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Determinants of Rural Income Poverty in Ethiopia: Case Study of Villages in Dodola District

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I. BACKGROUND AND JUSTIFICATION OF THE STUDY

Poverty is one of the core issues and the most widespread social problems in the world. It has no geographical boundary. It is found in all directions and corners. Despite world exceptional advances in science, technology and wealth creation, poverty in all its manifestations remains deep and persistent. Poverty is multifaceted and has no single generally accepted definition (Ibrahim and Umar, 2008). Indeed, it is multidimensional. As a result literatures on the concept of poverty show various interpretations in economic, social, political, institutional, environmental and cultural contexts.

As of World Bank (2005), poverty is defined as a deprivation in well-being, and encompasses many dimensions. It, besides the inability to acquire the basic goods and services, consists of low levels of health and education, poor access to clean water and sanitation, inadequate physical security, voicelessness, and insufficient capacity and opportunity to better one's life. O'Boyle (1999) defines poverty as a:

"...problem in unmet human physical need. That is, persons and families in poverty lack the goods and services needed to sustain and support life and the

income to purchase the goods or services which would meet those needs" (Page 1).

In the same way, Bradshaw (2005) expressed poverty, generally, as a lack of necessities. Basic food, shelter, medical care, and safety are generally considered essential based on shared values of human dignity. Nevertheless, what is a necessity to one person is not equally a necessity to others. Other writers, like Lehning (2006), Frerer and Vu (2006) and Wolf (2006) also defined and expressed poverty from their own viewpoint and field of study. However, all the approaches and definitions of poverty reveal as a state of human well being deprivation.

Poverty is a threat to the world, especially developing countries. The governments, national and international development institutions have tried to understand the nature of poverty and mechanisms of reducing it. Poverty alleviation is a key policy debate in recent development literature. Many researchers of development economics have argued that the fight against poverty is a necessary condition for sustainable Economic growth. As stated in Oyekale (2011) poverty reduction is the issue that reconsidered as one of the brightest indicators of human progress.

When we come to Ethiopia, it is one of the poorest nations in the world. The country has a long experience famine, hunger and poverty often managed by international humanitarian agencies. The government of Federal Democratic Republic of Ethiopia has been spending large amount of money to alleviate poverty, especially since 1991. Despite strong progress in poverty reduction, still millions of poor people live in the country. In other words, poverty is still a salient feature of the country. According to MoFED (2012), by the year 2010/11 around 29.2% and 28.2% of populations are living below income and food poverty line, respectively.

Even if all Ethiopians suffer of poverty, it is more sever in the rural area than urban areas (MoFED, 2006). This would bring various criminal acts if situations go beyond the limits of social tolerance. Working on anti – poverty program is pivotal. Any effective poverty reduction intervention depends on a good targeting of the poor and their features. Therefore, understanding the nature, determinants and level of rural poverty is a prerequisite for successful and effective government

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intervention to reduce deprivation in the rural areas. With the view of that this paper examines the socio-economic determinants of poverty in rural areas of Ethiopia. This study will contribute to the understanding of status and sources of poverty. Moreover, it will provide significant information for concerning bodies such as government, policy makers, and other institutions working to alleviate rural poverty and misery life.

II. LITERATURE REVIEW: SOCIO-ECONOMIC DETERMINANTS OF POVERTY

Poverty alleviation is a key policy debate in recent international development literature. The all inclusive development will happen when people empowered politically, socially and economically. The preparation of policies for poverty alleviation requires a systematic knowledge of the poverty phenomenon. With the growing interest in poverty reduction, it is important to summarize information on poverty and identify characteristics of the poor. In this regard, various studies have been conducted in all corners of the World to identify the factors responsible for poverty and well being deprivation.

Andersson et al (2005) examined the determinants of income and poverty in Lao PDR. The result reveals that household size, dependency ratios, education, and access to agricultural inputs are among the main determinants of per capita consumption. Sekhampu (2013) showed that household size, age and the employment status of the household head significantly explain the variations in the likelihood of being poor in South Africa. The age and employment status of the household head reduces the probability of being poor, while household size is associated with an increased probability of being poor.

