

LEVELS AND DETERMINANTS OF HOUSEHOLD FOOD SELF SUFFICIENCY IN SOUTHERN ETHIOPIA

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This article is part of a study aimed at examining the overall food security scenario in three most populous zones (Ethnic group) in Southern Ethiopia. The study used primary data collected from 620 households selected through the multi stage sampling techniques. It has collected wide range of variables related to food security. The study entered nine independent variables (all of which are related to household socio-demographic structure) in its multiple regression model to see their net effects on household food security status. The study has concluded that there are six variables explaining the variations in the status of household food self sufficiency in the study area.; this includes, household size, marital form, number of bullock owned by the household, accessibility to main economic factors, Marital form, use of rented land for cultivation, household size, and average income generated by the household.

Keywords, *Households, Determinants, Food Self Sufficiency, Food Security, Zone, Southern Ethiopia*

Introduction

With an estimated population of about 77 million, Ethiopia is the second most populous country of Africa, next to Nigeria. Fuelled by a high level of fertility rate, the country is experiencing high annual population growth rate of about 2.7 percent (NOP, 2000; CSA, 2000). The population increased over the decades from 42.6 million in 1984 to 77 million in 2004. The country is currently experiencing one of the highest growth rates of population, with a net addition of 2 million new born children each year.

The economy of Ethiopia is predominantly agricultural and this will continue for the foreseeable future. Agriculture provides over 85% of the employment, generates 52% of the GDP (CSA, 1999) and accounts for over 90% of the total foreign exchange earnings of the country (CSA, 1996). Above all, agriculture is the main source of food for more than 77 million of the population. It is therefore likely that the failure or success of the agricultural sector can strongly influence the extent of economic growth and the living conditions of the people in Ethiopia.

The main form of agricultural production in Ethiopia is an integrated crop-livestock or mixed farming system. However, pastoralism appears more important in the peripheral lowland areas, while sedentary agriculture is dominant in the highlands. Peasant households, cultivating fragmented micro-holdings, produce the overwhelming portion of agricultural output in Ethiopia. The 1994/95 agricultural sample survey

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showed that 78% of the total smallholder farmers of the country were engaged in mixed farming, 20% mainly in crop production, and the remaining 2% in livestock rearing (CSA, 1995). It was also noted that small-scale peasant households held about 93% of cultivated land and 98% of the livestock population (Solomon, 1992).

Moreover, Ethiopian agriculture has been primarily subsistence based and traditional, using simple and archaic tools, controlled by climatic variation and the meager resources of the farmers. Continued cultivation, overgrazing, deforestation, fast population growth, and political, economic and cultural forces that relate to the peasant agriculture have exerted enormous pressure on the ecosystem and hence on the agricultural resources of the country. Environmental degradation coupled with a fast growing population have exacerbated the problem of environmental management and created food crises. The poor performance of the agricultural sector of Ethiopia may be attributed to cumulative causation of demographic and non-demographic factors. As noted by Shumeye (1998), non-demographic factors that perpetuate environmental degradation and land use conflicts and have implications for the long-term sustainability of the mixed farming systems include land tenure policies, inappropriate conservation and development policies, low farm-gate prices, lack of access to agricultural inputs and limited infrastructures. Coupled with natural and man made catastrophes, it has brought about series of food shortage and sustained famine during the last few decades.

Food insecurity and poverty are crucial and persistent problems facing the majority of Ethiopians today. In Ethiopia, both chronic and transitory (seasonal) food insecurity are severe. Each year about five million people in the country, particularly in the rural areas, face food shortage. Food production in the last three decades has not been sufficient enough to make rural population food secure. It was estimated that domestic food production provided in the late 1980s was about 1,620 calories per person per day, while total availability, including imports, was about 1770 calories per person per day, equivalent to 225 kg of grain per person per year (FDRE 1996; Workineh, 2006). As computed by Workineh (2006) from DPPC reports, domestic food production was able to cover only 68.8 % and 76.3% of the total national food requirement in 2002 and 2005, respectively.

