
**RURAL HOUSEHOLDS FOOD SECURITY AND LIVELIHOOD
STRATEGIES: THE CASE OF OFFA WOREDA, IN WOLAITA SODO
ZURIA, SOUTHERN NATION, NATIONALITIES AND PEOPLES
REGIONAL STATE, ETHIOPIA**

¹Bogale Gebeyehu

²Guta Regasa

³Mesfin Tebeje

ABSTRACT

The objectives of the study were to identify the contributions of livelihood strategies to rural household food security and to examine household food security status in the study area. In the study multi-stage sampling techniques were used to select 5 kebeles and 140 sample households out of 23 kebeles of the study area. Primary data were collected through structured interview schedule, Key Informants Interview, Focus Group-Discussions and Direct Observation. Various documents were reviewed to collect the secondary data. To analyze the data, descriptive statistics such as mean, standard deviation, percentage, and frequency distribution were used to describe the socio economic characteristics of the sample households. In addition, t-tests and chi-square tests were used to compare food secure and insecure sample groups with respect to the explanatory variables. A binary logit model was used to analyze the data. The findings of the study revealed that about 57% of the rural households were food insecure and 43% were food secure. A total of sixteen explanatory variables were included in the model. Out of these, eleven were found to be statistically significant and most of the coefficients of these variables exhibited the expected signs with the hypothesis. These variables includes Education level of household head, Access to credit, Total cultivated land, Household active labor forces, Household members participation into income generating activities, Participation in rural institutions , Participation in off-farm activities, Dependency ratio, Participation in non-farm activities, Frequency to extension contact and Livestock rearing. The estimated model correctly predicted 92.1% of the total sample households. To estimate the extent of food insecurity FGT index was used. Accordingly, the incidence of food insecurity, food insecurity gap and severity of food insecurity were found to be 57%, 24% and 11.67%, respectively. The livelihood strategies of the rural

households were also found to be diversification and integration of activities, and migration is also adopted when the shock to their livelihood becomes very serious.

Key words: Food security, livelihood strategies, binary logistic regression model, incidence of food insecurity, food insecurity gap, severity of food insecurity, FGT index.

INTRODUCTION

Ethiopia is a large country, geographically and by population size, and is extremely complex in terms of the diversity of rural livelihoods. The vast majority of the population, over 80%, live in rural areas (UNDP, 2003), and agriculture accounts for 45% of GDP.

Understanding seasonality and rural livelihoods in Ethiopia is critical to interpreting events and indicators and planning for assessments and responses. Recent efforts have attempted to do this on a sub-national scale – livelihood mapping exercises have been conducted for Somali region and SNNPR, and give some indication of the contextual complexity. For SNNPR, where each zone represents easily distinguishable livelihood patterns, based on types of crops grown and livestock owned, and seasonal patterns of economic activities. As a result of the climatic variation, a wide variety of crops is grown in Ethiopia, including staples such as barley, wheat, teff, maize, sorghum, *ensete*, potatoes and other tubers.

Ethiopia is one of the world's largest producers of high quality Arabica coffee, with approximately 700,000 smallholders producing the vast majority, and providing work for many others. In general, farming households in Ethiopia have small landholdings, and crops are almost entirely rain-fed.

Livestock accounts for over 20% of GDP, and is critical for farming and pastoral communities and is a major indicator of wealth for most rural communities. Pastoralists and agro-pastoralists are a significant population group. In the country, the livestock producers are found in many of the outlying, lowland areas of the country, such as Somali and Afar regions and Borena and South Omo zones, politically sensitive areas where Ethiopia borders Eritrea, Djibouti, Somalia, Kenya and Sudan.

The complexity and fragility of livelihoods is the fact that Ethiopia has extremely high levels of malnutrition. The Millennium Development Goals on hunger are measured by malnutrition rates, and nutrition underpins six of the MDGs – reducing hunger, gender inequality, child mortality and disease, and improving education and maternal health. The very high prevalence of HIV/AIDS also has a significant bearing on nutritional status and household food security, particularly given the resulting shifts in dependency ratios.

Statements of the problem

Ethiopia is one of the most food insecure countries in the world. It suffers from both chronic and acute food insecurity. About 52 percent of the Ethiopia's population is food insecure and below the poverty line (Amdissa, 2006).

Numerous studies have confirmed that there is a problem of food insecurity in Ethiopia with wide range of area to be covered and large number of people to be attended for different identified causes of food insecurity problem. Among these causal factors decreasing per capita land holding with increasing population growth, livestock availability, education, per capita income of the household from agricultural and non agriculture activities, soil fertility, conflict, under-funded agriculture are the major and commonly mentioned factors (Madeley, 2000; Negatu, 2004; Samuel, 2006).