Sabir et al (2006) presented the empirical findings on the poverty status and its causes among small farmers in the Pakistan. The result revealed that lower farm productivity, old age of the head, lower prices of the outputs, bigger household size, lack of infrastructure, and dependency ratio were the major determinants of poverty, whereas the education of the head was inversely related to poverty. Hashmi et al (2008), in the same country, showed that the chance of being in poverty increased due to increase in household size, dependency ratio, while, education, value of livestock, remittances and farming decreased the likelihood of being a poor. The same history is explained in the work of Malik et al (2012).

Ibrahim and Umar (2008), in Nigeria, identified the major determinants of poverty include household size, number of income sources of the household head, number of household members employed outside agriculture and the number of literate adult males and females in the household. In the same way, Apata et al (2010) examined the determinants of rural poverty in Nigeria. The results shows that access to micro-credit,

education, participation in agricultural workshops/seminars, livestock asset, and access to extension services significantly affect the probability of existing in poverty whereas female headed households' and distance to the market increases the probability of persistence in poverty.

Bahta and Haile (2013) identified the determinants of poverty in Eritrea. The result of study shows that poverty status is negatively associated with education level, type of resident, size of land, number of meal, remittance, access of credit from relatives, credit institutions, opinion to credit, rain fed crop, irrigated crop, income from agriculture and income from -non-agriculture. However, family number, number of children, children at school age and rent of land highly positively related to poverty.

In Ethiopia, agriculture is the backbone of Economy and agricultural production is the source of livelihood for millions of Ethiopians, especially for those in rural areas. According to Namara et al (2010), the persistent fluctuation in the amount and distribution of rainfall is considered as a major factor in rural poverty. As of Asmamaw (2004) vulnerability to rural poverty are mainly caused by degraded natural resources, poor access to essential services, poor infrastructure, weak local institution, rain-fed agriculture system and low saving.

Tesfahun (2005) revealed that poverty was found to rise with household size and access to micro credit (because of inappropriate use). However, rural poverty falls with higher level of education, size of cultivable land, number of oxen and other animals, and saving. Bogale et al (2005) explored the determinants of rural poverty in Ethiopia. The study illustrates that rural poverty is strongly linked to entitlement failures understood as lack of household resource endowments to crucial assets such as land, human capital and oxen.

In the same way, Bogale (2011) also analysed the extent and determinants of rural household poverty in the eastern highlands of Ethiopia. The study suggests that poverty is location specific, depends on access to irrigated land and access to non-farm income. The result also shows that household wellbeing is negatively affected by household size, and positively affected by age of household head. Probability of being in poverty is also strongly associated involvement in governance, social and production related networks.

Poverty is so technical that it is very difficult to draw a single conclusion. What is more significant is that how poverty is defined and measured. It determines the types and directions of policies aimed at reducing poverty. However, identifying the causes of poverty can be complex exercise (Sekhampu, 2013). Hence, this study focused on identifying the determinants of poverty.

III. METHODOLOGY OF THE STUDY

The study area was located in Dodola district, Oromia National Regional State, in south Eastern part of Ethiopia. It was based on a cross-sectional study that involved both quantitative and qualitative methods of data collection. Both primary and secondary sources of information were used. The primary data were collected with the use of structured questionnaires. A total of 217 households were randomly sampled.

The study used both descriptive and inferential statistics. Descriptive statistics such as frequency distribution tables, mean and standard deviation were used to analyze the socioeconomic characteristics of the respondents. The Binary Logistic model was used to identify the determinants of poverty in the area. The collected data through household survey was entered, manipulated and analysed using **SPSS** software. In addition MS-Excel was used to supplement those softwares.