The study zones (Sidama, Wolaita, and Guraghe) are among the most food insecure areas of the region. In a study conducted in the Boricha area of the Sidama (2006-2007), which is one of the lowland areas in the zone, it was observed that most of the pockets of the area are under continued influence of a high population pressure. Among other things, increasing population pressure has resulted in land scarcity, which is one of the major challenges for the people. This has led to fragmentation of farmlands, reduction of fallow periods, shifts in cropping patterns; reduce time spent in farming, acceleration of land use conflict and competition, and land degradation (Assefach and Nigatu 2006). The hilly lands of the area are highly affected by water erosion. As much of the natural cover of the area has been destroyed, lack of fuel wood has led to widespread use of manure for burning, while shortage of fodder has forced households

to divert crop residues for feeding livestock and burning. Hence, such farm resources which traditionally have been used to replenish the soil are often diverted to meet other pressing needs (Assefach and Nigatu 2006). All these consequences of population pressure could have jeopardized the sustainability of the traditional mixed farming systems and have adverse implications for household food security.

Despite the fact that rural households in these areas are increasingly becoming food insecure (SNNPR, 2001), little is known about the actual level and determinants of households food insecurity. The main objective of this paper is therefore: to investigate household food security levels and determinants in the three selected areas of SNNPR: namely, Sidama, Wolaita and Guraghe.

Scope and Methodology of the Study

Study Site

Among the seventeen zones in the region, the Sidama, Wolaita and Guraghe zones have large population with 3.5 million, 2.6 m and 2.3 m people respectively. Due to increasing population size over the decades with small land size, there has been series of food shortages, which resulted in migration of household members. The food shortage is more pronounced in the low land of these most populous zones of the region.

One of the most pressing issue to mention here is that the bulk of population of the areas are known to heavily depend on 'enset' (enset ventricosum) as a major source of survival. It is the single most important root crop grown in the study. It is also known to non - Ethiopian as false banana. Enset is a perennial crop taking about 3-5 years to mature, although there are some varieties, It has the following characteristics, (i) inset cultivation passes through various stages of land and plant preparation (ii) unlike many perennial crops the product is decorticated once and a new clone should be planted for replacement (iii) has long storage life (iv) it has a unique agronomic adaptation to withstand severe moisture stress (v) high population carrying capacity. Because of its long storage life and good performance under stressful moisture conditions, enset provides security against food shortages. The areas are also typically known for producing cash crops: coffee, chat, and fruits (Diriba, 1995).

Data Source

The study is conducted in three selected zones of SNNPR. It generated the required data from both primary and secondary sources. As to the primary source, information was collected from household heads and individuals in selected areas. In order to generate adequate data and examine the socio-cultural practices/attitudes, the quantitative data were supported by the qualitative data (in a form of Key Informant Interview/KII and Focus Group Discussion/FGD) The study included three levels of study units: *Households, individuals, and concerned governmental and non-governmental offices having link with food security* which were selected using the following selection procedures. The study used various secondary sources to augment the findings from

the primary data; such as review of reports at regional level, review of related literature, woreda level information on food and natural resource profile.

Sampling

As mentioned in the introductory section, one of the main purposes of the study is to examine the levels and determinants of household food security among selected communities of SNNPR. It is thus important that the sample subjects selected need to cover wide range of agro-ecological and cultural zones which was determined through appropriate statistical tools (sampling techniques). Generalizability of the findings to the total vulnerable population is another important and major issue considered in sample size estimation. On the basis of these two premises, the sample size was determined using the sample formula given by:

$$CV_i = \frac{\sqrt{q_i}}{n_i p_i}$$

Where CV is the coefficient variation for each category of cultural zones; n_i is the required sample size from a specific categories/zone; p is the probability or risk of becoming vulnerable to food security (selection criteria), and q_i is the probability of a household not becoming vulnerable to food insecurity. The fact that one of the main themes of the study is cross-cultural comparison of food insecurity (see objective 5), it is understood that the sample size considered for the study need to be large enough and representative (Note: A minimum sample size of 200 households from each zone was computed).

The study employed multi-stage probability sampling (combining the systematic, simple random and cluster sampling techniques) The process of sampling started with the listing out of all vulnerable kebeles in the study area. At the first stage, three woredas, representing three different cultures were taken. At the second stage, two kebeles from each woreda were selected using systematic sampling technique. The ultimate-sampling units, the households, were selected through systematic sampling technique upon determination of the coefficient of variation. Both the husband and wife were interviewed under separate headings (section of the checklist) so as to get comprehensive and reliable information.

