also to protect loss of crucial livelihood assets such as cattle due to seasonal food shortage, illness or death (Tesfaye, 2003). As expected, credit use is found to have a significant ($p<0.05$) positive impact on the likelihood of choosing agriculture alone, agriculture plus nonfarm and agriculture plus off farm livelihood strategy. The household likelihood to participating in agriculture alone, agriculture plus nonfarm and agriculture plus off farm livelihood strategy increased by 2.2%, 3.1% and 2.1% for a household using credit. The reason may be due to the fact that accessing credit assists the household to diversify household livelihood strategies (engaging in income generating activities like off farm and nonfarm activities) and also borrowed money to purchase improved agricultural inputs. The result is in line with Berhanu (2007), Adunga (2008) and Tatek (2012).

Landholding size of the household (LAND): The probability of diversifying livelihoods decreases by increasing land size as farmers with more land supposed to stay on farm since land stimulates farming. Increased role of off/nonfarm activities such as selling labour, wage employment, petty trading, especially for poor households with less land holding and other necessary resources, signify how households respond to a decreasing ratio of farm size to household Tatek, (2012). From the category of household asset, land is referred as a natural capital. As indicated in the parameter estimates, a unit increases in land holding size the probability to engage in agriculture plus nonfarm activities decreased by 2.39% at less than 10% probability level. The possible explanation is that farmers whose arable farm land size is relatively bigger could prefer to stay more in agricultural work rather than diversifying other livelihood strategies since they get more incentives or obtain more household income from the selling of different agricultural produce. This result is similar with the findings of Berhanu (2007), Tatek (2012).

Receiving remittance (RECREMITA): Remittance refers to money/cash sent from inside and outside the country; however in this study all remittances are from outside the country. The multinomial logit model identified that the existence of positive contribution for agricultural alone and agriculture plus off farm livelihood strategies and significance of at less than1% probability level. This meant that, the likelihood of a household receiving remittance increase choice of agricultural alone and agriculture plus off farm livelihood activities by 29% and 61%. The probable reason could be the household who are getting more remittance will have the opportunity to stay in agriculture activity since they invest to improve their agricultural production and the variable also encourage households to engage in off farm activities since they obtain grant to start off farm business. This result does agree with the finding of Brown *et al.*, (2006), Adugna (2008) and Tatek, (2012).

Conclusion

Based on the present study it is possible to conclude that the constraints of the rural households in choosing livelihood strategies that will lead them in achieving of their food security goal should not be put aside since food security problem cannot be overcome by simply concentrating on the farm sector alone as around 39% sample households are feeding their family by cultivating less than 0.5or 0.5ha farm land. The analysis has shown that female-headed households tend to less access to engage in remunerative opportunities as do male household heads with strong social networks and finical capitals in the study area. From human capital, education is one of the important livelihood assets that can help the poor households to diversify their livelihood strategy into remunerative activities. According to the survey result, the better the land size has the more the tendency for household to pursue agricultural alone livelihood strategy rather than diversify their livelihood activities with a broad option. Here this conclusion should be caution bigger size may not necessarily imply quality of land. Less coverage of formal credit service from government or non-government financial services in the study area construct entry barrier that hinder the poorest households not to improve returns and diversify remunerative income sources. Another factor that affects smallholder farmers' engagement into non-farm income generating activities is access to market. Based on the result, the closer to market center helps households to pursue agriculture plus nonfarm livelihood strategy. Among these activities, petty trade income is the main sources of household income. Because nearby to market center increase access to different information and barging power and practice of more remunerative non-farm and off-farm activities, save their substantial

time, reduce transport costs.

The study result showed that the main livelihood strategy that respondent households specialized according to broader livelihood strategies is found to be Agriculture (AG) followed by Agriculture plus migration (AG + MIGR), even though the size of asset endowment (size of arable land) varies from one wealth category to another. The study ensured that migration strategy is one of the strategy that practicing by all wealth categories. The key point is that the perception of migrant and their parents of better opportunity in abroad. Non-farm and off farm activities, while not the leading sector in the study area, play a significant role in determination of the poor total household income. The combinations of different agricultural activities are the major source of income followed by remittance. Household choose different livelihood strategy based on their specific household asset. For the poor off farm and nonfarm activities are survival oriented and have little to do with wealth accumulation. The result also showed that the poor households take the maximum opportunity in utilizing the different livelihood options, mostly into unskilled labor whether in agriculture or not (agriculture plus off/non-farm), to minimize the vulnerability they are facing at household level and diversifying their livelihoods.

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