Most of the studies on poverty in Ethiopia are based on data on consumption expenditure. This study was, however, based on income data collected from households in a reference year. The income variable includes all receipts in form of kind and cash for the reference year of the survey, i.e. 2012 Gregorian calendar. Household consumption of self-produced crops, livestock and forest products was also included in income. Salaries, profits, remittances and wages were also considered.

Poverty is usually measured as either absolute or relative poverty using income, consumption and welfare as well being indicators. Relative poverty refers to lacking a usual or socially acceptable level of resources or income as compared with others within a society or country where absolute poverty refers to the set of resources a person must acquire to maintain a minimum standard of living for survival. It defines the threshold that distinguishes the poor from the non-poor and examines the income or consumption levels of people in reference to that threshold. Recently, these income or consumption based absolute poverty lines have become a norm in almost all developing countries (Wagle, 2002).

The measurement of economic poverty, hence, requires defining a threshold (line) that distinguishes the poor from the non-poor. Any individual or household in the population with a measure below the line will be considered poor. Every society has its own ways of illustrating the standard of living. In the same way, almost all countries have their own national poverty lines to identify citizens whose income falls below a level necessary to maintain a minimum acceptable standard of living. Poverty lines are country specific and governments ultimately define what is meant by poverty in each country. So far, Ethiopia has not developed any official poverty lines. For the purpose of this study, the absolute poverty line is the value of income at the

twenty-fifth percentile for sample households, it is ETB 2606. The amount is to a large extent higher as compared to the threshold used by Namara et al (2010), it was ETB 1025.

In order to identify the determinants of poverty the study used a probability model in which the chances of being in income poverty are linked to individual, socio-economic and demographic characteristics. It is defined as:

$$P_i = E(Y = 1/R_i) = \alpha + \beta R_i$$

Where:

Dependent variable: Poverty is in binary nature (1=yes or 0=no): indicates probability being in poverty. The poverty line is ETB 2606 Per Year per Adult.

Independent variable, R_i:

- Age of the household head (age), Continuous variable
- Sex of household head (gender), Discrete variable
- Family/household size (family size), Continuous variable
- Dependency ratio (dependency ratio), Continuous variable
- Farm Landholding (totland), Continuous variable
- Livestock ownership in TLU (live stock unit), Continuous variable
- Education level of household head, (educ), Discrete variable
- Income Diversification (income sources), Continuous variable

IV. DATA ANALYSIS AND DISCUSSION

a) Socio-Economic Features of Respondents

The majority of the household heads (80.2 percent) were males. Male dominance, as we know, is one of the typical features of developing countries. About 79.7% of the respondents were married. In terms of education, the majority of them are literate (starting from read and write to secondary education). The literate respondents are around 61.8 percent.

Table 1 : Demographic Features of Respondents

Demographic features	In percentage
Sex of household head	
Male	80.2
Female	19.8
	100%
Marital status	
Single	1.8
Married	79.7
Widowed/Separated	18.4
	100%
Educational level of household head	
Illiterate	38.2
literate	61.8
	100%

Source: Own Survey and Computation, 2012

The mean age of household head is 50.38 years. The average family size and dependency ratio are 7.94 and 1.9, respectively. This is indeed higher even as compared to national parameters.

Table 2 : Age, Family size and dependency Ratio

Demographic features	Mean
Age of household head	50.38±9.697
Family size	7.94±2.537
Dependency ratio	1.90±1.27

Source: Own Survey and Computation, 2012

As regard to resources or assets ownership, the possession of land and livestock per household is 1.85 hectare and 7.24 (in terms of TLU), respectively.