The selection of FGD participants strictly followed the purposive sampling techniques (non-probability sampling technique). In this case, 2 FGDs for each selected woreda were arranged giving a total of 6 FGDs from the three zones (3 female and 3 male groups). All efforts were made to ensure heterogeneity of each FGD; to constitute youth, adults, religious and elderly group, kebele administrators and known leaders of the community.

Data Collection

In order to produce a complete set of data for analysis and meet the stated objectives, three data collection instruments were prepared and administered – Interview schedules

for households (Quantitative); Checklist for concerned GOs and NGOs and Checklists for Focus Group Discussions (FGDs). The aforementioned list of interview schedules/ checklists were cautiously developed incorporating the most important socio-demographic and economic profiles and characteristics of the categories of respondents and households.

Prior to the actual data gathering (field work), the checklists/ schedules underwent intensive review and pre-testing on small sample subjects from all categories of respondents. Seventeen data collectors at each woreda recruited, employed and got trained. The one-day training encompassed both theoretical and practical aspects of the fieldwork.

Data Processing and Analysis

Upon completion of the fieldwork, the quantitative data were coded, entered into SPSS software, and cleaned and verified. The entire analyses were done following two level of analysis: In the first level, all the quantitative data were processed and analyzed separately. In this case, both univariate and multi-variate statistical tools were employed depending upon the issues to be examined. In the multivariate analysis, the Multiple Regression technique was used to examine the determinants of household food security (detail description of these statistical tools is presented in 4.4). There are two sets of variables included in the multivariate analysis: the dependent variable (i.e household food security) and the independent variable (i.e. variables explaining the response variable). In the second level, the qualitative data were scrutinized and is supplemented to the result of the quantitative data.

Result and Discussion

Characterization of Respondents

Information on the respondent's background characteristics such as household size, religion, marital form, operational land size, major source of water and access to information was collected. The percentage distribution of these background variables are given on Table 1.

The distribution of household size given on Table 1 reveals that majority of the household (46.9%) are reported to have size of 7-10 followed by 4-6 (36.6%) and only 7.3. per cent and 9.2 per cent of the households have 0-3 and 10+ sized households respectively. It is also observed that the computed mean household size for the three study sites is about 7.07, which is well above the mean at national level (4.8).

Another background variable shown on Table 1 is religion. The majority of the respondents (42.4%) are reported to be Protestants followed by Muslim (27.9%), Orthodox Christian (16.3), Catholic (12.3%) and the rest of the categories make up the smaller proportion of the respondents. The higher percentage distribution of the Protestant religion commensurate the regional picture where about 40 per cent of the population of the region is Protestants (DHS, 2005). The majorities of the Protestants

respondents are from Sidama zone (Boricha woreda), while the Muslim majority makes up the Gurage respondents.

Table 1
Distributions of Respondents by Selected Socio-Demographic and Economic Characteristics

<i>Characteristics</i>	<i>Frequency</i>	<i>Percent</i>
<i>Household size</i>		
0-3	45	7.3
4-6	227	36.6
7-10	291	46.9
Above 10	57	9.2
<i>Religion</i>		
Orthodox Christian	101	16.3
Catholic	76	12.3
Protestant	263	42.4
Muslim	173	27.9
Traditional	3	.5
Others	4	.6
<i>Marital form</i>		
Polygamous	71	11.5
Monogamous	549	88.5
<i>Operational land size</i>		
Landless	20	3.2
Less than 0.25 hectare	230	37.1
0.25 to 0.50 hectare	208	33.5
Half to one hectare	134	21.6
1-2 hectare	27	4.4
Greater than two hectare	1	.2
<i>Age of the household head</i>		
15-24	43	6.9
25-34	159	25.6
35-49	259	41.8
50-64	123	19.8
65-100	36	5.8
<i>Literacy status of the household head (men)</i>		
Literate	305	49.2
Illiterate	306	50.8
<i>Educational status (men)</i>		
Elementary (1-6)	207	33.4
Junior secondary (7-8)	55	8.9
Secondary (9-12)	36	5.8
College diploma	1	.2
Illiterate	321	51.8
<i>Literacy status of the women</i>		
Yes	110	17.7
No	510	82.3

Table Contd...