In recent years, Ethiopia has made a significant progress towards reducing poverty and increasing food security. Since 2003, Ethiopia has measured economic growth of 11% per annum. Between 2004/05 and 2009/2010 the food poverty head count index declined from 38% to 28%; however, as the 2010 MDG Report from Ethiopia highlighted and the current crisis shows, Ethiopia remains extremely sensitive to unpredictable climate variations. Small-scale and subsistence farmers and pastoralists are the most vulnerable groups and the current prolonged drought has caused a rapid deterioration of food security in southern and south-eastern Ethiopia (UNDP, 2011).

Ethiopian government and international donors have implementing different strategies to food insecurity to attain food self-sufficiency and reduce food aid dependency through increasing the level and stability of production, increasing food reserve, and influencing international food markets, improving income, productive assets, and other market and non-market transfer; and strengthening disaster prevention and preparedness capabilities through adequate early warning systems (EDRI, 2003). However, food insecurity remains the main problem in our country and the need for food aid become increasing.

The rural poor struggle to ensure food security by participating in diverse activities. However, the contribution to be made by livelihood diversification strategies to rural households has got limited attention by policy makers who have chosen to focus their activities on agriculture.

Thus, this study is intended to examine the current food security status in the study area and to assess different categories of rural livelihood strategies pursued by rural households and their contributions to food security of households in the study area.

General objective of the study

The general objective of the study was to assess the rural households' food security status and the effects of livelihood strategies on household food security in the study area.

Specific Objectives of the study were:

1. To examine household food security status in the study area
2. To determine contributions of livelihood strategies to rural household food security

RESEARCH METHODOLOGY

Sampling techniques

This study used multi-stage sampling techniques; in the first stage Offa woreda was purposively selected based on easy access to transportation, a potential to livelihood strategies' diversity and the woreda is declared to food insecurity; in the second stage five kebeles out of 23 administrative kebeles were selected randomly; finally 140 sample respondents were selected through simple random sampling techniques using Probability Proportion to Size (PPS).

Types and sources of data

For this study, primary and secondary, as well as qualitative and quantitative data were collected. The primary data were collected from the primary sources such as sample respondents and key informants, as well as focused groups. The secondary data were collected from relevant secondary sources such as books, woreda annual report documents, and internet and journal articles.

Methods of data collection

Data for this study was collected using interview schedule, key informant interview; focus group discussion and observation methods. The qualitative data was also collected from focus group and key informants using checklists.

The relevant secondary sources such as books, woreda agriculture and rural development report, internet and journal articles were also reviewed.

Methods of data analysis

In this study, data was analyzed using descriptive statistics such as mean, frequency and percentage; inferential statistics such as t-test, and chi-squared test and binary logistic regression model was also used. Data was compiled into Statistical Package for Social Sciences (SPSS) version 20. On the other hand, qualitative data was analyzed through the description of ideas, opinions and concept generalization.

Study variables

The dependant variable: Household food security status, which is dependent variable for the logistic analysis, is a dichotomous variable representing the status of household food security situation. It is represented in the model as 1 for food secured and 0 for food insecure households.

RESULTS AND DISCUSSION

The household food security status was measured by direct survey of household food consumption. Data needed to measure household food security were collected in terms of household food consumption from own production, purchase and/or gift/loan/wage using the seven day recall method and then was converted into calorie; finally divided to household size calculated as adult equivalent (AE). Using minimum subsequent requirement 2100 kcal per a day, 57% of sample households were found to be food insecure and 43% were food secure.

Descriptive analysis of independent variables

Several studies show that education is a greater facilitator of livelihood diversification. Lack of education has been identified as a critical constraint inhibiting diversification [Evans and Ngau, 1991; Dercon and Krishnan, 1996]. Similar to previous studies, this study found that there is statistically significant relationship between education status and household food security affecting the household food security at 1 percent probability level.

Table 1: The education status of household head

Education status	Household food security status						
	Food insecure (n=80)		Food secure (n=60)		Total (n=140)	χ^2 -Value	p-value
Illiterate	37	46.25	6	10	43	30.7	
1-4 grade	28	35	25	41.67	53	37.9	
5-8 grade	12	15	23	38.33	35	25	24.621*** 0.000

9-12 grade	3	3.75	6	10	9	6.4
Total	80	100	60	100	140	100

Source: Survey result, 2013 *** Significant at 1 % probability level

Participation of household members into various income generating activities is an indicator of livelihood diversification. According to Reardon *et al.* (2006), there are two important forces of livelihood diversification into various strategies. These are “pull factor” takes place when a household has objectives of income accumulation, while the “push factor” forces a household undertaken to risk management, cope with shock, or escape from agriculture in stagnation or in secular decline. However, the survey result showed that in both food secure and insecure households, there is less household member participation into income generating activities. This was mainly due to insufficient employment opportunities.