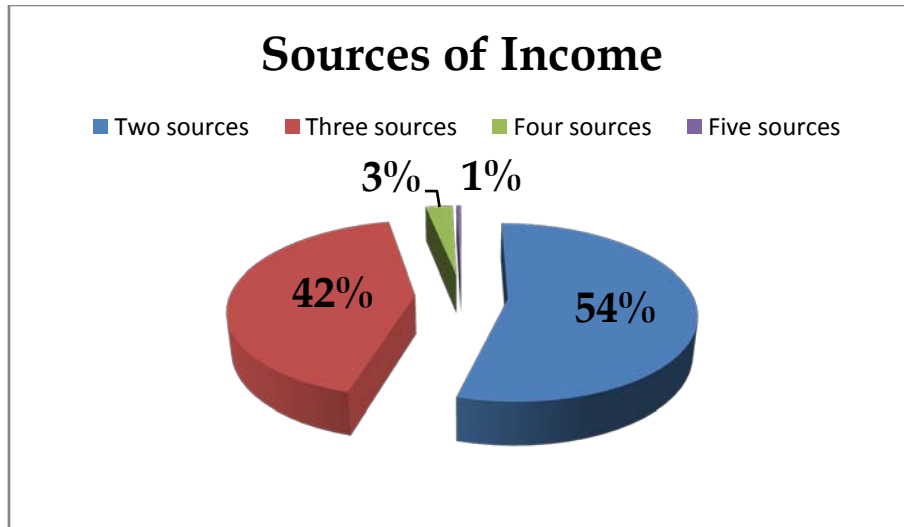
Table 3 : Sources of Income and Ownership of Basic Resources

Productive Resources Ownership	Mean
Per adult household income	3719±1756.9
Total land of the family	1.85±0.935
Livestock Wealth in TLU	7.24±2.69

Source: Own Survey and Computation, 2012

The monthly average income per household was ETB 3719. All households earn their income from more than one economic activity. The sources of income are farming, animal husbandry, forest product, remittances, business and others. The majority of households (54%) earn their income from two major activities, crop farming and animal husbandry.

Chart 1 : The number of sources of household income



Source: Own Survey and Computation, 2012

b) Socio-Economic Determinants of Poverty

In order to identify the major determinants of income poverty the dependent variable, poverty situation of households, was regressed against various explanatory variables. The logit model fitted the data fairly well. The chi-square test strongly rejects the hypothesis of no explanatory power and the model correctly predicted 86.2 percent of the observations.

Apart from these, the Hosmer and Lemeshow (H-L) test was checked. It is also an important measure of goodness-of-fit test. It tests the null hypothesis that there is a linear relationship between the predictor variables and the log odds of the criterion variable. An insignificant chi-square indicates that the data fit the model well.

Table 4 : Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.
Step	118.303	8	.000
Block	118.303	8	.000
Model	118.303	8	.000

Source: Own Survey and Computation, 2012

The Model Summary we see below reveals that the -2 Log Likelihood statistics is 122.966. The Cox & Snell R² can be interpreted like R² in a multiple regression and is 42%.

Table 5 : Model summary and H-L test

-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
122.966 ^a	0.420	.626

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	7.928	8	0.441

Source: Own Survey and Computation, 2012

Besides the model evaluation (goodness-of-fitness), it is, also, important to check their presence or absence of multicollinearity. In logistic regression, it has the same consequences as multiple regressions. In its presence, we are likely to misinterpret the contribution of independent variables. The correlation matrix confirms that multicollinearity is not a serious issue.

The estimates of the logistic regression are shown in Table 6. In general, **familysize**, **totland**, **incomesources** and **livestockunit** are statistically significant and the signs on the parameter estimates support expectations.

Table 6 : Binary Logit coefficient estimates for determinants of Poverty

Dependent Variable: Poverty situation of households(1 if the household is poor and 0 if otherwise)					
Independent Variables	B	S.E.	Wald	Sig.	Exp(B)
gender(1)	-.312	.768	.165	.685	.732
age	-.015	.038	.156	.692	.985
dependencyratio	.107	.186	.332	.564	1.113
familysize	1.188	.202	34.575	.000*	3.280
educ(1)	.573	.599	.907	.341	1.770
totland	-2.720	.603	20.380	.000*	.066
incomesources	-1.587	.548	8.371	.004**	.205
livestockunit	-.417	.154	7.367	.007***	.659
Constant	.387	1.852	.044	.834	1.473

Note: *indicate that the coefficients are statistically significant at 0.01 levels.
 **indicate that the coefficients are statistically significant at 0.05 levels.
 ***indicate that the coefficients are statistically significant at 0.10 levels.