<i>Characteristics</i>	<i>Frequency</i>	<i>Percent</i>
<i>Educational status (Women)</i>		
Illiterate	517	83.4
Elementary (1-6)	66	10.6
Junior secondary (7-8)	14	2.3
Secondary (9-12)	12	1.9
College diploma	8	1.3
Others	3	.5
<i>Type of crops produced by the household</i>		
Cash crops only	15	2.4
Non-cash crops only	388	62.6
Both	217	35.0
<i>Average amount of wheat per person (All production converted into wheat terms)</i>		
Less than 2.5 quintal	348	56.1
2.5 to 5 quintal	114	18.4
5-15 quintal	91	14.7
Above 15 quintal	67	10.8
<i>Accessibility to main economic factors</i>		
0-30 minutes	275	44.4
30-60 minutes	251	40.5
Greater than one hour	94	14.2

Respondents were also asked to indicate if their husband has other wife/wives or not. The simple and direct forward question was used to estimate the volume of polygamous marriage in the study population. Accordingly, about 11.5 per cent of the female respondents were found to live in the polygamous union where their husband has one or more additional wife during the survey date. The computed proportion is exactly similar with the national figure reported in DHS (CSA 2005).

Another household characteristics revealed on Table 4.1 is the operational land size distribution. It is evident from the table that the bulk of the respondents (37.1%) were reported to own less than 0.25 hectare of land, 33.5 per cent of them 0.25-0.50 hectares; 21.6 per cent of the households owned 0.5-1.0 hectare, and only insignificant proportion of the households were reported to own land size greater than 1.0 hectare (4.6%). As expected, the proportion of landless households account for about 3.2 per cent which is nearly similar to the figures reported in many researches.

Table 1 reveals the percentage distribution of age of household head, literacy status, education status and occupation. The age distribution of the household head given indicates that majority of them are represented from the age group 35-49 (41.8%), respondents in the age group 25-34 accounts for about 25.6 per cent and 50-64 was 19.8%. Comparatively, the young (15-24) and the aged (65+) account significant proportion of the respondents (6.9 and 5.8 per cent respectively). Looking at the percentage distribution of the respondents, it is evident that majority of them fall in the middle adulthood category.

Men respondents were asked if they can read and write sentences in view of identifying their literacy status. Based on the oral reports of the respondents, it was found out that 49.2 per cent of the respondents are literate, while the remaining 50.8 per cent are categorized as illiterate. The percentage distribution of the husbands by educational status reveals that 33.4 per cent of the respondents are at elementary level of education (1-6). The proportion of men in junior secondary, secondary and college level account for about 8.9, 5.58 and 0.2 per cent of the respondents respectively.

As reported by many other researchers, the literacy status and educational level of women respondents has clear disparity compared to that of the men. It is seen on Table 1 that only 17.7 per cent of women respondents do read and write sentences, while the majority of the respondents (82.3%) are in the illiterate category. The disparity between the two groups yield 31.5% (49.2-17.7). The disparity also exists at primary level where only 10.6 per cent attained primary level education. The percentage distribution of the women respondents in the junior secondary (7-8), secondary (9-12) and college level accounts for very small proportion of the respondents, all together giving only 6.0 per cent of the respondents. The distribution of occupation of household heads reveals that 48.4 per cent of them are farmers; 33.7 per cent self-employed those who primary generate their income through petty trading and laborers.

Figure 1: Land Size Owned by the Household (In Hectare)

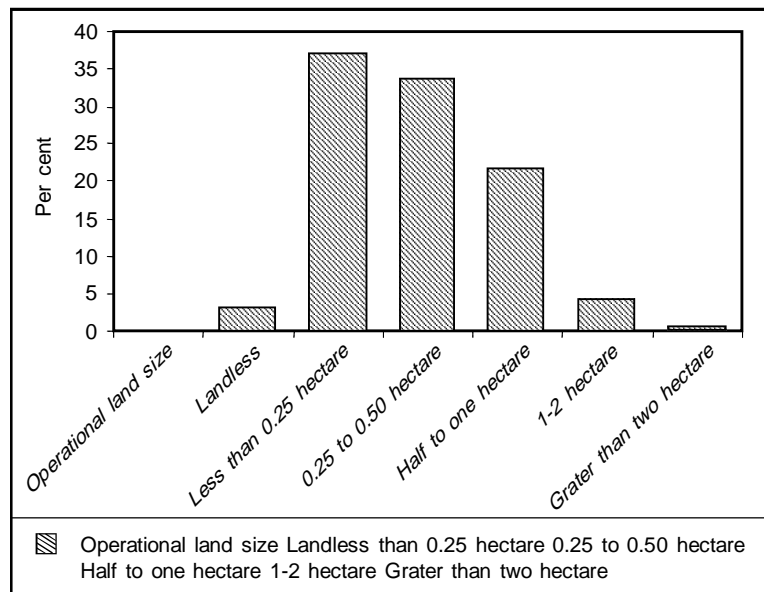


Table 2 reveals that 62.6 per cent of the households produce non-cash crops only, 35 per cent are reported to produce both cash and non-cash crops while small proportion (2.4 per cent) of the respondents produce only cash crops. Involvement of at least one