Table 2: Household member participation into income generating activities

Household member participation into income generating activities	Household food security status						χ^2 -Value	p-value
	Food insecure (n=80)		Food secure (n=60)		Total (n=140)			
	Frequency	%	Frequency	%	Frequency	%		
Ye	23	28.75	31	51.67	54	38.57		
No	57	71.25	29	48.33	86	61.43	7.599***	0.006
Total	80	100	60	100	140	100		

Source: Survey result, 2013 *** Significant at 1 % probability level

Women have an income; substantial evidence indicates that the income is more likely to be spent on food and children’s needs. They are generally responsible for food selection and preparation and for the care and feeding of children. Therefore, they are the key to food security for their households (Quisumbing, 1995). However, in most cases women lack capital resources to alleviate food insecurity. Similarly the result of this study showed that female headed households are more likely to be food insecure than male headed households.

Table 3: Sex of the household head

Sex of household head	Household food security status						χ^2 -Value	p-value
	Food insecure (n=80)		Food secure (n=60)		Total (n=140)			
Male	60	75	47	78.3	107	76.4	0.211NS	0.646
Female	20	25	13	21.7	33	23.6		
Total	80	100	60	100	140	100		

Source: Survey result, 2013

NS=non significant

The availability of rural credit will improve households' access agricultural to inputs such as fertilizer, seeds, and pesticide chemicals (MoFED, 2002). This is evident that lack of access to rural credit is potential constraint to livelihood diversification. In this study it is identified that majority of sample households have no adequate access to credit service in the study area.

Table 4: access to credit

Access to credit	Household food security status						χ^2 -Value	p-value
	Food insecure (n=80)		Food secure (n=60)		Total (n=140)			
	Frequency	%	Frequency	%	Frequency	%		
Yes	17	21.25	40	66.67	57	40.7	29.299***	0.000
No	63	78.75	20	33.33	83	59.3		
Total	80	100	60	100	140	100		

Source: Survey result, 2013

*** Significant at 1 % probability level.

According to MoFED (2002) proximity to market centers creates access to additional income by providing off-farm/non-farm employment opportunities, easy access to extension, inputs and transportation. Residence near to market center creates opportunity for rural households to engage in small scale entrepreneurship thereby assure their food security. In this study it is identified that there is statistically significant relationship between distance to nearest market and household's food security.

Table 5: Distance to nearest market

Distance	Household food security status	
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to nearest market	Food insecure (n=80)		Food secure (n=60)		Total (n=140)		χ^2 -Value	p-value
	Frequency	%	Frequency	%	Frequency	%		
Less than 1km	10	12.5	14	23.34	24	17.14		
1-5km	31	38.75	36	60	67	47.86	15.753***	0.001
6-10km	22	27.5	5	8.33	27	19.27		
Above 10km	17	21.25	5	8.33	22	15.73		
Total	80	100	60	100		100		

Source: Survey result, 2013

*** Significant at 1 % probability level

Participation in rural social institutions; in our case, rural social institutions are "*iqub*" and "*idir*". *Iqub* provides a source of credit and *idir* provides insurance outside the formal sector but much rooted in the rural people particularly at household level. This study identified that important social contribution of *idir* is fund raising for helping members: provides social welfare for its members, in the event of production loss, funerals, house damage by fire or theft, cattle death or theft and any other individual misfortune. From the following table (4) chi-square test result reveals that the relationship between participation in rural social institutions and food security status is statistically significant at less than 1 percent probability level.

Table 4: households Participation in rural social organization

Participati on in rural social organizati on	Household food security status						χ^2 -Value	p-value
	Food insecure (n=80)		Food secure (n=60)		Total (n=140)			
	Frequency	%	Frequency	%	Frequency	%		
None	29	36.25	5	8.33	34	24.29		
Idir only	29	36.25	13	21.67	42	30	35.535***	0.000
Equb only	15	18.75	12	20	27	19.29		

Both	7	8.75	30	50	37	29.42
Total	80	100	60	100	140	100

Source: Survey result, 2013

*** Significant at 1 % probability level

Remittance flows are particularly significant for the world's poorest countries and are central to millions of households' livelihood strategies (ACF, 2010). In this study, remittances refer to economic support acquired from relatives in terms of money and materials sent to the household either domestic or abroad. The survey result didn't show a significant relationship between remittance acquisition and household food security. This was due to lack of sufficient employment opportunities either domestically or from abroad for rural households.