Source: Own Survey and Computation, 2012

According to the table above, household or family size was found to be a significant determinant of rural poverty. The coefficient for household size was found to be positive at 1 percent level of significance. As the household size increases by one unit, the odds of the household to fall into poverty increase by a factor of 3.280. This implies that the possibility of being in poverty is very high for those families who have large size.

As expected, the coefficient of total land holding was negatively correlated with the probability of a household being in poverty. It is statistically significant at 1 percent. The odds ratio illustrates that a one-hectare increase in land holding, the odds of being poor decrease noticeably. Since agriculture is the mainstay of the households in rural Ethiopia, land is the critical resource. Accordingly, the smaller the land holding implies the greater likelihood of falling in poverty. Increment of land holding by one hectare was found to reduce the chance of being trapped in poverty by a factor of 0.066. In the same way, livestock ownership, as measured in TLU-Tropical Livestock Unit, was found significant in reducing the probability of being trapped in poverty. An additional livestock ownership by one TLU reduces the chance of households to fall in poverty by a factor 0.659. Besides their own direct contribution, livestock are the main supplementary in farming system of Ethiopia.

The coefficient for household's involvement in different activities was found to be statistically significant at 5 percent. The higher income diversification implies the lower chances of being trapped in poverty. As regard to household age and education status, contrary to the expectation, the coefficient for the variables was not found to be statistically significant at either of 1, 5 or 10 percent.

V. CONCLUSIONS AND RECOMMENDATIONS

Poverty is one of the hottest social issues in international phenomena. In this regard various studies have been conducted in all directions of the world to identify its determinants. The Binary logistic model was employed so as to find out factors affecting income poverty in rural areas of Ethiopia. The dependent variable, poverty situation of households, was regressed against eight explanatory variables. The result shows that income diversification, livestock ownership, family size and land possession are significantly influencing the probability of households being in poverty. As a result they are considered as major determinants of rural poverty. On the other hand, sex of the household head, age, education and dependency ratio were not found to be statistically significant.

The study suggests that two things, above all, are important in reversing the trends of poverty and well being deprivation in rural areas of Ethiopia. These are: First, promoting effective family planning system and second, diversification of income earning mechanisms.

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APPENDIX

A. Classification Tables(Model adequacy test)

Classification Table ^{a,b}					
	Observed		Predicted		
			Poverty situation		Percentage Correct
	Poverty situation		Poor	Non poor	
Step 0	Poverty situation	poor	0	53	.0
		Non poor	0	164	100.0
	Overall Percentage				75.6

Classification Table ^a					
	Observed		Predicted		
			Poverty situation		Percentage Correct
			Poor	Non poor	
Step 1	Poverty situation	poor	35	18	66.0
		Non poor	12	152	92.7
	Overall Percentage				86.2

a. The cut value is .500

B. Correlation Matrix(multicollinearity test)

Correlation Matrix									
	Constant	Income sources	gender(1)	age	Family size	dependency ratio	Educ (1)	totland	Livestock unit
Constant	1.000	-.493	.233	-.704	.104	-.174	.243	.108	-.312
Income sources	-.493	1.000	.093	.058	-.452	-.032	.022	.140	.141
gender(1)	.233	.093	1.000	-.559	-.230	.091	.540	.156	-.032
age	-.704	.058	-.559	1.000	-.084	.119	-.561	-.119	.067
Family size	.104	-.452	-.230	-.084	1.000	-.245	.009	-.679	-.332
dependencyratio	-.174	-.032	.091	.119	-.245	1.000	.088	.119	-.014
educ(1)	.243	.022	.540	-.561	.009	.088	1.000	.047	-.113
totland	.108	.140	.156	-.119	-.679	.119	.047	1.000	-.077
livestockunit	-.312	.141	-.032	.067	-.332	-.014	-.113	-.077	1.000