household member in petty trading was reported by 26.3 per cent of the respondents. Related to this, 27.4 per cent of households participate in income generating activities (off farm activities) during the last 12 months. It is also revealed on table 4.4 per cent that 36.5 per cent of them reported that they do not have any income (neither on-farm or off- farm), those with 1-100 birr per month account for 38.9 percent, 101-500 birr per month (16.6 %) and very small proportion (8%) get on average income of greater than 5 birr per month.

Table 2
Percentage Distribution of Respondents by Selected Economic Indicators of Households by Zone

Characteristics	Name of the zone			Total
	Sidama	Wolaita	Guraghe	
<i>Involvement of the household members in petty trading</i>				
Yes	9.0	9.8	7.4	26.3
No	24.8	22.9	26.0	73.7
Total	33.9	32.7	33.4	100.0
<i>Land size owned by the household (hectare)</i>				
Landless	.3	.8	2.1	3.2
Less than 0.25 hectare	16.8	12.4	7.9	37.1
0.25 to 0.50 hectare	12.3	14.0	7.3	33.5
Half to one hectare	3.5	3.9	14.2	21.6
1-2 hectare	1.0	1.5	1.9	4.4
Greater than two hectare	.0	.2	.0	.2
Total	33.9	32.7	33.4	100.0
<i>Use of rented land for cultivation</i>				
Yes	1.5	1.5	10.0	12.9
No	32.4	31.3	23.4	87.1
Total	33.9	32.7	33.4	100.0
<i>Average income generated by the household per month</i>				
No income at all	9.8	14.4	12.3	36.5
1 birr to 100	14.2	12.7	11.9	38.9
101-500	7.4	4.0	5.2	16.6
501-1000	1.6	.6	2.3	4.5
Above 1000	.8	1.0	1.8	3.5
Total	33.9	32.7	33.4	100.0
<i>Accessibility to main economic factors</i>				
0-30 minutes	24.0	13.6	6.4	45.0
30-60 minutes	7.1	15.4	18.7	41.1
Greater than one hour	2.8	3.7	8.3	13.9
Total	33.9	32.7	33.4	100.0

Although off-farm income opportunities are not widely spread in rural Ethiopia, they are important means of securing food security; they enhance purchasing capacity or in-kind income. Farm food production, farm income and off-farm income influence largely farm household food security. Thus factors that affect farm production, farm

income and off-farm income influence household food security status indirectly. Accordingly, production endowments and off-farm opportunities are important categories that enter into food security equation. One of the popular ways of measuring household economic status is counting the average amount of wheat per person (all household production converted into wheat terms). The percentage distribution shown on Table 4.4 revealed that the large majority of the households (56.1%) get less than 2.5 quintal of wheat per year. If the 2.5 quintal is taken as international cut off point, it entails that 56.1 per cent of the households in the study area are said to be food insecure.

In order to compute the index of access to major economic services, each household was asked to report the average time taken for household members to reach to some selected economic services (i.e. average distance to input market, big market, small markets, saving and credit, etc.). These variables were summarized (composed) to yield an index named '*access to economic service*', whose value is ranging from 0 to 100. On the basis of this computation, 45 per cent of the households should travel 0.30 minutes, 41.1 per cent take 30-60 minutes and 13.9 per cent take greater than one hour.