Table 5: Remittance acquisition

Remittance	Household food security status						χ^2 -Value	p-value
	Food insecure (n=80)		Food secure (n=60)		Total (n=140)			
	Frequency	%	Frequency	%	Frequency	%		
Yes	27	33.75	25	41.67	52	37.14	0.920NS	0.337
No	53	66.25	35	58.33	88	62.86		
Total	80	100	60	100	140	100		

Source: Survey result, 2013

NS=non significant

Table 5: t-test result of continuous explanatory variables

Explanatory Variables	t-value	p-value
Age of household head	0.941 NS	0.348
Total land holding of households	3.448***	0.001
Household active labor	2.841***	0.005
Dependency ratio	1.002 NS	0.318
Family size in adult equivalent ratio	0.977 NS	0.330

Source: Survey result, 2013

*** Significant at 1% probability level, NS=Not significant

The t-test result from the above table revealed that there is statistically significant mean difference between food secure and food insecure household in reference to total land holding

and households' active labor availability. However, other variables didn't show the significant mean difference between food secure and food insecure households.

Table 5: Model out-put

Variables	B	S.E.	Wald	Sig.	Exp(B)
SEX	2.302	1.550	2.206	.137	9.993
AGE	.059	.056	1.138	.286	1.061
EDU	1.056	.540	3.823	.051*	2.874
ACESCREDIT	1.497	.848	3.119	.077*	4.467
FARSIZE	1.628	.985	2.733	.098*	5.093
HHLABOR	-1.258	.510	6.081	.014**	.284
HHMMPARTINIGA	3.584	1.192	9.044	.003***	36.017
DSFROMMARKET	.098	.463	.045	.832	1.103
PARTINRURIN	2.054	.632	10.568	.001***	7.801
PARTOFFARM	1.656	.851	3.783	.052*	5.238
REMITTANCE	.691	.827	.699	.403	1.997
DEPRATIO	-.811	.429	3.562	.059*	.445
PARTNONFARM	2.440	1.220	3.998	.046**	.087
FREQEXTCON	.937	.415	5.103	.024**	.392
FAMLSIZE	-.048	.212	.052	.820	.953
LIVESTKPROD	5.170	1.404	13.551	.000***	175.937
Constant	-8.610	3.714	5.375	.020	.000

Correctly predicted (overall) 92.1

Correctly predicted food secure 91.7

Correctly predicted food insecure 92.5

-2 Log likelihood 52.473

Nagelkerke R² 84.4

χ^2 test of goodness of fit p=.000, $\chi^2=138.741$

Source: Survey result, 2013 *** Significant at 1%, ** 5% and * 10% probability level

The model result from the above table revealed that variables like education level of household head, access to credit, farm size/land holding, households' active labor, household's member participation into income generating activities, participation to rural social institutions, participation to off-farm activities, dependency ratio, participation to non-farm activities, frequency to extension contact and livestock ownership are significantly affecting household food security in the study area.

CONCLUSION

The main objectives of the study were to identify the contributions of livelihood strategies to rural household food security and to examine household food security status in the study area. In the study multi-stage sampling techniques were used in the study area. Primary data were collected through structured interview schedule, Key Informants Interview, Focus Group-Discussions and Direct Observation. Various documents were reviewed to collect the secondary data. To analyze the data, descriptive statistics such as mean, standard deviation, percentage, and frequency distribution were used to describe the socio economic characteristics of the sample households. In addition, t-tests and chi-square tests were used to compare food secure and insecure sample groups with respect to the explanatory variables. A binary logit model was used to analyze the data. The findings of the study revealed that about 57% of the rural households were food insecure and 43% were food secure. A total of sixteen explanatory variables were included in the model. Out of these, eleven were found to be statistically significant and most of the coefficients of these variables exhibited the expected signs with the hypothesis. These variables includes Education level of household head, Access to credit, Total cultivated land, Household active labor forces, Household members participation into income generating activities, Participation in rural institutions , Participation in off-farm activities, Dependency ratio, Participation in non-farm activities, Frequency to extension contact and Livestock rearing. The estimated model correctly predicted 92.1% of the total sample households. To estimate the extent of food insecurity FGT index was used. Accordingly, the incidence of food insecurity, food insecurity gap and severity of food insecurity were found to be 57%, 24% and 11.67%, respectively. The livelihood strategies of the rural households were also found to be diversification and integration of activities, and migration is also adopted when the shock to their livelihood becomes very serious. Therefore, community institutions, cooperative organizations,

family planning policy makers, woreda agricultural and rural development office, NGOs and other responsible bodies should be more concerned and work hard to alleviate these challenges/problems of food insecurity in the study area.

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