Determinants of Household Food Security: Multivariate Analysis

Measuring the response variable: Household food insecurity

Food security is defined as a state in which "all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and health life" (USAID 2002). Because it is a complex multi dimensional concept measuring food insecurity has been on going challenge to researchers. Until recently most household level measures of food access such as income and caloric adequacy, have been technically difficult, data intensive and costly to collect. The USAID title II and child survival and health grant programs require relatively simple out methodologically rigorous indicators of the access components of household food insecurity. USAID (2007) Household Food insecurity Access Scale (HFIA) for measurement of Food Access: indicator guide (version 3)

It is notable that measuring food security is challenging. Different indicators of food security are under use, but each of them may not be self-sufficient. Direct measures include food consumption and anthropometric parameters, while the indirect ones include income, assets base and production one way of measuring the food insecurity status of a household is the use of different behavioral domains. This survey adopted the food security access scale developed by USAID (USAID 2007) The scale lists Eighteen questions asking respondents to describe behaviors and attitudes that relate to these various aspects also called "domains", of food insecurity experience (Hamilton *et al.*, 1997). The questions include: Feeling of uncertainty or anxiety over food; Perception that food is of insufficient quantity; Perception that food is of insufficient quality; Reported reduction of food intake; and Reported consequences of reduced food intake.

The measures constituted were strongly related with common indicators of poverty and food consumption. These sets of questions are known to use in several countries

and appear to distinguish the food secure from the insecure household across different cultural context.

The HFIA score a continuous measure of the degree of food insecurity (access) in the household in the past four weeks (30 days). A HFIA score variable is computed for each household by summing the codes for each frequency or occurrence question. Before summing the frequency of occurrence codes, the frequency of occurrence was coded "0" for all cases where the answer to the corresponding occurrence questions was "No". The maximum score for a household is 27 (the household response to all nine frequency of occurrence questions was *often* coded with response code of 3) the minimum score is 0 (the household responded "No" to all occurrence questions (i.e households responded "No" to all occurrence questions) The higher the score, the more food insecure (access) the household experienced; the lower the score, the less food insecurity (access) a household experienced.

The study has also used another dependent variable which measures the production aspects of food security: Average amount of wheat produced per person per year. Thought this measure may not be adequately addresses the aspect of consumption and utilization of food, it is usually used as important indicator of the household food security status.

The Model

Multivariate analysis encompasses a variety of statistical methods used to analyze measurements on two or more variables. Regression analysis is subset of multivariate analysis that includes methods for predicting values of one or more response variables form one or more predictor variables.

OLS regression estimation was run to find the major determinants of household food security. There were two regression for two dependent variables (household food security); *the average amount of wheat per person per year and food insecurity index* (ranging from 1-7.) . The general formula of the multiple regression model is given by:

$$Y_i = B_0 + B_1 X_{1i} + B_2 X_{2i} + \dots + B_K X_{ki} + e$$

Where K denotes the number of predictor variables (factors explaining the dependent variables) and i denotes the i th number of the sample population. The corresponding estimated model pertaining to a particular sample from the population is:

$$Y_i = b_0 + b_1 x_i + b_2 x_2 + \dots + b_k x_{ki} + e$$

Results and Discussion on the Multivariate Analysis

Pursuant to the above brief description of multiple regression models, the full tables are produced using SPSS computer software. Attempt was made to select about nine best fitting predictors based on both theoretical bases and empirical model fitting procedures. Table 3 below presents the regression results using '*Average amount of wheat per per person per year*' as the dependent variable. Also, Table 4 presents the same

predictors regressed against the second dependent variable (Food Access Scale). At this juncture, it is important to note that only some of the predictors are found to have relatively stronger influence on household food security status while some others have weaker effects, and the rest are found to have no significant effects on the dependent variable.

To begin with, the beta (β) coefficients indicated in the last column of the tables tells us the level of importance or the magnitude of the contribution of the individual predictor, that is to say, the larger the value of beta (β), the greater its effect on the status of household food security will be. Based on this premises, thus, the most important predictors explaining the variability in the dependent variable in Table 3 in order of prominence can be thought of as: Number of bullock owned by the household, accessibility to main economic factors, Marital form, Use of rented land for cultivation, household size, and average income generated by the household.

Table 3
Regression Estimation of Household Food Security Status in Selected zones of SNNPR, 2008

<i>Variables</i>	<i>Error</i>		<i>t</i>	<i>Sig.</i>
	<i>B</i>	<i>Std.</i>		
Household size	-.127	.054	-2.356	.019*
Marital form	.282	.126	2.239	.026*
Type of corps produced by the household	.129	.080	1.619	.051*
Average income generated by the household	.113	.041	2.789	.025*
Inaccessibility to main economic factors	-.247	.058	-4.238	.000***
Number of bullock owned by the household	.422	.065	6.533	.000***
Satisfaction of the household consumption from food aid/safety net programs	.089	.082	1.086	.278
Use of rented land for cultivation	.259	.120	2.159	.031*
literacy status of the respondent	-.136	.076	-1.782	.075
(Constant)	.974	.467	2.084	.038*

F value = 11.042; *df* = 9

Adjusted R² = 13.5 %

*** = Sig. at 1%; ** = Sig at 5%

Dependent Variable: Average amount of wheat per person per year

It is documented that the number of bullock owned by the household plays significant role in food production and food self-sufficiency. The regression estimate on Table 3 above indicate that, all other variables remaining constant, an increase of a unit of bullock would result in an increase of 0.422 wheat per person per year. Similarly, it is shown in Table 4 that a decrease of a unit of bullock would result in an increase in food inaccessibility index by 0.149. Workineh (2006) has also found in his study of determinants of small farm household food security in South Wollo that ownership of livestock (measured in TLU) would result in an increase in food consumption by 68.076 and 51.594 calories per head per day for the year 2000 and 2001.

The level of accessibility to main economic factors was also another variable entered into the multiple regression analysis. It is noted from Table 3 that a decrease of one unit in accessibility index would result in increase of 0.247 wheat per person per year. Similarly, it is inferred from Table 4 that an increase of one unit in the accessibility index for main economic factors would result in an increase of food inaccessibility index of 0.183.

Few of the available researches conducted to examine the relationship between marital form (polygamy versus monogamy) and food security focused at macro-level. Many countries in sub-Saharan Africa, including Ethiopia, are characterized by higher prevalence of polygamous marital union, which is believed to serve as a means to maintain the endless line of birth and rebirth and strengthen the power of the family. It is true that many men in rural Ethiopia are motivated to have two or more wives and many children as the wives and children serve as a form of cheap labor.

Table 4
Regression Estimation of Household Food Security Status in Selected zones of SNNPR, 2008

<i>Variables</i>	<i>Error</i>		<i>t</i>	<i>Sig.</i>
	<i>B</i>	<i>Std.</i>		
Household size	.121	.052	2.308	.021*
Marital form	.119	.122	.256	.058*
Type of corps produced by the household	-.219	.077	-2.826	.005**
Average income generated by the household	-.084	.039	-2.138	.033*
Accessibility to main economic factors	.183	.057	3.237	.001**
Number of bullock owned by the household	-.149	.063	-2.373	.018*
Satisfaction of the household consumption from food aid/safety net programs	-.236	.080	-2.959	.003**
Use of rented land for cultivation	.242	.116	2.076	.038*
literacy status of the respondent	.114	.074	1.538	.125
(Constant)	2.378	.454	5.241	.000

F value = 11.042; df = 9

Adjusted R² = 13.5 %

*** = Sig. at 1%; ** = Sig at 5%

The Dependent Variable is: food Access scale (coded as 0-7): where zero indicates high level of access and 7 indicates high level of food inaccessibility index.

The information on the type of marital union was generated during the survey through very simple and direct forward questions. Respondents were asked to indicate whether their husband has another wife or not and also asked if they are the first second or other subsequent rank among the wives. Other factors remaining constant, a shift into the monogamous marriage tend to increase the per capita wheat production by 0.282 units (see Table 3). Similarly, it is inferred from Table 4 that a shift to monogamous marital form would result in an increase of wheat per capita by 0.119. It is also clear from the focus group discussion that some of the polygynyst women in the second or third rank are either divorced or widowed, suggesting that the culture

of polygynous marriage is also a means of social insurance and economic security for some group of women. The manner of polygyny marital life, in most of the cases, is a pleasure for larger number of polygynist men and women, even though such practices are usually condemned by Christian religious institutions.

On the other hand, by exposing the women to early and prolonged risks of pregnancy, the polygamy system has increased the burden of maintaining very large number of children (between six and eight children) in most of the regions in the country. It is true that the quick remarriage of separated, divorced or widowed women, which help extend their reproductive duration, are all contributing to high fertility, and hence, increased risk of food insecurity.

The relationship between household size (sometimes approximated by the total number of children) and the level of household food security status was also examined in the multivariate analysis. As clearly depicted in table 4:11 above, other factors remaining constant, an increase of one unit in household size would result in decrease of per capita wheat by 0.127 quintals- or- put it otherwise (see Table 4:12) , an increase of one unit of household size would result in an increase of food inaccessibility index by 0.121 units. It is known that the perceived value of children by social class varies with the changing social conditions. People in different socio-economic and cultural settings desire children for various reasons, which reflect on the number of children. It is also important to note that children in many developing countries participate in various social, cultural, religious, and economic activities. In traditional subsistence agrarian economy, particularly in patriarchal society like in most communities of Ethiopia, sons are considered very instrumental as psychological, economical and non-economic resources of a family unit.

It is often observed that households in the study population want large families for valid economic reasons, partly not because they were ignorant of how to avoid them. The economic and non-economic motive of giving higher value for children in this population has been justified by three important reasons during the focus group discussion: first, children in this community and in many other communities in Ethiopia participate in important household & out door activities starting as early as 4-6 years. Some in-door and out door activities such as fetching water from distant places, collection of fire wood, taking cattle to the field, taking care of animals and the like are usually the exclusive task of children and women. If children do not render these services, adults find little time to devote to productive activities. Secondly, the majority of people in this area have small and fragmented land holdings (devoted mainly for cash crops: *coffee*, *chat* and *banana* production). It is believed that a household with larger number of members can better diversify activities and exploit multiple source of income as there are always seasonal variations in agricultural activities in these areas. Third, higher value of children is also associated, more importantly; with higher expectation of old age security, getting social acceptance and status. In agrarian societies, particularly patriarchal one, sons provide the family labor and eventually assume responsibility for the household and for running the farm; they are also expected to

assume the responsibility for parents in old age as daughters usually get married earlier and are less likely to give financial support to their parents.

Summary, Conclusion and Policy Implications

This study is primarily devoted to examine the levels and determinants of household food self sufficiency in three selected zones of SNNPRS. As described in section 2, the input data for this study were collected from 620 randomly selected households where the household was considered to be the ultimate unit of analysis (couple were taken as respondents). In order to collect the required information from the selected respondents, two sets of interview schedule (questionnaire) and FGD checklists were prepared and used as discussed in section 2.3. The data were analyzed using both the univariate and multivariate techniques as thoroughly discussed in section 4 above. On the basis of the information collected from the 620 households and taking into account all the methodological pitfalls of cross sectional survey of this type, the study has come up with the following plausible conclusions and policy implications:

- (i) The study has identified that households in the study areas are in pre-carious situation where more than 56.1 per cent of the households are found to have less than 2.5 quintal per person per year (i.e below the minimum cut pint).
- (ii) The involvement of the rural households on off-farm and income generating activities is insignificant. As a result of this, it is possible to conclude that the households' livelihood is entirely dependent on an income generated from the agricultural activities. The implication of poor diversification is that households in the study area may get difficulties in managing risks and disturbances/ agricultural failure during serious food shortages.
- (iii) Despite the fact that the proportion of landless households are fairly minimal (3.2%), it is evident that large majority of the households (about 70 per cent) owned land size of less than half hectare, indicating that there is increasingly high population pressure on the existing land intensifying subsistence economy. This implies that, unless households diversify their income through off-farm activities (such as wage employment), the vicious circle of poverty and food security continues.
- (iv) The study has identified that rural households in the study areas lack the accessibility and availability of some of the economic institutions such as, input market, saving and credit, big and mini markets, road and the like. It is noticed that about 55.0 per cent of the householders should travel more that 30 minutes to get access to the different economic institutions.
- (v) The multivariate analysis, using multiple regression, identified about eight variables explaining the variations in the status of household food security in the study area; this includes, household size, marital form, number of bullock owned by the household, accessibility to main economic factors, Marital form, use of rented land for cultivation, household size, and average income generated by the household.

- (vi) In view of the fact that larger proportion of households in the study area (about 56 per cent) are facing food insufficiency, the safety net program is in place in all the study woredas with a total 129,845 beneficiary. In the sample population, about 39.2 per cent of the households are reported to be beneficiaries of the safety net program. Despite its role model intervention mechanisms in terms of bringing changes and improvements in natural resource management/conservation and local infrastructure development, it has been reported by FGD and KII participants that the program has some pitfalls which includes: Inappropriate application of beneficiary selection criteria, high danger of dependency syndrome on the part of the beneficiaries, its inability to incorporate all the needy groups (capacity limitations), and the like.

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